

SELF-EVALUATION REPORT FOR MODULE 3

THE NAME OF THE UNIT BEING EVALUATED: Faculty of Mechanical Engineering, Czech Technical University in Prague

FORD: 2 - Engineering and technology

SOCIAL CONTRIBUTION OF THE EVALUATED UNIT

3.1 Introductory information about the unit under evaluation

The evaluated unit will describe its mission and vision and provide a general self-reflection of the societal contribution of R&D&I, along with its long-term goals in the fields it develops. The distribution of research activities by type of research will also be commented on.¹ The evaluated unit will describe its organisational structure and size (staffing, number of students, number of study programmes implemented, etc.) based on the data provided in annex tables 3.1.1 to 3.1.6.

Maximum 1000 words.

This is a non-rated indicator that serves as an introduction to the evaluated unit, providing context for data in indicators 3.2-3.7.

Self-assessment:

The Faculty of Mechanical Engineering of the Czech Technical University in Prague has a long history more than 160 years of dedicated teaching of mechanical engineering and corresponding tradition to accumulate the knowledge and to provide that to students and industry. **The mission of FME that was being fulfilled during this long period can be formulated as**

- to develop new knowledge, expand and preserve the acquired knowledge in engineering fields, especially mechanical ones (improvement of products through the application of new design principles, new technologies and manufacturing process organization development through including additive, digital, data-driven, machine learning, AI approaches)
- enable access to, and carry out higher mechanical engineering education
- contribute to the development of the economy and life quality in the Czech Republic (CR)
- play an active role in the public debate on social and ethical issues of technology
- sustain and develop international cooperation.

The vision of FME is to sustain and improve its position from various points of view. FME

- is an international center of excellence in the fields of engineering and industrial sciences, creative activity and education
- attracts the best students from CR and gifted students from abroad to study at FME
- brings stimuli for new basic&applied research, these research results are applied in practice for the development of the economy and life quality in the Czech Republic

¹ Basic, applied, contract, artistic research (see Definition of Terms in Methodology HEI2025+).

At the same time, FME plays multiple roles, each of which should be seen from the point of view of a university and simultaneously from the point of view of a company striving for sustainability. The roles are teaching (university point of view is education x company point of view is income from students), research (science and research x grant income from funding agency), contracts (know-how transfer x contract with company), patents and spin-off (support of economy x sales and business), knowledge (service to society x sales to public), sourcing and providing people (social function x acquiring students and offer of graduates), entertainment and cohesion of society around campus (social function and service to society x PR and sales to public).

The fulfilment of FME mission and vision can be visible from the facts that FME

- is developing knowledge in all fields of mechanical engineering
- is teaching all fields of mechanical engineering
- conducts R&D in all fields of mechanical engineering
- cooperates with industry
- is recognized by industry (e.g., participating in 6 National Competence Centers)
- offers and applies technology for improvement of life quality in CR
- provides knowledge and social service to society

Over the past 20 years, FME has built up in many areas what is today called an ecosystem of university-industrial cooperation. The ecosystem requires a university R&D and teaching/learning background comprising academic knowledge, often a unique instrument and experimental base, and study programs aimed at educating students in their chosen specialization. However, to create an ecosystem, it is necessary to have the entire sequence from basic science through applied science to industrial R&D. The aim of ecosystem building is to enable industrial enterprises already active in CR to be globally competitive. This will provide benefits for the Czech economy, will raise the standard of living and will make the CR a sought-after attractive country for R&D and for producing new high-tech products. Ecosystems have been created for the automotive, machine tool, aerospace, energy, and manufacturing industries.

These ecosystems were established based on difficult decisions about the conflict between usefulness for industry and economy of the Czech Republic and the risk of sustainability and the simple reproduction of costs to FME. FME has managed these conflicts so far, and the goal is now to sustain and offer acquired infrastructures for usage by industrial companies.

FME is constantly making decisions about how much resources are devoted to basic and how much to applied research and development. The FME vision is that the basic research provides generalization the industrial practice problems into theoretical level and/or by asking curious questions and/or by carrying out experiments and/or by innovative concepts. Solving the arisen basic research problems leads thus to scientific results and/or innovative proposals for applied research or innovative applications. The results of applied research are used and this closes the circle. The basic research is supported by grants or by institutional funds. The collaborative applied research is mostly based on public support, contractual research based on company contract. The ratio between basic and applied research is approximately 1:2.

FME consists of 17 departments, two of them have divisions and three research centers that cover all knowledge areas needed for mechanical engineering (Technical Mathematics, Physics, Mechanics, Biomechanics and Mechatronics, Fluid Dynamics and Thermodynamics, Designing and Machine Components, Materials Engineering, Manufacturing Technology, Machining, Process Planning and Metrology, Instrumentation and Control Engineering, Production Machines and Equipment, Energy Engineering, Automobiles, Combustion Engines and Rail Vehicles, Aerospace Engineering, Environmental Engineering, Process Engineering, Management and Economics, Foreign Languages). FME, at 2023 had has 27 full professors, 35 associate professors, 154 Assistant Professors, 309 PhD students, 494 Master students, and 955 Bachelor students. FME has just one bachelor study

programme as it is a belief that the fundamentals of mechanical engineering are indivisible, however the bachelor study programme offers 16 focuses. FME offers 13 Master Study programs with multiple specializations that cover the whole mechanical engineering except for sea ship design and textile machinery. Then FME offers 5 PhD Study programmes in the main research areas at FME (Applied sciences in Mechanical engineering, Design engineering and mechatronics, Production and material engineering, Energy and process engineering, Machine and process control), each in Czech and English versions. These areas of PhD study are also the main areas of research at FME.

FME is a technical university with clear mission and vision, fulfills the goals and tasks from its mission and vision, contributes to the competitiveness of Czech industry and thus Czech economy in global markets, is trying to carry out basic research for solution of current problems in society such as transportation, energy&environment, circular economy, safety and security, is trying to contribute to ethical and social stability in society.

 Table 3.1.1 - Staffing per FTE²

Academic/ Professional position	Total / Of which women					
	2019	2020	2021	2022	2023	Total
Professor	27,0 / 0,4	26,8 / 0,4	27,2 / 0,4	26,7 / 0,3	27,5 / 0,3	135,2 / 1,8
Associate Professor	37,7 / 2,9	37,2 / 2,9	37,4 / 2,9	37,1 / 2,9	35,5 / 2,9	184,9 / 14,5
Assistant Professor	168,5 / 23,2	163,5 / 21,1	158,0 / 21,5	156,4 / 21,5	154,5 / 21,5	800,9 / 108,8
Assistant	25,8 / 1,0	29,7 / 2,0	30,0 / 2,0	30,2 / 2,0	29,6 / 2,1	145,3 / 9,1
R&D Personnel ³	106,3 / 35,9	105,1 / 34,3	104,1 / 30,3	107,0 / 33,5	102,5 / 29,6	525,0 / 163,6
Researchers in other categories ⁴	65,5 / 9,3	68,2 / 10,3	74,4 / 10,1	90,6 / 11,6	107,2 / 12,3	405,9 / 53,6
Technical and economic staff ⁵	105,5 / 59,6	103,9 / 58,7	94,3 / 53,6	88,2 / 52,9	74,2 / 50,1	466,1 / 274,9
Scientific, research and development staff involved in teaching activities	281,4 / 27,5	276,6 / 27,0	270,0 / 27,3	267,3 / 27,2	262,9 / 26,3	1358,2 / 135,3
Early career researchers ⁶	135,5 / 12,0	119,6 / 11,5	114,6 / 10,0	119,0 / 11,8	120,4 / 12,2	609,1 / 57,5
Total ⁷	536,3 / 132,3	534,4 / 129,7	525,4 / 120,8	536,2 / 124,7	531,0 / 118,8	2663,3 / 626,3

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one

² The average number of hours worked is calculated as the ratio of the total number of hours actually worked during the reference period, from 1 January to 31 December, by all staff (including agreement on work activity, excluding agreement on work performance) to the total annual working time pool per full-time employee. The full-time status of the worker in the evaluated unit is always reported. If an employee holds more than one type of full-time job within the evaluated unit, the total sum of the two shall be reported.

³ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

⁴ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

⁵ Who participates in the management and support of R&D&I in the institution.

⁶ See Definition of Terms in Methodology HEI2025+.

⁷ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

3.1.2 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2019 (numbers of physical employees and personnel)⁸

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	3	0	9	0	10	0	25	2
Associate Professor	0	0	2	0	20	1	6	2	10	1	21	1
Assistant Professor	7	0	69	6	77	10	26	3	15	7	12	1
Assistant	15	0	12	0	1	1	1	0	0	0	1	0
R&D Personnel ⁹	37	11	47	11	24	9	10	6	13	6	11	0
Researchers in other categories ¹⁰	39	9	43	5	8	0	5	0	4	0	3	1
Technical and economic staff ¹¹	31	6	26	4	4	1	1	0	2	0	2	0
Scientific, research and development staff involved in teaching activities	27	1	111	7	103	12	42	5	35	8	59	4
Early career researcher ¹²	61	9	126	11	0	0	0	0	0	0	0	0
Total ¹³	129	26	199	26	137	22	58	11	54	14	75	5

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D Personnel, Researchers in other categories and Technical and economic staff are mutually exclusive, i.e. one staff member is reported in only one category. The categories of scientific, research and development staff involved in teaching activities and early career researchers are reported collectively for all the above-mentioned categories.

3.1.3 Age structure of R&D&I personnel of the evaluated unit and their structure by job title and gender in the year 2023 (numbers of physical employees and personnel)¹⁴

⁸ The total number of employees/workers as of 31st December of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

⁹ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁰ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹¹ Who participates in the management and support of R&D&I in the institution.

¹² See Definition of Terms in Methodology HEI2025+.

¹³ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I Personnel, Researchers in other categories and technical and economic staff.

¹⁴ The total number of employees/workers as at 31.12. of the calendar year in question is to be entered, irrespective of the level of time worked, but only in an employment relationship (including agreement on work activity, excluding agreement on work performance). Other types of contractual relationships under the Civil Code that involve purchase of services are not included.

Academic/ professional position	Under 29 years		30-39 years old		40-49 years old		50-59 years old		60-69 years old		70 years and older	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Professor	0	0	0	0	4	0	6	0	7	0	26	1
Associate Professor	0	0	1	0	15	1	11	1	9	3	17	0
Assistant Professor	0	0	32	1	81	8	38	8	20	6	14	2
Assistant	5	0	21	1	5	1	1	0	2	1	1	0
R&D Personnel ¹⁵	16	1	46	9	31	13	12	6	10	4	14	2
Researchers in other categories ¹⁶	67	11	67	9	21	1	6	0	4	0	5	1
Technical and economic staff ¹⁷	2	0	4	0	6	1	0	0	0	0	1	0
Scientific, research and development staff involved in teaching activities	5	0	72	4	112	10	57	9	38	10	58	3
Early career researcher ¹⁸	72	11	121	11	0	0	0	0	0	0	0	0
Total ¹⁹	90	12	171	20	163	25	74	15	52	14	78	6

Note: The categories professor, associate professor, assistant professor, assistant, other scientific, R&D personnel, researchers in other categories and technical and economic staff are mutually exclusive, i.e. one staff member is reported under one category only. Scientific, research and development staff involved in teaching activities, as well as early career researchers are reported collectively for all the above-mentioned categories.

Table 3.1.4 – Students

Type of study	2019		2020		2021		2022		2023		Total	
	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women	Total	Women
Undergraduate	1405	123	1371	101	1223	85	968	57	955	64	5922	430
Master's ²⁰	793	81	731	76	727	79	601	54	494	39	3346	329
Doctoral	276	44	302	50	313	47	301	50	309	51	1501	242
Lifelong Learning Courses	60	57	431	170	120	39	183	61	311	110	1105	437
Total	2534	305	2835	397	2383	250	2053	222	2069	264	11874	1438

¹⁵ The category "R&D Personnel" includes technical and professional personnel who are not directly involved in R&D&I but are indispensable for the research activity (e.g. operators of research facilities).

¹⁶ The category "Researchers in other categories" includes all other staff who cannot be classified under any of the above categories (e.g. independent researcher/scientist).

¹⁷ Who participates in the management and support of R&D&I in the institution.

¹⁸ See Definition of Terms in Methodology HEI2025+.

¹⁹ Total is the sum of the categories: professor, associate professor, assistant professor, assistant, R&I personnel, researchers in other categories and technical and economic staff.

²⁰ All master's degree students are listed, regardless of the length of their programme of study.

Table 3.1.5 - Study programmes in Czech/English

Type of study programme	Total ²¹ / Of which professional study programmes											
	2019		2020		2021		2022		2023		Total	
Undergraduate	6/2	0/0	6/2	0/0	6/2	0/0	9/1	0/0	11/1	0/0	38/8	0/0
Master's	18/2	0/0	26/5	0/0	27/5	0/0	26/4	0/0	24/3	0/0	121/19	0/0
Doctoral	2/1	0/0	12/1	0/0	14/3	0/0	17/5	0/0	19/7	0/0	64/17	0/0
Lifelong Learning courses	6/0	1/0	27/0	0/0	12 / 0	1/0	10/0	1/0	16/0	2/0	71/0	5/0
Total	30/5	1/0	71/8	0/0	59/10	1/0	62/10	1/0	70/11	2/0	294/44	5/0

Note: For each SP type, enter the number of SPs in Czech language in the first cell and insert the number of SPs in English language after the slash in the same cell (e.g. 15/3), enter the number of professional SPs in Czech language in the second cell and insert the number of professional SPs in English language after the slash. Follow a similar procedure in the last column of the table (Total).

3.1.6 – R&D&I capacities

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
1. Natural Sciences	1.1 Mathematics	5,09 %	Balanced basic and applied research	11,77 %
	1.2 Computer and information sciences	1,32 %	Balanced basic and applied research	
	1.3 Physical sciences	4,17 %	Basic Research	
	1.4 Chemical sciences	0,56 %	Basic Research	
	1.5 Earth and related environmental sciences	0,37 %	Applied Research	
	1.6 Biological sciences	0,06 %	Balanced basic and applied research	
	1.7 Other natural sciences	0,20 %	Balanced basic and applied research	
2. Engineering and Technology	2.1 Civil engineering	1,54 %	Balanced basic and applied research	85,89%
	2.2 Electrical engineering, Electronic engineering, Information engineering	7,57 %	Applied Research	
	2.3 Mechanical engineering	59,68 %	Balanced basic and applied research	
	2.4 Chemical engineering	2,18 %	Balanced basic and applied research	

²¹ The total number of study programmes for which admissions have been announced in a given academic year.

R&D&I field	FORD	FORD share [%]	Predominant type of research	Total share of industry group [%]
	2.5 Materials engineering	10,28 %	Balanced basic and applied research	
	2.6 Medical engineering	0,61 %	Applied Research	
	2.7 Environmental engineering	3,33 %	Balanced basic and applied research	
	2.8 Environmental biotechnology	0,01 %	Applied Research	
	2.9 Industrial biotechnology	0,25 %	Applied Research	
	2.10 Nanotechnology	0,00 %	Zvolte položku.	
	2.11 Other engineering and technologies	0,44 %	Balanced basic and applied research	
3. Medical and Health Sciences	3.1 Basic medicine	0,02 %	Applied Research	0,86 %
	3.2 Clinical medicine	0,29 %	Applied Research	
	3.3 Health sciences	0,00 %	Zvolte položku.	
	3.4 Medical biotechnology	0,52 %	Applied Research	
	3.5 Other medical sciences	0,00 %	Zvolte položku.	
4. Agricultural and veterinary sciences	4.1 Agriculture, Forestry, and Fisheries	0,01 %	Applied Research	0,01 %
	4.2 Animal and Dairy science	0,00 %	Zvolte položku.	
	4.3 Veterinary science	0,00 %	Zvolte položku.	
	4.4 Other agricultural sciences	0,00 %	Zvolte položku.	
	4.5 Other agricultural sciences	0,00 %	Zvolte položku.	
5. Social Sciences	5.1 Psychology and cognitive sciences	0,00 %	Zvolte položku.	1,50 %
	5.2 Economics and Business	1,24 %	Applied Research	
	5.3 Education	0,12 %	Applied Research	
	5.4 Sociology	0,00 %	Zvolte položku.	
	5.5 Law	0,14 %	Applied Research	
	5.6 Political science	0,00 %	Zvolte položku.	
	5.7 Social and economic geography	0,00 %	Zvolte položku.	
	5.8 Media and communications	0,00 %	Zvolte položku.	
	5.9 Other social sciences	0,00 %	Zvolte položku.	
6. Humanities and the Arts	6.1 History and Archaeology	0,00 %	Zvolte položku.	0 %
	6.2 Languages and Literature	0,00 %	Zvolte položku.	
	6.3 Philosophy, Ethics and Religion	0,00 %	Zvolte položku.	
	6.4 Arts (arts, history of arts, performing arts, music)	0,00 %	Zvolte položku.	
	6.5 Other Humanities and the Arts	0,00 %	Zvolte položku.	
Total		100 %	-	100 %

RECOGNITION BY THE RESEARCH COMMUNITY

3.2 Recognition by the research community

The evaluated unit will briefly comment on its position in the research community. It shall consider individual and other prestigious R&D&I awards, participation of its academic staff in the editorial boards of international scientific journals, elected membership in professional societies, major invited lectures given by the evaluated unit's academic staff abroad or by foreign scientists and other relevant guests at the evaluated unit. Additionally, it will address the involvement of staff in the evaluation of national or European project/programme calls over the period of 2019–2023 based on the data provided in annex tables 3.2.1 to 3.2.5 (max. 10 most relevant items). If necessary, the evaluated unit shall list any additional services to the scientific community that it considers relevant.

Maximum 1000 words.

Self-assessment:

CTU FME is a well-known and respected entity in the research and professional community both in the Czech Republic, and in Europe and the world, which results on the one hand from tradition (it was founded more than 160 years ago and is among the oldest civil technical universities in the world), on the other hand from the high-quality research carried out by individual departments and teams of the faculty in their fields. Two researchers at CTU FME, in the monitored period were among the *World's Top 2% Scientist according to Stanford University*. Professor of CTU FME, Jan Macek, was awarded the *Gold medal of the 63rd International Engineering Fair* for his lifelong creative technical work and innovative achievements. Some of our exhibits were also awarded medals at various years of this fair. The leader of the team that created the S.A.W.E.R – the Solar air water earth resource, doc. Tomáš Matuška received the *Professional Award in Science* of the Federation of European Heating, Ventilating and Air-conditioning Associations, that represents 100,000 experts from 28 European countries. Our young colleagues and students were awarded the Werner von Siemens Prize or the Best Paper Award of ASME Turbo Expo 2019. CTU FME itself received the *Honorary Award of the jury for the Visionaries 2019* innovation competition for comprehensive support of socially beneficial applied research and implementation of innovations in the field of mechanical engineering.

Many of our academics serve on the editorial and scientific boards of international scientific journals and major scientific conferences. Many contribute to the quality of the publication peer review process as opponents in their specific fields.

CTU FME is a collective member of *ERCOFTAC - a global association of research, education, and industry groups, supporting joint efforts of Research Institutes and Industries who are active in all aspects of Flow, Turbulence and Combustion* and *EIT Manufacturing - a public-private partnership, one of the nine Knowledge and Innovation Communities (KIC) supported by the European Institute of Innovation and Technology (EIT)*. Through the *Czech Society for Mechanics* and *Central European Association for Computational Mechanics (CEACM)*, we are collective members of the *European Community on Computational Methods in Applied Sciences ECCOMAS*. Academicians of CTU FME are members and work in other scientific and research (*The von Karman Institute for Fluid Dynamics, Federation of European National Statistical Societies FENStatS, Working Party on Mixing of the European Federation of Chemical Engineering, The Society for the Advancement of Material and Process Engineering SAMPE, Knowledge Center on Organic Rankine Cycle technology, International Union of Pure and Applied Chemistry*) and professional (*The international membership organization for the technology of mobility community FISITA, American Society of Heating, Refrigerating and Air-Conditioning Engineers ASHRAE, International Energy Agency, International Standardization Organization ISO ...*) institutions. In the Czech Republic, CTU FME is a member of national organizations

- the *Confederation of Industry* and the *Association of Small and Medium-sized Enterprises*. Recognition by the scientific community can also be illustrated by the fact that prominent academic staff are members of the highest bodies in several dozen national scientific, expert and professional organizations. During the monitored period, invited lectures by several foreign scientists and experts from both academic and non-academic institutions were held at CTU FME, as well as several of our colleagues gave lectures at partner institutions abroad. The topics of the lectures cover a wide range of mechanical engineering problems, from design, production technologies, process engineering, energy, biomechanics, to applied engineering mathematics, physics, and mechanics. CTU FME staff are members of bodies of institutions and agencies that provide support for science and research activities and participate in the evaluation of submitted projects and the progress of provided grants in the role of opponents, rapporteurs and members of evaluation panels or higher bodies of the institutions.

Distinguished professors and associate professors serve on scientific councils, professional advisory bodies, and councils of doctoral study programmes at domestic and foreign universities. Many experts also serve on advisory bodies of government ministries and other public organizations or boards of directors of foundations supporting science and research.

Table 3.2.1 - Prestigious R&D&I awards granted during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
Navid Aslfattahi, Ing., Ph.D.	Top 2 % Scientists Worldwide 2022 by Stanford University	Stanford University and Elsevier
Tomáš Matuška, doc. Ing., Ph.D.	Professional Award in Science	European Heating, Ventilating and Air-conditioning Associations REHVA
Jan Macek, prof. Ing., DrSc.	Gold medal of the 63rd International Engineering Fair 2022 for his lifelong creative technical work and innovative achievements	Confederation of Industry of the Czech Republic + BUT + Veletrhy Brno, a.s.
Matěj Sulitka, Ing., Ph.D.	Gold medal of the International Engineering Fair 2021 for Multifunctional grinder BUD100	Confederation of Industry of the Czech Republic + BUT + Veletrhy Brno, a.s.
Pavel Zeman, doc. Ing., Ph.D.	Bronze medal at the 15th International Fair of Inventions and Innovations INTARG Katowice 2022	International Federation of Inventors' Associations
Pavel Ditl, prof. Ing., DrSc.	Awarding a significant personality who contributed to the development of the chemical industry	Association of the Chemical Industry of the Czech Republic
P-D Refractories CZ a.s. + CTU FME	Industry 4.0 Award 2023	Confederation of Industry of the Czech Republic
Jan Čížek, doc. Ing., Ph.D.	Werner von Siemens Award for the Most Significant Result in Basic Research	Siemens
Marek Pátý, Ing.	Best Paper Award, ASME Turbo Expo 2019	ASME

Name, surname and title(s) of the evaluated unit's staff member	Name of the award	Awarding institution
CTU FME	Jury of innovation competition Visionaries 2019 honorary award for the comprehensive support of socially beneficial applied research and implementation of innovations in the field of mechanical engineering	CzechInno

Note: Provide up to 10 examples.

Table 3.2.2 Participation of academic staff of the evaluated unit in editorial boards of international scientific journals during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of scientific journal, ISSN
Navid Aslfattahi, Ing., Ph.D.	International Journal of Energy Research, ISSN: 1099-114X
Matej Daniel, prof. RNDr., Ph.D.	Scientific Reports, ISSN: 2045-2322 (online)
Michael Valášek, prof. Ing., DrSc.	Multibody system dynamics, ISSN: 1384-5640
Jan Hensen, prof. Dr. Ir.	Journal of Building Performance Simulation, ISSN: 1940-1493
Jan Papuga, Ing., Ph.D.	International Journal of Fatigue, ISSN: 0142-1123
Matej Daniel, prof. RNDr., Ph.D.	Journal of Mechanics, ISSN: 1727-7191 (Print), 1811-8216 (Online)
Michael Valášek, prof. Ing., DrSc.	Vehicle system dynamics, ISSN: 0042-3114
Jaromír Fišer, doc. Ing., Ph.D.	Kybernetika, ISSN: 0023-5954
Navid Aslfattahi, Ing., Ph.D.	Frontiers in Energy Research-Solar Energy, ISSN: 2296-598X
Pavel Zeman, doc. Ing., Ph.D.	MM Science Journal, ISSN: 1803-1269

Note: Please provide up to 10 examples of academic staff participation in editorial boards of international scientific journals (e.g. editor, editorial board member, etc.).

Table 3.2.3 The most important invited lectures delivered by the academic staff of the evaluated unit at foreign institutions during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Tomáš Bodnár, doc. Mgr. Ing., Ph.D.	Numerical Simulations of Johnson-Segalman Viscoelastic Fluids in Shear-Thinning Setting	Institute of Turbomachinery (ITU) at the University of Rostock / International Workshop on Flow-Induced Blood Damage in Rotating Systems 2022	2022
Tomáš Halada, Ing.	Smoothed Particle Hydrodynamics method and Template Numerical Library-a way to implement numerical methods	Max Planck Institute for molecular biology and genetics	2023
Václav Dostál, doc. Ing., Sc.D.	Effect of real gas properties on modelling of gas systems	Cambridge University/SAFE-G summer seminar on advanced modelling techniques	2023
Petr Špatenka, prof. RNDr., CSc.	Thermoplastics composites prepared by rotomolding technology	7th International Conference on Advanced Plasma Technologies (ICAPT-7)	2019

Name, surname and title(s) of the evaluated unit's staff member	Invited lecture title	Name of host institution, or name of conference or event	Year
Michal Vojtíšek, prof. Ing., Ph.D.	Applying lessons learned from diesel exhaust to brake wear nanoparticle measurements and regulation	PAREMPI seminar, Lund University, Lund, Sweden	2023
Jan Papuga, Ing., Ph.D.	Responsible Fatigue Design of Components under Multiaxial Loading	Fatigue Design Conference 2023, Senlis, France	2023
Matej Daniel, prof. RNDr., Ph.D.	Additive manufacturing in medicine	National Taiwan University of Science and Technology	2023
Tomáš Vyhliďal, prof. Ing., Ph.D.	Time delay controllers and compensators for vibration suppression-neutrality, spectral design and applications	7th IFAC Symposium on Systems Structure and Control and 15th IFAC Workshop on Time Delay Systems, 9-11 September 2019, Sinaia, Romania	2019
Matěj Sulitka, Ing., Ph.D., FEng.	Digital twins of machines and processes for smart manufacturing (key note)	The Korean Society for Precision Engineering / International Conference on Precision Engineering and Sustainable Manufacturing (PRESM2023)	2023
Michael Valášek, prof. Ing., DrSc.	Mechatronic stiffness	GMMME2023 Global Meet on Mechanical and Mechatronics Engineering	2023

Note: Provide up to 10 examples.

Table 3.2.4 - The most important lectures by foreign scientists and other guests relevant to R&D&I at the evaluated unit during the evaluation period

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Josefs Kovacs, prof.	McGill University, Canada	Task-Driven Dynamics and Modelling of Mechanical and Mechatronic Systems	2022
Raffaella Sesana, Ph.D.	Politecnico di Torino	Stresses And Thermal Effects: Engineering Research Applications	2019
Fabrizio Scala, prof.	Universita degli studi di Napoli Federico II	An Introduction to Fluidized Bed Combustion of Solid Fuels	2022
Lars Penter, Dr. Ing.	Technical University Dresden, Institut of Mechatronic Engineering, Chair of Machine Tools Development and Adaptive Controls	Measurement methods in forming machine acceptance tests	2023
Paolo Nespoli, MSc.	European Space Agency	Human Space Endeavours: Today, Tomorrow, After-Tomorrow, After-after Tomorrow	2023
Nejat Olgac, prof.	University of Connecticut, USA	Active Noncollocated Vibration Absorption	2022

Name, surname and title(s) of the lecturer	Lecturer's employer at the time of the lecture	Invited lecture title	Year
Mojtaba Ahmadi, prof.	Carleton University, Canada	Robotics and Controls with Application to both Aerospace, Biomedical, and Manufacturing	2022
Adam Nieslony, prof.	Opole University of Technology	Multiaxial Vibration Fatigue Analysis	2022
Gregor Primc, Assoc. prof., Ph.D.	Jozef Stefan Institute, Slovenia	Non-Equilibrium Plasma for Improving Surface Properties of Materials	2022
Nirupam Chakraborti, prof.	Indian Institute of Technology Kharagpur, India	Development of Evolutionary Data-driven Modeling Algorithms	2022

Note: Provide up to 10 examples.

Table 3.2.5 - Involvement in the evaluation of national/European research project/programme calls relevant to the R&D&I area at the unit during the evaluation period

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
Jan Macek, prof. Ing. Dr.Sc.	Panel of Experts: EPSILON Panel No. 10	Technology Agency of the Czech Republic (TAČR)	2017-2021
Tomáš Vampola, prof. Dr. Ing.	Panel P101 (Mechanical engineering)	Czech Science Foundation (GACR)	2019-2023
Tomáš Vyhlídal, prof. Ing., Ph.D.	Panel P101 (Mechanical engineering)	Czech Science Foundation (GACR)	2019-2020
Antonín Kříž, prof. Dr. Ing.	Jan Amos Comenius Operational Programme - 1.1. Development and strengthening of research and innovation capacities and introduction of advanced technologies 1 - Research and development. Chairman of the evaluators' committee.	Ministry of Education, Youth and Sports	2023-2025
Jiří Plešek, Ing., CSc.	Member of the board of Technology Agency of the Czech Republic	Technology Agency of the Czech Republic (TAČR)	
Miroslav Španiel, doc. Ing., CSc.	Panel of Experts: THETA Panel No. 3	Technology Agency of the Czech Republic (TAČR)	2019-2023
Matej Daniel, prof. RNDr., Ph.D.	Panel P108 (Organic materials and biomaterials science and engineering)	Czech Science Foundation (GACR)	
Jan Hošek, prof. Ing., Ph.D.	National Sustainability Program I (member of the agency's evaluation body)	Ministry of Education, Youth and Sports	2021

Name, surname and title(s) of the evaluated unit's staff member	Name of the research project/programme call	Name of the contracting authority/guarantor of the project/programme call	Year
František Hrdlička, prof. Ing., CSc.	Member of the supervisory board of agencz	Czech Science Foundation (GACR)	2022-2025
Jan Hrdlička, prof. Ing., Ph.D.	Clean Energy Transition Partnership	European Commission	2022-2023

Note: Provide up to 10 examples.

RESEARCH PROJECTS

3.3 Research projects

The evaluated unit shall list at most 10 (considered most significant by the evaluated unit) research projects/activities (regardless of whether they are supported by public funds or based on contract research²²) that it has implemented or participated in during the period of 2019–2023²³. This should be done from the full list in annex tables (Table 3.3.1–3.3.2)²⁴, regarding particularly the results achieved or the application potential of the projects. The unit should also describe how the research projects contributed to the mission and purpose of the evaluated unit. If the evaluated unit has been a participant in listed project, it shall indicate which other entities were involved and describe its contribution to the project. The interdisciplinary aspects of the projects will also be commented on, along with any collaboration with other units of the evaluated HEI.

Maximum 300 words per project.

Self-assessment:

Bozek Vehicle Engineering National Center of Competence – BOVENAC (2023-2028) a **Josef Bozek National Center of Competence for Surface Vehicles** - (JOBNAC) (2019-2022) are applied research projects in the program of National Centers of Competence of the Czech Republic, whose main goal and benefit is the research and development of means of sustainable mobility by road and rail vehicles and their integration into transport systems. Both projects follow each other in the monitored period, their main investigator is the FS CTU, and they operate as consortia of >30 entities that use the synergy between related fields with similar development problems as well as the synergy of cooperation between academic (TUL FS, UPCE DFJP, VŠB FS, BUT FS, UČU FS UK), research (VÚKV, VZÚ, ...) and industrial (e.g., Škoda Auto a.s., ŠKODA TRANSPORTATION a.s., Garrett Motion Czech Republic s.r.o., Siemens Mobility, s.r.o., Eaton Elektrotechnika s.r.o., ...) partners, and are focused on crucial problems applicable to the market of future means of transport and sustainable mobility. Research and development responds to changes in the vehicle industry in trends of environmental friendliness and competitiveness of purpose-optimized products in the areas of: Electrification of vehicles at various levels; Digitization of research in key technologies (KET) covering thermodynamic, aerodynamic, mechanical, electrical and control areas in combination with testing of individual innovations and entire systems; IT tools for connecting vehicles with mobility and autonomous driving systems; Environmental friendliness of vehicles throughout their life cycle; Competitiveness of final products on global markets; HMI with AI impact and communication in V2X systems; Life cycle analyses of new vehicle concepts. Of the 265 results registered in the national NCCJB database, academic institutions

²² For the definition of contract research for the purposes of evaluation in the HE segments, see Article 2.2.1 of the Community Framework for State Aid for Research, Development and Innovation 2014/C 198/01.

²³ Regardless of whether the projects are completed or still ongoing, provided that at least part of the project was implemented during the evaluation period.

²⁴ The evaluated unit shall only fill tables that are relevant to it.

are the originators of 240. 128 of these results come from the FS CTU, of which 11 articles, 23 software, 16 functional samples (e.g., Optimized gas ICE for vehicle decarbonization), 48 articles in proceedings. One European patent application was filed within the center, one habilitation was defended, two doctoral theses were defended, and four invited lectures were delivered.

Center of electron and photonic optics-CEPO (2018-2022) and **Centre of Advanced Electron and Photonic Optics – CAEPO** (2023-2028) are consecutive projects of applied research (NCC 1,2 programme of TACR) dealing with R&D and technology transfer in electron microscopy and lithography, optical microscopy and spectroscopy, laser and fiber technologies, optical and quantum metrology, ultraprecise optical manufacturing and sophisticated optical systems. The main participant of both centres is Institute of Scientific Instruments of CAS. It unites 15 key academic (CTU FME, CTU FCE, BUT CEITEC, MU CEITEC, UP PF), research (institutes of CAS, ...) and industrial (Meopta s.r.o., Compo Tech PLUS, spol. s r.o., ...) players in Czech Republic.

Faculty has participated in the subproject "Advanced Design of Opto-Mechanical Systems". This subproject focuses on the design of diffraction-limited optical assemblies with advanced mechanical design and sub micrometer precision positioning of optical components. We are developing methods for simulations of optical and mechanical components (parasitic stress in optics, prediction of aberrations from temperature, vibrational behaviour of assemblies). Other activities focus on stress-free mounting of optics, coupling of optics to mechanics by soldering, high-precision positioning, automation of alignment, reduction of vibration effects, and application of composite materials in the support structures of opto-mechanical assemblies.

FME contributed: Functional sample *Active vibration suppression* that was later applied in utility model *A feedback system for the active compensation of vibrations of Twyman-Green interferometer*; Functional sample *Centred turning head* enabling to increase the current production of milled and short lenses preserving manufacturing quality. New generation - *2DOF Rotary Tilting Adjustment Fixture* was recently developed; Verified technology *Adaptive control system for active absorption implemented on the low-cost control hardware platform*; A methodology focused on replacement of classical structural frames from granite or isotropic metals with composite or hybrid composite – metal ones, that potentially reduces weight while maintaining or improving the frame dynamic behaviour.

The **National Centre of Competence ENGINEERING - NCCE 1** (2019-2022) and NCCE 2 (2023-2028) are consecutive projects of applied research (NCC 1 program of TACR) focused on research and development activities necessary for enhancing the competitiveness of the Czech (mechanical) engineering companies within the segment of manufacturing and light industries by increasing the performance and precision of machines and equipment, energy consumption reduction, material consumption decreasing, production processes automation, environmental impact reduction and, digitalization of processes within Industry 4.0 principles.

NCCE united 33 academic (ČVUT FS, ZČU FS, TUL FS, VŠB FS, VUT FSI) and industrial (TAJMAC-ZPS, a.s., TOS VARNSDORF a.s., Wikov Gear s.r.o., ...) subjects, with the main participant - R&D company VÚTS, a.s. In the scope of the Centre were delivered totally 158 results, 28 particularly by FME CTU mainly in the fields of machine tool design, control and operation, green and digital transformation in machine tools. FME CTU in Prague was involved in 10 sub-projects. The major volume of applied results (prototypes, functional samples, verified technologies) and their subsequent market implementation means a kind of technology transfer with related financial benefit for CTU FME. The minor volume of results are journal publications publishing selected principles and novel findings. Example functional sample *Machining Centre Thermal Error Compensation with Automatic Recalibration* embodies approximation of spindle rotation impact regarding both heating and cooling phases and ambient temperature changes influence using software compensation model based on transfer functions and inter-process calibration. The model is part of control system extension TOS Control, that highlights the high level of the research finalized with the applied results. Intensive close collaboration with five

leading companies also provides additional inputs and experience to improve collaboration with other companies within production engineering in the Czech Republic and in foreign countries.

The [National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering](#) MESTEC is focused on the areas of Advanced Materials, Additive Technologies, Mechatronics, Transport Phenomena and Energy, Tribology and Surfaces, Energy-Saving Technologies and Materials for Sustainable Development. It combines multidisciplinary research specializations (construction, mechanics, electrical engineering, chemistry, biology, sensors, materials engineering, virtual design, etc.) directed towards three interconnected technological areas (new materials, virtual design and prototyping, mechatronics and control) primarily aimed at mechanical engineering for the 21st century. In the period 2019 - 2022, the centre consisted of the workplaces of 6 research organizations and 19 companies, successfully fulfilled its research agenda and was extended for the period 2023-2028. Currently it consists of 5 research organizations and 25 companies. Activities have been organized as particular research projects between a research organization and an industrial enterprise.

The main beneficiary of the project is BUT Brno, CTU is in the position of another participant.

The CTU FME participated in the field of advanced functional materials, the projects of which represented a combination of three different approaches to new and at the same time practically applicable materials and their processing methods. Individual topics (electrically conductive plastics, biomaterials and semi-intelligent composite containers) are aimed at the use of renewable resources, increasing efficiency, material utilization and extending their functionality.

As well CTU participated in the field of mechatronics. The particular projects were focused on mechatronic vibration control, both for efficient vibration generation for vibration testing and for efficient vibration damping to accelerate production cycles, and on various uses of artificial intelligence in 21st century industry. One use is to monitor the flawless progress of a production process, and the second use is to use artificial intelligence to recognize, classify and reuse production documentation from the archives of industrial companies.

The [Center for Advanced Aerospace Technologies - CAAT](#) (2017-2022) was established in the call for Excellent Research from ESIF funds as a center of international excellence engaged in problem-oriented interdisciplinary research in the field of simulation of degradation processes of individual components and their influence on the functionality of aircraft engines and aircraft structures with an original practical impact in the form of experimental development of parts of a new turboprop engine and their assembly into a functional unit achieving parameters that overcome recent ones in a given performance category.

The goal of the project is to develop service life monitoring systems for the individual engines and entire aircraft, extending their life cycle, functionality, safety, and economic efficiency. The main areas of research included both effective modeling and effective data processing and use, and the new production technologies. Specifically, it was the development of degradation processes effective simulation and lifelong monitoring of the functionality of aircraft structures methods, and the development of new materials and procedures for the production, assembly, and maintenance of components and assemblies of aircraft structures.

The building of a test facility system that allows integral testing of aircraft engines (core test facility, dynamometric test facility, two propeller test facilities, and an experimental aircraft as a flying test facility) was the demanding part of the project as well as purchasing experimental engines on which research and development was conducted. To meet this, the CTU FME established a collaborative research cooperation agreement with GE Aviation Czech, providing knowledge and completing the development of the new Catalyst turboprop engine during the project period. The main beneficiary of the project was FME CTU, the only other participant was BUT Brno. The project involved most FME departments, covering a wide range of technologies needed for new aircraft engines.

The [Research centre for low-carbon energy technologies](#) – BIO-CCS/U is the only integrated research platform in the Czech Republic that systematically focusses on the CCS/CCU technologies with a special emphasis on biomass as the primary energy source. The centre is coordinated by the Faculty of Mechanical Engineering of the CTU and integrates three departments - Energy Engineering, Process Engineering, and Environmental Engineering. Several other research institutions are involved. Within the CTU it is the Faculty of Nuclear Sciences and Physical Engineering, and outside the CTU it is Brno University of Technology, VŠB-Technical University Ostrava, and Institute of Thermomechanics of the Czech Academy of Sciences. Members of the research Teams were experts from abroad, e.g. TU Wien (Austria), University of Naples Federico II (Italy), Wrocław University of Science and Technology (Poland), Lodz University of Technology (Poland), University of Limerick (Ireland) or TU Dresden (Germany). Energy research activities are coupled with oxyfuel combustion technology. One of the most significant achievements of the centre is the development and completion of the experimental oxyfuel fluidized bed combustion system. It is a technology that allows to obtain highly concentrated CO₂ from energy conversion of biomass within a single process. In the fluidized bed, oxyfuel combustion technology is investigated further sub-processes focusing on the separation of unwanted components in the CO₂ in order to retain its quality for further utilisation. An integral part of the centre's focus are activities for optimisation of oxygen production for the oxyfuel system and investigation of the CO₂ utilisation processes in the biorefinery concept, like catalytic conversion to methane or methanol, or its application in photobioreactors. These activities are also strongly experimentally based and are supported by numerical simulations that are used for modelling of the individual processes and their optimisation. At the Faculty of Mechanical Engineering, the project results were published in more than 100 articles in peer-reviewed journals and several patents were filed.

The [Mechanical engineering of biological and bio-inspired systems](#) – MeBioSys (2023-2028) project was established in the call for Excellence in Research from ESIF funds, the JAK operational program. The main contribution is the development of new technologies for mechanical engineering as a convergence of biological and technological evolution. The aim is to achieve progress in the research and development of a new generation of technological, manufacturing and material solutions for demanding engineering applications with high added value. The research agenda consists of two research plans dedicated to bioinspired mechatronic systems in materials (development of materials based on theoretical approaches and bioinspiration, superlubricity of machine elements inspired by biosystems, development of SMART material structures and bioinspired metamaterial systems) and mechatronic systems for biomedical engineering (hybrid and composite biomaterials, modification and nanostructuring of biomaterial surfaces, mechatronic systems for biomedicine).

The main beneficiary of the project is BUT Brno, CTU is in the position of another participant together with 5 research organizations, the investigator is the Department of Mechanics, Biomechanics and Mechatronics, where biomechanics and mechatronics are combined. The CTU participates in the development of mechatronic systems for biomedical engineering. Research is being carried out on systems with distributed actuators and sensors. It is used to develop biomechatronic systems using distributed actuators and sensors in layers of artificial veins with actively controlled stiffness, including actuation for research on blood circulation and the function of artificial lungs. Specifically, the design of a new peristaltic pump as an actively controlled tubular biomechatronic structure and the development of advanced methods for its control are being carried out so that it achieves the optimal physiological shape of the pressure and flow wave in the patient's extracorporeal blood circulation depending on his current condition.

The [You can also reduce emissions](#) – uCARE (2019-2022) is a project funded by the European Union (H2020, Programme Societal challenges - Smart, Green And Integrated Transport) with the aim to reduce the overall pollutant emissions of existing combustion engine vehicles by providing drivers with simple and effective tools to decrease their individual emissions. It also supported those interested in local air quality in selecting feasible intervention strategies that lead to reduced emissions.

The uCARE united 13 academics (AUTH, TU Graz, Empa, VUB, CTU, University of Leeds, TsingHua University), research (IVL, VTI ICCT), and private subjects, with the main participant – research organisation TNO. Project delivered totally 31 results, mainly documents and reports. prof. Vojtišek from CTU FME was leading author of all 5 peer-reviewed articles.

Contribution of the FME CTU in Prague was in real-world emissions measurements using portable measurement systems and in transferring the results into practical recommendations. It included topics: Effect of driving conditions on nanoparticles from brake wear the emissions of which are becoming important. A combination of high initial speed and high deceleration rate has resulted in especially high emissions; Citizen science measurements of NO₂ concentrations in urban air; On-road detection of high NO_x emitters to examine (by using FTIR analyzer to remotely measure NO_x emissions from over 250 trucks traveling on the D1 motorway during one week) the extent of the manipulation of SCR systems; On-road measurement of emissions of key reactive nitrogen species using a portable FTIR analyzer; Measurement of real-world emissions from diesel locomotives and railcars; Measurement of real-world emissions of mopeds and small motorcycles; Low-cost instrumentation for testing presence and integrity of diesel particle (less than 100 EUR), has been designed as an alternative to the measurement of non-volatile particle number (nvPN) in a diploma thesis.

The [Innovative Demonstrator for hybrid-Electric Regional Application](#) - AMBER project was created under the Clean Aviation call as an ambitious EU Horizon project, with the main benefit being the development of a hybrid aircraft propulsion demonstration to reduce the environmental impact of aviation.

The AMBER project aims to develop, integrate, and validate key technologies necessary for a megawatt class hybrid electric propulsion system powered by hydrogen fuel cells.

The Clean Aviation project will study the integration of hybrid electric components - including a fuel cell engine/generator, power converters, power transmission systems with the advanced GE Catalyst turboprop engine. The architecture is assumed to be parallel hybrid configuration of a turbine and an electric engine with a common propeller propulsion.

A hybrid-electric propulsion system for regional aircraft is seen as a promising step towards a more sustainable aviation industry. The EU-funded AMBER project will address the challenge of climate change and will seek to mature, integrate and validate key technologies necessary for a megawatt-class hybrid electric propulsion system powered by hydrogen fuel cells. This will significantly reduce greenhouse gas emissions and fuel consumption by at least 50% compared to state-of-the-art regional aircraft by 2020.

The main contribution of CTU to the AMBER project is the modification of the propeller test cell and the testing of the hybrid drive demonstrator. The first phase of testing is the power supply of the electric motor from the electrical network and in the second phase its power supply with a hydrogen fuel cell. In addition, CTU is involved in the simulation optimization of the concept of the entire hybrid aircraft drive.

The main beneficiary of the project is Avio Aero, CTU is in the position of another participant together with 20 research organizations and industrial enterprises. The investigator is the CTU FME Center for Aviation and Space Research.

Collaboration of CTU FME with Škoda auto a.s. - examples of contract-based R&D:

a) Research of efficient Cooling of Automotive Components Using Synthetic Jets found that selected components used in the automotive environment can be cooled using synthesized flows with higher efficiency than using standard fans. Moreover, it is a solution without rotating parts with lower production costs and lower failure rates. The results were experimentally verified.

b) Methods of categorization of road dust for the purpose of vehicles air filters have been validated, and other simpler methods have also been proposed and tested.

- c) Compilation and evaluation of measurements made by Skoda-Auto personnel on test tracks in Spain, the U.S.A., Russia and India have been done at the same time resulting in 6 reports, 3 articles in progress and one diploma thesis that has received the highest award of the VW group.
- d) Ensuring the modification of the intake system of hybrid cars to meet the GILSCH test focused on the separation of droplets generated by the previous car on wet roads. The reasons for the failure of the test were investigated and a new element for the separation of droplets, which can be easily fixed in the intake system, was developed. Explanation of the phenomena that occurs when a car enters water, e.g., a ford, because of a water hammer.
- e) Research into the weldability of deep-drawing and high-strength steel sheets used for the production of automotive body components, in particular by resistance spot welding and of LITECOR sandwich material, consisting of two steel sheets (HC220Y + ZE), between which a polymeric material (PE / PA) is placed.
- f) The research of the formability of LITECOR® sandwich material mainly focused on bending behavior, deep drawing, and cohesion of surface sheet with a plastic core.

Table 3.3.1 Projects supported by public funds

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Additive manufacture of high value joint replacement ? reliability, performance, individuality (2016–2019)	2290 / 90336	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Precise initialization of water turbine blade geometry using panel methods and vortex wake (2017–2019)	2046 / 80711	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Optimization and testing of unmanned aerial vehicles of new concepts (2017–2019)	2636 / 103985	610 / 24064	0 / 0	0 / 0	0 / 0
TA CR	Development of a unit for recovering waste heat from extrusion and pressing of oilseeds (2017–2019)	795 / 31361	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	NOx reduction by SNCR for bubbling fluidized bed boilers (2017–2019)	1217 / 48008	0 / 0	0 / 0	0 / 0	0 / 0

²⁵ If the provider is from abroad, please indicate the provider's country of origin in brackets. For the determination of the country of origin of the provider, the place of residence of the provider is decisive.

²⁶ Indicate the total amount expressed in thousands of CZK and the conversion of the total amount into Euro.

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Study of influence of surface treatment of polymers and metals on strength of polymer-metal joints with potential use in composite systems (2018–2019)	1326 / 52308	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Managing migration with a special focus on Ukraine as a tool for reducing the workforce deficit and increasing the competitiveness of Czech industry (2018–2020)	2713 / 107022	2008 / 79212	0 / 0	0 / 0	0 / 0
TA CR	Local sources of heat and electricity in the municipal environment with possibility of island mode operation (2018–2025)	2739 / 108048	2803 / 110572	2888 / 113926	2964 / 116924	3047 / 120198
TA CR	Research and development of advanced boiler for non-wooden biomass II (2018–2022)	2930 / 115582	2948 / 116292	2950 / 116371	1635 / 64498	0 / 0
TA CR	Development and verification of sonic thermal metallic spraying to extend the service life of components of incinerators, heating plants and power plants for their intended lifetime (2019–2021)	2688 / 106036	2699 / 106470	2739 / 108048	0 / 0	0 / 0
TA CR	Development of tools for optimal building demand response to smart grid requirements and their economical and environmental impact (2019–2022)	1119 / 44143	2660 / 104931	2432 / 95937	1280 / 50494	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Increasing the Effectiveness of Rotary Regenerative Heat Exchangers (2019–2022)	927 / 36569	1413 / 55740	1391 / 54872	682 / 26904	0 / 0
TA CR	Latent Thermal Energy Storage in the form of heat or cold within intra-day applications (2019–2025)	1853 / 73097	3444 / 135858	2684 / 105878	2276 / 89784	2283 / 90060
TA CR	Bragg grating based measurement devices for transport infrastructure monitoring (2020–2022)	0 / 0	1711 / 67496	2780 / 109665	867 / 34202	0 / 0
TA CR	Thermodynamic model of thermal cycles of fusion power plants with gas-cooled reactor (2020–2025)	0 / 0	1317 / 51953	3754 / 148087	3738 / 147456	3456 / 136332
TA CR	Low-emission technologies of energy conversion of biomass and alternative fuels (2020–2025)	0 / 0	666 / 26273	4362 / 172072	5143 / 202880	5633 / 222210
TA CR	Optimised expanders for small-scale distributed energy systems (2020–2024)	0 / 0	0 / 0	4405 / 173768	15757 / 621578	13670 / 539251
TA CR	Tool for assessment of personal characteristics and external factors to improve efficiency and collaboration of the team during a long-time stay in “Integrated Collaboration Environment (ICE)” (2021–2023)	0 / 0	0 / 0	2583 / 101894	4010 / 158186	1205 / 47535
TA CR	Utilization of condensing heat from flue gases of biomass boilers (2022–2025)	0 / 0	0 / 0	0 / 0	1362 / 53728	1707 / 67338
TA CR	Methodology for smart thermal grid	0 / 0	0 / 0	0 / 0	1949 / 76884	3513 / 138580

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	planning: exemplary scenarios and coordination tools for Power2Heat system integration at the municipal level (2022–2024)					
TA CR	Development of a new generation of rotary regenerative heat exchanger (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1606 / 63354
TA CR	Research of additive methods for corrosion and deposit suppression in biomass-fired fluidized bed boilers (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1418 / 55937
TA CR	Developing tool for prediction and verification of safety and endurance of small arms during impact tests (2017–2019)	478 / 18857	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Innovative in-line CNC woodworking centers, including automatic multifunctional cell. (2017–2020)	3200 / 126233	2010 / 79290	0 / 0	0 / 0	0 / 0
TA CR	Competence Center - Manufacturing Technology (2012–2019)	26560 / 1047732	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Advanced technologies for heat and electricity production (2012–2019)	20917 / 825129	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Josef Bozek National Center of Competence for Surface Vehicles (2019–2022)	53259 / 2100947	78833 / 3109784	48355 / 1907496	20936 / 825878	0 / 0
TA CR	Božek Vehicle Engineering National Center of Competence (2023–2028)	0 / 0	0 / 0	0 / 0	0 / 0	101279 / 3995227

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Functional materials (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	61264 / 2416726
TA CR	Applied molecular genetics and biology - IMG (2020–2021)	1050 / 41421	0 / 0	0 / 0	0 / 0	0 / 0
Min Int CR	Protection of persons against explosion (2018–2021)	2678 / 105642	2656 / 104774	1756 / 69271	0 / 0	0 / 0
Min Health CR	Additive manufacturing of NiTi alloys for applications in orthopaedics and traumatology (2023–2026)	0 / 0	0 / 0	0 / 0	0 / 0	3942 / 155503
Min Health CR	Use of lymphocytes of hypersensitive patients for preclinical testing of advanced titanium-based materials modified by ion beam (2019–2022)	1716 / 67693	3245 / 128008	3027 / 119409	2300 / 90730	0 / 0
Min Edu Youth Sports CR	Development of Vehicle Centre of Sustainable Mobility (2014–2019)	7404 / 292072	0 / 0	0 / 0	0 / 0	0 / 0
Min Edu Youth Sports CR	Bioresorbable materials for additive manufacturing of vascular replacements and their biomechanical characterization (2022–2025)	0 / 0	0 / 0	0 / 0	479 / 18896	995 / 39251
Min Edu Youth Sports CR	Estimation of fatigue life from thermal measurements of additively manufactured samples with the application of artificial intelligence to reduce the costs (2022–2024)	0 / 0	0 / 0	0 / 0	229 / 9034	486 / 19172
Min Edu Youth Sports CR	A generative design method for support structures subject to extreme stiffness requirements and uncertain boundaries:	0 / 0	0 / 0	0 / 0	151 / 5957	604 / 23827

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	application to the Future Circular Collider (FCC), CERN (2022–2024)					
GA CR	Active multidimensional vibration absorbers for complex mechanical structures based on delayed resonator method (2017–2019)	1816 / 71638	0 / 0	0 / 0	0 / 0	0 / 0
GA CR	Effect of axial prestretch on mechanical response of nonlinearly elastic and viscoelastic tubes (2018–2020)	1261 / 49744	1119 / 44143	0 / 0	0 / 0	0 / 0
GA CR	Modelling and measurements of fluid-structure-acoustic interactions in biomechanics of human voice production (2019–2021)	2579 / 101736	2561 / 101026	2600 / 102565	0 / 0	0 / 0
GA CR	Mechatronic tensegrities for energy efficient light robots (2020–2022)	0 / 0	1847 / 72860	2749 / 108442	2662 / 105010	0 / 0
GA CR	Model of fibre segregation in dependence on rheological properties of fresh HPC (2021–2023)	0 / 0	0 / 0	2070 / 81657	2366 / 93334	2139 / 84379
GA CR	Active non-collocated vibration absorption for robots and mechanical structures (2021–2023)	0 / 0	0 / 0	2302 / 90809	2544 / 100356	2571 / 101421
GA CR	Life assessment of mechanical components under multiaxial thermo-mechanical loading with variable amplitude (2021–2023)	0 / 0	0 / 0	2086 / 82288	1867 / 73649	1860 / 73373

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
GA CR	Functionally biomimetic exoskeleton of human upper limb for selective muscle augmentation (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	2425 / 95661
GA CR	Procedure for fatigue estimation in contacts: Local multiaxial analysis of stress-related and tribological effects (2023–2026)	0 / 0	0 / 0	0 / 0	0 / 0	1485 / 58580
ESF through Prague Municip	Large-volume transport and temporary storage of mixed municipal waste (2018–2019)	5020 / 198028	0 / 0	0 / 0	0 / 0	0 / 0
ESF through Min Edu Youth Sports CR	Center of Advanced Aerospace Technology (2016–2022)	41045/1619133	97385/3841618	153726/6064143	0 / 0	0 / 0
ESF through Min Edu Youth Sports CR	Modernization of laboratory classes in Bachelor's and Master's degree programs CTU in Prague (2017–2021)	82005,4984 / 3234931	27256,08704 / 1075191	28805,19612 / 1136300	27478,04756 / 1083947	0 / 0
ESF through Min Edu Youth Sports CR	Research centre for low-carbon energy technologies (2018–2022)	130400/5143985	50000/1972387	57198/2256332	39952/1576016	0 / 0
ESF through Min Edu Youth Sports CR	Machine Tools and Precision Engineering (2019–2022)	16000/631164	18000/710060	18000/710060	3852 / 151953	0 / 0
(other foreign provider)	Young Manufacturing Leaders (2022–2022)	0 / 0	0 / 0	137 / 5405	439 / 17318	369 / 14557
Total		422668 / 16673291	307192 / 12118002	355780 / 14034695	146919 / 5795596	216957 / 8558472
In the role of another participant						
Provider ²⁷	Project name	Support (in thousands CZK/EUR)				

²⁷ Ibid.

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
		2019	2020	2021	2022	2023
TA CR	High-speed and lightweight reducer of Electric Vehicle using composite materials (2017–2019)	3264 / 128758	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Development of new technology for common application of electrophoretic paint systems (2017–2019)	797 / 31440	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Turbine profile cascades for supersonic flow fields (2017–2020)	746 / 29429	746 / 29429	0 / 0	0 / 0	0 / 0
TA CR	Implementation of multi-physics numerical analysis into the development process opto-mechanical systems (2016–2020)	1841 / 72624	810 / 31953	0 / 0	0 / 0	0 / 0
TA CR	Advanced Analytical Tools for Severe Accident Simulations (2017–2020)	520 / 20513	520 / 20513	0 / 0	0 / 0	0 / 0
TA CR	Innovation of key structural nodes of water turbine (2017–2019)	1240 / 48916	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Modeling of CHF-boiling crisis by using CFD computer codes (2017–2019)	1000 / 39448	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Research of NOx reduction in flue gas within the oxyfuel combustion CCS technology (2017–2020)	1714 / 67614	1805 / 71204	0 / 0	0 / 0	0 / 0
TA CR	POLYBET - Development of technological line for waste thermoplastic and recycled	465 / 18344	0 / 0	0 / 0	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	construction waste recovery for production of polymer concrete building components (2017–2019)					
TA CR	Sensor for measuring of operational parameters of deep core drilling (2017–2019)	1207 / 47614	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	High performance polymer implants with bioactive surface (2017–2020)	1750 / 69034	1775 / 70020	0 / 0	0 / 0	0 / 0
TA CR	Intelligent diagnostic unit of street lighting poles (2017–2019)	750 / 29586	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Advanced system for vehicle rear view monitoring with protection against damage and dirt (2017–2019)	1510 / 59567	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Headstock HS180 for horizontal boring machines (2017–2019)	372 / 14675	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Increase of multi-functional turning machining centre accuracy (2017–2020)	2040 / 80474	2070 / 81657	0 / 0	0 / 0	0 / 0
TA CR	Robotic machine head (2017–2020)	2454 / 96805	546 / 21539	0 / 0	0 / 0	0 / 0
TA CR	UL-LSA STOL class aircraft „KITPLANE“ – development, prototyping and testing of novel aircraft (2017–2020)	980 / 38659	322 / 12703	0 / 0	0 / 0	0 / 0
TA CR	Acoustic optimization of induced draft cooling towers (2017–2020)	1910 / 75346	647 / 25523	0 / 0	0 / 0	0 / 0
TA CR	The development of new generation of devices for long-bone	1383 / 54557	1347 / 53137	1331 / 52505	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	osteosynthesis (2018–2021)					
TA CR	Novel ways to dry extruded feeds (2018–2021)	1300 / 51283	1300 / 51283	1300 / 51283	0 / 0	0 / 0
TA CR	Truboprop engine performance improvement via development of advanced finishing technologies (2018–2019)	1529 / 60316	1276 / 50336	0 / 0	0 / 0	0 / 0
TA CR	Landfills leachate water reduction (2018–2020)	1530 / 60356	960 / 37870	0 / 0	0 / 0	0 / 0
TA CR	Research and development of the electroformed biomimetic materials with gradient and composite composition for biomedical applications and smart manufacturing (2018–2019)	651 / 25681	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Gradient functionally structured hip implant with a long life span (2018–2021)	906 / 35740	906 / 35740	906 / 35740	0 / 0	0 / 0
TA CR	Development & Validation of Control Algorithms of High Speed Electric Machines (2018–2020)	840 / 33137	780 / 30770	0 / 0	0 / 0	0 / 0
TA CR	Conditions and resources for the sustainable development of the quality of working life in the Czech Republic in the era of the emerging industrial revolution (2018–2021)	457 / 18028	457 / 18028	207 / 8166	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Gyroscopic Simulator of Vehicle Crashes (2018–2019)	740 / 29192	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Epicyclic Continuously Variable Transmission (2018–2020)	750 / 29586	500 / 19724	250 / 9862	0 / 0	0 / 0
TA CR	Efficiency Increasing of Turbine Wet Steam Last Stages (2018–2021)	5098 / 201105	5596 / 220750	2600 / 102565	0 / 0	0 / 0
TA CR	Reduction of Hg, HCl and HF concentrations from large industrial sources (2018–2020)	1420 / 56016	1383 / 54557	0 / 0	0 / 0	0 / 0
TA CR	Conceptual design of safety-important components of helium-cooled fast demonstration reactor ALLEGRO (2018–2025)	1316 / 51914	1401 / 55267	1417 / 55898	1425 / 56214	1490 / 58778
TA CR	Optimal use of renewable energy sources in transport (2018–2020)	223 / 8797	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Design of mixer optimized for water purification and water treatment processes (2019–2020)	1027 / 40513	1313 / 51795	0 / 0	0 / 0	0 / 0
TA CR	3D PRINTER OF BUILDINGS AND OTHER PREFABRICATED COMPONENTS IN THE FRAMEWORK OF CONSTRUCTION 4.0 (2019–2021)	2541 / 100237	2115 / 83432	1420 / 56016	0 / 0	0 / 0
TA CR	3D PRINTER OF BUILDINGS AND OTHER PREFABRICATED COMPONENTS IN THE FRAMEWORK OF CONSTRUCTION 4.0 (2019–2021)	2541 / 100237	2115 / 83432	1420 / 56016	0 / 0	0 / 0
TA CR	Automatic ultrasonic manipulator for	1636 / 64537	1485 / 58580	1343 / 52979	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	inspection of composite material defects (2018–2021)					
TA CR	The preparation of a TiNbTa powder alloy designated for manufacturing of joint implants with trabecular osseointegration surface by the 3D printing (2019–2022)	598 / 23590	900 / 35503	929 / 36647	900 / 35503	0 / 0
TA CR	Advanced actuation system for VT - Valvetrain with electro-mechanical actuation (2018–2022)	1596 / 62959	1155 / 45563	2466 / 97279	2296 / 90572	0 / 0
TA CR	Car door limiter with integrated door protector (2019–2021)	1467 / 57870	1482 / 58462	1539 / 60711	0 / 0	0 / 0
TA CR	Means of safety of road transport vehicles, infrastructure and processes, automation methods of traffic information validation (2019–2022)	1792 / 70691	5927 / 233807	5792 / 228482	1420 / 56016	0 / 0
TA CR	Development of integrated joints of composite profiles (2019–2021)	1566 / 61776	1769 / 69784	512 / 20198	0 / 0	0 / 0
TA CR	Energy Well - Design solution for a demonstration unit of a small modular reactor cooled by fluoride salts (2019–2024)	600 / 23669	1200 / 47338	1171 / 46194	1200 / 47338	1174 / 46312
TA CR	Development of a new ceramic chimney pipes joint system (2020–2022)	0 / 0	1519 / 59922	1519 / 59922	1519 / 59922	0 / 0
TA CR	Development of shape complicated pressing tools production technology (2020–2022)	0 / 0	1238 / 48837	1238 / 48837	1238 / 48837	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Additively Fabricated Polymer-Metal Composites for Biomedical Applications and Smart Manufacturing (2020–2022)	0 / 0	677 / 26707	677 / 26707	339 / 13373	0 / 0
TA CR	Development of connecting rods with threaded end-pieces (2020–2022)	0 / 0	1523 / 60079	1783 / 70336	1583 / 62446	0 / 0
TA CR	Development of Beta-Titanium based individual implants produced by Additive Manufacturing processes (2020–2022)	0 / 0	941 / 37121	1897 / 74833	2063 / 81381	0 / 0
TA CR	Hybrid Diesel-Electric powertrain for mining suspended monorail locomotive (2020–2023)	0 / 0	2849 / 112387	4207 / 165957	4373 / 172505	2065 / 81460
TA CR	Application possibilities of the multifunctional grinding machine BUD 100 (2020–2023)	0 / 0	4040 / 159369	4414 / 174123	4555 / 179685	4573 / 180395
TA CR	Development of spindle head with increased parameters (2020–2022)	0 / 0	1796 / 70849	1424 / 56174	1486 / 58620	1248 / 49231
TA CR	Containerizing of planting stock of forest trees using the PostCont technological system (2020–2023)	0 / 0	1986 / 78344	1493 / 58896	1176 / 46391	976 / 38501
TA CR	Conceptual Design of an Innovative Safety System for Gas-cooled Nuclear Reactors (2020–2024)	0 / 0	555 / 21894	2287 / 90217	2285 / 90139	2274 / 89705
TA CR	Spindle units with condition monitoring (2020–2022)	0 / 0	518 / 20434	1496 / 59014	1646 / 64931	833 / 32860

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Energy utilization of brownfield sites in Usti Region (2020–2023)	0 / 0	306 / 12072	817 / 32229	823 / 32466	412 / 16253
TA CR	Applied research and development of long-term small joint replacements based on additive manufacturing (2021–2023)	0 / 0	0 / 0	650 / 25642	1700 / 67062	1700 / 67062
TA CR	Development of design principles and additive manufacturing of multi-material medical devices (2021–2024)	0 / 0	0 / 0	1050 / 41421	1800 / 71006	0 / 0
TA CR	Electric Bus Drive Project with IoT System for City and Intercity Transport. (2021–2023)	0 / 0	0 / 0	778 / 30691	834 / 32900	611 / 24103
TA CR	Smart automatic warehouse, including optimization of CNC machining centers (2021–2024)	0 / 0	0 / 0	1951 / 76963	1854 / 73137	2048 / 80789
TA CR	Dynamic model of water infrastructure operation (2021–2023)	0 / 0	0 / 0	2060 / 81263	2374 / 93649	2227 / 87851
TA CR	Research and development of technology for purification and recycling of used cooking oils, including the system of their collection (2021–2024)	0 / 0	0 / 0	1088 / 42920	1420 / 56016	1365 / 53847
TA CR	Modular and digitized series of vertical machining centers (2021–2024)	0 / 0	0 / 0	3592 / 141697	3833 / 151204	3713 / 146470
TA CR	Smart machine tool in a digital factory environment (2021–2024)	0 / 0	0 / 0	3402 / 134202	4084 / 161105	3688 / 145484

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Surface Grinder TOS Hostivar (2021–2023)	0 / 0	0 / 0	1590 / 62722	1378 / 54359	1541 / 60789
TA CR	The research of Hg distribution in absobrem wet method desulphurization (2022–2024)	0 / 0	0 / 0	0 / 0	640 / 25247	1558 / 61460
TA CR	Research and development of a hydrogen bus (2022–2024)	0 / 0	0 / 0	0 / 0	1538 / 60671	1837 / 72466
TA CR	Complex system for process automation from configurable product design to technical preparation of production and production itself. (2022–2025)	0 / 0	0 / 0	0 / 0	1609 / 63472	1744 / 68797
TA CR	Model support for clean and sustainable mobility in the Czech Republic (2022–2024)	0 / 0	0 / 0	0 / 0	655 / 25839	756 / 29823
TA CR	SPD processed Beta-titanium alloys (2022–2024)	0 / 0	0 / 0	0 / 0	1176 / 46391	1224 / 48285
TA CR	Smart Flexible Manufacturing Planning and Monitoring System (2022–2024)	0 / 0	0 / 0	0 / 0	2638 / 104064	2563 / 101105
TA CR	Research and Development of Stabilizing Anchoring Systems for Locked Intramedullary Osteosynthesis (2023–2026)	0 / 0	0 / 0	0 / 0	0 / 0	1578 / 62249
TA CR	Applied research and development of the use of titanium scrap as a primary charge in the production of products with higher added value (2023–2024)	0 / 0	0 / 0	0 / 0	0 / 0	2790 / 110060

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Cloud platform for energy data analysis using artificial intelligence (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1910 / 75346
TA CR	ESO - Vehicle of category N1 powered by hydrogen cells (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	4002 / 157870
TA CR	A new generation of composite beams for high dynamic production machines (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	2754 / 108640
TA CR	New machine tool integrating Industry 4.0 features (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	2894 / 114162
TA CR	Fluidized bed technology for decentralized energy utilization of dried sewage sludge (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1319 / 52032
TA CR	Research on increasing the integrity of castings from high melting temperature alloys by low-pressure casting into ceramic shells. (2023–2024)	0 / 0	0 / 0	0 / 0	0 / 0	1673 / 65997
TA CR	Upscale 3D printing technology for commercial use in Construction 4.0 (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	3924 / 154793
TA CR	Application of probabilistic safety assessment for small modular reactors in the activities of the state office for nuclear safety in the Czech Republic (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	812 / 32032
TA CR	Heat storage technology based on PCM glauber salt (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1198 / 47259

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
TA CR	Competence Center of Railway Vehicles (2012–2019)	2000 / 78896	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Research center of surface treatment (2014–2019)	2912 / 114872	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Advanced Aerostructures Research Centre (2015–2019)	1892 / 74636	0 / 0	0 / 0	0 / 0	0 / 0
TA CR	Center of electron and photonic optics (2018–2021)	7336 / 289389	11429 / 450849	6789 / 267811	2805 / 110651	0 / 0
TA CR	National Competence Centre of Mechatronics and Smart Technologies for Mechanical Engineering (2019–2022)	5842 / 230454	11892 / 469113	6699 / 264261	2168 / 85523	0 / 0
TA CR	National Centre for Energy (2019–2022)	5115 / 201776	11585 / 457002	6437 / 253926	2598 / 102486	0 / 0
TA CR	National Competence Centre for Aeronautics and Space (2019–2022)	7224 / 284971	8191 / 323117	6308 / 248837	3234 / 127574	0 / 0
TA CR	National Centre of Competence ENGINEERING (2019–2020)	2699 / 106470	27406 / 1081105	10208 / 402683	4998 / 197160	0 / 0
TA CR	National Centre for Energy II (2023–2028)	0 / 0	0 / 0	0 / 0	0 / 0	8044 / 317318
TA CR	Centre of Advanced Electron and Photonic Optics 2 (2023–2028)	0 / 0	0 / 0	0 / 0	0 / 0	10649 / 420079
TA CR	National Competence Centre for Aeronautics and Space TN02000009/06 Composite integral fuel tank for pressurised hydrogen (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	4091 / 161381
TA CR	National Centre of Competence ENGINEERING (2023–2028)	0 / 0	0 / 0	0 / 0	0 / 0	22080 / 871006

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Min Int CR	Research and development of the device for efficient searching and securing of dactyloscopic traces (2017–2019)	477 / 18817	0 / 0	0 / 0	0 / 0	0 / 0
Min Int CR	Safety improvement of extension ladders for firefighters (2016–2020)	623 / 24576	488 / 19251	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	The Development of the Impeller for Turbomachine Wheel with the Cover Discs for a Turbomachine (2016–2019)	1426 / 56253	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of a new interpolator of the Czech CNC system for production machines (2016–2019)	1735 / 68442	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Innovation of an unconventional ultralight all-composite airplane (2016–2020)	820 / 32348	780 / 30770	300 / 11835	0 / 0	0 / 0
Min Ind Trade CR	Development of processes applicable to development and production of components for the space industry (2016–2019)	1075 / 42407	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of design and production technology of molds for refractory vibrocasted materials (2016–2019)	1060 / 41815	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of technology for production of ceramic chimney pipes to improve their utility properties and reduce production costs. (2016–2019)	1280 / 50494	0 / 0	0 / 0	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Min Ind Trade CR	Development of new cleaning technology, sterilization and surface functionalization of materials (2016–2020)	320 / 12624	230 / 9073	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	The research of increase shape accuracy wax pattern of castings stracionary turbochargers and gas turbines. (2016–2020)	1200 / 47338	606 / 23906	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Termovision system for non-destructive testing of weld joints (2016–2019)	579 / 22841	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Biofilter with dielectric heating (2016–2019)	850 / 33531	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Additive nad hybrid manufacturing technology without the use of laser (2017–2020)	3780 / 149113	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Laser technology designed for additive nad hybrid metals manufacturing (2017–2019)	2360 / 93097	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Research and development of high-speed, high-pressure pumps (2017–2020)	1390 / 54833	675 / 26628	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of technological accessories for machine tools (2017–2019)	1640 / 64695	0 / 0	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	The modular system of knee joint replacement to enable reconstruction of large defects using porous augmentation and individual replacement for the extreme deformity of bone tissue. (2017–2021)	1600 / 63117	1600 / 63117	800 / 31559	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
Min Ind Trade CR	Design and manufacturing process development of primary aircraft parts of advanced shapes of reinforced thermoplastics (2018–2020)	1000 / 39448	900 / 35503	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Research and development of a higher efficiency electric traction system for an electric bus (2018–2020)	1380 / 54438	848 / 33452	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of a new generation of nails for osteosynthesis of long bones of the lower limb (2018–2020)	730 / 28797	730 / 28797	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Energy efficient cover for advanced production machines (2018–2021)	1405 / 55425	1405 / 55425	1455 / 57397	0 / 0	0 / 0
Min Ind Trade CR	Vertical milling center of medium size with increased precision (2018–2020)	1980 / 78107	990 / 39054	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Smart machine tool (2018–2021)	3050 / 120316	2830 / 111638	1060 / 41815	0 / 0	0 / 0
Min Ind Trade CR	Heavy Duty Grinder TOS Hostivař (2018–2020)	2880 / 113610	1920 / 75740	1060 / 41815	0 / 0	0 / 0
Min Ind Trade CR	Development of a sampler for grain sampling (2018–2021)	1450 / 57200	1000 / 39448	550 / 21697	0 / 0	0 / 0
Min Ind Trade CR	Laser technologies for microstructuring of bionic and functional surfaces of advanced materials (2018–2021)	1100 / 43393	1100 / 43393	1100 / 43393	0 / 0	0 / 0
Min Ind Trade CR	Advanced Leveling and Stabilization System for Active Floating Mobile Modular System (APMMS) for the transport of large	1214 / 47890	1124 / 44340	0 / 0	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	structures. (2018–2020)					
Min Ind Trade CR	Automatic Field Infiltration Measuring Two-Ring Device (2018–2020)	1782 / 70296	975 / 38462	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	Development of new homogenization technology high viscous dispersion of the non-newton type (2018–2020)	1148 / 45286	841 / 33176	0 / 0	0 / 0	0 / 0
Min Ind Trade CR	New high precision CNC machining and finishing technologies for opto-mechanical assemblies (2019–2022)	2064 / 81421	1957 / 77200	1860 / 73373	850 / 33531	0 / 0
Min Ind Trade CR	Evaluation of degraded steels for the construction of turbines and superheaters of power boilers (for the need to predict residual service life time and local repairs) (2019–2022)	950 / 37476	950 / 37476	950 / 37476	950 / 37476	0 / 0
Min Ind Trade CR	Control and optimization of selected wastewater treatment units based on inline rheological properties of batch measurement focused on the development of innovated thickening and dewatering equipment (2019–2022)	660 / 26036	1360 / 53649	1320 / 52072	1107 / 43669	0 / 0
Min Ind Trade CR	INTELLIGENT GRAPHIC BASED TEXTILE (2019–2021)	840 / 33137	840 / 33137	840 / 33137	0 / 0	0 / 0
Min Ind Trade CR	Efficient design and manufacture of high efficiency compressor wheels for	928 / 36608	1428 / 56332	1308 / 51598	1201 / 47377	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	turbochargers (2019–2022)					
Min Ind Trade CR	New generation of cutting tools made from advanced materials with the usage of laser technology during their production (2019–2022)	947 / 37358	1377 / 54320	1696 / 66904	1464 / 57752	0 / 0
Min Ind Trade CR	Development of high power propulsion unit of electric ducted fans with application in aircraft industry (2019–2022)	885 / 34912	2870 / 113215	2375 / 93689	1950 / 76924	0 / 0
Min Ind Trade CR	Advanced fuel cell materials for sustainable energetics (2019–2021)	1282 / 50572	1282 / 50572	1282 / 50572	0 / 0	0 / 0
Min Ind Trade CR	Boundary layer passive control as the tool for the performance improvement of the aircrafts made from composite materials. (2019–2022)	653 / 25760	1458 / 57515	584 / 23038	942 / 37160	0 / 0
Min Ind Trade CR	Composite materials for non-pressure technology (3D printers and rotary sintering) (2019–2022)	282 / 11125	606 / 23906	618 / 24379	336 / 13255	0 / 0
Min Health CR	The study of new materials used as articulation surface of joint replacement (2015–2019)	481 / 18975	0 / 0	0 / 0	0 / 0	0 / 0
Min Health CR	Comprehensive pre-clinical evaluation of lateral lumbar spine fusion with hybrid biodegradable nanocomposite porous implant. (2017–2020)	991 / 39093	740 / 29192	0 / 0	0 / 0	0 / 0
Min Health CR	Development and comprehensive	623 / 24576	635 / 25050	603 / 23787	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	evaluation of novel injectable, resorbable, porous bone substitute with controlled release of antimicrobial agents (2018–2021)					
Min Health CR	Biomechanically defined absorbable materials for cardiovascular surgery (2020–2023)	0 / 0	609 / 24024	911 / 35937	918 / 36214	907 / 35780
Min Health CR	Implantable sensors for early detection of infection and bacterial colonization (2020–2023)	0 / 0	407 / 16056	652 / 25720	607 / 23945	607 / 23945
Min Health CR	Changes in vascular density, physical and histopathobiochemical properties of ligamentum flavum in lumbar spine based on spinal segment levels and anatomical localization and presence of lumbar spinal stenosis (2021–2024)	0 / 0	0 / 0	478 / 18857	640 / 25247	648 / 25563
Min Health CR	Influence of UHMWPE type of polyethylene on the lifetime of knee replacements and relationship with the implant surfaces design (2021–2024)	0 / 0	0 / 0	483 / 19054	795 / 31361	795 / 31361
Min Edu Youth Sports CR	ADAR - Accelerator Driven Advanced Reactor (2019–2022)	255 / 10060	581 / 22920	606 / 23906	371 / 14636	0 / 0
Min Agr CR	New orchard concept using technology 4.0 (2021–2025)	0 / 0	0 / 0	727 / 28679	935 / 36884	937 / 36963
GA CR	Evaluation and modelling of thermal field during machining of non-metallic materials (2017–2019)	658 / 25957	0 / 0	0 / 0	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
GA CR	Computational design of hydrogel cell scaffolds. (2017–2019)	619 / 24419	0 / 0	0 / 0	0 / 0	0 / 0
GA CR	Mechanisms of toxicity of gasoline engine emissions in 3D tissue cultures and a model bronchial epithelial cell line (2018–2020)	847 / 33413	372 / 14675	0 / 0	0 / 0	0 / 0
GA CR	Influence of Complex and Cyclic Loading Modes on Lifetime of Machine Parts Made by Additive Manufacturing (2019–2021)	661 / 26075	629 / 24813	598 / 23590	0 / 0	0 / 0
GA CR	Bioaccessibility and environmental interaction of antimony near busy traffic nodes (2019–2021)	710 / 28008	283 / 11164	249 / 9823	118 / 4655	0 / 0
GA CR	Mechanics of arterial delamination and crack propagation (2020–2022)	0 / 0	1103 / 43511	1226 / 48363	1188 / 46864	0 / 0
GA CR	Improved osseointegration of bone implants with the use of ferroelectric coatings (2020–2022)	0 / 0	951 / 37515	951 / 37515	841 / 33176	110 / 4340
GA CR	Novel concepts for analysis and design of nonlinear controllers and compensators of flexible and chained mechanical systems (2021–2023)	0 / 0	0 / 0	1467 / 57870	1518 / 59882	1515 / 59764
GA CR	Study of methods for modification of mechanical properties of collagen matter (2021–2023)	0 / 0	0 / 0	1099 / 43354	1269 / 50060	1256 / 49547
GA CR	Formation of droplets in rapid expansions: Between unary,	0 / 0	0 / 0	0 / 0	796 / 31401	824 / 32505

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	binary, and heterogeneous paths (2022–2024)					
GA CR	Mechanical and structural properties of additively manufactured AlSi10Mg alloy with effect of powder recycling (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1878 / 74083
GA CR	Identification and compensation of imperfections and friction effects in joints of mechatronic systems (2023–2025)	0 / 0	0 / 0	0 / 0	0 / 0	1291 / 50928
ESF through Min Ind Trade CR	Development of advanced engine brake for diesel trucks engines (2016–2019)	5358 / 211361	3514 / 138620	0 / 0	0 / 0	0 / 0
ESF through Min Ind Trade CR	Research and development of diesel aircraft engines (2015–2019)	4568 / 180198	0 / 0	0 / 0	0 / 0	0 / 0
ESF through Min Ind Trade CR	Development optalmo endoscope (2017–2020)	1341 / 52900	4387 / 173058	0 / 0	581 / 22920	0 / 0
ESF through Min Ind Trade CR	Development of Hybrid Drive System for the Aerospace Industry (2020–2022)	0 / 0	0 / 0	1162 / 45839	1191 / 46983	2733 / 107811
ESF through Min Ind Trade CR	The new generation of universal center lathes of the FLEXI series (2021–2023)	0 / 0	0 / 0	0 / 0	3191 / 125878	0 / 0
ESF through Min Ind Trade CR	SMART Hestego - Parameterization of new products and automation of the process of development, design and introduction into production (2021–2023)	0 / 0	0 / 0	0 / 0	2678 / 105642	2313 / 91243
ESF through Min Ind Trade CR	Development of high performance electric propulsion unit for CS-	0 / 0	0 / 0	0 / 0	1340 / 52860	7921 / 312466

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
	23 class aircraft (2021–2023)					
ESF through Min Ind Trade CR	Linear hydraulic actuators for demanding applications (2021–2023)	0 / 0	0 / 0	0 / 0	1510 / 59567	4521 / 178344
ESF through Min Ind Trade CR	Variable Valve Actuation for Heavy Duty Diesel Engines (2021–2024)	0 / 0	0 / 0	0 / 0	1324 / 52229	0 / 0
ESF through Min Ind Trade CR	Energetically effective covering 2: Lamination cover with flexibly bound motion and telescopic covering with fluid support (2021–2023)	0 / 0	0 / 0	0 / 0	1368 / 53965	2759 / 108837
ESF through Min Ind Trade CR	Automated wear determination of machine tool during variable process conditions (2021–2023)	0 / 0	0 / 0	0 / 0	0 / 0	4471 / 176371
ESF through Min Ind Trade CR	New generation of universal cylindrical grinders of BUB series (2021–2023)	0 / 0	0 / 0	0 / 0	456 / 17989	6056 / 238896
ESF through Min Ind Trade CR	Milling center prototype with an inprocess monitoring and tool lifetime prediction (2021–2023)	0 / 0	0 / 0	0 / 0	0 / 0	314 / 12387
ESF through Min Edu Youth Sports CR	The innovative system for coke oven wastewater treatment and water recovery with the use of clean technologies (2016–2019)	571 / 22525	-254 / -10019	0 / 0	0 / 0	0 / 0
EC	Implementation of Powertrain Control for Economic and Clean Real driving emission and fuel Consumption (2016–2019)	30 / 1184	0 / 0	0 / 0	0 / 0	0 / 0

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
EC	Future Research, Advanced Development and Implementation Activities for Road Transport (2016–2019)	254 / 10020	175 / 6904	0 / 0	0 / 0	0 / 0
EC	ADvancing user acceptance of general purpose hybridized Vehicles by Improved Cost and Efficiency (2017–2019)	1821 / 71835	1707 / 67338	0 / 0	0 / 0	0 / 0
EC	TURBOmachinery REtrofits enabling FLEXible back-up capacity for the transition of the European energy system (2017–2020)	1160 / 45760	1355 / 53452	0 / 0	0 / 0	0 / 0
EC	City Air Remote Emission Sensing (2019–2022)	115 / 4537	227 / 8955	353 / 13926	386 / 15227	194 / 7653
EC	You can also reduce emissions (2019–2022)	217 / 8561	807 / 31835	768 / 30296	411 / 16214	0 / 0
EC	InnovActive DeMonstrator for hyBrid-Electric Regional Application (2023–2026)	0 / 0	0 / 0	0 / 0	0 / 0	1975 / 77910
EC	Innovation in Supercritical CO ₂ Power generation systems (2023–2026)	0 / 0	0 / 0	0 / 0	0 / 0	185 / 7298
EC	Young Manufacturing Leaders (2020–2020)	0 / 0	441 / 17397	0 / 0	0 / 0	0 / 0
EC	Safety of GFR through innovative materials, technologies and processes (2020–2024)	0 / 0	163 / 6430	745 / 29389	1729 / 68206	1105 / 43590
(other foreign provider)	Shaping the Next Generation of manufacturing professionals II (2021–2021)	0 / 0	0 / 0	718 / 28324	836 / 32979	576 / 22722

In the role of beneficiary						
Provider ²⁵	Project name	Support (in thousands CZK/EUR) ²⁶				
		2019	2020	2021	2022	2023
(other foreign provider)	Education programs development in RIS countries (2021–2022)	0 / 0	0 / 0	636 / 25089	996 / 39290	0 / 0
(other foreign provider)	Simulation Enhanced/Enabled Nuggets for Learning and Mastering Manufacturing for Lightweighting (2021–2022)	0 / 0	0 / 0	929 / 36647	309 / 12190	0 / 0
(other foreign provider)	Influence of the specimen geometry on quality of temperature measurement during dynamic loading (2021–2021)	0 / 0	0 / 0	114 / 4498	0 / 0	0 / 0
Total		165192 / 6516506	185061 / 7300285	135090 / 5329037	110765 / 4369463	157229 / 6202357

Table 3.3.2 - Contract research activities

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SKODA AUTO,A.S.	Analysis of coated electrodes.	0 / 0	115 / 4537	0 / 0	0 / 0	0 / 0
	Analysis of gears in serial production	0 / 0	0 / 0	0 / 0	0 / 0	198 / 7811
	Automated Measurement Center	239 / 9417	0 / 0	0 / 0	0 / 0	0 / 0
	BWA 16961-MeasurementEquipment	0 / 0	0 / 0	0 / 0	450 / 17740	0 / 0
	BWA 17038 Autonomous Measurement Center	0 / 0	0 / 0	0 / 0	498 / 19645	0 / 0
	CMM Holders	0 / 0	0 / 0	0 / 0	0 / 0	215 / 8462
	Collaboration on computations in GT Power	176 / 6907	0 / 0	0 / 0	0 / 0	0 / 0
	Collaboration on computations in GT Power	1937 / 76384	1891 / 74580	80 / 3131	0 / 0	0 / 0

²⁸ If the client is from abroad, indicate in brackets the country of origin of the client.

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Comparison analysis of dust samples	0 / 0	0 / 0	0 / 0	0 / 0	244 / 9614
	Computational support for EPO/5	0 / 0	0 / 0	195 / 7667	132 / 5172	0 / 0
	Computational support for EPO/5	0 / 0	0 / 0	1073 / 42326	1392 / 54892	1435 / 56593
	Contract research for Virtual Clamping project	0 / 0	0 / 0	0 / 0	0 / 0	420 / 16569
	Cooling analysis of LED modules	0 / 0	0 / 0	0 / 0	238 / 9373	0 / 0
	Creation of material curves	0 / 0	0 / 0	0 / 0	925 / 36482	333 / 13109
	Design and testing of field sedimentation tests.	75 / 2959	75 / 2959	0 / 0	0 / 0	0 / 0
	Design, assembly and verification of a cellar dust density measuring instrument	177 / 6983	0 / 0	0 / 0	0 / 0	0 / 0
	Determination of material properties of selected parts significantly affecting heat transfer in critical areas of the vehicle.	0 / 0	0 / 0	0 / 0	0 / 0	367 / 14468
	Development and production of fitness unit	0 / 0	0 / 0	0 / 0	135 / 5294	0 / 0
	Development and production of HD module demonstrator for headlight	0 / 0	0 / 0	0 / 0	467 / 18423	0 / 0
	Development and production of HD module demonstrator for headlight.	0 / 0	0 / 0	700 / 27614	0 / 0	0 / 0
	Development of a projection lamp.	0 / 0	292 / 11497	0 / 0	0 / 0	0 / 0
	Development of measuring methodology and measuring equipment	0 / 0	0 / 0	685 / 27022	0 / 0	0 / 0
	Development of research on the topic of optimizing the handling of measurement orders with a focus on dimensional quality control of production of engine and gearbox components.	0 / 0	0 / 0	217 / 8561	0 / 0	0 / 0
	Development tests	0 / 0	0 / 0	0 / 0	0 / 0	1069 / 42158

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	Development tests of petrol engine	1236 / 48753	1253 / 49422	210 / 8254	0 / 0	0 / 0
	Development tests of synchronization mechanisms	0 / 0	312 / 12288	0 / 0	0 / 0	0 / 0
	Development tests of the NV engine	0 / 0	0 / 0	720 / 28403	0 / 0	0 / 0
	Development tests of the standard VI. gear	0 / 0	1930 / 76103	0 / 0	0 / 0	0 / 0
	Development tests-Hysteresis differential	0 / 0	0 / 0	0 / 0	0 / 0	499 / 19675
	Differential Hysteresis Measurement	127 / 4999	0 / 0	0 / 0	0 / 0	0 / 0
	Engine development tests	0 / 0	0 / 0	3132 / 123551	2249 / 88701	0 / 0
	Engine performance verification	0 / 0	0 / 0	0 / 0	0 / 0	622 / 24525
	Entry exp. Cars with cylinder brakes	0 / 0	0 / 0	106 / 4172	0 / 0	0 / 0
	Experimental investigation of the behavior of the axle lock differential.	267 / 10529	0 / 0	0 / 0	0 / 0	0 / 0
	External modification of the radar cover	0 / 0	0 / 0	270 / 10651	0 / 0	0 / 0
	External modification of the radar cover	0 / 0	0 / 0	320 / 12624	0 / 0	0 / 0
	Gearbox development tests	465 / 18337	0 / 0	0 / 0	0 / 0	0 / 0
	Gearbox installation, differential hysteresis measurement, gearbox disassembly, inspection, data export, test report	0 / 0	0 / 0	100 / 3908	0 / 0	0 / 0
	IC. -Measurement, testing and calibration	0 / 0	0 / 0	0 / 0	0 / 0	78 / 3077
	LED cooling analysis	0 / 0	0 / 0	0 / 0	0 / 0	594 / 23409
	Measurement and evaluation of CEMA dust sample	0 / 0	0 / 0	0 / 0	0 / 0	159 / 6269
	Measurement and evaluation of CEMA19 samples	150 / 5918	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	Measurement and evaluation of dust sample CEMA 21/3	0 / 0	0 / 0	0 / 0	143 / 5638	0 / 0
	Measurement and evaluation of dust samples CEMA 22/1	0 / 0	0 / 0	0 / 0	140 / 5503	0 / 0
	Measurement and evaluation of dust samples.	0 / 0	0 / 0	106 / 4150	0 / 0	0 / 0
	Measurement of ATCT cooling curves	1628 / 64199	1110 / 43772	1258 / 49608	666 / 26263	0 / 0
	Metrologist Certificates	0 / 0	0 / 0	0 / 0	119 / 4695	0 / 0
	Optimization of measurement plans, determination of temperature curves for individual products, technical and economic evaluation using MS PowerBI.	0 / 0	0 / 0	248 / 9784	0 / 0	0 / 0
	Qualification activity-material sciences.	73 / 2841	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity-Metrology	0 / 0	23 / 900	119 / 4695	23 / 900	0 / 0
	Statistical analysis of asthma. Activities	152 / 5997	0 / 0	0 / 0	0 / 0	0 / 0
	SW development on OVL. Measure and measure. Equipment.	0 / 0	0 / 0	0 / 0	510 / 20119	0 / 0
	Test Anfahrttest gearbox MQ200	0 / 0	0 / 0	0 / 0	316 / 12438	0 / 0
	Test Anfahrttest gearbox MQ281	0 / 0	0 / 0	0 / 0	316 / 12438	0 / 0
	Test for BMG 1.0 TSI engine from MLSL	1172 / 46214	0 / 0	0 / 0	0 / 0	0 / 0
	Test samples from 3D printing	0 / 0	0 / 0	0 / 0	62 / 2446	0 / 0
	Testing of road dust-air filter interactions using electron microscope.	0 / 0	0 / 0	0 / 0	154 / 6059	0 / 0
	Theoretical elaboration of sedimentation methodology	100 / 3929	0 / 0	0 / 0	0 / 0	0 / 0
	Verification of part properties under cyclic loading	0 / 0	0 / 0	176 / 6943	0 / 0	117 / 4586
	Small contracts /Various titles	77 / 3038	90 / 3531	93 / 3653	141 / 5542	57 / 2231

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
SKODA AUTO,A.S. subtotal		8046 / 317394	7088 / 279585	9804 / 386708	9070 / 357754	6403 / 252549
CESKE RADIOKOMUNIK	Research and development of detection of vehicles with excessive particulate emissions	0 / 0	0 / 0	0 / 0	4766 / 187998	5143 / 202851
CESKE RADIOKOMUNIK subtotal		0 / 0	0 / 0	0 / 0	4766 / 187998	5143 / 202851
SKODA X S.R.O.	Construction and operation of a fleet system operating in the form of "carsharing".	988 / 38942	1879 / 74099	2402 / 94741	2307 / 91000	395 / 15554
SKODA X S.R.O. subtotal		988 / 38942	1879 / 74099	2402 / 94741	2307 / 91000	395 / 15554
BOSCH ROBERT SPOL.S.	Analysis of data from operational measurements of vibrating equipment for determining the condition of this equipment	0 / 0	0 / 0	0 / 0	107 / 4198	0 / 0
	Contract research and development of methods for evaluating the condition of test shakers based on operational measurements.	0 / 0	0 / 0	336 / 13255	0 / 0	0 / 0
	Contract research: study of existing solutions	318 / 12545	0 / 0	0 / 0	0 / 0	0 / 0
	Creep Test for Isuzu	285 / 11243	0 / 0	0 / 0	0 / 0	0 / 0
	Experimental research of vibration state measurement methodology for maintenance optimization.	320 / 12624	0 / 0	0 / 0	0 / 0	0 / 0
	Fasteners	52 / 2052	0 / 0	0 / 0	0 / 0	0 / 0
	Modular FEM model of valves and thermal barriers for further development in RBCB	0 / 0	0 / 0	0 / 0	160 / 6296	0 / 0
	Optimization of thermal barriers for vibrating machines with a temperature chamber.	0 / 0	806 / 31795	506 / 19937	0 / 0	0 / 0
	Optimization of thermal barriers for vibration tests with a temperature chamber	397 / 15661	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity-ISO GPS	0 / 0	0 / 0	28 / 1093	50 / 1953	42 / 1657
	Research and development of methods for evaluating the condition	0 / 0	650 / 25642	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	of test shakers based on operational measurements.					
	Research of probabilistic methods	0 / 0	0 / 0	336 / 13255	0 / 0	0 / 0
	Research on a special type of deep neural networks	0 / 0	0 / 0	0 / 0	107 / 4198	0 / 0
	Research on composite PTC polymers	0 / 0	0 / 0	0 / 0	0 / 0	350 / 13807
	Research on metal fabrication methods. Electrodes for heating elements	0 / 0	612 / 24143	421 / 16608	0 / 0	0 / 0
	Research on methods of fabrication of metal electrodes for heating elements	0 / 0	0 / 0	0 / 0	135 / 5326	0 / 0
	Research on methods of fabrication of metal electrodes for heating elements.	0 / 0	590 / 23275	0 / 0	0 / 0	0 / 0
	Research on methods of manufacturing metal electrodes for heating elements.	476 / 18778	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	21 / 809	0 / 0	0 / 0	25 / 987	17 / 653
BOSCH ROBERT SPOL.S. subtotal		1869 / 73709	2658 / 104853	1627 / 64146	582 / 22955	409 / 16117
PLANE VERTI S.R.O. Praha 2	Design of measurement concept and documents for ordering components necessary for project implementation	0 / 0	0 / 0	168 / 6628	0 / 0	0 / 0
	Experimental analysis of accuracy of BRAL machining center	0 / 0	250 / 9862	0 / 0	0 / 0	0 / 0
	Integration of additional measuring device into the machine tool	0 / 0	0 / 0	0 / 0	1991 / 78533	0 / 0
	Interaction of metrology software and machine tool	0 / 0	0 / 0	0 / 0	0 / 0	3302 / 130225
	Simulation analysis of machine dimensions to achieve defined target stiffness	0 / 0	0 / 0	0 / 0	144 / 5681	0 / 0
PLANE VERTI S.R.O. Praha 2 subtotal		0 / 0	250 / 9862	168 / 6628	2135 / 84214	3302 / 130225

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
STROJIRNA TYC S.R.O.	Assembled milling head within the project Reg. No. CZ.01.1.02/0.0/0.0/19 _ 262/0020238	0 / 0	0 / 0	0 / 0	1700 / 67062	0 / 0
	Calculation and construction design of two-axis milling drill head with mechanical spindle drive	399 / 15740	0 / 0	0 / 0	0 / 0	0 / 0
	Documentation Fork head with mechanical drive	0 / 0	2000 / 78896	0 / 0	0 / 0	0 / 0
	Documentation Fork milling head with electric spindle	0 / 0	0 / 0	1200 / 47338	0 / 0	0 / 0
	Measurement results including design modifications	0 / 0	0 / 0	500 / 19724	0 / 0	0 / 0
	Small contracts /Various titles	15 / 592	0 / 0	0 / 0	0 / 0	0 / 0
STROJIRNA TYC S.R.O. subtotal		414 / 16332	2000 / 78896	1700 / 67062	1700 / 67062	0 / 0
CARL ZEISS, SPOL.S.R.	Application support in CMM	0 / 0	0 / 0	0 / 0	0 / 0	68 / 2671
	Contract development activities/Metrology	600 / 23630	0 / 0	0 / 0	0 / 0	0 / 0
	Cooperation in research and development in metrology	900 / 35503	900 / 35503	0 / 0	0 / 0	0 / 0
	Custom measurement	135 / 5315	0 / 0	0 / 0	0 / 0	0 / 0
	ZEISS custom measurement	0 / 0	439 / 17288	405 / 15971	521 / 20513	1687 / 66526
	Small contracts /Various titles	57 / 2241	0 / 0	0 / 0	0 / 0	0 / 0
CARL ZEISS, SPOL.S.R. subtotal		1691 / 66688	1339 / 52791	405 / 15971	521 / 20513	1755 / 69196
SOMA SPOL. S R. O.	Evaluation and generalization of the results of HS storage design.	0 / 0	0 / 0	0 / 0	0 / 0	704 / 27772
	Research and development of HS printing cylinder bearing	0 / 0	0 / 0	618 / 24379	0 / 0	0 / 0
	Research and modeling of damping of HS bearing	0 / 0	0 / 0	0 / 0	2528 / 99724	0 / 0
	Research and Modeling of HS Loading Damping	0 / 0	0 / 0	770 / 30375	0 / 0	0 / 0
	Research of requirements for HS storage, presentation summarizing	0 / 0	0 / 0	396 / 15622	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	the results of the research of requirements.					
	Small contracts /Various titles	47 / 1838	0 / 0	0 / 0	0 / 0	0 / 0
SOMA SPOL. S R. O. subtotal		47 / 1838	0 / 0	1784 / 70375	2528 / 99724	704 / 27772
EATON ELEKTROTECHNIK	Advanced VT systems-Govt Program	0 / 0	0 / 0	243 / 9568	0 / 0	0 / 0
	Development of an innovative closed test rig for recirculation pump tests	0 / 0	0 / 0	0 / 0	100 / 3945	0 / 0
	Es gibt nicht, dass es nicht nicht, wenn es nicht nicht	0 / 0	0 / 0	0 / 0	0 / 0	3134 / 123599
	Measurement, Outputs and Component Evaluation	0 / 0	0 / 0	0 / 0	0 / 0	60 / 2367
	R&D measurements DAF MX-11	0 / 0	0 / 0	0 / 0	0 / 0	149 / 5840
	Research work in tribology and nanomaterial for friction reduction of mechanical components.	0 / 0	201 / 7924	0 / 0	0 / 0	0 / 0
	Simulation and consultation in the research of zero-emission powertrains for commercial vehicles.	0 / 0	199 / 7851	0 / 0	0 / 0	0 / 0
	Virtual optimization of the drive of a fully electric bus (engine and gears) using the driving record in real traffic.	211 / 8315	0 / 0	0 / 0	0 / 0	0 / 0
	Yes. Assessment of EL properties. Bus	0 / 0	0 / 0	200 / 7870	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	7 / 257	0 / 0	20 / 756
EATON ELEKTROTECHNIK subtotal		211 / 8315	400 / 15774	449 / 17694	100 / 3945	3361 / 132561
CEZ, A.S.	Assessment of the influence of water injection into the combustion chamber of the NZ boiler and injection after the boiler on the output parameters of flue gases after the LJ in the Ledvice power plant	0 / 0	82 / 3206	0 / 0	0 / 0	0 / 0
	Determination of the influence of Hg-coal/TAP	0 / 0	0 / 0	0 / 0	870 / 34314	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Evaluation of operational tests for the capture of Hg from flue gases in the Trmice heating plant	152 / 5965	0 / 0	0 / 0	0 / 0	0 / 0
	Professional activity according to the partial cooperation agreement	0 / 0	0 / 0	300 / 11835	0 / 0	0 / 0
	Professional activity according to the partial cooperation agreement	250 / 9862	250 / 9862	0 / 0	300 / 11835	400 / 15780
	Professional supervision during the production of castings. Shield Gen.	100 / 3920	0 / 0	0 / 0	0 / 0	0 / 0
	Proposal of measures to reduce the power consumption of boilers K1 and K4 in the Trmice heating plant below 50 MWt.	79 / 3093	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity- Thermohydraulics	0 / 0	0 / 0	0 / 0	68 / 2647	0 / 0
	R&D verification of "ScatRexcit Blue Boson" technology	0 / 0	0 / 0	150 / 5918	0 / 0	0 / 0
	Research on the absorber of wet method of flue gas desulfurization from the point of view of Hg issues and the influence of Hg reemission	79 / 3085	0 / 0	0 / 0	0 / 0	0 / 0
	TP-Combustion test of coal and sludge in a fluidized boiler	0 / 0	0 / 0	0 / 0	320 / 12619	0 / 0
	TP-Concept study to increase the efficiency of biomass boiler	0 / 0	0 / 0	0 / 0	0 / 0	324 / 12782
	TP-Research on the influence of the operating parameter on the output emission of HGT	0 / 0	0 / 0	0 / 0	0 / 0	145 / 5720
	Small contracts /Various titles	4 / 158	97 / 3807	31 / 1212	51 / 1980	0 / 0
CEZ, A.S. subtotal		662 / 26082	428 / 16874	481 / 18964	1608 / 63393	869 / 34281
SKODA TRANSPORTATION	Contract research and evaluation of basic driving characteristics of MBS model of a prototype of a powerful traction rolling stock.	158 / 6196	0 / 0	0 / 0	0 / 0	0 / 0
	Contract research-investigation and calculations of dynamic properties for FCB tram.	0 / 0	308 / 12123	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Cooperation and support in the field of rolling stock	323 / 12722	323 / 12722	323 / 12722	323 / 12722	323 / 12722
	High cycle fatigue tests at negative temperatures.	0 / 0	0 / 0	309 / 12190	0 / 0	0 / 0
	Preparation of an EJ energy consumption assessment for Latvia	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
	Simulation calculation	0 / 0	0 / 0	269 / 10600	0 / 0	0 / 0
	Simulation calculations for the 36T Mannheim tram project.	0 / 0	0 / 0	986 / 38896	0 / 0	0 / 0
	Simulation calculations of the 36T tram of the Mannheim project.	0 / 0	0 / 0	99 / 3898	0 / 0	0 / 0
	Vehicle simulation model and simulation calculations	0 / 0	127 / 4991	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	20 / 789	0 / 0	15 / 592	36 / 1421	0 / 0
SKODA TRANSPORTATION subtotal		560 / 22073	757 / 29835	2000 / 78896	359 / 14143	323 / 12722
DOOSAN BOBCAT EMEA	Analysis of hydraulic tubes 7298057 and 7299408	51 / 1997	0 / 0	0 / 0	0 / 0	0 / 0
	Analysis of Shaft axles PN 6709757	0 / 0	88 / 3472	0 / 0	0 / 0	0 / 0
	Analysis of Shaft Motor Carrier 7257470	0 / 0	0 / 0	0 / 0	0 / 0	71 / 2782
	Analysis of slewing bearings	0 / 0	0 / 0	0 / 0	129 / 5053	0 / 0
	Analysis of Sprocket Machined.	0 / 0	117 / 4611	0 / 0	0 / 0	0 / 0
	Analysis of welds of cylinders 7103256, 7179957 and 7180183	104 / 4078	0 / 0	0 / 0	0 / 0	0 / 0
	Analysis of welds on cylinders	404 / 15913	0 / 0	58 / 2280	0 / 0	0 / 0
	Analysis of welds on hydraulic cylinders	0 / 0	48 / 1861	226 / 8908	0 / 0	0 / 0
	Cardan Load Measurement for CWL95	0 / 0	0 / 0	0 / 0	0 / 0	190 / 7464
	Coating thickness measurement by optical method	0 / 0	0 / 0	0 / 0	0 / 0	99 / 3906

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Delivery and configuration of two GSV-6BT control panels for gimbal measurement	0 / 0	0 / 0	0 / 0	0 / 0	57 / 2217
	Heart rate analysis. Processing	0 / 0	81 / 3188	0 / 0	0 / 0	0 / 0
	Installation of strain gauges on excavator chassis	0 / 0	0 / 0	0 / 0	0 / 0	178 / 7002
	Macroscopic evaluation of welds.	0 / 0	0 / 0	68 / 2683	0 / 0	0 / 0
	Materials analysis (HD-PE RAW, HD-PE, ISOFORM 456T20)	61 / 2375	0 / 0	0 / 0	0 / 0	0 / 0
	Preparation of the ERGO Design document for Doosan Bobcat EMEA s.r.o. (Instructions for the creation of workplaces from the point of view of work ergonomics)	0 / 0	0 / 0	0 / 0	0 / 0	62 / 2446
	Tensile test of bolts 31C1228	0 / 0	0 / 0	65 / 2565	0 / 0	0 / 0
	Small contracts /Various titles	238 / 9377	129 / 5062	382 / 15039	192 / 7544	171 / 6713
DOOSAN BOBCAT EMEA subtotal		856 / 33738	462 / 18191	798 / 31472	320 / 12596	825 / 32528
BEZNOSKA S.R.O.	Abrasion test of SVL knee replacements, method according to ISO 14243-2, 3	0 / 0	0 / 0	0 / 0	0 / 0	835 / 32939
	Abrasion tests of knee implant inserts.	150 / 5918	0 / 0	0 / 0	0 / 0	0 / 0
	Activities concerning beta-titanium materials and their properties.	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
	Bending fatigue test of cemented revision femoral shafts, method according to ISO 7206-4	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655
	Bending fatigue test of CMS tibial plates according to ISO 14879-1	0 / 0	0 / 0	0 / 0	189 / 7456	0 / 0
	Bending fatigue test of SVL tibial plates according to ISO 14879-1	0 / 0	0 / 0	0 / 0	189 / 7456	0 / 0
	CSC femoral shaft bending fatigue test, method according to ISO 7206-4	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Fatigue bending test of uncemented revision femoral SF shafts, method according to ISO 7206-4	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655
	Fatigue test in bending of femoral necks of CSC shafts	0 / 0	0 / 0	0 / 0	0 / 0	159 / 6273
	Fatigue test in bending of femoral shafts CEP D56, method according to ISO 7206-4	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655
	Fatigue test in bending of tibial plates according to ISO 14879-1	0 / 0	0 / 0	0 / 0	477 / 18817	0 / 0
	Fatigue test of femoral shafts TRIO, method according to ISO 7206-4	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655
	Fatigue testing of femoral necks SF	0 / 0	0 / 0	0 / 0	0 / 0	310 / 12229
	SVLOCK tibial plate bending fatigue test according to ISO 14879-1	0 / 0	0 / 0	0 / 0	189 / 7456	0 / 0
	Small contracts /Various titles	85 / 3354	24 / 947	0 / 0	0 / 0	0 / 0
BEZNOSKA S.R.O. subtotal		295 / 11638	24 / 947	0 / 0	1044 / 41184	1894 / 74715
TGS NASTROJE-STROJE-	Development of new types of cutting tools at TGS	0 / 0	288 / 11361	0 / 0	0 / 0	0 / 0
	Development of new types of cutting tools at TGS, Reg. no. CZ.01. 1.02/0.0/17 _ 106/0012281	0 / 0	1835 / 72365	0 / 0	0 / 0	0 / 0
	Research activity for the project CZ.01. 1.02/0.0/17 _ 106/0012281	750 / 29586	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	21 / 829	0 / 0
TGS NASTROJE-STROJE-subtotal		750 / 29586	2123 / 83726	0 / 0	21 / 829	0 / 0
ECOONE EUROPE, S.R.O	Development of assembly technology of functional prototype of atmospheric water generator Query Water	0 / 0	0 / 0	2240 / 88363	0 / 0	0 / 0
	Development of assembly technology of functional prototype of atmospheric water generator Query Water-Stage 1-1/2021	0 / 0	0 / 0	140 / 5523	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Development of assembly technology of functional prototype of atmospheric water generator Query Water-Stage 1-2/2021	0 / 0	0 / 0	140 / 5523	0 / 0	0 / 0
ECOONE EUROPE, S.R.O subtotal		0 / 0	0 / 0	2520 / 99409	0 / 0	0 / 0
DOOSAN SKODA POWER S	Activity within the Trend FlexBlade project.	0 / 0	0 / 0	600 / 23669	0 / 0	0 / 0
	Activity within the Trend FlexBlade project.	0 / 0	0 / 0	0 / 0	600 / 23669	700 / 27594
	Comprehensive research measurement of steam humidity on 660 MW Ledvice turbine and data analysis	0 / 0	0 / 0	0 / 0	92 / 3612	0 / 0
	Preliminary study of the potential of Carnot batteries in connection with current DSPW technologies	0 / 0	0 / 0	0 / 0	244 / 9617	0 / 0
	Proposal of a procedure and subsequent cooperation for the commissioning and use of Eurodyssey	0 / 0	0 / 0	0 / 0	96 / 3769	0 / 0
	Thermo-mechanical fatigue analysis using viscoplastic approximation of the locality of the closing blade of the 1st stage VT steam turbine rotor	0 / 0	0 / 0	0 / 0	0 / 0	102 / 4024
	Small contracts /Various titles	49 / 1929	0 / 0	0 / 0	0 / 0	30 / 1184
DOOSAN SKODA POWER S subtotal		49 / 1929	0 / 0	600 / 23669	1031 / 40664	832 / 32801
GE AVIATION CZECH S.	Computational work in the field of FEM	0 / 0	0 / 0	0 / 0	400 / 15780	0 / 0
	Contract research in the field of cryogenic cooling of oil cooler operation	0 / 0	0 / 0	960 / 37870	0 / 0	0 / 0
	G377514800 Balling device-KRK	260 / 10257	0 / 0	0 / 0	0 / 0	0 / 0
	Residual stress test according to M601-P31-15	300 / 11835	0 / 0	0 / 0	0 / 0	0 / 0
	Residual stress test.	0 / 0	0 / 0	200 / 7890	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	Surface roughness check of radial compressor wheels according to plan M601-1023. 21.	0 / 0	0 / 0	65 / 2557	0 / 0	0 / 0
	Small contracts /Various titles	26 / 1026	84 / 3294	0 / 0	39 / 1539	0 / 0
GE AVIATION CZECH S. subtotal		586 / 23117	84 / 3294	1225 / 48316	439 / 17318	0 / 0
SOPO S.R.O.	Development of ergonomic design of production workplaces with the aim of reducing the physical load of operators and increasing labor productivity.	0 / 0	450 / 17752	0 / 0	0 / 0	0 / 0
	Development of production automation using robotic systems	453 / 17870	0 / 0	0 / 0	0 / 0	0 / 0
	Development of production technologies and project management	0 / 0	0 / 0	80 / 3156	0 / 0	0 / 0
	Development of production technologies and project management.	0 / 0	0 / 0	240 / 9468	0 / 0	0 / 0
	Development of production technologies and project management-realized period 09/21	0 / 0	0 / 0	80 / 3156	0 / 0	0 / 0
	Development of production technologies and project management-realized period 11, 12/21	0 / 0	0 / 0	80 / 3156	0 / 0	0 / 0
	Development of production technologies in SOPO s.r.o.	154 / 6046	337 / 13287	0 / 0	0 / 0	0 / 0
	One Piece Flow	0 / 0	341 / 13423	0 / 0	0 / 0	0 / 0
SOPO S.R.O. subtotal		607 / 23916	1128 / 44461	480 / 18935	0 / 0	0 / 0
INSTITUT FÜR GEBIRGS	Technical design of the sCO ₂ turbine and compressor for Energy storage in salt caverns with supercritical CO ₂ -ESsCO ₂ -.	0 / 0	471 / 18541	0 / 0	0 / 0	0 / 0
	Technical design of the sCO ₂ turbine and compressor.	219 / 8625	0 / 0	633 / 24961	603 / 23762	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	Thermodynamic calculations for a feasibility study on energy storage in salt caverns with sCO ₂	0 / 0	0 / 0	0 / 0	171 / 6726	0 / 0
INSTITUT FÜR GEBIRGS subtotal		219 / 8625	471 / 18541	633 / 24961	773 / 30487	0 / 0
ORLEN UNIPETROL RPA	Assessment of the residual life of the stirrer pin of the R-201 reactor.	0 / 0	0 / 0	183 / 7215	0 / 0	0 / 0
	Assessment of the service life of the stirring device of the R-201 reactors, respectively. R-251	0 / 0	0 / 0	0 / 0	90 / 3551	0 / 0
	Assessment of the service life of the stirring device of the R-201 reactors, respectively. R-251 with pin-groove mounting and after structural modification with clamping joint mounting.	0 / 0	0 / 0	91 / 3590	0 / 0	0 / 0
	Crack propagation and life of the stirrer pin of the R-201 reactor	0 / 0	479 / 18896	0 / 0	0 / 0	0 / 0
	Design of modification of the construction of special vibrating screens on the CHEZACARB unit	188 / 7417	0 / 0	0 / 0	0 / 0	0 / 0
	Experimental analysis of stress and assessment of causes of shaft pin fractures of mixers R-201 and R-251.	0 / 0	0 / 0	172 / 6782	0 / 0	0 / 0
	Kinematics of vibratory screening line CHEZACARB	57 / 2249	0 / 0	0 / 0	0 / 0	0 / 0
	Perform a basic technical overhaul of the EA-203A and assess the possible cause of its crash	0 / 0	53 / 2072	0 / 0	0 / 0	0 / 0
	Strength analysis of pressure vessel	0 / 0	0 / 0	0 / 0	0 / 0	85 / 3354
	Strength check of the stirrer pin of the R-201 reactor	70 / 2762	0 / 0	0 / 0	0 / 0	0 / 0
	Technical analysis of the R-302 reactor	0 / 0	115 / 4537	40 / 1578	0 / 0	0 / 0
	Technical analysis of the R-304 reactor accident	0 / 0	0 / 0	165 / 6509	0 / 0	0 / 0
	Tendering activities for R-30X reactors	0 / 0	0 / 0	130 / 5129	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	Vibration problems of pumps 1310-P02	0 / 0	0 / 0	0 / 0	122 / 4784	0 / 0
	Small contracts /Various titles	0 / 0	35 / 1381	0 / 0	0 / 0	0 / 0
ORLEN UNIPETROL RPA subtotal		315 / 12427	682 / 26884	781 / 30801	212 / 8334	85 / 3354
SLOVACKE STROJIRNY,	Consultation and participation in the development within the project CZ.01. 1.02/0.0/0.0/15 _ 019/0000812	163 / 6430	0 / 0	0 / 0	0 / 0	0 / 0
	Control model of thermo-mechanical behavior of the machine	880 / 34691	0 / 0	0 / 0	0 / 0	0 / 0
	Experimental research and measurement	980 / 38636	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	8 / 296	0 / 0	0 / 0	0 / 0
SLOVACKE STROJIRNY, subtotal		2022 / 79756	8 / 296	0 / 0	0 / 0	0 / 0
GARRETT MOTION CZECH	Calibration of engine models, data analysis	0 / 0	0 / 0	0 / 0	740 / 29160	0 / 0
	Emmission dyno rental	0 / 0	0 / 0	0 / 0	0 / 0	65 / 2539
	Measurement of CTU-Passat NOx	0 / 0	0 / 0	52 / 2030	0 / 0	0 / 0
	Modeling Hybrid powertrains.	0 / 0	79 / 3111	0 / 0	0 / 0	0 / 0
	NPO 801153 LVG H3 Engine Measuring	111 / 4371	0 / 0	0 / 0	0 / 0	0 / 0
	Presentation describing the calibration process and quality	0 / 0	0 / 0	0 / 0	0 / 0	81 / 3182
	Vehicle Testing-Emission Measurement	0 / 0	0 / 0	0 / 0	0 / 0	107 / 4217
	WP 5 # FRM Model Calibration	0 / 0	0 / 0	576 / 22722	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	33 / 1279	0 / 0	42 / 1649	47 / 1825
GARRETT MOTION CZECH subtotal		111 / 4371	112 / 4389	628 / 24752	781 / 30809	299 / 11761
FYZIKALNI USTAV AV C	Cooling nozzle processing	0 / 0	93 / 3649	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Debugged control programs for workpiece processing robots	0 / 0	0 / 0	54 / 2131	0 / 0	0 / 0
	Development and production of laser heads	0 / 0	0 / 0	0 / 0	0 / 0	57 / 2249
	Characteristics of typical hospital waste and comparison with other wastes	0 / 0	0 / 0	0 / 0	0 / 0	168 / 6628
	Insulation socket, Insulation molex, Insulation MDP	0 / 0	0 / 0	69 / 2685	0 / 0	0 / 0
	Modification of the selected concept and sensitivity analysis	0 / 0	0 / 0	0 / 0	159 / 6249	0 / 0
	Performing a series of experimental measurements	0 / 0	320 / 12624	0 / 0	0 / 0	0 / 0
	Test components for ATLAS ITK within CERN-MOU-2019-018, WBS 2.2. 3.5. 2 and 2.2. 3.6	0 / 0	0 / 0	566 / 22326	0 / 0	0 / 0
	Test components for bonding R0-R5 incl. eloxu	0 / 0	0 / 0	144 / 5654	0 / 0	0 / 0
	TK Current Measurement Jigs for Atlas ITK Strip Project	0 / 0	58 / 2288	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	120 / 4716	30 / 1184	75 / 2956	0 / 0	10 / 358
FYZIKALNI USTAV AV C subtotal		120 / 4716	501 / 19744	907 / 35750	159 / 6249	235 / 9233
SA LHOIST RECHERCHE	Experimental research of mercury adsorption from flue gas	625 / 24655	185 / 7289	0 / 0	0 / 0	0 / 0
	Experimental research of mercury adsorption from flue gas-Technical report	0 / 0	0 / 0	1104 / 43543	0 / 0	0 / 0
SA LHOIST RECHERCHE subtotal		625 / 24655	185 / 7289	1104 / 43543	0 / 0	0 / 0
SMART CITY LAB S.R.O	Construction and operation of a fleet system operating in the form of "carsharing".	1867 / 73628	0 / 0	0 / 0	0 / 0	0 / 0
SMART CITY LAB S.R.O subtotal		1867 / 73628	0 / 0	0 / 0	0 / 0	0 / 0
WIKOV MGI A.S.	Alstom Production Analysis	0 / 0	95 / 3739	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Analytical, optimization and development activities in WIKOV MGI a.s.	244 / 9594	321 / 12646	0 / 0	0 / 0	0 / 0
	Assembly analysis of Kocks-Center 300 gearboxes	200 / 7888	0 / 0	0 / 0	0 / 0	0 / 0
	Cooling nozzle processing	0 / 0	192 / 7555	0 / 0	167 / 6580	112 / 4387
	Efficiency measurement and preparation of measurement report for "EMU-Latvia" gearbox	0 / 0	0 / 0	105 / 4123	0 / 0	0 / 0
	Optimization of the Alstom product assembly process	0 / 0	0 / 0	250 / 9845	0 / 0	0 / 0
	Small contracts /Various titles	50 / 1973	62 / 2438	42 / 1657	0 / 0	0 / 0
WIKOV MGI A.S. subtotal		494 / 19454	669 / 26377	397 / 15624	167 / 6580	112 / 4387
ATTL A SPOL. S.R.O.	Application of proposed solutions to project No.: CZ.01. 1.02/0.0/0.0/18 _ 215/0018014	0 / 0	399 / 15740	0 / 0	0 / 0	0 / 0
	Laser welding innovation services	400 / 15760	0 / 0	0 / 0	0 / 0	0 / 0
	Production of prototypes and validation for the project No.: CZ.01. 1.02/0.0/0.0/18 _ 215/0018014	0 / 0	798 / 31480	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	2 / 60	4 / 143	35 / 1361	23 / 888	24 / 947
ATTL A SPOL. S.R.O. subtotal		401 / 15819	1201 / 47361	35 / 1361	23 / 888	24 / 947
MEOPTA - OPTIKA, S.R	Data evaluation, processing and analysis of measurement results of optomechanical assemblies dynamics.	0 / 0	0 / 0	177 / 6983	0 / 0	0 / 0
	Measurement of dynamic effects on sports/military optomechanical assemblies.	0 / 0	71 / 2801	0 / 0	0 / 0	0 / 0
	Non-contact Surface Tension Detection of Hybrid Optomechanical Assembly	155 / 6091	0 / 0	0 / 0	0 / 0	0 / 0
	Visualization of workplace design and time study of assembly of both assemblies	0 / 0	0 / 0	0 / 0	700 / 27614	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Workplace design from the point of view of work ergonomics.	0 / 0	0 / 0	0 / 0	153 / 6008	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	6 / 209	0 / 0
MEOPTA - OPTIKA, S.R subtotal		155 / 6091	71 / 2801	177 / 6983	858 / 33829	0 / 0
PRIMOCO UAV SE	Design calculations and development tests for unmanned aerial vehicle certification	0 / 0	0 / 0	0 / 0	116 / 4557	636 / 25089
	Design calculations and development tests for unmanned aircraft certification	0 / 0	0 / 0	0 / 0	0 / 0	56 / 2210
	Development of the program and methodologies of type tests of unmanned aircraft	0 / 0	0 / 0	150 / 5918	0 / 0	0 / 0
	Perform design calculations and development tests for the certification of unmanned aircraft	0 / 0	0 / 0	0 / 0	0 / 0	126 / 4951
	Preparation of documentation for certification of unmanned aircraft	0 / 0	0 / 0	0 / 0	158 / 6233	0 / 0
PRIMOCO UAV SE subtotal		0 / 0	0 / 0	150 / 5918	274 / 10789	818 / 32249
AERO VODOCHODY	Modifications of chemical processing technologies based on REACH regulation	0 / 0	0 / 0	0 / 0	362 / 14281	408 / 16081
	We invoice you for an expert analysis of the state of the surface treatment processes	0 / 0	0 / 0	0 / 0	0 / 0	380 / 14991
	Small contracts /Various titles	0 / 0	51 / 2012	0 / 0	0 / 0	0 / 0
AERO VODOCHODY subtotal		0 / 0	51 / 2012	0 / 0	362 / 14281	788 / 31072
REDITELSTVI SILNIC	Assessment of fault condition of building D47091/1 SO 233.	118 / 4640	0 / 0	0 / 0	0 / 0	0 / 0
	Determination of corrosive aggressiveness of the environment (design, production and installation of 2 devices including software for data collection and evaluation).	0 / 0	200 / 7890	0 / 0	0 / 0	0 / 0
	Technical activity in the field of steel corrosion	0 / 0	0 / 0	286 / 11283	240 / 9468	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Technical support in the field of steel corrosion.	147 / 5799	123 / 4833	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	24 / 947	0 / 0	0 / 0	0 / 0	0 / 0
REDITELSTVI SILNIC subtotal		289 / 11385	323 / 12722	286 / 11283	240 / 9468	0 / 0
UNIVERZITA J.E. PURK	Scientific and technical activities related to the development, implementation and production of composites containing high-strength fibres	0 / 0	0 / 0	0 / 0	550 / 21697	450 / 17752
	Small contracts /Various titles	25 / 979	0 / 0	31 / 1198	24 / 947	45 / 1744
UNIVERZITA J.E. PURK subtotal		25 / 979	0 / 0	31 / 1198	574 / 22643	495 / 19496
AIRS, S.R.O.	Development of software for tracking thumb position.	200 / 7890	0 / 0	0 / 0	0 / 0	0 / 0
	Testing of the proposed HW and SW solution.	0 / 0	0 / 0	0 / 0	370 / 14596	0 / 0
	Testing of the proposed SW solution and support of commissioning.	200 / 7890	0 / 0	0 / 0	0 / 0	0 / 0
	Verification and debugging of the created model on process data.	0 / 0	350 / 13807	0 / 0	0 / 0	0 / 0
AIRS, S.R.O. subtotal		400 / 15780	350 / 13807	0 / 0	370 / 14596	0 / 0
COMPOTECH PLUS S.R.O	Automation in the field of forming press machines	0 / 0	0 / 0	0 / 0	70 / 2762	0 / 0
	Design and computational control "Omega housing"	0 / 0	0 / 0	0 / 0	0 / 0	355 / 14004
	Experimental modal analysis of composite beam prototypes	0 / 0	0 / 0	0 / 0	197 / 7760	0 / 0
	Simulation model, achieved results and their process interpretation.	0 / 0	0 / 0	118 / 4655	0 / 0	0 / 0
	Testing of samples ID 48	253 / 9949	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	15 / 592	13 / 490	28 / 1105	0 / 0	57 / 2214
COMPOTECH PLUS S.R.O subtotal		268 / 10541	13 / 490	146 / 5760	267 / 10521	412 / 16217

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
DORMER PRAMET S.R.O.	Complex tests of turning insert shapers CNMG 120408E during longitudinal turning of steel CSN 12 050.9.	0 / 0	0 / 0	0 / 0	0 / 0	162 / 6391
	Comprehensive tests of turning insert formers CNMG 120404E	0 / 0	0 / 0	0 / 0	0 / 0	74 / 2912
	Edge durability tests of turning inserts.	0 / 0	147 / 5799	0 / 0	0 / 0	0 / 0
	Measurement of force load of tools during milling of material CSN 12050.9	0 / 0	0 / 0	59 / 2320	0 / 0	54 / 2131
	Measurement of the durability of the cutting edge of turning inserts depending on the type of cooling during machining of stainless steel	0 / 0	0 / 0	159 / 6273	0 / 0	0 / 0
	Qualification activity-milling cutter tooth pitch	0 / 0	0 / 0	0 / 0	74 / 2920	0 / 0
	Testing/debugging cutting conditions for CCMT geometries	0 / 0	0 / 0	0 / 0	133 / 5227	0 / 0
	Tests of the magnitude of the force load during drilling with different types of drills during drilling of steel CSN 12 050.9 and measurement of the dynamic compliance of tools and the acoustic pressure emitted during drilling.	0 / 0	0 / 0	0 / 0	0 / 0	94 / 3693
	Small contracts /Various titles	38 / 1500	0 / 0	14 / 517	50 / 1973	39 / 1515
DORMER PRAMET S.R.O. subtotal		38 / 1500	147 / 5799	231 / 9109	257 / 10119	422 / 16640
INDORAMA VENTURES MO	Contract research focused on measuring the temperature dependence of viscose flow properties	0 / 0	100 / 3945	0 / 0	0 / 0	0 / 0
	Contract research focused on the study of mixing and design of semi-operational stirred reactor	0 / 0	0 / 0	0 / 0	360 / 14202	200 / 7890
	Testing FMV-Composites	0 / 0	0 / 0	0 / 0	0 / 0	98 / 3866

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Testing of biocomposites- Determination of mechanical properties of samples	0 / 0	0 / 0	0 / 0	0 / 0	238 / 9389
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	25 / 987
INDORAMA VENTURES MO subtotal		0 / 0	100 / 3945	0 / 0	360 / 14202	561 / 22131
SLEVARNA CHOMUTOV, A	Achieving a higher quality level of castings made of carbon, low-alloy steels and special chromium castings	0 / 0	150 / 5918	236 / 9310	0 / 0	0 / 0
	Development and verification of molding compounds	170 / 6707	0 / 0	0 / 0	75 / 2959	0 / 0
	Ecology and economics of inlet systems for large steel castings	0 / 0	0 / 0	0 / 0	135 / 5326	250 / 9862
SLEVARNA CHOMUTOV, A subtotal		170 / 6707	150 / 5918	236 / 9310	210 / 8285	250 / 9862
VSEOBECNA FAKULTNI	Design and optimization of a CO2 bubble generation and monitoring system	0 / 0	0 / 0	249 / 9823	0 / 0	0 / 0
	Design of systems or procedures for the formation of gas microbubbles, construction of a simulated hydraulic circuit for injection and monitoring of gas bubbles.	0 / 0	248 / 9784	0 / 0	0 / 0	0 / 0
	Development of measuring device for bronchoscope	0 / 0	0 / 0	0 / 0	0 / 0	110 / 4340
	Mechanical tests of biological tissues (blood vessels)	0 / 0	29 / 1144	29 / 1144	29 / 1144	0 / 0
	Mechanical tests of hemostatic collagen foams	273 / 10759	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	34 / 1305	0 / 0	0 / 0
VSEOBECNA FAKULTNI subtotal		273 / 10759	277 / 10928	312 / 12271	29 / 1144	110 / 4340
PBS TURBO, S.R.O.	Measurement of angularly indexed pressure profiles at the turbine inlet on a TCR14 turbocharger	0 / 0	0 / 0	95 / 3748	0 / 0	0 / 0
	Prototype of compressor rotor 11.521228055 (tuning of wheel blades, machining of wheel blades)	0 / 0	0 / 0	0 / 0	0 / 0	143 / 5634

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Qualification activity-ISO GPS	0 / 0	0 / 0	132 / 5182	0 / 0	0 / 0
	Qualification activity-Machining 11.52022-4464	0 / 0	613 / 24174	0 / 0	0 / 0	0 / 0
PBS TURBO, S.R.O. subtotal		0 / 0	613 / 24174	227 / 8929	0 / 0	143 / 5634
JIHOSTROJ A.S.	Experimental simulation study of the potential of the RGZ heat engine in systems for the utilization of renewable heat sources.	0 / 0	0 / 0	356 / 14044	0 / 0	0 / 0
	Feasibility study of robotization of small series assembly of tooth pumps	0 / 0	0 / 0	0 / 0	150 / 5915	0 / 0
	Project RAMO-Consultancy and advisory activities	0 / 0	0 / 0	0 / 0	0 / 0	83 / 3272
	Project RAMO-Consultancy and advisory activities.	0 / 0	0 / 0	0 / 0	94 / 3700	0 / 0
	Simulation in the GT-Power program.	0 / 0	207 / 8143	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	4 / 139	5 / 198	5 / 198	3 / 107	74 / 2902
JIHOSTROJ A.S. subtotal		4 / 139	212 / 8340	361 / 14241	247 / 9720	157 / 6174
VYZK. US. ZELEZNICNI	Design and implementation of digital twin of dynamic test bench	0 / 0	0 / 0	0 / 0	398 / 15671	500 / 19695
	Preparation of strength assessment for the E6MST locomotive project	0 / 0	0 / 0	80 / 3156	0 / 0	0 / 0
VYZK. US. ZELEZNICNI subtotal		0 / 0	0 / 0	80 / 3156	398 / 15671	500 / 19695
DOOSAN MACHINE TOOLE Advanced Technology Team	Résumé: Dans ce contexte, nous avons développé une méthode d'échelle d'une méthode d'échelle.	970 / 38248	0 / 0	0 / 0	0 / 0	0 / 0
DOOSAN MACHINE TOOLE Advanced Technology Team subtotal		970 / 38248	0 / 0	0 / 0	0 / 0	0 / 0
HAVEL & PARTNERS S.R	Packing of expert opinion from the area of "Transport".	0 / 0	0 / 0	954 / 37634	0 / 0	0 / 0
HAVEL & PARTNERS S.R subtotal		0 / 0	0 / 0	954 / 37634	0 / 0	0 / 0
KPMG CESKA REPUBLIKA	Expert assessment of selected research and development projects	0 / 0	0 / 0	0 / 0	348 / 13728	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	implemented by companies in the automotive industry					
	Expert assessment of selected research and development projects in the automotive industry	0 / 0	0 / 0	0 / 0	0 / 0	360 / 14202
	Provision of professional services	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity-review	0 / 0	30 / 1184	120 / 4734	0 / 0	0 / 0
KPMG CESKA REPUBLIKA subtotal		60 / 2367	30 / 1184	120 / 4734	348 / 13728	360 / 14202
HYDRONAUT LAB S.R.O.	Design and implementation of a technological solution aimed at reducing the humidity inside the underwater research laboratory H03 Deeplab.	0 / 0	0 / 0	428 / 16860	0 / 0	0 / 0
	Verification of water vapor condensation in the underwater laboratory H03 Deeplab.	0 / 0	480 / 18916	0 / 0	0 / 0	0 / 0
HYDRONAUT LAB S.R.O. subtotal		0 / 0	480 / 18916	428 / 16860	0 / 0	0 / 0
ING. MARTIN KAVAN	Development of an innovative laser cutting machine control system for communication with new hardware components	0 / 0	0 / 0	0 / 0	0 / 0	850 / 33531
ING. MARTIN KAVAN subtotal		0 / 0	0 / 0	0 / 0	0 / 0	850 / 33531
CESKA EXPORTNI BANKA	Expert activities in Aero V.	350 / 13807	280 / 11046	210 / 8285	0 / 0	0 / 0
CESKA EXPORTNI BANKA subtotal		350 / 13807	280 / 11046	210 / 8285	0 / 0	0 / 0
VSB - TECHNICKA UNI	Continuous measurement of Hg emissions	0 / 0	0 / 0	0 / 0	250 / 9862	0 / 0
	Continuous measurement of Hg emissions in Chvaletice power plant during sorbent testing	0 / 0	0 / 0	0 / 0	0 / 0	80 / 3156
	Measurement of Hg emissions	0 / 0	165 / 6509	0 / 0	0 / 0	0 / 0
	Research measurement of total HGT behind CEZ, a.s.	0 / 0	0 / 0	65 / 2565	0 / 0	0 / 0
	Small contracts /Various titles	68 / 2667	66 / 2588	73 / 2848	30 / 1181	40 / 1551

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
VSB - TECHNICKA UNI subtotal		68 / 2667	231 / 9097	138 / 5412	280 / 11043	120 / 4706
TATRA TRUCKS A.S.	Tatra Hydrogen Engine Study	0 / 0	0 / 0	0 / 0	0 / 0	800 / 31559
TATRA TRUCKS A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	800 / 31559
STRATOSYST S.R.O.	Design calculations and development tests for unmanned aerial vehicle certification	0 / 0	0 / 0	0 / 0	0 / 0	598 / 23590
	Implementation of system design of kinetic energy absorbers	0 / 0	0 / 0	0 / 0	0 / 0	89 / 3488
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	93 / 3669
STRATOSYST S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	780 / 30746
EATON INDUSTRIES B.V	FEM modeling/Design phase	0 / 0	0 / 0	250 / 9862	500 / 19724	0 / 0
EATON INDUSTRIES B.V subtotal		0 / 0	0 / 0	250 / 9862	500 / 19724	0 / 0
BRM AERO, S.R.O.	Flutter Analysis of B23 Aircraft	270 / 10651	0 / 0	0 / 0	0 / 0	0 / 0
	Flutter Analysis of Bristell Aircraft	245 / 9665	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	30 / 1184	121 / 4745	40 / 1574	34 / 1326	0 / 0
BRM AERO, S.R.O. subtotal		545 / 21500	121 / 4745	40 / 1574	34 / 1326	0 / 0
MEDIN A.S.	Experimental evaluation of mechanical properties of splints and nails.	195 / 7693	0 / 0	0 / 0	0 / 0	0 / 0
	Fatigue test to verify tibial nail service life	0 / 0	0 / 0	60 / 2367	0 / 0	0 / 0
	Static and fatigue tests of splints according to ASTM F382.	0 / 0	160 / 6312	135 / 5326	95 / 3748	0 / 0
	Small contracts /Various titles	0 / 0	40 / 1578	45 / 1776	0 / 0	0 / 0
MEDIN A.S. subtotal		195 / 7693	200 / 7890	240 / 9468	95 / 3748	0 / 0
DIAMO, STATNI PODNIK	Feasibility study of the preparation and implementation of the construction of pumped hydro power plants	698 / 27515	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
DIAMO, STATNI PODNIK subtotal		698 / 27515	0 / 0	0 / 0	0 / 0	0 / 0
SPOLANA S.R.O.	Contract research focused on design and analysis of mixed PVC polymerization reactors	0 / 0	0 / 0	0 / 0	438 / 17279	0 / 0
	Technical support for the implementation of the R-302 reactor	0 / 0	0 / 0	0 / 0	110 / 4340	0 / 0
	Thermal calculation of boiler KS2020	0 / 0	0 / 0	86 / 3393	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	40 / 1578
SPOLANA S.R.O. subtotal		0 / 0	0 / 0	86 / 3393	548 / 21618	40 / 1578
LA COMPOSITE S.R.O.	Realization of research on mechanical properties of composite materials	0 / 0	0 / 0	129 / 5081	114 / 4486	0 / 0
	Realization of research on mechanical properties of composite materials.	170 / 6703	113 / 4450	0 / 0	0 / 0	0 / 0
	Research on mechanical properties of composite materials.	0 / 0	0 / 0	0 / 0	0 / 0	110 / 4328
	Small contracts /Various titles	0 / 0	0 / 0	38 / 1468	0 / 0	0 / 0
LA COMPOSITE S.R.O. subtotal		170 / 6703	113 / 4450	166 / 6549	114 / 4486	110 / 4328
SEVEN ENGINEERING S	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
	Technical assistance for the dosing of sodium sulfide in the Chvaletice power plant	0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945
	Technical assistance for the testing of sorbents at the Pocerady power plant	0 / 0	0 / 0	0 / 0	170 / 6707	0 / 0
	Technical assistance in the testing of sorbents at the Chvaletice power plant	0 / 0	0 / 0	0 / 0	0 / 0	265 / 10454
	Test of sorbent performance at temperatures above 300 °C on samples CSC PH600BR and Albemarle B-PAC +	0 / 0	0 / 0	0 / 0	0 / 0	55 / 2170

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SEV.EN ENGINEERING S subtotal		0 / 0	0 / 0	0 / 0	245 / 9665	420 / 16569
DIRECT FLY S.R.O.	Static and dynamic tests of the ALTO 600kg aircraft	0 / 0	0 / 0	665 / 26217	0 / 0	0 / 0
DIRECT FLY S.R.O. subtotal		0 / 0	0 / 0	665 / 26217	0 / 0	0 / 0
ATEKO A.S.	Debugging of NC programs/machining of switchgear body	0 / 0	0 / 0	138 / 5436	0 / 0	0 / 0
	Modification of NC programs, production of own final compressor wheel	51 / 1997	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity-TEG switchgear	0 / 0	193 / 7606	73 / 2872	0 / 0	0 / 0
	Qualification activity-tuning of drives	170 / 6699	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	26 / 1026	0 / 0
ATEKO A.S. subtotal		221 / 8695	193 / 7606	211 / 8308	26 / 1026	0 / 0
MIWA TECHNOLOGIES, A	Design concept and basic-design of pumps	0 / 0	0 / 0	95 / 3748	0 / 0	0 / 0
	Technical solution proposal for bulk food filling line.	0 / 0	0 / 0	180 / 7101	0 / 0	348 / 13728
MIWA TECHNOLOGIES, A subtotal		0 / 0	0 / 0	275 / 10849	0 / 0	348 / 13728
UJV REZ, A. S.	Realization of vibration measurement on the cooling pipe of the LVR-15 reactor	0 / 0	0 / 0	0 / 0	0 / 0	447 / 17614
	Small contracts /Various titles	0 / 0	34 / 1326	25 / 973	5 / 198	104 / 4083
UJV REZ, A. S. subtotal		0 / 0	34 / 1326	25 / 973	5 / 198	550 / 21697
SUJB_	Expert support in the control and verification of fraudulent, counterfeit and suspicious items (nuclear)	0 / 0	0 / 0	0 / 0	300 / 11835	300 / 11835
SUJB_ subtotal		0 / 0	0 / 0	0 / 0	300 / 11835	300 / 11835
COCKERILL MAINTENANC	Simulation calculations of diesel-electric locomotive CMI	0 / 0	0 / 0	0 / 0	0 / 0	593 / 23392

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
COCKERILL MAINTENANC subtotal		0 / 0	0 / 0	0 / 0	0 / 0	593 / 23392
TOS VARNSDORF A.S.	3D models and 2D drawings of sent components and assemblies AVO125	0 / 0	0 / 0	183 / 7219	0 / 0	0 / 0
	3D models and 2D drawings of sent components and assemblies AVO160	0 / 0	0 / 0	183 / 7219	0 / 0	0 / 0
	Qualification activity-tuning of drives	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	86 / 3364	34 / 1335	47 / 1847
TOS VARNSDORF A.S. subtotal		60 / 2367	0 / 0	452 / 17802	34 / 1335	47 / 1847
HJ AUTOMATIZACE S.R. Praha 5	Development of automated assembly workplace	0 / 0	242 / 9532	222 / 8728	0 / 0	0 / 0
	Production of prototypes for automated assembly workplaces	0 / 0	0 / 0	107 / 4212	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	14 / 522	0 / 0	0 / 0	0 / 0
HJ AUTOMATIZACE S.R. Praha 5 subtotal		0 / 0	255 / 10053	328 / 12939	0 / 0	0 / 0
KOREA INSTITUTE OF M	Research services under the Services Agreement.	0 / 0	0 / 0	576 / 22687	0 / 0	0 / 0
KOREA INSTITUTE OF M subtotal		0 / 0	0 / 0	576 / 22687	0 / 0	0 / 0
HOWDEN CKD COMPRESSO	Algorithm usable in prototype SW (Python) and design of software modification.	85 / 3354	0 / 0	0 / 0	0 / 0	0 / 0
	Measurement and analysis of Rheden impellers.	0 / 0	0 / 0	164 / 6470	0 / 0	0 / 0
	Research report-SW modules (Python).	185 / 7298	0 / 0	0 / 0	0 / 0	0 / 0
	Research-Experimental modal analysis of impellers.	0 / 0	0 / 0	0 / 0	129 / 5073	0 / 0
	Small contracts /Various titles	4 / 158	0 / 0	0 / 0	0 / 0	0 / 0
HOWDEN CKD COMPRESSO subtotal		274 / 10809	0 / 0	164 / 6470	129 / 5073	0 / 0
ENERGOCENTRUM PLUS ,	Design and pilot implementation of a general control system for air conditioning units.	0 / 0	496 / 19552	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Small contracts /Various titles	43 / 1697	0 / 0	4 / 138	0 / 0	11 / 411
ENERGOCENTRUM PLUS , subtotal		43 / 1697	496 / 19552	4 / 138	0 / 0	11 / 411
BRANO A.S.	Noise analysis of the lock system.	0 / 0	100 / 3945	0 / 0	100 / 3945	0 / 0
	Performance of simulation research characteristics of shock absorbers and the influence of parameters on comfort.	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
	Research of a shock absorber with non-traditional characteristics	0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945
	Support for static kinematic solution of mechanisms	0 / 0	0 / 0	0 / 0	0 / 0	65 / 2565
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	46 / 1815	35 / 1381
BRANO A.S. subtotal		100 / 3945	100 / 3945	0 / 0	146 / 5760	200 / 7890
RUSINAK MIROSLAV	Adjustment of three tool clamps and one workpiece clamp version	0 / 0	0 / 0	0 / 0	95 / 3748	0 / 0
	Post Processor Activities	0 / 0	0 / 0	230 / 9073	0 / 0	0 / 0
	Working on postprocessors	0 / 0	160 / 6312	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	26 / 1006	0 / 0	0 / 0	35 / 1381
RUSINAK MIROSLAV subtotal		0 / 0	186 / 7318	230 / 9073	95 / 3748	35 / 1381
HIWIN S.R.O.	Analysis of structural properties	125 / 4924	0 / 0	0 / 0	0 / 0	0 / 0
	SW control project Beckhoff-AZD manipulator	205 / 8072	195 / 7669	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	16 / 632	0 / 0	0 / 0	0 / 0	0 / 0
HIWIN S.R.O. subtotal		346 / 13626	195 / 7669	0 / 0	0 / 0	0 / 0
HPH, SPOL. S R.O.	Engine measurement TJ-42	0 / 0	0 / 0	0 / 0	0 / 0	192 / 7574
	Flutter analysis of tail surfaces of sailboats EB29DR and EB29R	0 / 0	0 / 0	220 / 8677	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Revision of Flutter Resistance Technical Reports for Shark and Twin Shark	66 / 2604	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	40 / 1563	10 / 395	0 / 0
HPH, SPOL. S.R.O. subtotal		66 / 2604	0 / 0	260 / 10240	10 / 395	192 / 7574
BUZULUK A.S.	Technological-metallurgical research and development	170 / 6707	170 / 6707	30 / 1184	90 / 3551	60 / 2367
BUZULUK A.S. subtotal		170 / 6707	170 / 6707	30 / 1184	90 / 3551	60 / 2367
SIEMENS S.R.O.	Control of spindle drive control, vibration diagnostics of spindle drive	0 / 0	0 / 0	0 / 0	70 / 2762	0 / 0
	Qualification activity-ISO GPS	14 / 537	0 / 0	0 / 0	46 / 1799	0 / 0
	Small contracts /Various titles	109 / 4285	61 / 2396	39 / 1529	50 / 1956	126 / 4943
SIEMENS S.R.O. subtotal		123 / 4821	61 / 2396	39 / 1529	166 / 6516	126 / 4943
PERSIMMON TECHNOLOGI	Labour used for the construction and manufacture	0 / 0	113 / 4445	0 / 0	0 / 0	0 / 0
	Labour used for the consultancy, programming, assembly and commissioning for linear drive	0 / 0	0 / 0	118 / 4647	0 / 0	0 / 0
	Labour used for the consultancy, programming, experimenting, machining	0 / 0	0 / 0	0 / 0	0 / 0	79 / 3113
	Research optical data link	0 / 0	0 / 0	0 / 0	51 / 1999	0 / 0
	Software simulations (Zemax OpticStudio)-optical simulations of researched approach.	0 / 0	0 / 0	0 / 0	150 / 5885	0 / 0
PERSIMMON TECHNOLOGI subtotal		0 / 0	113 / 4445	118 / 4647	200 / 7884	79 / 3113
INOMECH S.R.O.	Development of a universal control unit and advanced calibration methods to repurpose obsolete robots	0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945
	Development of robot motion planning and calibration of robots for machining.	0 / 0	200 / 7890	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Small contracts /Various titles	150 / 5918	50 / 1973	0 / 0	0 / 0	0 / 0
INOMECH S.R.O. subtotal		150 / 5918	250 / 9862	0 / 0	0 / 0	100 / 3945
LYNAX S.R.O.	Development tests-ignition chamber	0 / 0	0 / 0	0 / 0	500 / 19724	0 / 0
LYNAX S.R.O. subtotal		0 / 0	0 / 0	0 / 0	500 / 19724	0 / 0
WAKEMASTER, S.R.O.	Creating the user environment of the basic CAM application including the postprocessor	0 / 0	0 / 0	0 / 0	250 / 9862	0 / 0
	Creation of the computing core of the basic CAM application including the postprocessor	0 / 0	0 / 0	0 / 0	0 / 0	250 / 9862
WAKEMASTER, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	250 / 9862	250 / 9862
MYSCADA TECHNOLOGIES	Design of a concept and development of a prototype of a self-learning system based on the developed Computational Intelligence package	0 / 0	200 / 7890	0 / 0	0 / 0	0 / 0
	Design of suitable methods of computational intelligence, data processing and adaptive control, programming package of these functions in open-source	0 / 0	200 / 7890	0 / 0	0 / 0	0 / 0
	Feasibility study of analytical data module with transfer of expert and process knowledge	0 / 0	100 / 3945	0 / 0	0 / 0	0 / 0
MYSCADA TECHNOLOGIES subtotal		0 / 0	500 / 19724	0 / 0	0 / 0	0 / 0
1ST CLOUD REPUBLIC A	Software development and delivery	499 / 19678	0 / 0	0 / 0	0 / 0	0 / 0
1ST CLOUD REPUBLIC A subtotal		499 / 19678	0 / 0	0 / 0	0 / 0	0 / 0
TUV SUD CZECH S.R.O.	Assessment of the impact of fuel change on the technology and operation of the power plant.	130 / 5113	0 / 0	0 / 0	0 / 0	0 / 0
	Experimental description of the properties of the internal combustion engine.	0 / 0	0 / 0	86 / 3379	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Preparation of brake station test cycle simulation	0 / 0	0 / 0	0 / 0	95 / 3734	0 / 0
	Small contracts /Various titles	40 / 1578	98 / 3829	2 / 43	50 / 1957	0 / 0
TUV SUD CZECH S.R.O. subtotal		170 / 6691	98 / 3829	87 / 3421	145 / 5691	0 / 0
ABOUT CZ, S.R.O.	Software development and delivery	494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
ABOUT CZ, S.R.O. subtotal		494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
NOE'S, S.R.O.	Development and delivery of SW BOSS 4.0	494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
NOE'S, S.R.O. subtotal		494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
POSTER MEDIA NETWORK	Development and delivery of SW BOSS 4.0	494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
POSTER MEDIA NETWORK subtotal		494 / 19479	0 / 0	0 / 0	0 / 0	0 / 0
ERWIN JUNKER GRINDIN	Analysis and interpretation of measurement results	108 / 4261	0 / 0	0 / 0	0 / 0	24 / 947
	Analysis and interpretation of measurement results, SW processing	0 / 0	0 / 0	72 / 2841	0 / 0	0 / 0
	Analysis and interpretation of measurement results.	0 / 0	0 / 0	0 / 0	120 / 4734	0 / 0
	Design, calculation of the capillary regulator of the "Z" axis of the PF8 machine	0 / 0	59 / 2320	0 / 0	0 / 0	0 / 0
	Experimental analysis of static stiffness of grinding wheel replacement arm PF3 7294625.	0 / 0	0 / 0	0 / 0	0 / 0	84 / 3314
	Small contracts /Various titles	24 / 947	0 / 0	0 / 0	0 / 0	0 / 0
ERWIN JUNKER GRINDIN subtotal		132 / 5208	59 / 2320	72 / 2841	120 / 4734	108 / 4261
NANOTECH-EUROPE S.R.	Experimental research for knowledge creation of effects of nanoadditives Nanotech	0 / 0	0 / 0	0 / 0	0 / 0	470 / 18541
NANOTECH-EUROPE S.R. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	470 / 18541
JAWA MOTO SPOL. S R.	Creation of a mathematical model of the Jawa 1000 internal combustion	0 / 0	129 / 5070	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	engine and execution of a basic optimization study.					
	Experimental description of internal combustion engine behavior	0 / 0	0 / 0	121 / 4737	0 / 0	0 / 0
	Experimental description of the Jawa 1000 petrol engine	0 / 0	55 / 2152	0 / 0	0 / 0	0 / 0
	Mathematical description of internal combustion engine behavior	0 / 0	0 / 0	63 / 2486	0 / 0	0 / 0
	Qualification activity-International welding technologist	0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	6 / 217	0 / 0	0 / 0	0 / 0	35 / 1374
JAWA MOTO SPOL. S R. subtotal		6 / 217	245 / 9628	184 / 7222	0 / 0	35 / 1374
PRAZSKA VODOHOSPODAR	Expert assessment of flood pumps	0 / 0	460 / 18146	0 / 0	0 / 0	0 / 0
PRAZSKA VODOHOSPODAR subtotal		0 / 0	460 / 18146	0 / 0	0 / 0	0 / 0
CESKY METROLOGICKY	Development of production technology and production of the artifact "Blade" according to the supplied CAD model and drawing documentation	0 / 0	0 / 0	74 / 2900	0 / 0	0 / 0
	Machining of quartz tubes	0 / 0	0 / 0	0 / 0	0 / 0	175 / 6904
	Qualification Activity-Artifact	0 / 0	112 / 4419	0 / 0	0 / 0	0 / 0
	Qualification activity-part	0 / 0	0 / 0	96 / 3787	0 / 0	0 / 0
CESKY METROLOGICKY subtotal		0 / 0	112 / 4419	170 / 6687	0 / 0	175 / 6904
MOMENTIVE SPECIALTY	Study of heat supply from synthomer a.s. To CZT Sokolov	0 / 0	131 / 5144	0 / 0	0 / 0	0 / 0
	Study of the transition of PE to natural gas.	325 / 12805	0 / 0	0 / 0	0 / 0	0 / 0
MOMENTIVE SPECIALTY subtotal		325 / 12805	131 / 5144	0 / 0	0 / 0	0 / 0
CENTRUM VYZKUMU REZ	Compander rotor design	0 / 0	0 / 0	0 / 0	0 / 0	109 / 4300

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Design and production of mandrels, self-balancing of the rotor, centrifugation, accompanying documentation	0 / 0	0 / 0	278 / 10943	0 / 0	0 / 0
	Qualification activity-OSH in welding, international tests according to CSN 05 070 5	60 / 2336	0 / 0	0 / 0	0 / 0	0 / 0
CENTRUM VYZKUMU REZ subtotal		60 / 2336	0 / 0	278 / 10943	0 / 0	109 / 4300
HOFMEISTER S.R.O.	Experimental verification of hybrid cutting tools. Project registration number: CZ.01. 1.02/0.0/0.0/20 _ 358/0028177	0 / 0	0 / 0	0 / 0	0 / 0	399 / 15740
	Small contracts /Various titles	42 / 1657	0 / 0	0 / 0	0 / 0	0 / 0
HOFMEISTER S.R.O. subtotal		42 / 1657	0 / 0	0 / 0	0 / 0	399 / 15740
GKR STEEL S.R.O.	Development of coupling devices for pick-up vehicles, turntables and kingpin-preparation of documentation.	0 / 0	0 / 0	437 / 17239	0 / 0	0 / 0
GKR STEEL S.R.O. subtotal		0 / 0	0 / 0	437 / 17239	0 / 0	0 / 0
SKO-ENERGO, S.R.O.	Assessment of the reduction of biomass impacts	0 / 0	0 / 0	141 / 5557	0 / 0	0 / 0
	Study on integration of CCS technology for S&E	240 / 9435	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	51 / 1985	0 / 0	0 / 0	0 / 0
SKO-ENERGO, S.R.O. subtotal		240 / 9435	51 / 1985	141 / 5557	0 / 0	0 / 0
INTECHA, SPOL. S R.O	Analysis of flow and sedimentation in strainer	0 / 0	0 / 0	0 / 0	0 / 0	430 / 16963
INTECHA, SPOL. S R.O subtotal		0 / 0	0 / 0	0 / 0	0 / 0	430 / 16963
CESKY PLYNARENSKY A	Revision of technical rules TPG G 935 01 Route closures of gas pipelines from steel tubes.	0 / 0	0 / 0	426 / 16805	0 / 0	0 / 0
CESKY PLYNARENSKY A subtotal		0 / 0	0 / 0	426 / 16805	0 / 0	0 / 0
AEROPILOT S.R.O.	Flutter analysis of Legend aircraft	0 / 0	417 / 16414	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Small contracts /Various titles	4 / 158	2 / 79	0 / 0	0 / 0	0 / 0
AEROPILOT S.R.O. subtotal		4 / 158	419 / 16493	0 / 0	0 / 0	0 / 0
PBS ENERGO, A.S.	Qualification activity-Disc switchboard	0 / 0	87 / 3425	0 / 0	0 / 0	0 / 0
	Qualification activity-Impeller milling	0 / 0	329 / 12971	0 / 0	0 / 0	0 / 0
PBS ENERGO, A.S. subtotal		0 / 0	416 / 16395	0 / 0	0 / 0	0 / 0
REON, S.R.O.	Optimization of equipment for the production of edible cups	0 / 0	0 / 0	412 / 16223	0 / 0	0 / 0
REON, S.R.O. subtotal		0 / 0	0 / 0	412 / 16223	0 / 0	0 / 0
COMTES FHT A.S.	Compilation of the FEM model of the buggy truck based on the supplied CAD geometry.	90 / 3551	25 / 987	0 / 0	0 / 0	0 / 0
	Qualification activity-creation of material models	99 / 3890	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	96 / 3760	50 / 1965	45 / 1776	0 / 0	0 / 0
COMTES FHT A.S. subtotal		284 / 11200	75 / 2951	45 / 1776	0 / 0	0 / 0
VEOLIA ENERGIE KOLIN	Conversion of K8 boiler for biomass combustion	227 / 8920	0 / 0	0 / 0	0 / 0	0 / 0
	Possibility analysis-reconstruction of K8 boiler for TAP combustion	175 / 6874	0 / 0	0 / 0	0 / 0	0 / 0
VEOLIA ENERGIE KOLIN subtotal		401 / 15793	0 / 0	0 / 0	0 / 0	0 / 0
ROTANA A.S.	Evaluation and analysis of experimental data, design of suitable working conditions.	0 / 0	0 / 0	400 / 15780	0 / 0	0 / 0
ROTANA A.S. subtotal		0 / 0	0 / 0	400 / 15780	0 / 0	0 / 0
PRODAKO PRODUCTION S	Basic creation of a postprocessor for testing basic movements	0 / 0	0 / 0	205 / 8072	0 / 0	0 / 0
	Modification of tool path settings on workpiece in Siemens NX CAM version NX12	0 / 0	0 / 0	66 / 2604	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	65 / 2557	64 / 2509	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
PRODAKO PRODUCTION S subtotal		0 / 0	0 / 0	336 / 13231	64 / 2509	0 / 0
CV MACHINING S.R.O.	In-process monitoring of tool wear during drilling and tapping	0 / 0	0 / 0	390 / 15385	0 / 0	0 / 0
CV MACHINING S.R.O. subtotal		0 / 0	0 / 0	390 / 15385	0 / 0	0 / 0
VARIOTEC S.R.O.	Performance of calculation, research and development work of a prototype of a two-stroke internal combustion engine	390 / 15366	0 / 0	0 / 0	0 / 0	0 / 0
VARIOTEC S.R.O. subtotal		390 / 15366	0 / 0	0 / 0	0 / 0	0 / 0
KERVAL A.S.	Design of an innovative method of production of profiles for steel door frames.	388 / 15306	0 / 0	0 / 0	0 / 0	0 / 0
KERVAL A.S. subtotal		388 / 15306	0 / 0	0 / 0	0 / 0	0 / 0
KVK TECHNOLOGY S.R.O	Design and construction of tools for forming stainless steel parts	0 / 0	385 / 15188	0 / 0	0 / 0	0 / 0
KVK TECHNOLOGY S.R.O subtotal		0 / 0	385 / 15188	0 / 0	0 / 0	0 / 0
USTAV FYZIKY PLAZMAT	Cooperation in the preparation of a publication on refinement of the grinding process of optical elements	0 / 0	0 / 0	0 / 0	0 / 0	118 / 4655
	Project CZ.02. 1.01/0.0/0.0/16 _ 026/0008390	0 / 0	0 / 0	0 / 0	142 / 5602	0 / 0
	Small contracts /Various titles	27 / 1039	50 / 1973	49 / 1914	0 / 0	0 / 0
USTAV FYZIKY PLAZMAT subtotal		27 / 1039	50 / 1973	49 / 1914	142 / 5602	118 / 4655
USTAV JADERNE FY FS	Acquisition and testing of final prototypes of ion beam tube elements.	0 / 0	0 / 0	174 / 6841	0 / 0	0 / 0
	Development and production of ion beam guide tube sample	77 / 3038	0 / 0	0 / 0	0 / 0	0 / 0
	Tests of ion beam guide tube elements	0 / 0	128 / 5044	0 / 0	0 / 0	0 / 0
USTAV JADERNE FY FS subtotal		77 / 3038	128 / 5044	174 / 6841	0 / 0	0 / 0
SIEMENS MOBILITY, S.	Expert analysis of possibilities to increase active and passive safety of	0 / 0	0 / 0	0 / 0	102 / 3997	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
	operation of railway vehicles of regional transport in the Czech Republic					
	Strength test of wheel holder	0 / 0	0 / 0	0 / 0	0 / 0	72 / 2809
	Technical Assessment	0 / 0	122 / 4778	0 / 0	0 / 0	0 / 0
	Technical Assessment	83 / 3260	0 / 0	0 / 0	0 / 0	0 / 0
SIEMENS MOBILITY, S. subtotal		83 / 3260	122 / 4778	0 / 0	102 / 3997	72 / 2809
HONEYWELL INTER	Design modifications of CTU flight simulator for testing new avionics concepts	0 / 0	0 / 0	318 / 12534	0 / 0	0 / 0
	Modification and adjustments of the setup for testing of new avionics concepts	0 / 0	0 / 0	0 / 0	54 / 2120	0 / 0
HONEYWELL INTER subtotal		0 / 0	0 / 0	318 / 12534	54 / 2120	0 / 0
ORLEN UNICRE A.S.	Mobile hydrogen filling station	0 / 0	0 / 0	0 / 0	368 / 14517	0 / 0
ORLEN UNICRE A.S. subtotal		0 / 0	0 / 0	0 / 0	368 / 14517	0 / 0
METAL 3D, S.R.O.	Analysis of properties of 3D printed, lightweight and hollow structures.	0 / 0	0 / 0	363 / 14320	0 / 0	0 / 0
METAL 3D, S.R.O. subtotal		0 / 0	0 / 0	363 / 14320	0 / 0	0 / 0
KOOPERATIVA, VYROBNE	Analysis of problems in forming the ends of the tubes of public lighting poles	0 / 0	0 / 0	0 / 0	0 / 0	360 / 14202
KOOPERATIVA, VYROBNE subtotal		0 / 0	0 / 0	0 / 0	0 / 0	360 / 14202
PLZENSKY PRAZDROJ, A	Dissipation of the thermal load of the building of the central bottling plant of the Pilsen brewery for adjusting the thermal state of the environment	0 / 0	360 / 14202	0 / 0	0 / 0	0 / 0
PLZENSKY PRAZDROJ, A subtotal		0 / 0	360 / 14202	0 / 0	0 / 0	0 / 0
UNITED ENERGY, A.S.	CO2 capture studies	0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0
	Tools for the production of top plate fluid nozzles.	0 / 0	250 / 9847	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Small contracts /Various titles	0 / 0	0 / 0	16 / 606	26 / 1021	8 / 296
UNITED ENERGY, A.S. subtotal		0 / 0	311 / 12253	16 / 606	26 / 1021	8 / 296
METROPROJEKT PRAHA	Environmental parameters in the Prague metro area	0 / 0	0 / 0	0 / 0	85 / 3328	0 / 0
	Measurement of temperature, relative humidity, air velocity, etc. According to the specification in the submitted offer in 5 metro stations.	0 / 0	85 / 3328	0 / 0	0 / 0	0 / 0
	Processing of computer simulation of the internal environment of the metro station Nemocnice Krc.	0 / 0	0 / 0	190 / 7496	0 / 0	0 / 0
METROPROJEKT PRAHA subtotal		0 / 0	85 / 3328	190 / 7496	85 / 3328	0 / 0
A2 CZ CONCEPTS S.R.O	Flutter analysis of Ellipse Spirit aircraft according to UL 2/2019.	0 / 0	357 / 14083	0 / 0	0 / 0	0 / 0
A2 CZ CONCEPTS S.R.O subtotal		0 / 0	357 / 14083	0 / 0	0 / 0	0 / 0
ZALL JIHLAVAN AIRPLA	Preparation of documents for obtaining type certificate P of the Amateur Aviation Association of the Czech Republic for all-metal low-wing aircraft Skyleader 400	350 / 13807	0 / 0	0 / 0	0 / 0	0 / 0
ZALL JIHLAVAN AIRPLA subtotal		350 / 13807	0 / 0	0 / 0	0 / 0	0 / 0
HECKL S.R.O.	Development of a handwheel made of polymer materials	0 / 0	350 / 13784	0 / 0	0 / 0	0 / 0
HECKL S.R.O. subtotal		0 / 0	350 / 13784	0 / 0	0 / 0	0 / 0
TEPLARNA LOUCOVICE,	Technical due diligence of biomass cogeneration plant on wood chips	0 / 0	0 / 0	0 / 0	348 / 13697	0 / 0
TEPLARNA LOUCOVICE, subtotal		0 / 0	0 / 0	0 / 0	348 / 13697	0 / 0
HLAVNI MESTO PRAH	Design of technical solution of modification of HVAC collector Modrany.	0 / 0	183 / 7219	0 / 0	0 / 0	0 / 0
	Measurement of air flow in collector Modrany	153 / 6036	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	4 / 158	0 / 0	0 / 0	5 / 198	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
HLAVNI MESTO PRAH subtotal		157 / 6194	183 / 7219	0 / 0	5 / 198	0 / 0
L.K. ENGINEERING, S.	Upon successful completion of WP 104 and successful MDR and acceptance by the Agency of all related deliverable items	0 / 0	0 / 0	0 / 0	130 / 5118	214 / 8416
L.K. ENGINEERING, S. subtotal		0 / 0	0 / 0	0 / 0	130 / 5118	214 / 8416
OK-BE S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	162 / 6374
	Supervision of repairs of PKO-Harachov viaduct.	0 / 0	60 / 2367	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	20 / 789	93 / 3669	0 / 0	0 / 0
OK-BE S.R.O. subtotal		0 / 0	80 / 3156	93 / 3669	0 / 0	162 / 6374
STARMANS ELECTRONI_1	Development and delivery of 4Q inverter controller software for hybrid locomotive	0 / 0	0 / 0	0 / 0	0 / 0	331 / 13041
	Small contracts /Various titles	0 / 0	4 / 146	0 / 0	0 / 0	0 / 0
STARMANS ELECTRONI_1 subtotal		0 / 0	4 / 146	0 / 0	0 / 0	331 / 13041
PRUSA RESEARCH S.R.O	Analysis of particle distribution from samples	235 / 9255	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	98 / 3842	0 / 0	0 / 0	0 / 0	0 / 0
PRUSA RESEARCH S.R.O subtotal		332 / 13096	0 / 0	0 / 0	0 / 0	0 / 0
VODNI ENERGIE S.R.O.	Experimental evaluation of pressure loss of aeration membrane and aeration elements	0 / 0	0 / 0	0 / 0	99 / 3898	0 / 0
	Performance of scientific research work related to the design of the geometry of a new hydropneumatic aerator.	0 / 0	0 / 0	0 / 0	0 / 0	233 / 9176
VODNI ENERGIE S.R.O. subtotal		0 / 0	0 / 0	0 / 0	99 / 3898	233 / 9176
PT SOLUTIONS WORLDWI	Application of Machine Vision for Automatic Measurement in Cutting Cylindrical Sheets	325 / 12821	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
PT SOLUTIONS WORLDWI subtotal		325 / 12821	0 / 0	0 / 0	0 / 0	0 / 0
VENTOS ENERGY SOLUTI	Energy balance of air drying	0 / 0	55 / 2146	0 / 0	0 / 0	0 / 0
	Technical analysis of the existing design of the heat exchanger	0 / 0	0 / 0	0 / 0	180 / 7101	0 / 0
	Small contracts /Various titles	0 / 0	48 / 1878	0 / 0	0 / 0	40 / 1578
VENTOS ENERGY SOLUTI subtotal		0 / 0	102 / 4024	0 / 0	180 / 7101	40 / 1578
SMOLO A.S.	Basic design of the selected variant crystallization evaporators.	320 / 12624	0 / 0	0 / 0	0 / 0	0 / 0
SMOLO A.S. subtotal		320 / 12624	0 / 0	0 / 0	0 / 0	0 / 0
BAEST MACHINES & STR	Analysis of suitable methods of mechanization and robotization of welding processes, determination and selection of suitable technological procedures and use of existing technological equipment.	0 / 0	295 / 11638	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	16 / 632	0 / 0
BAEST MACHINES & STR subtotal		0 / 0	295 / 11638	0 / 0	16 / 632	0 / 0
STROS-SEDLICANSKE STR	Design analysis and experimental measurements for determining dynamic coefficients	0 / 0	0 / 0	0 / 0	309 / 12180	0 / 0
STROS-SEDLICANSKE STR subtotal		0 / 0	0 / 0	0 / 0	309 / 12180	0 / 0
EVEKTOR, SPOL. S R.O	Flutter Analysis of Harmony Aircraft	0 / 0	0 / 0	0 / 0	253 / 9981	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	50 / 1973
EVEKTOR, SPOL. S R.O subtotal		0 / 0	0 / 0	0 / 0	253 / 9981	50 / 1973
TECHNICKE SLUZBY 002	Hg measurement in SAKO Brno-Hg analyzer rental	0 / 0	0 / 0	0 / 0	0 / 0	76 / 2999
	Hg measurement in Termizo Liberec- Hg analyzer rental	0 / 0	0 / 0	0 / 0	0 / 0	152 / 5997
	Technical cooperation on mercury measurement and balance in ZERO Chotkov	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	
TECHNICKÉ SLUŽBY 002 subtotal		0 / 0	0 / 0	75 / 2959	0 / 0	228 / 8995
VOPSS REPEC S.R.O.	Postprocessor and simulation model for SP430L2 and CAM system Siemens NX. Project registration number: CZ.01. 1.02/0.0/0.0/20 _ 358/0028196.	0 / 0	0 / 0	0 / 0	0 / 0	302 / 11914
VOPSS REPEC S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	302 / 11914
MGM COMPRO S.R.O.	Design of tilt rotor propulsion system for UAV.	300 / 11835	0 / 0	0 / 0	0 / 0	0 / 0
MGM COMPRO S.R.O. subtotal		300 / 11835	0 / 0	0 / 0	0 / 0	0 / 0
STROJIRNA LITVINOV S	Measurement of vertical wind tunnel parameters	88 / 3464	0 / 0	0 / 0	0 / 0	0 / 0
	Qualification activity-Employee training	0 / 0	0 / 0	0 / 0	208 / 8183	0 / 0
STROJIRNA LITVINOV S subtotal		88 / 3464	0 / 0	0 / 0	208 / 8183	0 / 0
VZDUCHOTECHNIK, S.R.	Conceptual design of the cover of the existing dryer for a new nebulisation head within the project CZ.01. 1.02/0.0/0.0/17 _ 176/0015563	0 / 0	60 / 2367	0 / 0	0 / 0	0 / 0
	Design of the nebulizer head, dryer and drying line	0 / 0	0 / 0	108 / 4261	0 / 0	0 / 0
	Methodology for testing and optimizing the operation of a complete demonstrator system.	0 / 0	0 / 0	122 / 4793	0 / 0	0 / 0
VZDUCHOTECHNIK, S.R. subtotal		0 / 0	60 / 2367	230 / 9054	0 / 0	0 / 0
LEHMAN RENE	Fasteners	154 / 6040	124 / 4892	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	11 / 434	0 / 0	0 / 0	0 / 0	0 / 0
LEHMAN RENE subtotal		165 / 6474	124 / 4892	0 / 0	0 / 0	0 / 0
PRUSA MANUFACTURING	Analysis of particle distribution from samples	0 / 0	161 / 6344	53 / 2083	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	29 / 1135	24 / 943	0 / 0	20 / 789
PRUSA MANUFACTURING subtotal		0 / 0	190 / 7478	77 / 3026	0 / 0	20 / 789

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
VM ENGINEERING S.R.O	Study and design of a prototype for fusion of sensors in the spectrum of visible radiation, thermal radiation and depth sensor for online industrial detection.	0 / 0	0 / 0	285 / 11243	0 / 0	0 / 0
VM ENGINEERING S.R.O subtotal		0 / 0	0 / 0	285 / 11243	0 / 0	0 / 0
PULS INVESTICNI S.R.	Intel's proposal. A gripper for a robot containing a laser marking machine.	284 / 11204	0 / 0	0 / 0	0 / 0	0 / 0
PULS INVESTICNI S.R. subtotal		284 / 11204	0 / 0	0 / 0	0 / 0	0 / 0
CONTINENTAL AUTOMOTI	Performance of working test in autoclave	0 / 0	0 / 0	0 / 0	10 / 395	176 / 6943
	Qualification activity-ISO GPS	0 / 0	38 / 1480	30 / 1160	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	29 / 1144
CONTINENTAL AUTOMOTI subtotal		0 / 0	38 / 1480	30 / 1160	10 / 395	205 / 8087
DOPRAVNI PODNIK HL.	Analysis of electrical properties and verification of conductivity of rubber damping inserts for 15t tram wheels	0 / 0	101 / 3985	0 / 0	0 / 0	0 / 0
	Analysis of electrical properties and verification of conductivity of rubber wheel liners of 15T tram	95 / 3748	0 / 0	0 / 0	0 / 0	0 / 0
	Review on air conditioning for trams Skoda 15 T for City	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	20 / 789	0 / 0	0 / 0
DOPRAVNI PODNIK HL. subtotal		155 / 6115	101 / 3985	20 / 789	0 / 0	0 / 0
ENERGOTRANS, A.S.	Demonstration of guaranteed parameters of desulfurization lines.	0 / 0	76 / 2999	0 / 0	0 / 0	0 / 0
	Opinion on determining the efficiency of the new fluid boiler	135 / 5326	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	13 / 505	43 / 1697	0 / 0
ENERGOTRANS, A.S. subtotal		135 / 5326	76 / 2999	13 / 505	43 / 1697	0 / 0
TEPLARNA CESKE BUDEJ	Assessment of the study of future heat supply in Ceske Budejovice.	0 / 0	152 / 5997	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Performing a one-time measurement on the K11 boiler in order to evaluate the real operation of DeNOxSNCR.	0 / 0	60 / 2367	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	10 / 375	45 / 1776	0 / 0	0 / 0	0 / 0
TEPLARNA CESKE BUDEJ subtotal		10 / 375	257 / 10139	0 / 0	0 / 0	0 / 0
PRVNI BRNENSKA STRO	Qualification activity-Disc of distributor blades	0 / 0	0 / 0	264 / 10406	0 / 0	0 / 0
PRVNI BRNENSKA STRO subtotal		0 / 0	0 / 0	264 / 10406	0 / 0	0 / 0
LUCEBNI ZAVODY DRASL	Calculation of modification of the exchanger La Mont	0 / 0	69 / 2695	0 / 0	0 / 0	0 / 0
	Measurement of flow properties of DPG	0 / 0	0 / 0	0 / 0	0 / 0	76 / 2999
	Small contracts /Various titles	47 / 1849	67 / 2610	0 / 0	0 / 0	7 / 253
LUCEBNI ZAVODY DRASL subtotal		47 / 1849	135 / 5304	0 / 0	0 / 0	83 / 3251
PARTNER / ZAKAZNIK	Qualification activity-International welding technologist	73 / 2869	35 / 1370	0 / 0	62 / 2446	0 / 0
	Qualification activity-OSH in welding, international tests according to CSN 05 070 5	40 / 1562	11 / 431	21 / 825	0 / 0	0 / 0
	Small contracts /Various titles	8 / 284	0 / 0	13 / 513	0 / 0	0 / 0
PARTNER / ZAKAZNIK subtotal		120 / 4714	46 / 1800	34 / 1338	62 / 2446	0 / 0
BOTANICKA ZAHRAHA HL	Software development and its implementation for devices providing audio information for the blind	0 / 0	130 / 5129	130 / 5129	0 / 0	0 / 0
BOTANICKA ZAHRAHA HL subtotal		0 / 0	130 / 5129	130 / 5129	0 / 0	0 / 0
MOSA SOLUTION S.R.O.	Research and Development No. V-M-11 in the framework of "Experimental development of equipment for the elimination of dust impurities on impellers"	150 / 5918	0 / 0	0 / 0	0 / 0	0 / 0
	Research report within the project "Experimental device for cleaning electrodes of electrodepressor and increasing efficiency".	110 / 4340	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
MOSA SOLUTION S.R.O. subtotal		260 / 10257	0 / 0	0 / 0	0 / 0	0 / 0
WACKER NEUSON LINZ G	Research on the carrying capacity of the D24 dump truck operator's cab	0 / 0	215 / 8466	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	40 / 1549	0 / 0	0 / 0	0 / 0
WACKER NEUSON LINZ G subtotal		0 / 0	254 / 10014	0 / 0	0 / 0	0 / 0
H55 S.A.	Flutter analysis of the airplane H55 according to CS 23.2245 AMDT5 using CS.VLA.629 as AMC.	250 / 9847	0 / 0	0 / 0	0 / 0	0 / 0
H55 S.A. subtotal		250 / 9847	0 / 0	0 / 0	0 / 0	0 / 0
STATNI USTAV RADIACN	Qualification activity-Employee training	0 / 0	0 / 0	0 / 0	83 / 3261	166 / 6521
STATNI USTAV RADIACN subtotal		0 / 0	0 / 0	0 / 0	83 / 3261	166 / 6521
USTAV MATERIALOV A M	Fatigue tests of dental implants MV4, 5-10 (TiGr4) according to EN ISO 14801	0 / 0	120 / 4703	0 / 0	0 / 0	0 / 0
	Fatigue tests of dental implants MV4, 5-10 Biacom according to EN ISO 14801	0 / 0	129 / 5073	0 / 0	0 / 0	0 / 0
USTAV MATERIALOV A M subtotal		0 / 0	248 / 9776	0 / 0	0 / 0	0 / 0
CESKA AGENTURA PRO S	Preparation of draft Czech technical standard	206 / 8103	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	42 / 1631	0 / 0	0 / 0	0 / 0	0 / 0
CESKA AGENTURA PRO S subtotal		247 / 9733	0 / 0	0 / 0	0 / 0	0 / 0
GLEBUS ALLOYS EUROPE	Preparation, execution and evaluation of experimental measurement of tribological properties	0 / 0	0 / 0	0 / 0	246 / 9705	0 / 0
GLEBUS ALLOYS EUROPE subtotal		0 / 0	0 / 0	0 / 0	246 / 9705	0 / 0
KOLEKTORY PRAHA A.S.	Activities and measurements-air flow in the Dáblice collector	0 / 0	0 / 0	0 / 0	166 / 6549	0 / 0
	Measurement of air flow in collector Modrany	0 / 0	0 / 0	0 / 0	0 / 0	77 / 3038

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
KOLEKTORY PRAHA A.S. subtotal		0 / 0	0 / 0	0 / 0	166 / 6549	77 / 3038
MINISTERSTVO OBRANY	Preparation of expert opinion MO	211 / 8304	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	32 / 1239
MINISTERSTVO OBRANY subtotal		211 / 8304	0 / 0	0 / 0	0 / 0	32 / 1239
FANI TRADE S.R.O.	Research work on a Stirling engine model according to patent CZ308724	0 / 0	0 / 0	241 / 9473	0 / 0	0 / 0
FANI TRADE S.R.O. subtotal		0 / 0	0 / 0	241 / 9473	0 / 0	0 / 0
GULIWER ELECTRONICS,	Development and testing of AdBlue dosing system components.	234 / 9229	0 / 0	0 / 0	0 / 0	0 / 0
GULIWER ELECTRONICS, subtotal		234 / 9229	0 / 0	0 / 0	0 / 0	0 / 0
SEKO AEROSPACE, A.S.	Analysis of blade set according to PS-0551	0 / 0	0 / 0	0 / 0	0 / 0	80 / 3156
	Preparation of sample analysis	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
SEKO AEROSPACE, A.S. subtotal		0 / 0	0 / 0	75 / 2959	75 / 2959	80 / 3156
BTL HEALTHCARE TECHN	Measurement of diffusivity of barium sulfate surface samples	0 / 0	0 / 0	0 / 0	104 / 4083	0 / 0
	Study of energy transfer characteristics of pulsed discharge lamp radiation to laser crystal	0 / 0	0 / 0	90 / 3551	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	34 / 1314	0 / 0	0 / 0
BTL HEALTHCARE TECHN subtotal		0 / 0	0 / 0	124 / 4864	104 / 4083	0 / 0
VEOLIA ENERGIE CR	Qualification activity-review	0 / 0	0 / 0	116 / 4545	36 / 1421	46 / 1799
	Small contracts /Various titles	0 / 0	30 / 1172	0 / 0	0 / 0	0 / 0
VEOLIA ENERGIE CR subtotal		0 / 0	30 / 1172	116 / 4545	36 / 1421	46 / 1799
SECHERON HASLER CZ	Qualification activity-ISO GPS	13 / 513	68 / 2667	0 / 0	40 / 1578	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Qualification activity-technology, surface treatment	56 / 2210	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	7 / 253	40 / 1578	0 / 0
SECHERON HASLER CZ subtotal		69 / 2722	68 / 2667	7 / 253	80 / 3156	0 / 0
SPACEK S.R.O.	Flutter analysis of SD-2 aircraft	0 / 0	0 / 0	221 / 8718	0 / 0	0 / 0
SPACEK S.R.O. subtotal		0 / 0	0 / 0	221 / 8718	0 / 0	0 / 0
HLVC A SPOL. S.R.O. Praha 6	Expert opinion in the matter of damage event damage to trucks	0 / 0	0 / 0	31 / 1223	33 / 1283	0 / 0
	Expert Opinion on Locomotive Damage Event	0 / 0	0 / 0	27 / 1066	30 / 1184	0 / 0
	Qualification activity-review	0 / 0	0 / 0	62 / 2436	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	33 / 1302	0 / 0
HLVC A SPOL. S.R.O. Praha 6 subtotal		0 / 0	0 / 0	120 / 4724	96 / 3768	0 / 0
JIRI HRUBY 001	Postprocessor source code with machine model and kinematics of the OS	0 / 0	0 / 0	215 / 8482	0 / 0	0 / 0
JIRI HRUBY 001 subtotal		0 / 0	0 / 0	215 / 8482	0 / 0	0 / 0
TOSHULIN	Calculation of the hydrostatic bearing of the Y axis for the machine V.N. 1900	0 / 0	204 / 8048	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	10 / 391	0 / 0
TOSHULIN subtotal		0 / 0	204 / 8048	0 / 0	10 / 391	0 / 0
F.X.MEILLER SLANY S.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
	Version IA according to EN ISO 3834-2.	0 / 0	30 / 1184	30 / 1184	0 / 0	0 / 0
	Small contracts /Various titles	39 / 1539	3 / 109	0 / 0	33 / 1302	0 / 0
F.X.MEILLER SLANY S. subtotal		39 / 1539	33 / 1292	30 / 1184	108 / 4261	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
GREIF-AKUSTIKA,S.R.O	Measurement of acoustic parameters of crosstalk dampers	136 / 5365	0 / 0	0 / 0	0 / 0	0 / 0
	Research and development of new soundproof and fire doors	0 / 0	70 / 2762	0 / 0	0 / 0	0 / 0
GREIF-AKUSTIKA,S.R.O subtotal		136 / 5365	70 / 2762	0 / 0	0 / 0	0 / 0
SVV PRAHA, S.R.O.	Qualification activity-International welding technologist	21 / 790	14 / 521	17 / 656	113 / 4422	20 / 766
	Small contracts /Various titles	11 / 427	7 / 277	6 / 221	0 / 0	0 / 0
SVV PRAHA, S.R.O. subtotal		31 / 1216	21 / 797	23 / 876	113 / 4422	20 / 766
CESKA ZEMEDELSKA UNI	Analysis of velocity field of air flow inside experimental dryer.	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
	Measurement of emissions of a motorcycle category L3 in a cylinder test room	0 / 0	0 / 0	0 / 0	0 / 0	54 / 2092
	Small contracts /Various titles	0 / 0	30 / 1184	20 / 789	1 / 30	0 / 0
CESKA ZEMEDELSKA UNI subtotal		100 / 3945	30 / 1184	20 / 789	1 / 30	54 / 2092
TECRON S.R.O. Praha 8	Verification of the properties of parts manufactured by additive technology.	0 / 0	202 / 7969	0 / 0	0 / 0	0 / 0
TECRON S.R.O. Praha 8 subtotal		0 / 0	202 / 7969	0 / 0	0 / 0	0 / 0
ERNST LEOPOLD S.R.O.	Technological and metallurgical research and development	40 / 1578	160 / 6312	0 / 0	0 / 0	0 / 0
ERNST LEOPOLD S.R.O. subtotal		40 / 1578	160 / 6312	0 / 0	0 / 0	0 / 0
JIHOESKY, A.S. VEDE	Design of single-purpose machines	200 / 7858	0 / 0	0 / 0	0 / 0	0 / 0
JIHOESKY, A.S. VEDE subtotal		200 / 7858	0 / 0	0 / 0	0 / 0	0 / 0
PLASTOIL EUROPE, A.S	Design and parameters of equipment for mechanical disintegration of waste textiles	0 / 0	0 / 0	0 / 0	194 / 7653	0 / 0
PLASTOIL EUROPE, A.S subtotal		0 / 0	0 / 0	0 / 0	194 / 7653	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
TEPLARNA OTROKOVICE	Measurement of the total concentration of Hg in flue gases from boilers K3 and K4.	180 / 7101	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	12 / 474	0 / 0	0 / 0	0 / 0
TEPLARNA OTROKOVICE subtotal		180 / 7101	12 / 474	0 / 0	0 / 0	0 / 0
VLADYKA ROBERT, MGR. Praha 1	Qualification activity-review	0 / 0	0 / 0	192 / 7574	0 / 0	0 / 0
VLADYKA ROBERT, MGR. Praha 1 subtotal		0 / 0	0 / 0	192 / 7574	0 / 0	0 / 0
MINISTERSTVO FINANCI	Expert recommendations for the developed project from companies JIKA-CZ s.r.o.	0 / 0	0 / 0	0 / 0	185 / 7279	0 / 0
MINISTERSTVO FINANCI subtotal		0 / 0	0 / 0	0 / 0	185 / 7279	0 / 0
PIVOVARY STAROPRAME	Qualification activity-milling cutter tooth pitch	0 / 0	0 / 0	79 / 3093	0 / 0	0 / 0
	Qualification activity-OSH in welding, international tests according to CSN 05 070 5	101 / 3977	0 / 0	0 / 0	0 / 0	5 / 178
PIVOVARY STAROPRAME subtotal		101 / 3977	0 / 0	79 / 3093	0 / 0	5 / 178
JETTI, A.S.	Calculations of heat transfer through insulation panels	0 / 0	183 / 7212	0 / 0	0 / 0	0 / 0
JETTI, A.S. subtotal		0 / 0	183 / 7212	0 / 0	0 / 0	0 / 0
BRESSON POWER A.S.	Development of expert analyses for determination of material characteristics of Allobor 5 alloy	0 / 0	0 / 0	0 / 0	80 / 3156	0 / 0
	Research work on the development of a new Al-B-based alloy	0 / 0	0 / 0	0 / 0	54 / 2101	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	48 / 1880	0 / 0
BRESSON POWER A.S. subtotal		0 / 0	0 / 0	0 / 0	181 / 7137	0 / 0
ISOLA POWERTEKK S.R.	Preparation, execution and evaluation of experimental measurement of tribological properties	0 / 0	0 / 0	0 / 0	0 / 0	179 / 7050
ISOLA POWERTEKK S.R. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	179 / 7050

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
USTAV EXPERIMENTALNI	Carrying out measurements in an engine test room for the purpose of exposure of cell cultures.	0 / 0	0 / 0	179 / 7048	0 / 0	0 / 0
USTAV EXPERIMENTALNI subtotal		0 / 0	0 / 0	179 / 7048	0 / 0	0 / 0
FESTO S.R.O.	Qualification activity-Servo drives	44 / 1710	0 / 0	30 / 1184	30 / 1184	71 / 2782
FESTO S.R.O. subtotal		44 / 1710	0 / 0	30 / 1184	30 / 1184	71 / 2782
UAB PRODENTA	Fatigue test for endosseous dental implants according to EN ISO 14801	0 / 0	0 / 0	0 / 0	0 / 0	137 / 5389
	Small contracts /Various titles	0 / 0	0 / 0	17 / 634	0 / 0	20 / 763
UAB PRODENTA subtotal		0 / 0	0 / 0	17 / 634	0 / 0	156 / 6152
CZ A.S.	Measurement of blade surface errors and wear of used tools	0 / 0	0 / 0	0 / 0	0 / 0	54 / 2131
	Small contracts /Various titles	50 / 1941	0 / 0	24 / 947	44 / 1705	0 / 0
CZ A.S. subtotal		50 / 1941	0 / 0	24 / 947	44 / 1705	54 / 2131
TOOL AXIS S.R.O.	Determination of suitable laser cutting parameters for structural and stainless steel	122 / 4805	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	46 / 1815	0 / 0	0 / 0	0 / 0	0 / 0
TOOL AXIS S.R.O. subtotal		168 / 6620	0 / 0	0 / 0	0 / 0	0 / 0
CESKA ZBROJOVKA A.S.	Small contracts /Various titles	0 / 0	20 / 789	0 / 0	0 / 0	147 / 5799
CESKA ZBROJOVKA A.S. subtotal		0 / 0	20 / 789	0 / 0	0 / 0	147 / 5799
MARTIN VACULIK	Measurement of the complete characteristics of the VW 1.4 TSI engine	0 / 0	0 / 0	0 / 0	0 / 0	166 / 6533
MARTIN VACULIK subtotal		0 / 0	0 / 0	0 / 0	0 / 0	166 / 6533
LASAK S.R.O.	Fatigue test of dental implant according to EN ISO 14801-Bioniq implant	0 / 0	0 / 0	0 / 0	161 / 6352	0 / 0
	Small contracts /Various titles	1 / 32	4 / 127	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
LASAK S.R.O. subtotal		1 / 32	4 / 127	0 / 0	161 / 6352	0 / 0
TECHSOFT ENGINEERING	Design of uniform ammonia distribution in a modified distributor.	0 / 0	62 / 2446	0 / 0	0 / 0	0 / 0
	Design of uniform ammonia flow distribution in a modified distributor.	102 / 4024	0 / 0	0 / 0	0 / 0	0 / 0
TECHSOFT ENGINEERING subtotal		102 / 4024	62 / 2446	0 / 0	0 / 0	0 / 0
UJP PRAHA A.S.	Performing EBSD analyses on bodies after creep tests	0 / 0	0 / 0	0 / 0	105 / 4143	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	12 / 474	0 / 0	47 / 1831
UJP PRAHA A.S. subtotal		0 / 0	0 / 0	12 / 474	105 / 4143	47 / 1831
TEMPERATOR S.R.O.	Testing of fuel properties on a diesel engine.	162 / 6385	0 / 0	0 / 0	0 / 0	0 / 0
TEMPERATOR S.R.O. subtotal		162 / 6385	0 / 0	0 / 0	0 / 0	0 / 0
STV GROUP A.S.	Development of discounted repair technology for belt joints	0 / 0	0 / 0	0 / 0	0 / 0	160 / 6312
STV GROUP A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	160 / 6312
BORSODCHEM MCHZ, S.R.	Analysis of the current state and design of the filtration process of the crude reaction mixture of substance E including basic-design processing of the filter arrangement including peripherals	144 / 5681	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	15 / 592	0 / 0	0 / 0	0 / 0	0 / 0
BORSODCHEM MCHZ, S.R. subtotal		159 / 6273	0 / 0	0 / 0	0 / 0	0 / 0
MAVEL, A.S.	Analysis of shaft fracture, assessment of chemical composition of water turbine blades.	0 / 0	121 / 4744	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	23 / 892	0 / 0	0 / 0	9 / 336
MAVEL, A.S. subtotal		0 / 0	143 / 5636	0 / 0	0 / 0	9 / 336
QUINN HOTELS PRAHA,	Preparation, execution and evaluation of experimental	0 / 0	0 / 0	0 / 0	150 / 5918	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	measurement of tribological properties					
QUINN HOTELS PRAHA, subtotal		0 / 0	0 / 0	0 / 0	150 / 5918	0 / 0
VVV MOST SPOL. S R.O	Design of a technical solution for hydraulic separation of slag from process water	148 / 5839	0 / 0	0 / 0	0 / 0	0 / 0
VVV MOST SPOL. S R.O subtotal		148 / 5839	0 / 0	0 / 0	0 / 0	0 / 0
TEDOM A.S.	Model description of dynamic properties of the mechanism	0 / 0	0 / 0	0 / 0	84 / 3283	0 / 0
	Small contracts /Various titles	64 / 2509	0 / 0	0 / 0	0 / 0	0 / 0
TEDOM A.S. subtotal		64 / 2509	0 / 0	0 / 0	84 / 3283	0 / 0
AIRCRAFT INDUSTRIES,	Experimental fatigue tests of welded joints	0 / 0	0 / 0	0 / 0	0 / 0	76 / 2964
	Metallographic analysis of hinges	0 / 0	70 / 2745	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	2 / 79	0 / 0	0 / 0
AIRCRAFT INDUSTRIES, subtotal		0 / 0	70 / 2745	2 / 79	0 / 0	76 / 2964
TSS, SPOL. S R.O.	Qualification activity-smelter, moulding, mill	0 / 0	83 / 3260	0 / 0	55 / 2145	0 / 0
	Small contracts /Various titles	0 / 0	3 / 119	0 / 0	2 / 79	4 / 158
TSS, SPOL. S R.O. subtotal		0 / 0	86 / 3378	0 / 0	57 / 2224	4 / 158
MYPLAST S.R.O.	Refrigerant fill measurement	0 / 0	0 / 0	0 / 0	110 / 4327	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	36 / 1421	0 / 0	0 / 0
MYPLAST S.R.O. subtotal		0 / 0	0 / 0	36 / 1421	110 / 4327	0 / 0
CEZ ENERGETICKE PROD	Study of CO2 capture from EPOC flue gases	145 / 5720	0 / 0	0 / 0	0 / 0	0 / 0
CEZ ENERGETICKE PROD subtotal		145 / 5720	0 / 0	0 / 0	0 / 0	0 / 0
UNIVERZITA KARLOVA	Qualification activity-Vacuum connectors	0 / 0	70 / 2738	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	Small contracts /Various titles	30 / 1178	17 / 668	0 / 0	0 / 0	29 / 1121
UNIVERZITA KARLOVA subtotal		30 / 1178	87 / 3406	0 / 0	0 / 0	29 / 1121
PONTEX, SPOL. S.R.O.	Inspection of welds at gas crossings "K" Týn nad Vltavou and "W"	0 / 0	0 / 0	0 / 0	70 / 2762	0 / 0
	Small contracts /Various titles	0 / 0	40 / 1578	0 / 0	0 / 0	31 / 1196
PONTEX, SPOL. S.R.O. subtotal		0 / 0	40 / 1578	0 / 0	70 / 2762	31 / 1196
CERTIFIKACNI SDRUZEN	Qualification activity-technology, surface treatment	0 / 0	0 / 0	0 / 0	140 / 5523	0 / 0
CERTIFIKACNI SDRUZEN subtotal		0 / 0	0 / 0	0 / 0	140 / 5523	0 / 0
LH TECHNIK S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	61 / 2407	75 / 2959	0 / 0
LH TECHNIK S.R.O. subtotal		0 / 0	0 / 0	61 / 2407	75 / 2959	0 / 0
SHM, S.R.O.	Cutting edge durability tests for VBD face milling	0 / 0	100 / 3945	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	36 / 1401	0 / 0	0 / 0	0 / 0	0 / 0
SHM, S.R.O. subtotal		36 / 1401	100 / 3945	0 / 0	0 / 0	0 / 0
TIRE MACHINERY AND E	Preparation, execution and evaluation of experimental measurement of tribological properties	0 / 0	0 / 0	0 / 0	136 / 5328	0 / 0
TIRE MACHINERY AND E subtotal		0 / 0	0 / 0	0 / 0	136 / 5328	0 / 0
KOCIANOVA MILADA	Brake caliper "C"	0 / 0	65 / 2557	0 / 0	0 / 0	0 / 0
	Brake caliper "C" with RM adjustment	0 / 0	0 / 0	0 / 0	70 / 2730	0 / 0
KOCIANOVA MILADA subtotal		0 / 0	65 / 2557	0 / 0	70 / 2730	0 / 0
DFH HAUS CZ S.R.O.	Recovery of waste heat from compressors	0 / 0	0 / 0	0 / 0	0 / 0	131 / 5168
DFH HAUS CZ S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	131 / 5168
STP Z.S.	Promotional activities	0 / 0	0 / 0	130 / 5129	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
STP Z.S. subtotal		0 / 0	0 / 0	130 / 5129	0 / 0	0 / 0
EPPLIX S.R.O.	Optimization of mixing and configuration of autoclave for expanded polypropylene production	0 / 0	0 / 0	0 / 0	0 / 0	128 / 5050
EPPLIX S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	128 / 5050
MFS DIGITAL CZ, S.R. Praha 1	Simulation of thermal behaviour of the interspace of a double facade.	0 / 0	128 / 5050	0 / 0	0 / 0	0 / 0
MFS DIGITAL CZ, S.R. Praha 1 subtotal		0 / 0	128 / 5050	0 / 0	0 / 0	0 / 0
SURFACETREAT A.S.	Plasma surfaces, vacuum devices and design calculations in CAD system	127 / 5002	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
SURFACETREAT A.S. subtotal		127 / 5002	0 / 0	1 / 20	0 / 0	0 / 0
VODA ZELIVKA, A.S.	Basic-Design Model flocculation tanks for drinking water treatment	0 / 0	0 / 0	0 / 0	0 / 0	126 / 4971
VODA ZELIVKA, A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	126 / 4971
TOS KURIM - OS,A.S.	Examination of excessive vibration of a gantry machining center.	0 / 0	55 / 2154	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	28 / 1073	0 / 0	0 / 0	44 / 1726
TOS KURIM - OS,A.S. subtotal		0 / 0	82 / 3227	0 / 0	0 / 0	44 / 1726
ASOCIACE SAMOSTATNYC Praha 2	Preparation of a professional study on the topic "Possible changes in the workforce in the era of digitalization and robotization".	0 / 0	124 / 4891	0 / 0	0 / 0	0 / 0
ASOCIACE SAMOSTATNYC Praha 2 subtotal		0 / 0	124 / 4891	0 / 0	0 / 0	0 / 0
JANUSZ EJMA	En effet, nous avons développé une méthode d'électronique d'électronique et d'électronique d'électronique.	0 / 0	0 / 0	124 / 4880	0 / 0	0 / 0
JANUSZ EJMA subtotal		0 / 0	0 / 0	124 / 4880	0 / 0	0 / 0
EAGLE SPOLKA Z OGRAN	En effet, nous avons développé une méthode d'électronique d'	0 / 0	0 / 0	0 / 0	121 / 4748	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
	électronique et d 'électronique d' électronique.					
EAGLE SPOLKA Z OGRAN subtotal		0 / 0	0 / 0	0 / 0	121 / 4748	0 / 0
GLASSFIT CZECH S.R.O	Study of mixing and heat transfer in a stirred enamel reactor	0 / 0	0 / 0	0 / 0	0 / 0	120 / 4734
GLASSFIT CZECH S.R.O subtotal		0 / 0	0 / 0	0 / 0	0 / 0	120 / 4734
WATECH A.S.	Evaluation of surface treatment properties of samples supplied by WATECH	0 / 0	0 / 0	119 / 4665	0 / 0	0 / 0
WATECH A.S. subtotal		0 / 0	0 / 0	119 / 4665	0 / 0	0 / 0
ZF ENGINEERING PLZEN	Qualification activity-ISO GPS	0 / 0	79 / 3093	16 / 608	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	24 / 947	0 / 0	0 / 0	0 / 0
ZF ENGINEERING PLZEN subtotal		0 / 0	103 / 4040	16 / 608	0 / 0	0 / 0
CAD -PRO SPOL.S R.O.	Qualification activity-pumping technology	0 / 0	0 / 0	27 / 1042	31 / 1223	0 / 0
	Small contracts /Various titles	0 / 0	27 / 1042	0 / 0	0 / 0	34 / 1321
CAD -PRO SPOL.S R.O. subtotal		0 / 0	27 / 1042	27 / 1042	31 / 1223	34 / 1321
PRUSA DEVELOPMENT A. Praha 7	Simulation with crown wheel displacement	0 / 0	0 / 0	76 / 2983	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	29 / 1137	12 / 474	0 / 0
PRUSA DEVELOPMENT A. Praha 7 subtotal		0 / 0	0 / 0	105 / 4119	12 / 474	0 / 0
DBH TECHNOLOGIES S.R	Small contracts /Various titles	0 / 0	104 / 4097	10 / 395	0 / 0	0 / 0
DBH TECHNOLOGIES S.R subtotal		0 / 0	104 / 4097	10 / 395	0 / 0	0 / 0
HAWLE ARMATURY, SPOL	Measurement of contact pressures using correction calipers	0 / 0	0 / 0	0 / 0	0 / 0	99 / 3874
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
HAWLE ARMATURY, SPOL subtotal		0 / 0	0 / 0	0 / 0	0 / 0	114 / 4465

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
UNO PRAHA S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	61 / 2407	0 / 0
	Welding of studs and quality testing of welded joints	0 / 0	0 / 0	0 / 0	0 / 0	51 / 1993
UNO PRAHA S.R.O. subtotal		0 / 0	0 / 0	0 / 0	61 / 2407	51 / 1993
STROJIRNA TEDESCO, A	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
	Small contracts /Various titles	35 / 1381	0 / 0	0 / 0	0 / 0	0 / 0
STROJIRNA TEDESCO, A subtotal		35 / 1381	0 / 0	75 / 2959	0 / 0	0 / 0
DAC MOTORS A.S.	Refrigerant fill measurement type CN-D-10PP	0 / 0	0 / 0	0 / 0	0 / 0	109 / 4299
DAC MOTORS A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	109 / 4299
MANEKO, SPOL. S R.O.	Alternative fuel engine testing	108 / 4255	0 / 0	0 / 0	0 / 0	0 / 0
MANEKO, SPOL. S R.O. subtotal		108 / 4255	0 / 0	0 / 0	0 / 0	0 / 0
FAKULTNI NEMOCNICE V	Mechanical uniaxial tensile tests of human pericardial tissue	0 / 0	0 / 0	0 / 0	25 / 979	42 / 1631
	Small contracts /Various titles	0 / 0	0 / 0	42 / 1631	0 / 0	0 / 0
FAKULTNI NEMOCNICE V subtotal		0 / 0	0 / 0	42 / 1631	25 / 979	42 / 1631
PETLACH TZB S.R.O.	Assessment of air mixing for the purpose of assessing the concentration of extinguishing agent.	0 / 0	53 / 2091	0 / 0	0 / 0	0 / 0
	Study of the effect of replacement of lighting fixtures on thermal well-being in the workplace.	54 / 2127	0 / 0	0 / 0	0 / 0	0 / 0
PETLACH TZB S.R.O. subtotal		54 / 2127	53 / 2091	0 / 0	0 / 0	0 / 0
DAKO-CZ, A.S.	Structural analysis and metrology of selected parts of tram brake accumulator	0 / 0	0 / 0	0 / 0	69 / 2715	0 / 0
	Small contracts /Various titles	0 / 0	37 / 1452	0 / 0	0 / 0	0 / 0
DAKO-CZ, A.S. subtotal		0 / 0	37 / 1452	0 / 0	69 / 2715	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
CARBON DESIGN S.R.O.	FM250 Vampire wing carrying capacity research	105 / 4143	0 / 0	0 / 0	0 / 0	0 / 0
CARBON DESIGN S.R.O. subtotal		105 / 4143	0 / 0	0 / 0	0 / 0	0 / 0
ATG S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
ATG S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
KOMS PRAHA, S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
KOMS PRAHA, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
NYMWAG CS A.S.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
NYMWAG CS A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	104 / 4076
RHI MAGNESITA CZECH	Study of KKV products	0 / 0	80 / 3156	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	21 / 829	0 / 0	0 / 0	0 / 0	0 / 0
RHI MAGNESITA CZECH subtotal		21 / 829	80 / 3156	0 / 0	0 / 0	0 / 0
HENNLICH S.R.O.	Qualification activity-thermodynamics, aerodynamics, hydraulics	84 / 3314	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	16 / 632	0 / 0	0 / 0	0 / 0	0 / 0
HENNLICH S.R.O. subtotal		100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
MINISTERSTVO DOPR	Analysis of variants of urban transport development with regard to economy and environment	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
MINISTERSTVO DOPR subtotal		100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
SIPRAL A.S.	Simulation study of flow and heat transfer in a double facade cavity	100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
SIPRAL A.S. subtotal		100 / 3945	0 / 0	0 / 0	0 / 0	0 / 0
TEPLARNA Kladno S.R.	Combustion test of brown coal + TAP	0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945
TEPLARNA Kladno S.R. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	100 / 3945

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
B. BRAUN MEDICAL S.R	Preparation of expert opinion Braun Medical	100 / 3929	0 / 0	0 / 0	0 / 0	0 / 0
B. BRAUN MEDICAL S.R subtotal		100 / 3929	0 / 0	0 / 0	0 / 0	0 / 0
TECHNOLOGICKA PLATF	Small contracts /Various titles	100 / 3913	0 / 0	0 / 0	0 / 0	0 / 0
TECHNOLOGICKA PLATF subtotal		100 / 3913	0 / 0	0 / 0	0 / 0	0 / 0
PARS NOVA A.S.	Qualification activity-Employee training	0 / 0	0 / 0	50 / 1953	50 / 1953	0 / 0
PARS NOVA A.S. subtotal		0 / 0	0 / 0	50 / 1953	50 / 1953	0 / 0
TCTM OIL, S.R.O.	Processing of the assessment of the introductory information to the automated system of pumping chemical solutions into wells.	98 / 3866	0 / 0	0 / 0	0 / 0	0 / 0
TCTM OIL, S.R.O. subtotal		98 / 3866	0 / 0	0 / 0	0 / 0	0 / 0
VUT BRNO	Qualification activity-International welding technologist	14 / 521	20 / 778	0 / 0	23 / 887	0 / 0
	Small contracts /Various titles	3 / 119	0 / 0	0 / 0	0 / 0	40 / 1563
VUT BRNO subtotal		17 / 639	20 / 778	0 / 0	23 / 887	40 / 1563
SPOLECNOST PRO VYZ	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	98 / 3847
SPOLECNOST PRO VYZ subtotal		0 / 0	0 / 0	0 / 0	0 / 0	98 / 3847
JHV - DEVELOPMENT S.	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	22 / 857	0 / 0	0 / 0	0 / 0
JHV - DEVELOPMENT S. subtotal		0 / 0	22 / 857	75 / 2959	0 / 0	0 / 0
EXPLOSIA A.S.	Contract research focused on analysis of the current state of explosive extrusion, design of experiments and basic-design of extrusion head for multicomponent extrusion of razor products	96 / 3787	0 / 0	0 / 0	0 / 0	0 / 0
EXPLOSIA A.S. subtotal		96 / 3787	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
MILLENIUM TECHNOLOGI Praha 1	Design of a method for cooling the obtained process gas before cleaning and gas treatment after cleaning	0 / 0	96 / 3786	0 / 0	0 / 0	0 / 0
MILLENIUM TECHNOLOGI Praha 1 subtotal		0 / 0	96 / 3786	0 / 0	0 / 0	0 / 0
BLANIK AIRCRAFT CZ S	Development and supply of sensors and imaging and recording equipment for the existing machine.	95 / 3748	0 / 0	0 / 0	0 / 0	0 / 0
BLANIK AIRCRAFT CZ S subtotal		95 / 3748	0 / 0	0 / 0	0 / 0	0 / 0
ELPRAMO S.R.O.	Simulation analysis of photovoltaic system for residential building	0 / 0	0 / 0	0 / 0	0 / 0	95 / 3748
ELPRAMO S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	95 / 3748
CEGELEC A.S.	Small contracts /Various titles	33 / 1302	10 / 393	10 / 391	20 / 789	20 / 789
CEGELEC A.S. subtotal		33 / 1302	10 / 393	10 / 391	20 / 789	20 / 789
ALMET A.S.	Small contracts /Various titles	19 / 726	49 / 1926	14 / 537	5 / 194	6 / 237
ALMET A.S. subtotal		19 / 726	49 / 1926	14 / 537	5 / 194	6 / 237
BTL MEDICAL TECHNOLO	Small contracts /Various titles	8 / 285	50 / 1973	35 / 1350	0 / 0	0 / 0
BTL MEDICAL TECHNOLO subtotal		8 / 285	50 / 1973	35 / 1350	0 / 0	0 / 0
VSCHT	Small contracts /Various titles	31 / 1195	27 / 1058	24 / 926	0 / 0	10 / 395
VSCHT subtotal		31 / 1195	27 / 1058	24 / 926	0 / 0	10 / 395
SKODA ELECTRIC A.S.	Small contracts /Various titles	55 / 2170	35 / 1381	0 / 0	0 / 0	0 / 0
SKODA ELECTRIC A.S. subtotal		55 / 2170	35 / 1381	0 / 0	0 / 0	0 / 0
VUTS, A.S.	Mapping potential users of automation products for the OP project	0 / 0	90 / 3551	0 / 0	0 / 0	0 / 0
VUTS, A.S. subtotal		0 / 0	90 / 3551	0 / 0	0 / 0	0 / 0
MASCHINEN-VERTRIEBS-	Machinery design proposal-Watterjet-Ecowasp	90 / 3542	0 / 0	0 / 0	0 / 0	0 / 0
MASCHINEN-VERTRIEBS-subtotal		90 / 3542	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
DOWTY PROPELLERS	Ice Adhesion Measurements of IP1, IP2 and IP3-"Investigation"	0 / 0	0 / 0	0 / 0	0 / 0	90 / 3541
DOWTY PROPELLERS subtotal		0 / 0	0 / 0	0 / 0	0 / 0	90 / 3541
NIMBLE ENERGY S.R.O. Praha 1	Design of the structural solution of the trailer system and frame for the transport of battery boxes.	0 / 0	90 / 3521	0 / 0	0 / 0	0 / 0
NIMBLE ENERGY S.R.O. Praha 1 subtotal		0 / 0	90 / 3521	0 / 0	0 / 0	0 / 0
USTAV FYZIKY ATMOSFE	Implementation of thermal-vacuum cycling and subsequent research of material characteristics	0 / 0	0 / 0	0 / 0	90 / 3519	0 / 0
USTAV FYZIKY ATMOSFE subtotal		0 / 0	0 / 0	0 / 0	90 / 3519	0 / 0
MICHAL LANK	Development tests of petrol engine	0 / 0	0 / 0	0 / 0	0 / 0	87 / 3425
MICHAL LANK subtotal		0 / 0	0 / 0	0 / 0	0 / 0	87 / 3425
AREA FOUR INDUSTRIES	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
AREA FOUR INDUSTRIES subtotal		0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
AZ WELD STUHL S.R.O	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
AZ WELD STUHL S.R.O subtotal		0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
JIHOTEC SPOL. S R.O	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
JIHOTEC SPOL. S R.O subtotal		0 / 0	0 / 0	0 / 0	0 / 0	87 / 3424
PURE FLIGHT S.R.O.	Flutter Analysis of Phoenix Aircraft	0 / 0	0 / 0	0 / 0	0 / 0	87 / 3397
PURE FLIGHT S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	87 / 3397
ADITERA S. R. O.	Fasteners	0 / 0	0 / 0	0 / 0	75 / 2959	10 / 395
ADITERA S. R. O. subtotal		0 / 0	0 / 0	0 / 0	75 / 2959	10 / 395
PULSKLIMA, SPOL. S R	Verification of noise parameters for SUP and ETA endpieces and Duovent Compact casing	0 / 0	0 / 0	85 / 3354	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
PULSKLIMA, SPOL. S R subtotal		0 / 0	0 / 0	85 / 3354	0 / 0	0 / 0
SEA KOLIN S.R.O.	Small contracts /Various titles	85 / 3354	0 / 0	0 / 0	0 / 0	0 / 0
SEA KOLIN S.R.O. subtotal		85 / 3354	0 / 0	0 / 0	0 / 0	0 / 0
SIGMA GROUP A.S.	Measurement of force effects from the fluid on the pump rotor	0 / 0	0 / 0	85 / 3354	0 / 0	0 / 0
SIGMA GROUP A.S. subtotal		0 / 0	0 / 0	85 / 3354	0 / 0	0 / 0
VUAB PHARMA	Development of nozzles with adapters for connecting hoses	0 / 0	0 / 0	0 / 0	0 / 0	85 / 3354
VUAB PHARMA subtotal		0 / 0	0 / 0	0 / 0	0 / 0	85 / 3354
NUM SOLUTION S.R.O.	Adjustment of thread tolerances	0 / 0	85 / 3330	0 / 0	0 / 0	0 / 0
NUM SOLUTION S.R.O. subtotal		0 / 0	85 / 3330	0 / 0	0 / 0	0 / 0
WOOD & PARKET SYSTEM	Calculation of tests and correction of articles	0 / 0	0 / 0	0 / 0	84 / 3298	0 / 0
WOOD & PARKET SYSTEM subtotal		0 / 0	0 / 0	0 / 0	84 / 3298	0 / 0
KWD BOHEMIA, S.R.O.	Optical measurement of Zn coating thickness on galvanized nuts	0 / 0	0 / 0	58 / 2288	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	25 / 987	0 / 0	0 / 0
KWD BOHEMIA, S.R.O. subtotal		0 / 0	0 / 0	83 / 3275	0 / 0	0 / 0
MEDOKOMERC S.R.O.	Simulation of flow and circulation with the existing stirrer and modification of the geometry of the stirrer and simulation verification of circulation in the whole batch.	73 / 2880	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	10 / 395
MEDOKOMERC S.R.O. subtotal		73 / 2880	0 / 0	0 / 0	0 / 0	10 / 395
STREDNI PRUMYSLOVA	Qualification activity-International welding technologist	0 / 0	0 / 0	61 / 2407	0 / 0	0 / 0
	Small contracts /Various titles	20 / 789	0 / 0	0 / 0	0 / 0	0 / 0
STREDNI PRUMYSLOVA subtotal		20 / 789	0 / 0	61 / 2407	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
AKKODIS CZ S.R.O.	Small contracts /Various titles	46 / 1795	31 / 1223	5 / 168	0 / 0	0 / 0
AKKODIS CZ S.R.O. subtotal		46 / 1795	31 / 1223	5 / 168	0 / 0	0 / 0
AULIK FISER ARCHITEK	Simulation studies for roztyly plaza	0 / 0	0 / 0	0 / 0	80 / 3156	0 / 0
AULIK FISER ARCHITEK subtotal		0 / 0	0 / 0	0 / 0	80 / 3156	0 / 0
LL-C (CERTIFICATION)	Mechanical testing	80 / 3156	0 / 0	0 / 0	0 / 0	0 / 0
LL-C (CERTIFICATION) subtotal		80 / 3156	0 / 0	0 / 0	0 / 0	0 / 0
CRYTUR, SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	45 / 1768	34 / 1334
CRYTUR, SPOL. S R.O. subtotal		0 / 0	0 / 0	0 / 0	45 / 1768	34 / 1334
BOHEMIACHLAD PRAHA S	Determination of the required cooling capacity for cooling existing CK tanks in the brewery	0 / 0	0 / 0	0 / 0	78 / 3077	0 / 0
BOHEMIACHLAD PRAHA S subtotal		0 / 0	0 / 0	0 / 0	78 / 3077	0 / 0
LOM PRAHA S.P.	Strength verification of composite bracket assembly	0 / 0	0 / 0	0 / 0	0 / 0	78 / 3077
LOM PRAHA S.P. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	78 / 3077
MESTO VARNSDORF	Assessment of alternatives to the current method of supplying the city of Varnsdorf with thermal energy	0 / 0	0 / 0	0 / 0	78 / 3077	0 / 0
MESTO VARNSDORF subtotal		0 / 0	0 / 0	0 / 0	78 / 3077	0 / 0
CZECH AVIATION TRAIN	Qualification activity-lecturing services	0 / 0	77 / 3018	0 / 0	0 / 0	0 / 0
CZECH AVIATION TRAIN subtotal		0 / 0	77 / 3018	0 / 0	0 / 0	0 / 0
ALUMETALL CZ S.R.O.	Bursting tests and tests of selected materials	16 / 614	9 / 322	15 / 555	11 / 409	19 / 725
	Small contracts /Various titles	10 / 395	0 / 0	0 / 0	0 / 0	0 / 0
ALUMETALL CZ S.R.O. subtotal		26 / 1008	9 / 322	15 / 555	11 / 409	19 / 725
HEIDELBERG MATERIALS	Study of heat utilization in the technological process of cooling cement mixture.	77 / 3006	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
HEIDELBERG MATERIALS subtotal		77 / 3006	0 / 0	0 / 0	0 / 0	0 / 0
CESKOSLOVENSKY LLOYD	Qualification activity-International welding technologist	0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
CESKOSLOVENSKY LLOYD subtotal		0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
CZECH AIRLINES TECHN	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
CZECH AIRLINES TECHN subtotal		0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
DNV CZECH REPUBLIC S	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
DNV CZECH REPUBLIC S subtotal		0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
FORTEX - AGS, A.S.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
FORTEX - AGS, A.S. subtotal		0 / 0	0 / 0	0 / 0	75 / 2959	0 / 0
FOXCONN CZ S.R.O.	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
FOXCONN CZ S.R.O. subtotal		0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
METSO CZECH REPUBLIC	Qualification activity-International welding technologist	75 / 2959	0 / 0	0 / 0	0 / 0	0 / 0
METSO CZECH REPUBLIC subtotal		75 / 2959	0 / 0	0 / 0	0 / 0	0 / 0
N+N - KONSTRUKCE A D	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
N+N - KONSTRUKCE A D subtotal		0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
NEMOCNICE STRAKONICE	Reduction of energy intensity and modernization of the laundry of Strakonice Hospital, a.s	0 / 0	0 / 0	0 / 0	0 / 0	75 / 2959
NEMOCNICE STRAKONICE subtotal		0 / 0	0 / 0	0 / 0	0 / 0	75 / 2959
PBS INDUSTRY, A.S.	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
PBS INDUSTRY, A.S. subtotal		0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
REVOK S.R.O. - REALI	Qualification activity-International welding technologist	0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
REVOK S.R.O. - REALI subtotal		0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
UNITED REGISTRAR OF	Qualification activity-International welding technologist	0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
UNITED REGISTRAR OF subtotal		0 / 0	0 / 0	75 / 2959	0 / 0	0 / 0
ZAPADOČESKA UNIVER. Fakulta strojní	Qualification activity-International welding technologist	0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
ZAPADOČESKA UNIVER. Fakulta strojní subtotal		0 / 0	75 / 2959	0 / 0	0 / 0	0 / 0
AXA CNC STROJE, S.R.	Small contracts /Various titles	75 / 2950	0 / 0	0 / 0	0 / 0	0 / 0
AXA CNC STROJE, S.R. subtotal		75 / 2950	0 / 0	0 / 0	0 / 0	0 / 0
KRAMER-WERKE GMBH	Small contracts /Various titles	0 / 0	42 / 1643	33 / 1288	0 / 0	0 / 0
KRAMER-WERKE GMBH subtotal		0 / 0	42 / 1643	33 / 1288	0 / 0	0 / 0
TAJMAC-ZPS, A.S.	TMZ642CNC Linear Axis Positioning Accuracy Measurement	57 / 2230	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	18 / 691	0 / 0	0 / 0	0 / 0	0 / 0
TAJMAC-ZPS, A.S. subtotal		75 / 2920	0 / 0	0 / 0	0 / 0	0 / 0
LASERNEEDLE CZ S.R.O	Small contracts /Various titles	0 / 0	0 / 0	74 / 2920	0 / 0	0 / 0
LASERNEEDLE CZ S.R.O subtotal		0 / 0	0 / 0	74 / 2920	0 / 0	0 / 0
CESKY SVARECKÝ USTA	Qualification activity-International welding technologist	13 / 474	30 / 1182	0 / 0	13 / 484	8 / 302
	Small contracts /Various titles	11 / 402	0 / 0	0 / 0	0 / 0	0 / 0
CESKY SVARECKÝ USTA subtotal		23 / 875	30 / 1182	0 / 0	13 / 484	8 / 302
HOUFEK A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	71 / 2798
HOUFEK A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	71 / 2798
DATATHERM, SPOL. S R	Qualification activity-Ash fuel samples for Wotan Forest Saltnice project	71 / 2772	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
DATATHERM, SPOL. S R subtotal		71 / 2772	0 / 0	0 / 0	0 / 0	0 / 0
AAS AUTOMOTIVE S.R.O	Qualification activity-review	0 / 0	70 / 2762	0 / 0	0 / 0	0 / 0
AAS AUTOMOTIVE S.R.O subtotal		0 / 0	70 / 2762	0 / 0	0 / 0	0 / 0
PETRUSKA, A.S. Brno-Tuřany	Analysis of the current condition of the drying line.	0 / 0	70 / 2762	0 / 0	0 / 0	0 / 0
PETRUSKA, A.S. Brno-Tuřany subtotal		0 / 0	70 / 2762	0 / 0	0 / 0	0 / 0
STAVBY MOSTU A.S.	Research work for verification of weldability of FESMA materials by different welding methods	0 / 0	0 / 0	70 / 2762	0 / 0	0 / 0
STAVBY MOSTU A.S. subtotal		0 / 0	0 / 0	70 / 2762	0 / 0	0 / 0
ZUCCA A.S.	Qualification activity-review	0 / 0	0 / 0	70 / 2762	0 / 0	0 / 0
ZUCCA A.S. subtotal		0 / 0	0 / 0	70 / 2762	0 / 0	0 / 0
PIERBURG S.R.O.	Assessment of the weld joint of the shaft and the damper.	0 / 0	0 / 0	52 / 2052	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	18 / 679	0 / 0	0 / 0
PIERBURG S.R.O. subtotal		0 / 0	0 / 0	70 / 2730	0 / 0	0 / 0
ECKERT & ZIEGLER CES	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	70 / 2728	0 / 0
ECKERT & ZIEGLER CES subtotal		0 / 0	0 / 0	0 / 0	70 / 2728	0 / 0
TEDIKO, S.R.O.	Plating of colloidal impressions	0 / 0	0 / 0	0 / 0	0 / 0	70 / 2728
TEDIKO, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	70 / 2728
VIBRACOUSTIC CZ, S.R	Small contracts /Various titles	0 / 0	5 / 178	63 / 2454	3 / 83	0 / 0
VIBRACOUSTIC CZ, S.R subtotal		0 / 0	5 / 178	63 / 2454	3 / 83	0 / 0
MOTORDESIGN S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	32 / 1239	38 / 1468
MOTORDESIGN S.R.O. subtotal		0 / 0	0 / 0	0 / 0	32 / 1239	38 / 1468
REGULTECH SERVIS, S.	Checking the design of the heat pump cooling circuit	0 / 0	0 / 0	0 / 0	68 / 2651	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	
REGULTECH SERVIS, S. subtotal		0 / 0	0 / 0	0 / 0	68 / 2651	0 / 0
ABB S.R.O.	Small contracts /Various titles	24 / 924	0 / 0	0 / 0	43 / 1697	0 / 0
ABB S.R.O. subtotal		24 / 924	0 / 0	0 / 0	43 / 1697	0 / 0
EXPERBUY DEUTSCHLAND	Small contracts /Various titles	27 / 1034	40 / 1578	0 / 0	0 / 0	0 / 0
EXPERBUY DEUTSCHLAND subtotal		27 / 1034	40 / 1578	0 / 0	0 / 0	0 / 0
DEKONTA, A.S.	Small contracts /Various titles	65 / 2565	0 / 0	0 / 0	0 / 0	0 / 0
DEKONTA, A.S. subtotal		65 / 2565	0 / 0	0 / 0	0 / 0	0 / 0
VEZENSKA SLUZBA CESK	Evaluation of the efficiency and reliability of Ekomat 1500 and 950 boilers	0 / 0	0 / 0	65 / 2565	0 / 0	0 / 0
VEZENSKA SLUZBA CESK subtotal		0 / 0	0 / 0	65 / 2565	0 / 0	0 / 0
MARTIA A.S.	Analytical calculation of condensate formation from individual evaporators or air conditioning units	0 / 0	0 / 0	0 / 0	65 / 2547	0 / 0
MARTIA A.S. subtotal		0 / 0	0 / 0	0 / 0	65 / 2547	0 / 0
CENTRUM ANDRAGOGIKY,	Qualification activity-Technology	0 / 0	0 / 0	65 / 2541	0 / 0	0 / 0
CENTRUM ANDRAGOGIKY, subtotal		0 / 0	0 / 0	65 / 2541	0 / 0	0 / 0
PRUSA RESEARCH A.S.	Analysis of the current state of assembly workplaces	0 / 0	0 / 0	0 / 0	0 / 0	64 / 2507
PRUSA RESEARCH A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	64 / 2507
UNIVERZITA PARDUBICE	Small contracts /Various titles	33 / 1302	30 / 1184	1 / 20	0 / 0	0 / 0
UNIVERZITA PARDUBICE subtotal		33 / 1302	30 / 1184	1 / 20	0 / 0	0 / 0
LAGUS S.R.O.	Small contracts /Various titles	24 / 947	39 / 1515	0 / 0	0 / 0	0 / 0
LAGUS S.R.O. subtotal		24 / 947	39 / 1515	0 / 0	0 / 0	0 / 0
TOMAS BRITNIK	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	62 / 2446	0 / 0
TOMAS BRITNIK subtotal		0 / 0	0 / 0	0 / 0	62 / 2446	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SPRAVA ZELEZNIC, STA	Qualification activity-OSH in welding, international tests according to CSN 05 070 5	0 / 0	62 / 2442	0 / 0	0 / 0	0 / 0
SPRAVA ZELEZNIC, STA subtotal		0 / 0	62 / 2442	0 / 0	0 / 0	0 / 0
MAHR, SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	62 / 2425
MAHR, SPOL. S R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	62 / 2425
ALL ACADEMY S.R.O.	Qualification activity-International welding technologist	61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
ALL ACADEMY S.R.O. subtotal		61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
CSGM A.S.	Qualification activity-International welding technologist	0 / 0	0 / 0	61 / 2407	0 / 0	0 / 0
CSGM A.S. subtotal		0 / 0	0 / 0	61 / 2407	0 / 0	0 / 0
ELDIS PARDUBICE, S.R	Qualification activity-International welding technologist	0 / 0	0 / 0	61 / 2407	0 / 0	0 / 0
ELDIS PARDUBICE, S.R subtotal		0 / 0	0 / 0	61 / 2407	0 / 0	0 / 0
ENERGO CHOCEN, S.R.O	Qualification activity-International welding technologist	61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
ENERGO CHOCEN, S.R.O subtotal		61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
GERBET TRAINING CENT	Qualification activity-International welding technologist	61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
GERBET TRAINING CENT subtotal		61 / 2407	0 / 0	0 / 0	0 / 0	0 / 0
PERSA, A. S. Praha 10	Qualification activity-International welding technologist	0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0
PERSA, A. S. Praha 10 subtotal		0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0
REGIOJET, A.S.	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	61 / 2407	0 / 0
REGIOJET, A.S. subtotal		0 / 0	0 / 0	0 / 0	61 / 2407	0 / 0
RETEZY VAMBERK SPOL.	Qualification activity-International welding technologist	0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
RETEZY VAMBERK SPOL. subtotal		0 / 0	61 / 2407	0 / 0	0 / 0	0 / 0
STREDNI ODBORNE_____	Qualification activity-International welding technologist	0 / 0	0 / 0	0 / 0	61 / 2407	0 / 0
STREDNI ODBORNE_____ subtotal		0 / 0	0 / 0	0 / 0	61 / 2407	0 / 0
EPG CENTRAL MOST S.R Praha 1	Measurement and evaluation of ventilation operation OC Central Most.	61 / 2399	0 / 0	0 / 0	0 / 0	0 / 0
EPG CENTRAL MOST S.R Praha 1 subtotal		61 / 2399	0 / 0	0 / 0	0 / 0	0 / 0
AIR PRODUCTS SPOL.S	Research and development in modern additive technologies using electric arc-MIG/MAG methods	60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
AIR PRODUCTS SPOL.S subtotal		60 / 2367	0 / 0	0 / 0	0 / 0	0 / 0
I&AAT SPOL. S R.O.	Construction of a device for drying chips	0 / 0	0 / 0	0 / 0	60 / 2367	0 / 0
I&AAT SPOL. S R.O. subtotal		0 / 0	0 / 0	0 / 0	60 / 2367	0 / 0
JINOVA S.R.O.	Measurement of performance and temperature parameters of flue gas-air exchanger MTP-150 and subsequent modification proposals to increase efficiency according to "Ecodesign" 2016/2281	0 / 0	60 / 2367	0 / 0	0 / 0	0 / 0
JINOVA S.R.O. subtotal		0 / 0	60 / 2367	0 / 0	0 / 0	0 / 0
KUFI INT, S.R.O.	Training in refrigeration technology.	0 / 0	0 / 0	0 / 0	0 / 0	60 / 2367
KUFI INT, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	60 / 2367
MEGA A.S.	Evaluation of the state of anti-corrosion protection of the Iveco bus chassis.	59 / 2311	0 / 0	0 / 0	0 / 0	0 / 0
	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
MEGA A.S. subtotal		59 / 2311	0 / 0	1 / 20	0 / 0	0 / 0
ALFIMEX S.R.O.	Vibration characteristics of compressors	59 / 2326	0 / 0	0 / 0	0 / 0	0 / 0
ALFIMEX S.R.O. subtotal		59 / 2326	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
KOPOS KOLIN A.S.	Design, creation of computational models and performance of computational analyses	0 / 0	0 / 0	0 / 0	58 / 2273	0 / 0
KOPOS KOLIN A.S. subtotal		0 / 0	0 / 0	0 / 0	58 / 2273	0 / 0
INOS-SERVIS S.R.O.	Design of bioreactor mixing system	0 / 0	0 / 0	0 / 0	56 / 2210	0 / 0
INOS-SERVIS S.R.O. subtotal		0 / 0	0 / 0	0 / 0	56 / 2210	0 / 0
ZKW SLOVAKIA S.R.O.	Analysis of internal reflector surfaces	0 / 0	0 / 0	0 / 0	56 / 2200	0 / 0
ZKW SLOVAKIA S.R.O. subtotal		0 / 0	0 / 0	0 / 0	56 / 2200	0 / 0
5M S.R.O.	Filling machine control system upgrade	0 / 0	0 / 0	0 / 0	0 / 0	56 / 2178
5M S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	56 / 2178
LASERTHERM SPOL. S R	Small contracts /Various titles	0 / 0	0 / 0	30 / 1184	26 / 995	0 / 0
LASERTHERM SPOL. S R subtotal		0 / 0	0 / 0	30 / 1184	26 / 995	0 / 0
DAKARI CZECH S.R.O.	Technical assessment of the implementation of pyrolysis of mixed municipal waste on an industrial scale	0 / 0	0 / 0	0 / 0	55 / 2170	0 / 0
DAKARI CZECH S.R.O. subtotal		0 / 0	0 / 0	0 / 0	55 / 2170	0 / 0
JAWA FACTORY S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	55 / 2170	0 / 0	0 / 0
JAWA FACTORY S.R.O. subtotal		0 / 0	0 / 0	55 / 2170	0 / 0	0 / 0
ECOM SPOL. S R.O.	Qualification activity-Employee training	0 / 0	0 / 0	0 / 0	27 / 1047	27 / 1047
ECOM SPOL. S R.O. subtotal		0 / 0	0 / 0	0 / 0	27 / 1047	27 / 1047
DEVRO S.R.O.	Measurement of rheological properties of collagen samples 400NJ1012	0 / 0	0 / 0	53 / 2083	0 / 0	0 / 0
DEVRO S.R.O. subtotal		0 / 0	0 / 0	53 / 2083	0 / 0	0 / 0
KROFIAN CZ SPOL. S R	Small contracts /Various titles	0 / 0	0 / 0	51 / 1989	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
KROFIAN CZ SPOL. S R subtotal		0 / 0	0 / 0	51 / 1989	0 / 0	0 / 0
A G R O M E T A L L	Small contracts /Various titles	0 / 0	0 / 0	51 / 1980	0 / 0	0 / 0
A G R O M E T A L L subtotal		0 / 0	0 / 0	51 / 1980	0 / 0	0 / 0
JAKUB DOLEJS	Small contracts /Various titles	0 / 0	0 / 0	50 / 1973	0 / 0	0 / 0
JAKUB DOLEJS subtotal		0 / 0	0 / 0	50 / 1973	0 / 0	0 / 0
DOM-ZO 13,S.R.O.	Small contracts /Various titles	11 / 419	13 / 476	14 / 552	0 / 0	13 / 510
DOM-ZO 13,S.R.O. subtotal		11 / 419	13 / 476	14 / 552	0 / 0	13 / 510
METROSTAV A.S	Small contracts /Various titles	1 / 40	49 / 1906	0 / 0	0 / 0	0 / 0
METROSTAV A.S subtotal		1 / 40	49 / 1906	0 / 0	0 / 0	0 / 0
LOM PRAHA TRADE A.S. Praha 10	Small contracts /Various titles	49 / 1931	0 / 0	0 / 0	0 / 0	0 / 0
LOM PRAHA TRADE A.S. Praha 10 subtotal		49 / 1931	0 / 0	0 / 0	0 / 0	0 / 0
ACO INDUSTRIES	Small contracts /Various titles	18 / 711	0 / 0	0 / 0	30 / 1184	0 / 0
ACO INDUSTRIES subtotal		18 / 711	0 / 0	0 / 0	30 / 1184	0 / 0
VANAD 2000 A.S.	Small contracts /Various titles	48 / 1877	0 / 0	0 / 0	0 / 0	0 / 0
VANAD 2000 A.S. subtotal		48 / 1877	0 / 0	0 / 0	0 / 0	0 / 0
AMPENG S.R.O. Praha 15	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	47 / 1847
AMPENG S.R.O. Praha 15 subtotal		0 / 0	0 / 0	0 / 0	0 / 0	47 / 1847
SPOLECENSTVI VLA 004 Praha 11	Small contracts /Various titles	0 / 0	8 / 310	0 / 0	0 / 0	39 / 1513
SPOLECENSTVI VLA 004 Praha 11 subtotal		0 / 0	8 / 310	0 / 0	0 / 0	39 / 1513
HZP A.S.	Small contracts /Various titles	0 / 0	0 / 0	30 / 1164	16 / 632	0 / 0
HZP A.S. subtotal		0 / 0	0 / 0	30 / 1164	16 / 632	0 / 0
STATNI USTAV JADERNE	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	45 / 1776	0 / 0
STATNI USTAV JADERNE subtotal		0 / 0	0 / 0	0 / 0	45 / 1776	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
STROJMETAL ALUMINIUM	Small contracts /Various titles	0 / 0	45 / 1776	0 / 0	0 / 0	0 / 0
STROJMETAL ALUMINIUM subtotal		0 / 0	45 / 1776	0 / 0	0 / 0	0 / 0
SCHAFER - MENK S.R.O	Small contracts /Various titles	45 / 1774	0 / 0	0 / 0	0 / 0	0 / 0
SCHAFER - MENK S.R.O subtotal		45 / 1774	0 / 0	0 / 0	0 / 0	0 / 0
LAVARIS S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	44 / 1713
LAVARIS S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	44 / 1713
TECHNICKA UNIVERZIT	Small contracts /Various titles	15 / 554	0 / 0	1 / 20	4 / 158	25 / 967
TECHNICKA UNIVERZIT subtotal		15 / 554	0 / 0	1 / 20	4 / 158	25 / 967
MECHATEC S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	43 / 1684	0 / 0	0 / 0
MECHATEC S.R.O. subtotal		0 / 0	0 / 0	43 / 1684	0 / 0	0 / 0
FYZIOLOGICKY USTAV A	Small contracts /Various titles	0 / 0	43 / 1677	0 / 0	0 / 0	0 / 0
FYZIOLOGICKY USTAV A subtotal		0 / 0	43 / 1677	0 / 0	0 / 0	0 / 0
VUKV A.S.	Small contracts /Various titles	0 / 0	43 / 1677	0 / 0	0 / 0	0 / 0
VUKV A.S. subtotal		0 / 0	43 / 1677	0 / 0	0 / 0	0 / 0
TOMAS JANDA 001 Praha-Běchovice	Small contracts /Various titles	0 / 0	0 / 0	43 / 1671	0 / 0	0 / 0
TOMAS JANDA 001 Praha-Běchovice subtotal		0 / 0	0 / 0	43 / 1671	0 / 0	0 / 0
MB PHARMA S.R.O.	Small contracts /Various titles	0 / 0	42 / 1657	0 / 0	0 / 0	0 / 0
MB PHARMA S.R.O. subtotal		0 / 0	42 / 1657	0 / 0	0 / 0	0 / 0
BMD A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	41 / 1618
BMD A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	41 / 1618
PARKER-HANNIFIN S.R.	Small contracts /Various titles	41 / 1618	0 / 0	0 / 0	0 / 0	0 / 0
PARKER-HANNIFIN S.R. subtotal		41 / 1618	0 / 0	0 / 0	0 / 0	0 / 0
AGC FLAT GLASS CZECH	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	41 / 1616	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
AGC FLAT GLASS CZECH subtotal		0 / 0	0 / 0	0 / 0	41 / 1616	0 / 0
STRIX CHOMUTOV, A.S.	Small contracts /Various titles	0 / 0	0 / 0	41 / 1598	0 / 0	0 / 0
STRIX CHOMUTOV, A.S. subtotal		0 / 0	0 / 0	41 / 1598	0 / 0	0 / 0
VUHZ A.S.	Small contracts /Various titles	0 / 0	18 / 711	23 / 888	0 / 0	0 / 0
VUHZ A.S. subtotal		0 / 0	18 / 711	23 / 888	0 / 0	0 / 0
EDIKT A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	40 / 1578
EDIKT A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	40 / 1578
GUARANT INTERNATI FS	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	40 / 1578	0 / 0
GUARANT INTERNATI FS subtotal		0 / 0	0 / 0	0 / 0	40 / 1578	0 / 0
TOS - MET SLEVARNA A	Small contracts /Various titles	0 / 0	0 / 0	40 / 1578	0 / 0	0 / 0
TOS - MET SLEVARNA A subtotal		0 / 0	0 / 0	40 / 1578	0 / 0	0 / 0
USTAV CHEMICKYCH PRO	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	40 / 1578	0 / 0
USTAV CHEMICKYCH PRO subtotal		0 / 0	0 / 0	0 / 0	40 / 1578	0 / 0
TARGET TECHNOLOGIE S	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	40 / 1567	0 / 0
TARGET TECHNOLOGIE S subtotal		0 / 0	0 / 0	0 / 0	40 / 1567	0 / 0
KONCERN DESIGN STUDI	Small contracts /Various titles	16 / 616	0 / 0	24 / 947	0 / 0	0 / 0
KONCERN DESIGN STUDI subtotal		16 / 616	0 / 0	24 / 947	0 / 0	0 / 0
MEVA A.S.	Small contracts /Various titles	0 / 0	0 / 0	40 / 1563	0 / 0	0 / 0
MEVA A.S. subtotal		0 / 0	0 / 0	40 / 1563	0 / 0	0 / 0
MOTOR JIKOV FOSTRON	Small contracts /Various titles	40 / 1563	0 / 0	0 / 0	0 / 0	0 / 0
MOTOR JIKOV FOSTRON subtotal		40 / 1563	0 / 0	0 / 0	0 / 0	0 / 0
BALL AEROSOL PACKAGI	Small contracts /Various titles	39 / 1512	0 / 0	0 / 0	0 / 0	0 / 0
BALL AEROSOL PACKAGI subtotal		39 / 1512	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
ABNER A.S.	Small contracts /Various titles	0 / 0	38 / 1500	0 / 0	0 / 0	0 / 0
ABNER A.S. subtotal		0 / 0	38 / 1500	0 / 0	0 / 0	0 / 0
ATEC V.O.S.	Small contracts /Various titles	0 / 0	38 / 1500	0 / 0	0 / 0	0 / 0
ATEC V.O.S. subtotal		0 / 0	38 / 1500	0 / 0	0 / 0	0 / 0
PRUSA POLYMERS A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	38 / 1500
PRUSA POLYMERS A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	38 / 1500
CESKA NARODNI BANKA	Small contracts /Various titles	0 / 0	24 / 947	0 / 0	13 / 513	0 / 0
CESKA NARODNI BANKA subtotal		0 / 0	24 / 947	0 / 0	13 / 513	0 / 0
DPOV, A.S.	Small contracts /Various titles	0 / 0	0 / 0	37 / 1460	0 / 0	0 / 0
DPOV, A.S. subtotal		0 / 0	0 / 0	37 / 1460	0 / 0	0 / 0
SKD TRADE, A.S.	Small contracts /Various titles	0 / 0	0 / 0	37 / 1450	0 / 0	0 / 0
SKD TRADE, A.S. subtotal		0 / 0	0 / 0	37 / 1450	0 / 0	0 / 0
SVUM A.S.	Small contracts /Various titles	36 / 1421	0 / 0	0 / 0	0 / 0	0 / 0
SVUM A.S. subtotal		36 / 1421	0 / 0	0 / 0	0 / 0	0 / 0
VIKING CNC PRAGUE A.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	36 / 1421	0 / 0
VIKING CNC PRAGUE A. subtotal		0 / 0	0 / 0	0 / 0	36 / 1421	0 / 0
VOJENSKY TECHNICKY U	Small contracts /Various titles	0 / 0	0 / 0	36 / 1421	0 / 0	0 / 0
VOJENSKY TECHNICKY U subtotal		0 / 0	0 / 0	36 / 1421	0 / 0	0 / 0
ADEON CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	36 / 1415
ADEON CZ S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	36 / 1415
VZLU AEROSPACE, A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	20 / 774	17 / 640
VZLU AEROSPACE, A.S. subtotal		0 / 0	0 / 0	0 / 0	20 / 774	17 / 640
LINDAB SALES CZ S.R.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	35 / 1381

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
LINDAB SALES CZ S.R. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	35 / 1381
MONDI STETI A.S.	Small contracts /Various titles	0 / 0	35 / 1381	0 / 0	0 / 0	0 / 0
MONDI STETI A.S. subtotal		0 / 0	35 / 1381	0 / 0	0 / 0	0 / 0
PRAGOMETAL,SPOL. S R	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	35 / 1381
PRAGOMETAL,SPOL. S R subtotal		0 / 0	0 / 0	0 / 0	0 / 0	35 / 1381
TOMTON S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	35 / 1381	0 / 0
TOMTON S.R.O. subtotal		0 / 0	0 / 0	0 / 0	35 / 1381	0 / 0
APT, SPOL. S R.O.	Small contracts /Various titles	25 / 969	0 / 0	0 / 0	0 / 0	10 / 395
APT, SPOL. S R.O. subtotal		25 / 969	0 / 0	0 / 0	0 / 0	10 / 395
MUBEA, SPOL. S R.O.	Small contracts /Various titles	35 / 1350	0 / 0	0 / 0	0 / 0	0 / 0
MUBEA, SPOL. S R.O. subtotal		35 / 1350	0 / 0	0 / 0	0 / 0	0 / 0
CASTOLIN S.R.O.	Small contracts /Various titles	0 / 0	14 / 521	21 / 825	0 / 0	0 / 0
CASTOLIN S.R.O. subtotal		0 / 0	14 / 521	21 / 825	0 / 0	0 / 0
LHM MTOOLS S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	34 / 1342
LHM MTOOLS S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	34 / 1342
TYCO ELECTRONICS CZE	Small contracts /Various titles	0 / 0	0 / 0	34 / 1342	0 / 0	0 / 0
TYCO ELECTRONICS CZE subtotal		0 / 0	0 / 0	34 / 1342	0 / 0	0 / 0
LEMATEC S.R.O.	Small contracts /Various titles	0 / 0	34 / 1322	0 / 0	0 / 0	0 / 0
LEMATEC S.R.O. subtotal		0 / 0	34 / 1322	0 / 0	0 / 0	0 / 0
ROST GROUP S.R.O. Praha 3	Small contracts /Various titles	0 / 0	34 / 1303	0 / 0	0 / 0	0 / 0
ROST GROUP S.R.O. Praha 3 subtotal		0 / 0	34 / 1303	0 / 0	0 / 0	0 / 0
KOTIS S.R.O.	Small contracts /Various titles	33 / 1286	0 / 0	0 / 0	0 / 0	0 / 0
KOTIS S.R.O. subtotal		33 / 1286	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
ALTEC SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	32 / 1263	0 / 0	0 / 0
ALTEC SPOL. S R.O. subtotal		0 / 0	0 / 0	32 / 1263	0 / 0	0 / 0
SLEVARNA HEUNISCH, S	Small contracts /Various titles	32 / 1263	0 / 0	0 / 0	0 / 0	0 / 0
SLEVARNA HEUNISCH, S subtotal		32 / 1263	0 / 0	0 / 0	0 / 0	0 / 0
ING. ROBERT FLEISCHM	Small contracts /Various titles	0 / 0	0 / 0	32 / 1247	0 / 0	0 / 0
ING. ROBERT FLEISCHM subtotal		0 / 0	0 / 0	32 / 1247	0 / 0	0 / 0
GROZ-BECKERT CZECH S	Small contracts /Various titles	0 / 0	32 / 1239	0 / 0	0 / 0	0 / 0
GROZ-BECKERT CZECH S subtotal		0 / 0	32 / 1239	0 / 0	0 / 0	0 / 0
ARMOTECH S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	32 / 1233
ARMOTECH S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	32 / 1233
VANESSA DESIGN S.R.O	Small contracts /Various titles	20 / 758	0 / 0	0 / 0	0 / 0	12 / 450
VANESSA DESIGN S.R.O subtotal		20 / 758	0 / 0	0 / 0	0 / 0	12 / 450
ACO INDUSTRIES TABOR	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
ACO INDUSTRIES TABOR subtotal		0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
ADAMEC CRANE SYSTEMS	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
ADAMEC CRANE SYSTEMS subtotal		0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
HAPPY GARAGE S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	30 / 1184	0 / 0	0 / 0
HAPPY GARAGE S.R.O. subtotal		0 / 0	0 / 0	30 / 1184	0 / 0	0 / 0
KOVOFINIS S.R.O.	Small contracts /Various titles	0 / 0	30 / 1184	0 / 0	0 / 0	0 / 0
KOVOFINIS S.R.O. subtotal		0 / 0	30 / 1184	0 / 0	0 / 0	0 / 0
TESTO S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
TESTO S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
VYZKUMNY USTAV BEZPE	Small contracts /Various titles	0 / 0	0 / 0	8 / 296	15 / 592	8 / 296

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
VYZKUMNY USTAV BEZPE subtotal		0 / 0	0 / 0	8 / 296	15 / 592	8 / 296
ZENTIVA, K.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
ZENTIVA, K.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	30 / 1184
ZVVZ MACHINERY, A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	30 / 1184	0 / 0
ZVVZ MACHINERY, A.S. subtotal		0 / 0	0 / 0	0 / 0	30 / 1184	0 / 0
PRVNI BRNENSKA STROJ	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	30 / 1164	0 / 0
PRVNI BRNENSKA STROJ subtotal		0 / 0	0 / 0	0 / 0	30 / 1164	0 / 0
SAINT-GOBAIN CONSTRU Divize Isover	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	30 / 1164
SAINT-GOBAIN CONSTRU Divize Isover subtotal		0 / 0	0 / 0	0 / 0	0 / 0	30 / 1164
PRECIOSA, A.S.	Small contracts /Various titles	25 / 979	0 / 0	5 / 182	0 / 0	0 / 0
PRECIOSA, A.S. subtotal		25 / 979	0 / 0	5 / 182	0 / 0	0 / 0
SWISS - FORM A. S.	Small contracts /Various titles	14 / 553	15 / 592	0 / 0	0 / 0	0 / 0
SWISS - FORM A. S. subtotal		14 / 553	15 / 592	0 / 0	0 / 0	0 / 0
METALURGIE RUMBURK S	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	29 / 1125
METALURGIE RUMBURK S subtotal		0 / 0	0 / 0	0 / 0	0 / 0	29 / 1125
SAFIBRA S.R.O. .	Small contracts /Various titles	0 / 0	28 / 1085	0 / 0	0 / 0	0 / 0
SAFIBRA S.R.O. . subtotal		0 / 0	28 / 1085	0 / 0	0 / 0	0 / 0
JHV - ENGINEERING S.	Small contracts /Various titles	28 / 1081	0 / 0	0 / 0	0 / 0	0 / 0
JHV - ENGINEERING S. subtotal		28 / 1081	0 / 0	0 / 0	0 / 0	0 / 0
MELEGHY AUTOMOTIVE C	Small contracts /Various titles	0 / 0	0 / 0	28 / 1073	0 / 0	0 / 0
MELEGHY AUTOMOTIVE C subtotal		0 / 0	0 / 0	28 / 1073	0 / 0	0 / 0
LEEL COILS EUROPE S.	Small contracts /Various titles	13 / 478	15 / 592	0 / 0	0 / 0	0 / 0
LEEL COILS EUROPE S. subtotal		13 / 478	15 / 592	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
RIETER CZ S.R.O.	Small contracts /Various titles	27 / 1066	0 / 0	0 / 0	0 / 0	0 / 0
RIETER CZ S.R.O. subtotal		27 / 1066	0 / 0	0 / 0	0 / 0	0 / 0
VAKUUM PRAHA S.R.O.	Small contracts /Various titles	20 / 789	0 / 0	7 / 257	0 / 0	0 / 0
VAKUUM PRAHA S.R.O. subtotal		20 / 789	0 / 0	7 / 257	0 / 0	0 / 0
T.RAD CZECH S.R.O.	Small contracts /Various titles	0 / 0	26 / 1026	0 / 0	0 / 0	0 / 0
T.RAD CZECH S.R.O. subtotal		0 / 0	26 / 1026	0 / 0	0 / 0	0 / 0
TOPMES S.R.O.	Small contracts /Various titles	0 / 0	26 / 1026	0 / 0	0 / 0	0 / 0
TOPMES S.R.O. subtotal		0 / 0	26 / 1026	0 / 0	0 / 0	0 / 0
VITKOVICE STEEL, A.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	26 / 1026	0 / 0
VITKOVICE STEEL, A. subtotal		0 / 0	0 / 0	0 / 0	26 / 1026	0 / 0
ZABABA S.R.O.	Small contracts /Various titles	26 / 1010	0 / 0	0 / 0	0 / 0	0 / 0
ZABABA S.R.O. subtotal		26 / 1010	0 / 0	0 / 0	0 / 0	0 / 0
2 JCP A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	26 / 999
2 JCP A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	26 / 999
AHREND A.S.	Small contracts /Various titles	0 / 0	25 / 987	0 / 0	0 / 0	0 / 0
AHREND A.S. subtotal		0 / 0	25 / 987	0 / 0	0 / 0	0 / 0
ERNST & YOUNG TAX &	Small contracts /Various titles	0 / 0	0 / 0	25 / 987	0 / 0	0 / 0
ERNST & YOUNG TAX & subtotal		0 / 0	0 / 0	25 / 987	0 / 0	0 / 0
INFRAM A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	25 / 987	0 / 0
INFRAM A.S. subtotal		0 / 0	0 / 0	0 / 0	25 / 987	0 / 0
MODULARTEST S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	25 / 987
MODULARTEST S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	25 / 987
CUKROVAR VRBATKY A.S	Small contracts /Various titles	25 / 979	0 / 0	0 / 0	0 / 0	0 / 0
CUKROVAR VRBATKY A.S subtotal		25 / 979	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				2023
		2019	2020	2021	2022	
PROWELD STUD WELDING Slezská Ostrava	Small contracts /Various titles	0 / 0	0 / 0	11 / 423	0 / 0	14 / 531
PROWELD STUD WELDING Slezská Ostrava subtotal		0 / 0	0 / 0	11 / 423	0 / 0	14 / 531
KDYNIIUM A. S.	Small contracts /Various titles	8 / 296	0 / 0	17 / 655	0 / 0	0 / 0
KDYNIIUM A. S. subtotal		8 / 296	0 / 0	17 / 655	0 / 0	0 / 0
ASTOS MACHINERY A.S.	Small contracts /Various titles	0 / 0	7 / 277	0 / 0	0 / 0	17 / 671
ASTOS MACHINERY A.S. subtotal		0 / 0	7 / 277	0 / 0	0 / 0	17 / 671
EKOWATT CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	24 / 947
EKOWATT CZ S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	24 / 947
SWICHARD S.R.O.	Small contracts /Various titles	24 / 939	0 / 0	0 / 0	0 / 0	0 / 0
SWICHARD S.R.O. subtotal		24 / 939	0 / 0	0 / 0	0 / 0	0 / 0
WITTE NEJDEK, SPOL.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	24 / 928
WITTE NEJDEK, SPOL. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	24 / 928
INTERPLEX PRECISION	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	24 / 924	0 / 0
INTERPLEX PRECISION subtotal		0 / 0	0 / 0	0 / 0	24 / 924	0 / 0
NOVARES CZ ZEBRAK S.	Small contracts /Various titles	24 / 918	0 / 0	0 / 0	0 / 0	0 / 0
NOVARES CZ ZEBRAK S. subtotal		24 / 918	0 / 0	0 / 0	0 / 0	0 / 0
KOSTAL KONTAKT SYSTE	Small contracts /Various titles	0 / 0	0 / 0	23 / 876	0 / 0	0 / 0
KOSTAL KONTAKT SYSTE subtotal		0 / 0	0 / 0	23 / 876	0 / 0	0 / 0
DENSO CZECH S.R.O.	Small contracts /Various titles	0 / 0	22 / 868	0 / 0	0 / 0	0 / 0
DENSO CZECH S.R.O. subtotal		0 / 0	22 / 868	0 / 0	0 / 0	0 / 0
TECHCONTROL, SPOL. S	Small contracts /Various titles	22 / 868	0 / 0	0 / 0	0 / 0	0 / 0
TECHCONTROL, SPOL. S subtotal		22 / 868	0 / 0	0 / 0	0 / 0	0 / 0
MONTS S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	22 / 858	0 / 0	0 / 0
MONTS S.R.O. subtotal		0 / 0	0 / 0	22 / 858	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
POLICIE CR PHA	Small contracts /Various titles	0 / 0	0 / 0	22 / 846	0 / 0	0 / 0
POLICIE CR PHA subtotal		0 / 0	0 / 0	22 / 846	0 / 0	0 / 0
PROSPON, SPOL. S R.O	Small contracts /Various titles	0 / 0	22 / 838	0 / 0	0 / 0	0 / 0
PROSPON, SPOL. S R.O subtotal		0 / 0	22 / 838	0 / 0	0 / 0	0 / 0
BLUE POWER - ENERGET	Small contracts /Various titles	0 / 0	21 / 829	0 / 0	0 / 0	0 / 0
BLUE POWER - ENERGET subtotal		0 / 0	21 / 829	0 / 0	0 / 0	0 / 0
JAKUB SCERBA S.R.O.	Small contracts /Various titles	21 / 821	0 / 0	0 / 0	0 / 0	0 / 0
JAKUB SCERBA S.R.O. subtotal		21 / 821	0 / 0	0 / 0	0 / 0	0 / 0
MEGATECH INDUSTRIES Plzeň 3	Small contracts /Various titles	0 / 0	0 / 0	21 / 813	0 / 0	0 / 0
MEGATECH INDUSTRIES Plzeň 3 subtotal		0 / 0	0 / 0	21 / 813	0 / 0	0 / 0
ZACHVEJA & PARTNERI, Moravská Ostrava a Přívoz	Small contracts /Various titles	21 / 808	0 / 0	0 / 0	0 / 0	0 / 0
ZACHVEJA & PARTNERI, Moravská Ostrava a Přívoz subtotal		21 / 808	0 / 0	0 / 0	0 / 0	0 / 0
VEOLIA ENERGIE MARIA	Small contracts /Various titles	21 / 805	0 / 0	0 / 0	0 / 0	0 / 0
VEOLIA ENERGIE MARIA subtotal		21 / 805	0 / 0	0 / 0	0 / 0	0 / 0
ETHANOL ENERGY A.S.	Small contracts /Various titles	0 / 0	20 / 789	0 / 0	0 / 0	0 / 0
ETHANOL ENERGY A.S. subtotal		0 / 0	20 / 789	0 / 0	0 / 0	0 / 0
MGM, SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	20 / 789
MGM, SPOL. S R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	20 / 789
PLZENSKÉ MESTSKÉ DOP	Small contracts /Various titles	20 / 789	0 / 0	0 / 0	0 / 0	0 / 0
PLZENSKÉ MESTSKÉ DOP subtotal		20 / 789	0 / 0	0 / 0	0 / 0	0 / 0
SCHINDLER CZ,A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	20 / 789
SCHINDLER CZ,A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	20 / 789
SUDOP BRNO, SPOL. S	Small contracts /Various titles	20 / 789	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SUDOP BRNO, SPOL. S subtotal		20 / 789	0 / 0	0 / 0	0 / 0	0 / 0
HZ REAL S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	20 / 782	0 / 0	0 / 0
HZ REAL S.R.O. subtotal		0 / 0	0 / 0	20 / 782	0 / 0	0 / 0
OSKON S.R.O.	Small contracts /Various titles	3 / 119	7 / 277	10 / 387	0 / 0	0 / 0
OSKON S.R.O. subtotal		3 / 119	7 / 277	10 / 387	0 / 0	0 / 0
TECHTEST, S.R.O.	Small contracts /Various titles	20 / 782	0 / 0	0 / 0	0 / 0	0 / 0
TECHTEST, S.R.O. subtotal		20 / 782	0 / 0	0 / 0	0 / 0	0 / 0
ADVANTAGE CARS S.R.O	Small contracts /Various titles	20 / 774	0 / 0	0 / 0	0 / 0	0 / 0
ADVANTAGE CARS S.R.O subtotal		20 / 774	0 / 0	0 / 0	0 / 0	0 / 0
SKOLA WELDING S.R.O.	Small contracts /Various titles	7 / 272	4 / 135	2 / 58	3 / 97	5 / 187
SKOLA WELDING S.R.O. subtotal		7 / 272	4 / 135	2 / 58	3 / 97	5 / 187
C-ENERGY PLANA S.R.O	Small contracts /Various titles	0 / 0	0 / 0	19 / 738	0 / 0	0 / 0
C-ENERGY PLANA S.R.O subtotal		0 / 0	0 / 0	19 / 738	0 / 0	0 / 0
SSAB SWEDISH STEEL S	Small contracts /Various titles	19 / 738	0 / 0	0 / 0	0 / 0	0 / 0
SSAB SWEDISH STEEL S subtotal		19 / 738	0 / 0	0 / 0	0 / 0	0 / 0
VAN LEEUWEN PRODUCTI	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	19 / 722	0 / 0
VAN LEEUWEN PRODUCTI subtotal		0 / 0	0 / 0	0 / 0	19 / 722	0 / 0
JANOVEC JIRI DOC.ING	Small contracts /Various titles	0 / 0	8 / 294	0 / 0	0 / 0	11 / 427
JANOVEC JIRI DOC.ING subtotal		0 / 0	8 / 294	0 / 0	0 / 0	11 / 427
CESKA SLEVARENSKA SP	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	7 / 277	11 / 434
CESKA SLEVARENSKA SP subtotal		0 / 0	0 / 0	0 / 0	7 / 277	11 / 434
INVELT SERVIS, S.R.O	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	18 / 711
INVELT SERVIS, S.R.O subtotal		0 / 0	0 / 0	0 / 0	0 / 0	18 / 711
VKK, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	18 / 711	0 / 0
VKK, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	18 / 711	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
WEIDEMANN GMBH	Small contracts /Various titles	0 / 0	0 / 0	18 / 710	0 / 0	0 / 0
WEIDEMANN GMBH subtotal		0 / 0	0 / 0	18 / 710	0 / 0	0 / 0
ZOOLOGICKA ZAHRAHA H	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	18 / 707
ZOOLOGICKA ZAHRAHA H subtotal		0 / 0	0 / 0	0 / 0	0 / 0	18 / 707
VELLERIN, A. S.	Small contracts /Various titles	0 / 0	0 / 0	18 / 701	0 / 0	0 / 0
VELLERIN, A. S. subtotal		0 / 0	0 / 0	18 / 701	0 / 0	0 / 0
MAYER & CIE. CZ, S.R	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	18 / 679	0 / 0
MAYER & CIE. CZ, S.R subtotal		0 / 0	0 / 0	0 / 0	18 / 679	0 / 0
SLOVENSKA TECHNICKA Materiálovotechnologická fakulta	Small contracts /Various titles	0 / 0	0 / 0	12 / 471	0 / 0	5 / 198
SLOVENSKA TECHNICKA Materiálovotechnologická fakulta subtotal		0 / 0	0 / 0	12 / 471	0 / 0	5 / 198
KEYTEC CESKE BUDEJOV	Small contracts /Various titles	0 / 0	0 / 0	17 / 663	0 / 0	0 / 0
KEYTEC CESKE BUDEJOV subtotal		0 / 0	0 / 0	17 / 663	0 / 0	0 / 0
QUANTUM, A.S.	Small contracts /Various titles	0 / 0	0 / 0	9 / 327	0 / 0	9 / 327
QUANTUM, A.S. subtotal		0 / 0	0 / 0	9 / 327	0 / 0	9 / 327
KOVOLIS HEDVIKOV A.S	Small contracts /Various titles	6 / 221	0 / 0	11 / 415	0 / 0	0 / 0
KOVOLIS HEDVIKOV A.S subtotal		6 / 221	0 / 0	11 / 415	0 / 0	0 / 0
TECHSIM ENGINEERING	Small contracts /Various titles	16 / 632	0 / 0	0 / 0	0 / 0	0 / 0
TECHSIM ENGINEERING subtotal		16 / 632	0 / 0	0 / 0	0 / 0	0 / 0
MIGNEN CR S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	16 / 630	0 / 0
MIGNEN CR S.R.O. subtotal		0 / 0	0 / 0	0 / 0	16 / 630	0 / 0
MGR. DANIEL VASA, AD	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	16 / 614	0 / 0
MGR. DANIEL VASA, AD subtotal		0 / 0	0 / 0	0 / 0	16 / 614	0 / 0
LEAR CORPORATION ENG	Small contracts /Various titles	16 / 612	0 / 0	0 / 0	0 / 0	0 / 0
LEAR CORPORATION ENG subtotal		16 / 612	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
MALCOM CZ S.R.O.	Small contracts /Various titles	16 / 612	0 / 0	0 / 0	0 / 0	0 / 0
MALCOM CZ S.R.O. subtotal		16 / 612	0 / 0	0 / 0	0 / 0	0 / 0
ACCELERATOR S.R.O.	Small contracts /Various titles	15 / 592	0 / 0	0 / 0	0 / 0	0 / 0
ACCELERATOR S.R.O. subtotal		15 / 592	0 / 0	0 / 0	0 / 0	0 / 0
METAL TRADE COMAX, A	Small contracts /Various titles	0 / 0	0 / 0	15 / 592	0 / 0	0 / 0
METAL TRADE COMAX, A subtotal		0 / 0	0 / 0	15 / 592	0 / 0	0 / 0
PRAZSKE SLUZBY A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
PRAZSKE SLUZBY A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
VALEO AUTOKLIMATIZAC E81 - Driving Assistance Prague R&D	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
VALEO AUTOKLIMATIZAC E81 - Driving Assistance Prague R&D subtotal		0 / 0	0 / 0	0 / 0	0 / 0	15 / 592
WALTER PRAGUECAST A.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	15 / 592	0 / 0
WALTER PRAGUECAST A. subtotal		0 / 0	0 / 0	0 / 0	15 / 592	0 / 0
WEPPLER CZECH S.R.O.	Small contracts /Various titles	15 / 572	0 / 0	0 / 0	0 / 0	0 / 0
WEPPLER CZECH S.R.O. subtotal		15 / 572	0 / 0	0 / 0	0 / 0	0 / 0
BAK STAVEBNI SPOLECN	Small contracts /Various titles	0 / 0	0 / 0	15 / 561	0 / 0	0 / 0
BAK STAVEBNI SPOLECN subtotal		0 / 0	0 / 0	15 / 561	0 / 0	0 / 0
FAIVELEY TRANSPORT C	Small contracts /Various titles	14 / 553	0 / 0	0 / 0	0 / 0	0 / 0
FAIVELEY TRANSPORT C subtotal		14 / 553	0 / 0	0 / 0	0 / 0	0 / 0
JK MONT S. R. O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	14 / 553	0 / 0
JK MONT S. R. O. subtotal		0 / 0	0 / 0	0 / 0	14 / 553	0 / 0
MITSUBISHI ELECTRI	Small contracts /Various titles	0 / 0	0 / 0	6 / 237	8 / 316	0 / 0
MITSUBISHI ELECTRI subtotal		0 / 0	0 / 0	6 / 237	8 / 316	0 / 0
SYSCAE, S.R.O.	Small contracts /Various titles	14 / 549	0 / 0	0 / 0	0 / 0	0 / 0
SYSCAE, S.R.O. subtotal		14 / 549	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
MORAVSKE KOVARNY, A.	Small contracts /Various titles	14 / 545	0 / 0	0 / 0	0 / 0	0 / 0
MORAVSKE KOVARNY, A. subtotal		14 / 545	0 / 0	0 / 0	0 / 0	0 / 0
KNORR-BREMSE SYSTEMY	Small contracts /Various titles	14 / 537	0 / 0	0 / 0	0 / 0	0 / 0
KNORR-BREMSE SYSTEMY subtotal		14 / 537	0 / 0	0 / 0	0 / 0	0 / 0
VAPENKA CERTOVY SCHO	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	13 / 513	0 / 0
VAPENKA CERTOVY SCHO subtotal		0 / 0	0 / 0	0 / 0	13 / 513	0 / 0
AMCON EUROPE S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	13 / 505	0 / 0	0 / 0
AMCON EUROPE S.R.O. subtotal		0 / 0	0 / 0	13 / 505	0 / 0	0 / 0
CONTINENTAL VUK S.R.	Small contracts /Various titles	13 / 505	0 / 0	0 / 0	0 / 0	0 / 0
CONTINENTAL VUK S.R. subtotal		13 / 505	0 / 0	0 / 0	0 / 0	0 / 0
GREENWOOD	Small contracts /Various titles	13 / 505	0 / 0	0 / 0	0 / 0	0 / 0
GREENWOOD subtotal		13 / 505	0 / 0	0 / 0	0 / 0	0 / 0
NEDCON BOHEMIA	Small contracts /Various titles	13 / 486	0 / 0	0 / 0	0 / 0	0 / 0
NEDCON BOHEMIA subtotal		13 / 486	0 / 0	0 / 0	0 / 0	0 / 0
S.A.F. PRAHA SPOL. S	Small contracts /Various titles	9 / 332	4 / 154	0 / 0	0 / 0	0 / 0
S.A.F. PRAHA SPOL. S subtotal		9 / 332	4 / 154	0 / 0	0 / 0	0 / 0
AVCR	Small contracts /Various titles	13 / 483	0 / 0	0 / 0	0 / 0	0 / 0
AVCR subtotal		13 / 483	0 / 0	0 / 0	0 / 0	0 / 0
ALPHA VEHICLE SECURI	Small contracts /Various titles	0 / 0	13 / 482	0 / 0	0 / 0	0 / 0
ALPHA VEHICLE SECURI subtotal		0 / 0	13 / 482	0 / 0	0 / 0	0 / 0
FARMET A.S.	Small contracts /Various titles	12 / 474	0 / 0	0 / 0	0 / 0	0 / 0
FARMET A.S. subtotal		12 / 474	0 / 0	0 / 0	0 / 0	0 / 0
ING. DAVID KAIL - AK	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
ING. DAVID KAIL - AK subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
KRPA FORM, A.S.	Small contracts /Various titles	12 / 474	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
KRPA FORM, A.S. subtotal		12 / 474	0 / 0	0 / 0	0 / 0	0 / 0
ROBA SERVICE S.R.O.	Small contracts /Various titles	12 / 474	0 / 0	0 / 0	0 / 0	0 / 0
ROBA SERVICE S.R.O. subtotal		12 / 474	0 / 0	0 / 0	0 / 0	0 / 0
SLEVARNA, SPOL. S R.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
SLEVARNA, SPOL. S R. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
SMAPRO DESIGN S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
SMAPRO DESIGN S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 474
VANAD DESIGN S.R.O.	Small contracts /Various titles	5 / 198	0 / 0	0 / 0	7 / 277	0 / 0
VANAD DESIGN S.R.O. subtotal		5 / 198	0 / 0	0 / 0	7 / 277	0 / 0
UNITREX MANAGEMENT S	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 466
UNITREX MANAGEMENT S subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 466
BENVIG HEAT TRANSFER	Small contracts /Various titles	0 / 0	0 / 0	12 / 458	0 / 0	0 / 0
BENVIG HEAT TRANSFER subtotal		0 / 0	0 / 0	12 / 458	0 / 0	0 / 0
INODO S.R.O.	Small contracts /Various titles	12 / 458	0 / 0	0 / 0	0 / 0	0 / 0
INODO S.R.O. subtotal		12 / 458	0 / 0	0 / 0	0 / 0	0 / 0
ING. JIRI MIREJOVSKY	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 454
ING. JIRI MIREJOVSKY subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 454
MATTONI 1873 A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	12 / 454
MATTONI 1873 A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	12 / 454
BUK CS, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	11 / 419	0 / 0	0 / 0
BUK CS, S.R.O. subtotal		0 / 0	0 / 0	11 / 419	0 / 0	0 / 0
SUDOP PRAHA A.S.	Small contracts /Various titles	8 / 290	0 / 0	4 / 125	0 / 0	0 / 0
SUDOP PRAHA A.S. subtotal		8 / 290	0 / 0	4 / 125	0 / 0	0 / 0
TRELLEBORG BOHEMIA,	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	11 / 403
TRELLEBORG BOHEMIA, subtotal		0 / 0	0 / 0	0 / 0	0 / 0	11 / 403

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
GEOLOGICKY USTAV AV	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	11 / 401
GEOLOGICKY USTAV AV subtotal		0 / 0	0 / 0	0 / 0	0 / 0	11 / 401
ARKO TECHNOLOGY, A.S	Small contracts /Various titles	10 / 395	0 / 0	0 / 0	0 / 0	0 / 0
ARKO TECHNOLOGY, A.S subtotal		10 / 395	0 / 0	0 / 0	0 / 0	0 / 0
MELICHAR MICHAELA MG	Small contracts /Various titles	0 / 0	10 / 395	0 / 0	0 / 0	0 / 0
MELICHAR MICHAELA MG subtotal		0 / 0	10 / 395	0 / 0	0 / 0	0 / 0
SAFETUBE MEDICAL TUB Praha-Satalice	Small contracts /Various titles	0 / 0	0 / 0	10 / 395	0 / 0	0 / 0
SAFETUBE MEDICAL TUB Praha-Satalice subtotal		0 / 0	0 / 0	10 / 395	0 / 0	0 / 0
SVAZ STROJIRENSKE TE	Small contracts /Various titles	0 / 0	0 / 0	10 / 395	0 / 0	0 / 0
SVAZ STROJIRENSKE TE subtotal		0 / 0	0 / 0	10 / 395	0 / 0	0 / 0
UTAM AV CR V.V.I.	Small contracts /Various titles	0 / 0	10 / 395	0 / 0	0 / 0	0 / 0
UTAM AV CR V.V.I. subtotal		0 / 0	10 / 395	0 / 0	0 / 0	0 / 0
TRW CARR S.R.O.	Small contracts /Various titles	10 / 394	0 / 0	0 / 0	0 / 0	0 / 0
TRW CARR S.R.O. subtotal		10 / 394	0 / 0	0 / 0	0 / 0	0 / 0
CZECH SPORT AIRCRAFT	Small contracts /Various titles	10 / 388	0 / 0	0 / 0	0 / 0	0 / 0
CZECH SPORT AIRCRAFT subtotal		10 / 388	0 / 0	0 / 0	0 / 0	0 / 0
MATERIAL & TECHNOLOG	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	10 / 387	0 / 0
MATERIAL & TECHNOLOG subtotal		0 / 0	0 / 0	0 / 0	10 / 387	0 / 0
WABTEC RAIL LIMITED,	Small contracts /Various titles	0 / 0	0 / 0	10 / 387	0 / 0	0 / 0
WABTEC RAIL LIMITED, subtotal		0 / 0	0 / 0	10 / 387	0 / 0	0 / 0
ZPA NOVA PAKA	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	10 / 387	0 / 0
ZPA NOVA PAKA subtotal		0 / 0	0 / 0	0 / 0	10 / 387	0 / 0
AZD S.R.O. ZAVOD TEC	Small contracts /Various titles	0 / 0	0 / 0	10 / 379	0 / 0	0 / 0
AZD S.R.O. ZAVOD TEC subtotal		0 / 0	0 / 0	10 / 379	0 / 0	0 / 0
GZ MEDIA, A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	10 / 375

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
GZ MEDIA, A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	10 / 375
ELTRAF, A.S.	Small contracts /Various titles	0 / 0	0 / 0	5 / 178	5 / 178	0 / 0
ELTRAF, A.S. subtotal		0 / 0	0 / 0	5 / 178	5 / 178	0 / 0
ZVVZ-ENVEN-ENGINEERI	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	9 / 356
ZVVZ-ENVEN-ENGINEERI subtotal		0 / 0	0 / 0	0 / 0	0 / 0	9 / 356
BRAGEN S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	9 / 336
BRAGEN S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	9 / 336
SILNICE GROUP A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	9 / 336
SILNICE GROUP A.S. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	9 / 336
PRAGOSTROJ S.R.O.	Small contracts /Various titles	0 / 0	9 / 332	0 / 0	0 / 0	0 / 0
PRAGOSTROJ S.R.O. subtotal		0 / 0	9 / 332	0 / 0	0 / 0	0 / 0
ACTIVAIR S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	9 / 328	0 / 0	0 / 0
ACTIVAIR S.R.O. subtotal		0 / 0	0 / 0	9 / 328	0 / 0	0 / 0
ZAPADOESKE MUZEUM V Plzeň 3	Small contracts /Various titles	0 / 0	9 / 327	0 / 0	0 / 0	0 / 0
ZAPADOESKE MUZEUM V Plzeň 3 subtotal		0 / 0	9 / 327	0 / 0	0 / 0	0 / 0
AUTOSALON KLOKOCA C	Small contracts /Various titles	0 / 0	3 / 119	0 / 0	6 / 208	0 / 0
AUTOSALON KLOKOCA C subtotal		0 / 0	3 / 119	0 / 0	6 / 208	0 / 0
INTEGROVANA STREDNI	Small contracts /Various titles	9 / 326	0 / 0	0 / 0	0 / 0	0 / 0
INTEGROVANA STREDNI subtotal		9 / 326	0 / 0	0 / 0	0 / 0	0 / 0
AB CNC SERVIS S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
AB CNC SERVIS S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
BTL MEDICAL DEVELOPM	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
BTL MEDICAL DEVELOPM subtotal		0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
CESKA SLEVARENSK 001	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	8 / 316
CESKA SLEVARENSK 001 subtotal		0 / 0	0 / 0	0 / 0	0 / 0	8 / 316

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SHIMADZU HANDELS GMB	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	8 / 285	0 / 0
SHIMADZU HANDELS GMB subtotal		0 / 0	0 / 0	0 / 0	8 / 285	0 / 0
AUREL CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	7 / 277	0 / 0
AUREL CZ S.R.O. subtotal		0 / 0	0 / 0	0 / 0	7 / 277	0 / 0
ECOSOND S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	4 / 139	4 / 139
ECOSOND S.R.O. subtotal		0 / 0	0 / 0	0 / 0	4 / 139	4 / 139
INVENO S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	6 / 237	0 / 0	1 / 26
INVENO S.R.O. subtotal		0 / 0	0 / 0	6 / 237	0 / 0	1 / 26
SEBAR S.R.O.	Small contracts /Various titles	0 / 0	7 / 261	0 / 0	0 / 0	0 / 0
SEBAR S.R.O. subtotal		0 / 0	7 / 261	0 / 0	0 / 0	0 / 0
DARTWORK S.R.O.	Small contracts /Various titles	0 / 0	7 / 257	0 / 0	0 / 0	0 / 0
DARTWORK S.R.O. subtotal		0 / 0	7 / 257	0 / 0	0 / 0	0 / 0
STAS SPOL. S R.O.	Small contracts /Various titles	0 / 0	7 / 257	0 / 0	0 / 0	0 / 0
STAS SPOL. S R.O. subtotal		0 / 0	7 / 257	0 / 0	0 / 0	0 / 0
D5T5 S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	7 / 244	0 / 0	0 / 0
D5T5 S.R.O. subtotal		0 / 0	0 / 0	7 / 244	0 / 0	0 / 0
KIEKERT-CS, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	6 / 237	0 / 0	0 / 0
KIEKERT-CS, S.R.O. subtotal		0 / 0	0 / 0	6 / 237	0 / 0	0 / 0
MIKRON PLUS, S.R.O.	Small contracts /Various titles	0 / 0	6 / 237	0 / 0	0 / 0	0 / 0
MIKRON PLUS, S.R.O. subtotal		0 / 0	6 / 237	0 / 0	0 / 0	0 / 0
RATECH CZ S.R.O.	Small contracts /Various titles	6 / 237	0 / 0	0 / 0	0 / 0	0 / 0
RATECH CZ S.R.O. subtotal		6 / 237	0 / 0	0 / 0	0 / 0	0 / 0
STREDNI ODBORNE 001 Praha 4	Small contracts /Various titles	0 / 0	0 / 0	6 / 237	0 / 0	0 / 0
STREDNI ODBORNE 001 Praha 4 subtotal		0 / 0	0 / 0	6 / 237	0 / 0	0 / 0
USTAV MOLEKULARNI GE	Small contracts /Various titles	0 / 0	6 / 229	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
USTAV MOLEKULARNI GE subtotal		0 / 0	6 / 229	0 / 0	0 / 0	0 / 0
UNIVERZITA T. BATI Centrum polymerních systémů	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	6 / 217
UNIVERZITA T. BATI Centrum polymerních systémů subtotal		0 / 0	0 / 0	0 / 0	0 / 0	6 / 217
DUMEK JAN ING., PH.D	Small contracts /Various titles	6 / 214	0 / 0	0 / 0	0 / 0	0 / 0
DUMEK JAN ING., PH.D subtotal		6 / 214	0 / 0	0 / 0	0 / 0	0 / 0
STS OLBRAMOVICE, A.S	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	6 / 200
STS OLBRAMOVICE, A.S subtotal		0 / 0	0 / 0	0 / 0	0 / 0	6 / 200
BENES A LAT A.S.	Small contracts /Various titles	0 / 0	0 / 0	5 / 198	0 / 0	0 / 0
BENES A LAT A.S. subtotal		0 / 0	0 / 0	5 / 198	0 / 0	0 / 0
DECOLETA, A.S.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	5 / 198	0 / 0
DECOLETA, A.S. subtotal		0 / 0	0 / 0	0 / 0	5 / 198	0 / 0
ESON CZ S.R.O.	Small contracts /Various titles	0 / 0	5 / 198	0 / 0	0 / 0	0 / 0
ESON CZ S.R.O. subtotal		0 / 0	5 / 198	0 / 0	0 / 0	0 / 0
REDYST ,S.R.O. Praha-Libuš	Small contracts /Various titles	0 / 0	5 / 198	0 / 0	0 / 0	0 / 0
REDYST ,S.R.O. Praha-Libuš subtotal		0 / 0	5 / 198	0 / 0	0 / 0	0 / 0
SEBESTA-SLUZBY SLEVA	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	5 / 198
SEBESTA-SLUZBY SLEVA subtotal		0 / 0	0 / 0	0 / 0	0 / 0	5 / 198
TRISPORT HAVEL S.R.O	Small contracts /Various titles	5 / 198	0 / 0	0 / 0	0 / 0	0 / 0
TRISPORT HAVEL S.R.O subtotal		5 / 198	0 / 0	0 / 0	0 / 0	0 / 0
TYP AGENCY S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	5 / 198	0 / 0
TYP AGENCY S.R.O. subtotal		0 / 0	0 / 0	0 / 0	5 / 198	0 / 0
LADISLAV KRALOVSKY	Small contracts /Various titles	0 / 0	0 / 0	5 / 190	0 / 0	0 / 0
LADISLAV KRALOVSKY subtotal		0 / 0	0 / 0	5 / 190	0 / 0	0 / 0
SKODA JS A.S. SK	Small contracts /Various titles	0 / 0	0 / 0	5 / 190	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
SKODA JS A.S. SK subtotal		0 / 0	0 / 0	5 / 190	0 / 0	0 / 0
NARODNI TECHNICKE MU	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	5 / 178
NARODNI TECHNICKE MU subtotal		0 / 0	0 / 0	0 / 0	0 / 0	5 / 178
CONTRA PRAHA, S.R.O.	Small contracts /Various titles	0 / 0	4 / 158	0 / 0	0 / 0	0 / 0
CONTRA PRAHA, S.R.O. subtotal		0 / 0	4 / 158	0 / 0	0 / 0	0 / 0
HVM PLASMA SPOL. S R	Small contracts /Various titles	0 / 0	0 / 0	4 / 158	0 / 0	0 / 0
HVM PLASMA SPOL. S R subtotal		0 / 0	0 / 0	4 / 158	0 / 0	0 / 0
STEELTEC CZ, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	4 / 158	0 / 0	0 / 0
STEELTEC CZ, S.R.O. subtotal		0 / 0	0 / 0	4 / 158	0 / 0	0 / 0
SPRAVA PRAZSKEHO HRA	Small contracts /Various titles	0 / 0	0 / 0	4 / 157	0 / 0	0 / 0
SPRAVA PRAZSKEHO HRA subtotal		0 / 0	0 / 0	4 / 157	0 / 0	0 / 0
RE-SHINE S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	4 / 152
RE-SHINE S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	4 / 152
EURO SITEX S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	4 / 150
EURO SITEX S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	4 / 150
RUML S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	4 / 148
RUML S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	4 / 148
NBB BOHEMIA, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	4 / 127	0 / 0	0 / 0
NBB BOHEMIA, S.R.O. subtotal		0 / 0	0 / 0	4 / 127	0 / 0	0 / 0
NEO STAVEBNI S.R.O.	Small contracts /Various titles	0 / 0	3 / 103	0 / 0	0 / 0	0 / 0
NEO STAVEBNI S.R.O. subtotal		0 / 0	3 / 103	0 / 0	0 / 0	0 / 0
KOSAR JAN	Small contracts /Various titles	3 / 99	0 / 0	0 / 0	0 / 0	0 / 0
KOSAR JAN subtotal		3 / 99	0 / 0	0 / 0	0 / 0	0 / 0
UNITED BAKERIES A.S.	Small contracts /Various titles	2 / 60	0 / 0	1 / 40	0 / 0	0 / 0
UNITED BAKERIES A.S. subtotal		2 / 60	0 / 0	1 / 40	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
WELDINGPRO S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	3 / 99	0 / 0
WELDINGPRO S.R.O. subtotal		0 / 0	0 / 0	0 / 0	3 / 99	0 / 0
ABR STAVEBNI SPOL. S	Small contracts /Various titles	1 / 40	0 / 0	1 / 40	0 / 0	0 / 0
ABR STAVEBNI SPOL. S subtotal		1 / 40	0 / 0	1 / 40	0 / 0	0 / 0
CIRMON S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	2 / 79	0 / 0	0 / 0
CIRMON S.R.O. subtotal		0 / 0	0 / 0	2 / 79	0 / 0	0 / 0
PRECIOSA ORNELA, A.S	Small contracts /Various titles	0 / 0	2 / 79	0 / 0	0 / 0	0 / 0
PRECIOSA ORNELA, A.S subtotal		0 / 0	2 / 79	0 / 0	0 / 0	0 / 0
VOGELSANG FASTENERS	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	2 / 79	0 / 0
VOGELSANG FASTENERS subtotal		0 / 0	0 / 0	0 / 0	2 / 79	0 / 0
ENERGETIKA SERVIS S.	Small contracts /Various titles	0 / 0	2 / 77	0 / 0	0 / 0	0 / 0
ENERGETIKA SERVIS S. subtotal		0 / 0	2 / 77	0 / 0	0 / 0	0 / 0
CECHO - BOHUMIL CEMP	Small contracts /Various titles	0 / 0	2 / 72	0 / 0	0 / 0	0 / 0
CECHO - BOHUMIL CEMP subtotal		0 / 0	2 / 72	0 / 0	0 / 0	0 / 0
JOBMAN, S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
JOBMAN, S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
KARNIK LUBOS	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
KARNIK LUBOS subtotal		0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
RUS PAVEL	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
RUS PAVEL subtotal		0 / 0	0 / 0	0 / 0	0 / 0	2 / 72
PAVEL HORSKY	Small contracts /Various titles	0 / 0	2 / 66	0 / 0	0 / 0	0 / 0
PAVEL HORSKY subtotal		0 / 0	2 / 66	0 / 0	0 / 0	0 / 0
CEMAT TRADING, SPOL.	Small contracts /Various titles	0 / 0	2 / 64	0 / 0	0 / 0	0 / 0
CEMAT TRADING, SPOL. subtotal		0 / 0	2 / 64	0 / 0	0 / 0	0 / 0
MAGNA EXTERIORS	Small contracts /Various titles	0 / 0	0 / 0	2 / 60	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
MAGNA EXTERIORS subtotal		0 / 0	0 / 0	2 / 60	0 / 0	0 / 0
MARTIN WERUNSKY	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	2 / 60
MARTIN WERUNSKY subtotal		0 / 0	0 / 0	0 / 0	0 / 0	2 / 60
TQM SYSTEM S.R.O.	Small contracts /Various titles	0 / 0	2 / 52	0 / 0	0 / 0	0 / 0
TQM SYSTEM S.R.O. subtotal		0 / 0	2 / 52	0 / 0	0 / 0	0 / 0
TRUSTWORTHY INVESTME Praha 10	Small contracts /Various titles	0 / 0	2 / 52	0 / 0	0 / 0	0 / 0
TRUSTWORTHY INVESTME Praha 10 subtotal		0 / 0	2 / 52	0 / 0	0 / 0	0 / 0
ELEKTROTECHNICKY ZKU	Small contracts /Various titles	0 / 0	1 / 27	1 / 23	0 / 0	0 / 0
ELEKTROTECHNICKY ZKU subtotal		0 / 0	1 / 27	1 / 23	0 / 0	0 / 0
TECHNOVO S.R.O.	Small contracts /Various titles	0 / 0	1 / 20	0 / 0	0 / 0	1 / 26
TECHNOVO S.R.O. subtotal		0 / 0	1 / 20	0 / 0	0 / 0	1 / 26
KLUTHE CR S.R.O. Praha 9	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
KLUTHE CR S.R.O. Praha 9 subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
LONTECH - SURFACE TR	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
LONTECH - SURFACE TR subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
MW-DIAS, A.S.	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
MW-DIAS, A.S. subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
OTTO KUHNEN PRAHA S.	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
OTTO KUHNEN PRAHA S. subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
SAO PLUS S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
SAO PLUS S.R.O. subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
SYSTHERM S.R.O.	Small contracts /Various titles	1 / 40	0 / 0	0 / 0	0 / 0	0 / 0
SYSTHERM S.R.O. subtotal		1 / 40	0 / 0	0 / 0	0 / 0	0 / 0
TRUMPF PRAHA, SPOL.	Small contracts /Various titles	0 / 0	0 / 0	1 / 40	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
TRUMPF PRAHA, SPOL. subtotal		0 / 0	0 / 0	1 / 40	0 / 0	0 / 0
EUROPRINT A.S.	Small contracts /Various titles	0 / 0	1 / 27	0 / 0	0 / 0	0 / 0
EUROPRINT A.S. subtotal		0 / 0	1 / 27	0 / 0	0 / 0	0 / 0
MACONER GAP S.R.O.	Small contracts /Various titles	0 / 0	1 / 26	0 / 0	0 / 0	0 / 0
MACONER GAP S.R.O. subtotal		0 / 0	1 / 26	0 / 0	0 / 0	0 / 0
SUPERCO S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	0 / 0	0 / 0	1 / 26
SUPERCO S.R.O. subtotal		0 / 0	0 / 0	0 / 0	0 / 0	1 / 26
BUHLER PRAHA S.R.O.	Small contracts /Various titles	1 / 25	0 / 0	0 / 0	0 / 0	0 / 0
BUHLER PRAHA S.R.O. subtotal		1 / 25	0 / 0	0 / 0	0 / 0	0 / 0
STREDISKO SPOLECNÝC.	Small contracts /Various titles	0 / 0	1 / 22	0 / 0	0 / 0	0 / 0
STREDISKO SPOLECNÝC. subtotal		0 / 0	1 / 22	0 / 0	0 / 0	0 / 0
VOLKSWAGEN SLOVAKIA,	Small contracts /Various titles	0 / 0	0 / 0	1 / 21	0 / 0	0 / 0
VOLKSWAGEN SLOVAKIA, subtotal		0 / 0	0 / 0	1 / 21	0 / 0	0 / 0
ALLGARD CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
ALLGARD CZ S.R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
AQUA S.P.P., S.R.O. Praha 15	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
AQUA S.P.P., S.R.O. Praha 15 subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
ATALIAN CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
ATALIAN CZ S.R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
AUTOSALON KLOKOČKA B Praha 5	Small contracts /Various titles	0 / 0	1 / 20	0 / 0	0 / 0	0 / 0
AUTOSALON KLOKOČKA B Praha 5 subtotal		0 / 0	1 / 20	0 / 0	0 / 0	0 / 0
BEMI, SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
BEMI, SPOL. S R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
DOTERM SERVIS S.R.O.	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0

Client ²⁸	Activity name	Revenue (in thousands CZK/EUR)				
		2019	2020	2021	2022	2023
DOTERM SERVIS S.R.O. subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
EKOVA ELECTRIC A.S. Martinov	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
EKOVA ELECTRIC A.S. Martinov subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
EVERSTAR S. R. O.	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
EVERSTAR S. R. O. subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
ICECO, S.R.O.	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
ICECO, S.R.O. subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
K A R C H E R SPOL. S	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
K A R C H E R SPOL. S subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
LINET SPOL. S R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
LINET SPOL. S R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
MEGA-TEC S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
MEGA-TEC S.R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
PRECIOSA - LUSTRY, A	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
PRECIOSA - LUSTRY, A subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
PRO.MED.CS PRAHA A.S	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
PRO.MED.CS PRAHA A.S subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
RDK SERVIS,S.R.O.	Small contracts /Various titles	1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
RDK SERVIS,S.R.O. subtotal		1 / 20	0 / 0	0 / 0	0 / 0	0 / 0
SLOVCEM, SPOL. S.R.O	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
SLOVCEM, SPOL. S.R.O subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
STACHEMA CZ S.R.O.	Small contracts /Various titles	0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
STACHEMA CZ S.R.O. subtotal		0 / 0	0 / 0	1 / 20	0 / 0	0 / 0
Total		44655 / 1761519	42074 / 1659694	50179 / 1979415	47571 / 1876549	47736 / 1883061

Note: List and describe contract research activities with a revenue in a given calendar year, regardless of the amount of financial revenue.

3.4 Research results with existing or prospective impact on society

The evaluated unit shall briefly comment on a maximum of 10 (considered most significant by the evaluated unit) research results already applied or realistically heading towards application during the period of 2019–2023, based on the overview annex table 3.4.1 (it is recommended to indicate results with a link to projects listed in indicator 3.3). The evaluated unit must demonstrate in its description that the research results have led or will soon lead to positive impacts²⁹, on society (e.g. description of how the results are used by various users, the range of persons/institutions for which the result is relevant, measurable economic impacts, etc.). The evaluated entity shall indicate in its commentary whether the gender dimension is considered in these results and discuss the impacts of the results regarding sustainability.

Maximum range 300 words/result.

Self-assessment:

Software [Modular software platform for distributed production process monitoring, control, and optimization](#) is an open system for supporting the optimization, monitoring and control of industrial processes developed in scope of the Center for Applied Cybernetics 3 (TACR NCC) in cooperation with the teams of CTU FME, CTU CIIRC and the industrial partner PT Solutions Worldwide, s.r.o.

The software platform vertically integrates control systems from the controlled process itself through the level of basic automation with the help of industrial control machines, through the level of advanced control layer, to higher corporate and business control systems so that it provides resources for the entire process control system both for design, control and monitoring, but also for subsequent optimization and tuning. The platform primarily provides functions for controlling heating and melting furnaces and rolling processes. The presented summary result contains the following sets of software modules: M1) A set of modules for controlling and monitoring a continuous heating furnace based on a mathematical-physical model; M2) Modules for data processing and optimization of rolling processes; M3) Crane anti-sway system for handling metallurgical material; M4) Extended module for temperature estimation in the continuous casting process based on a reduced CFD model.

The expected benefits of the modular platform are closely related to the availability and prices of both energy and materials. Its functionalities increase the quality of material heating (M1, M4), prevent of disruption of the solid shell with fatal consequences (M4), help to optimize the rolling process and increase the quality of rolled sheets (M2) shorten production times (M3). Individual components of the platform, i.e. software applications and tools, have already been applied in four commercial projects, which also document the international dimension of the presented applied research result. Gender dimension is not relevant for this result.

Prototype [TOS Varnsdorf-2019 Machine tool management system](#) is a result in the form of software called TOS Control, which is implemented directly into the machine tool WHT110C.

CTU in Prague, Faculty of Mechanical Engineering, Institute of Production Machines and Equipment participated in the development of the TOScontrol system from the very beginning. CTU played a key role in the conceptual design of the entire system and the principle of implementation into individual control systems. Based on the collaborative results of research and development, the TOScontrol system was successfully implemented into the first machine tools. Following the successful implementation, an independent development team for the TOScontrol system was created and stabilized at TOS VARNSDORF a.s., which is closely connected with the CTU development team. The development and updating of the whole system itself and individual applications was and is therefore performed in close cooperation between TOS VARNSDORF a.s. and CTU in Prague.

²⁹ See Terms definition.

This result is implemented directly into the machine control system and uses its hardware and software resources. The result is a complex machine management system consisting of a set of application modules (sub-applications) and an interface for their implementation. This interface consists mainly of tools for communication with the control system and production control systems, user management, data storage databases and user interface, which is implemented directly on the control system panel. TOS Control was implemented on the Siemens Sinumerik 840D sl and Heidenhain TNC640 control systems and represents the result on the machine tool WHT110C. The result on the machine tool in the form of an additional TOS Control management system contributes to the achievement of the main project objective by improving the following SVA objectives: [o2] Quality; [o4] Reliability; [o5] Economy. The control system is independent of the gender of its users.

Mixing equipment comprising a vessel and at least one axial hydrofoil impeller. A hydrodynamically optimized impeller is the result of systematic research in the field of mixing multiphase systems, reactors, bioreactors, and tanks. The hydrofoil impeller was specifically designed to minimize the energy requirements at coagulation and flocculation processes which are used in water treatment and purification technologies. The impeller shape is designed not only to minimize the energy for mixing, but also to be gentle on the batch regarding the shear stresses arising on the leading and trailing edges of the impeller blades because during the flocculation, the goal is to ensure formation of particle clusters and too high shear stress breaks them. The impeller can be used in vessels of various plan shapes and sizes. The specification of possible geometric arrangements of the mixing system is part of the result, as well as the process parameters of the impeller, which are necessary for the design of the operating parameters of mixing device, i.e., operating speed, power required for mixing, the time required to achieve a certain degree of homogenization. The result is in the form of an industrially protected utility model, which is provided for use based on a license agreement. Currently, a license agreement is in force with the ENVI-PUR, s.r.o. company, which is a leading manufacturer of equipment for water treatment, purification, and recycling technologies with representation in the Czech as well as in the world market. Several industrial implementations have already been carried out based on the license, e.g., water disinfection equipment, flocculation tanks, or sorption units. Currently, there are at least five industrial implementations per year, not only by the licensee in the field of water treatment but also by the authors as part of contractual research applied to multiphase chemical reactors and bioreactors. Due to its nature, the result does not consider the gender dimension.

The **Heat recovery ventilation unit** has an optimized air flow through the unit, in order to prevent generation of noise. It was developed based on the cooperation between CTU in Prague and RECUAIR Company, within a research project implemented under the Operational Program Enterprise and Innovation for Competitiveness. The ventilation unit was designed for installation directly into inhabited rooms, thus the noise is one of the mayor issues. Numerical CFD simulation of air flow, experimental measurement of noise characteristics in acoustic laboratory and measurement of efficiency in laboratory conditions were performed during the development of the new type of ventilation unit. The recuperation unit is used for local ventilation of inhabited rooms. It is connected with the outdoor environment by the tube, housing a recuperative heat exchanger for recovery of heat from the exhaust air. The unit operates with an air flow rate of 15 to 45 m³/h and it is equipped with air filters of class M5. The efficiency of heat recovery is up to 94 %, thanks to the unique design that prevents icing of the heat exchanger. The unit contains a rotary recuperative heat exchanger with a servo drive, which rotates 180°. This enables alternation of the exhaust air flow and fresh air flow through the heat exchanger channels. The exchanger rotates at defined intervals controlled according to the outdoor air temperature. The biggest potential for use is in cold areas where outside air temperature falls below freezing point. The device enables year-round operation with a high year-round efficiency of heat recovery. The result considers the gender dimension in the customisation of the control panel and system. Moreover, the tonal components of noise were reduced during development, taking into account the fact that women are generally more sensitive to noise.

Prototype of [Short Take-Off and Landing \(STOL\) aircraft](#) in the Light Sport Aircraft (LSA) category, with a maximum take-off weight of 600 kg, marketed as the STOL Cruiser was developed through close collaboration between Direct Fly s.r.o. and the CTU FME Department of Aerospace Engineering (DAE carried out the conceptual design, aerodynamic and strength analyses, determination of flight performance, dimensioning of the airframe and testing) with support by TACR.

Thanks to a tailor-made high-lift system and an aerodynamically optimized design, this aircraft achieves significant fuel savings compared to other STOL aircraft in the LSA category, making it both more economical and environmentally friendly. Recently the common approach to achieving higher performance in existing STOL LSA aircrafts is the use of more powerful engines, which increases acquisition costs, fuel consumption, and reduces payload capacity, making them more suited for recreational use rather than practical transport. The uniqueness of the STOL Cruiser lies in the comprehensive design approach considering the need for high flight performance combined with advanced manufacturing technology minimizing production costs. As a result, the STOL Cruiser enters the market as a cost-efficient aircraft with an unprecedented combination of flight characteristics in this category, allowing for significantly more economical and environmentally friendly operation. As the design of aircrafts doesn't depend on gender, these aspects are not applicable in this result. Compared to its competitors, the STOL Cruiser offers a significantly broader range of operational speeds (max. 220–225 km/h, min. 40 km/h, cruise speed 180 km/h) while requiring less engine power (100 hp compared to typical >140 hp) and, providing an exceptionally spacious luggage compartment (payload up to 60 kg compared with typical <30 kg). Serial production of the aircraft is being prepared from 2024 (parts are being produced for the first 6 aircraft).

The Certified methodology [A set of recommended measures for the protection of persons during the transport of found unexploded ordnance](#). The main benefit is the increased protection of the technicians, i.e. the highly qualified specialists who make up the vehicle crew. The "Certified Methodology" is a direct result of the research project of the Ministry of Internal Affairs [Protection of persons in the vicinity of explosion](#) of the safety research program for the needs of the state. This result was requested by the research contract provider/awardee. This result is significant in particular because, if the conditions in the methodology are followed, it is possible to protect the bomb disposal technicians and other people in the vicinity, from the pressure and shrapnel effect of an accidental explosion of the transported found ammunition. The result represents general recommendation that do not recognize gender of protected persons.

The proposed modifications for the protection of the crew against accidental explosion of found unexploded ordnance are intended to be incorporated into a commercially produced and available production VW transporter, or any vehicle of similar type. The proposed modifications of the vehicle consist of built in barriers made of ballistic plates mounted on lightweight construction from aluminium profiles. The built-in prototype of the protective barrier was tested in real explosion of a mortar mine.

The [Optimized gas ICE for vehicle decarbonization](#) is functional prototype of a piston internal combustion engine, primarily focused on an advanced system equipped with an actively scavenged pre-chamber, that represents a future universal combustion system for spark ignition engines regarding new fuels, higher efficiency (significantly over 40%) and lower emissions (mainly NOx). The principle is already used, e.g. for racing purposes (F1, WEC), it is expected to be used in a future (new generation of ICE optimized for the use of alternative fuels is estimated more like around 2030 and later). Our current solution is roughly at the TRL 3-5 level (so far only Maserati has it in passive mode, probably only because of engine performance), standard spark plug thread was centrally mounted in the pre-chamber that is actively cooled by the engine coolant for reduced thermal stress and a safe operation even at high load, a new 2022 design of the fuel delivery (check valve and solenoid injector) was experimentally validated. This solution enables more precise fuel flow metering and control of

charge mixing in the prechamber. There are still quite a few practical obstacles to be solved. Advanced combustion system for future gasoline engines brings higher efficiency of the combustion engine (and therefore lower CO₂) while simultaneously reducing some pollutants (mainly NO_x) and enabling high combustion rates for various fuels (the flexibility suitable for the transition period from classic fossil fuels to an alternative fuels), which also positively affects the tendency to knock.

From a global perspective, this solution contributes to decarbonization, the transition to renewable sources and sustainable mobility, including strengthening the competitiveness of the Czech manufacturer (Škoda Auto). This functional sample was created in cooperation with Škoda Auto, within the NCC 1 project JOBNAC. There is no gender dimension—equal impact on all.

The [Prototype chimney system with a new type of joint for W3G chimney systems](#) is the joint know-how reached within the common R&D activities of CTU FME and RHI Magnesita Czech Republic a.s. - the world's leading manufacturer of refractory materials (particularly in the scope of common TACR projects), that have created a chimney system using a new principle of joining ceramic chimney liners (or pipes) and an optimized method of building the chimney system. Thanks to the combination of a unique method of constructing the entire chimney system, low acquisition costs of the system and high utility properties, it was possible to create a new, very durable chimney system for all types of operations while meeting strict certification tests, which, among other things, meets the highest standard for chimney operation, namely T400 N1 W3 G50.

Through the new product, especially chimney liners with a new type of joint, the position of RHI Magnesita Czech Republic a.s. on world markets as a major player in terms of the achieved product quality and their utility properties is significantly strengthened. Already in the first year after the end of the project (2023), the project results (based on the prototype) were used in the company's business activities. Sales using the project results for the year were EUR 680,000, with a profit of EUR 80,000. A full 100% of this volume was exported abroad. The share of sales using the project outputs in the company's total sales in 2023 was 1%.

Based on the project results, the CTU FME concluded the license agreement (based on considering the number of products) with the company. The license agreement is valid for 2023-2025. The gender aspects had not been considered as they have no impact onto the product. Cooperation between individual institutions and team members continues.

The essence of the patent [Composite Blood Vessel Substitute and the Method for Producing It](#) is a sandwich wall combined from biological and synthetic polymers. It is primarily intended for domains with blood flow <200 ml/min, and for vein diameter <6 mm. This prosthetics has not yet been satisfactorily solved, although cardiovascular disease is increasing worldwide (e.g. the Czech Republic is the country with high cardiovascular risk that accounts for up to 42% of total mortality). Considering patients gender is necessary in healthcare, for example, varicose veins affecting small diameter veins occur in 25-30% of women and in 10-20% of men. The result was based on many years of cooperation of an interdisciplinary scientific and research team of experts (doctors, technicians, material and process engineers) within the framework of the acquired projects NT13302-4/2012, NV15-27941A.

Grafts typically used in vascular surgery are often unavailable due to vascular disease. Therefore, synthetic vascular substitutes are used, the limitations of which include low resistance to infection, increased risk of occlusion or stenosis, or conversely, temporal dilation due to the environment and conditions in the body.

The patented vascular substitute made of fish collagen and an integrated knitted scaffold made of associated monofilament polyester fibers is relevant for the healthcare, and prosthetic industry. The matrix of collagen obtained from freshwater fish is produced by extrusion technology, in which the collagen bundles are oriented in a train. This technology introduces anisotropy into the vascular wall material, even though the original raw material is isotropic. This makes it closer to the native vein in terms of internal structure and mechanical response.

A great advantage is the minimization of the allergic reaction of the recipient organism, the elimination of the risk of transmission of zoonoses known in warm-blooded animals is essential. Performed preclinical tests on sheep were promising.

The result is [dataset Measured experimental data of the properties of the GE Catalyst turboprop engine](#), for the use of which a license agreement is being concluded.

At the request of the Czech government, CTU FME has built an ecosystem for aircraft engines and concluded a research agreement on collaborative cooperation with GE Aviation Czech. The ecosystem is based on four ground-based aircraft engine test cells (dynamometric, core, two propeller) and a flying test bed in the form of an experimental aircraft. In the test facilities, many demanding experiments with the GE Catalyst engine being developed were carried out in the years 2017-2024, which were subsequently verified by simulation experiments. In addition to the basic test facilities, auxiliary experimental facilities were also built, for example for testing aircraft engine oil coolers with controlled air flow temperature at altitude, for measuring aircraft engine emissions, etc. This has resulted in a lot of measured experimental data, the use of which GE Aviation Czech is interested in. According to the collaborative agreement, a license agreement is concluded for the use of these data. The value of this license is then partly paid for by the value of the knowledge provided by GE Aviation Czech used in the construction and operation of test facilities and in modeling the properties of the GE Catalyst turboprop engine.

The result was created while solving the OP VVV CAAT (Centre for Advanced Aviation Technologies) project and in fulfilling the research collaboration agreement with GE Aviation Czech.

The significance of the created data is great for both GE Aviation Czech and CTU FME. The significance of the experimentally determined engine properties is great for its manufacturer and CTU FME can create its own engine simulation models for its research from the measured data.

Gender dimension: none – it has the same effect on everyone.

Table 3.4.1 - Overview of research results in the period under evaluation

Type of result ³⁰	Year of application	Name
Software	2019	Modular software platform for distributed production process monitoring, control, and optimization
Prototype	2019	TOS Varnsdorf - 2019 Machine tool management system
Utility model	2020	Mixing equipment comprising a vessel and at least one axial hydrofoil impeller
Patent/US patent	2020/2021	Heat recovery ventilation unit
Prototype	2021	Short Take-Off and Landing (STOL) aircraft
Methodology certified by an authorised body	2022	A set of recommended measures for the protection of persons during the transport of found unexploded ordnance
Functional sample	2022	Optimized gas ICE for vehicle decarbonization
Prototype	2022	Prototype chimney system with a new type of joint for W3G chimney systems
EU Patent	2023	Composite Blood Vessel Substitute and the Method for Producing
Miscellaneous	2019-2023	Dataset Measured experimental data of the properties of the GE Catalyst turboprop engine

Note 1: Please list and describe the results already applied in practice or heading towards application in practice with existing or prospective impact on the society (e.g. domestic or foreign patents, sold licenses, spin-offs, prototypes, varieties and breeds, methodologies, significant analyses, surveys, expert outputs for policymaking or other forms of non-publication)

³⁰ Specify the specific type of result. Add rows as needed.

outputs, etc.). Indirect results of research, development and creative activities with documented societal impact, e.g. expert activities, services to the public/government/scientific community, may also be reported.

TRANSFER OF RESULTS INTO PRACTICE

3.5 Transfer of results into practice

The evaluated unit shall briefly describe its system for transferring results into practice. It shall also indicate up to five of the most typical users of its results, whether in the university environment or in the non-university application/corporate sphere, detailing how it collaborates with them and how it seeks out new users (using a maximum of five specific examples).

It will also indicate whether and how it commercialises R&D&I results (e.g. selling licences, setting up start-up or spin-off companies, etc.)³¹, providing brief description of the commercialisation methods used. The effectiveness of the transfer of results and the commercialisation of R&D&I results will be described using a selection of results (max. five) listed in annex table (Table 3.4.1).³²

Additionally, the evaluated unit shall briefly comment on the funds received during the period of 2019–2023 from non-public, non-grant sources (e.g. licences sold, spin-off revenues, donations, etc.). A full summary shall be provided in annex table (Table 3.5.1).

Maximum 500 words plus 200 words for each provided example of finding a new user of results and commercialization.

Self-assessment:

In collaborative applied research, agreements are concluded on the use of results, in which the partners discuss the shares of ownership of the result, including an agree on the method of financial settlement, which is realized after the result implementation (intellectual property with protection may also arise, which is later licensed). In basic research, results with application potential are more often protected as intellectual property and are licensed for use in practice. In the case of contractual research, the result is delivered directly for an agreed price. We acquire new partners in various ways: we use contacts with our graduates, we try to address the customers of our existing partners, we publish results, we participate in conferences, we meet with company representatives, we are members of professional societies. We try to offer our competencies through the CTU FME website. In case of interest from a company, we offer to conclude a simple framework cooperation agreement including a brief NDA. Then we hold an innovation brainstorming - a meeting of company representatives and our professors from the given field. Experience shows that after discussion, the company and CTU FME arrive at 1-2 areas that are so interesting that they are worth further investigation, even if the result is not certain. However, a dialogue about cooperation has been initiated.

The most typical users of our results are companies:

Škoda Auto, a.s. is a member of the research center project consortiums led by CTU FME for more than 20 years, there is close cooperation in the field of R&D of passenger cars (classic and hybrid drives, transmission/distribution systems, motor sports) consisting of experiments, simulations, construction, jointly led diploma and doctoral theses. Ad hoc research and commercial cooperation with specific tasks is also performed. For example, In the field of technology, we have long-standing cooperation within the framework of contractual research focused on testing the formability of steel sheets, weldability using electric resistance welding, service life of welding electrodes and analyses of anti-

³¹ In the case of military HEIs, their specific position is taken into account when evaluating the commercialisation/evaluation of R&D&I results.

³² If the commercialisation of R&D&I results is carried out in this way.

corrosion measures, or on systematic optimization of processes in the area of quality control, increasing measurement productivity, reducing measurement uncertainties, process automation, professional training and testing of ŠA employees in the fields of Corporate Metrology Management and Measurement, Testing and Calibration. Another topic is the development and testing of heat exchangers, aerodynamics of the engine compartment of vehicles and cooling of components using synthesized flows, or dust analysis and filtration of engine intake air. Specific projects or orders are negotiated informally within formalized structures, based on personal contacts and meetings and also brings to us links to ŠA partners.

TOS Varnsdorf is one of the biggest Czech machine tool producers. The company is known mainly due to the production of horizontal boring machines and portal milling machines. Collaboration of TOS Varnsdorf with CTU FME became intensive since 2000 when the Research Center of Manufacturing Technology was founded. The collaboration topics were in the field of research and innovation of the machine tool structural design, feed drive control and machining technology. During 2019-2023, the collaboration was focused on research of physics-based machine tool digital twin for machining process prediction and optimization, research of machine tool industrial communication, increasing of machine tool accuracy and reliability and increasing of accuracy and productivity in five axis milling of complex parts. The TOS Control application – a superior SW system integrated to the machine tool control system – is one of the most significant collaboration results of this period. The collaboration has been funded by own company resources or co-funded by public money. The CTU, FME, U12135 and TOS Varnsdorf participated together in these most significant research projects: Machine Tools and Precision Engineering (2019 – 2022), National Center of Competence ENGINEERING (2023 – 2028), New machine tool integrating Industry 4.0 features (2023-2025), Highly productive machines for digital factory environments (2021 – 2024), Smart Machine Tool (2018 – 2021).

Compotech PLUS spol.s r.o. is a hi-tech manufacturing company based in Sušice, which was co-founded in 1994 by a graduate of engineering and doctoral studies at CTU FME, who used the results of his diploma and dissertation and, together with a partner, developed a filament winding machine for winding paddle shaft for white water canoe. Today, Compotech PLUS spol.s r.o. is a respected company in the field of complex composite solutions with an overlap in applied research and development. Contact between the company and the faculty enables fast and effective cooperation in development with the necessary follow-up to verify technological possibilities and production procedures in complex procedures of composite parts and structures production technology using long-fiber winding, integrated joints, bonding, 3D printing and other technologies. Possibilities of building "quasi-intelligent" structures with an integrated system of electrical resistance / magnetic sensors, optical fibers, etc. for the possibility of on-line / off-line monitoring and tracking of the condition of the structure. Creation of software for big-data processing, monitoring and identification of types and locations of extreme deformations and stresses, as well as possible partial or global damage. Another area of recent cooperation is the research and development of mechatronic solutions for increasing the stiffness and damping of composite components.

ProsPon s.r.o. is a Czech company engaged in the development, production and distribution of orthopedic and traumatological implants, instruments and other medical devices (joint replacements, internal spinal fixators, implants and instruments for cruciate ligament plastic surgery, oncological replacements of all human joints and parts of bones ...) an example of a long-term partnership between the employees of the Department of Biomechanics of the CTU FME. with manufacturing companies in the healthcare sector. In the monitored period, we solved several applied research and development projects focused, for example, on using the method of direct 3D printing of titanium alloy Ti6Al4V for the construction of a new type of small joint implants, enabling new anchoring components that improve long-term osseointegration and surface treatments that improve the abrasion properties of contact surfaces. The connection of knowledge of the application, clinical and academic spheres from the Czech Republic and the United States has the potential to significantly

accelerate the development and introduction of small-scale production of new types of implants with high added value and significant competitive advantages on the Euro-American and Asian markets. In another project, we worked on the development of nanofibrous biopolymer surfaces with controlled elution of pharmaceuticals to increase the osteointegration of implants.

With the company; **Robert Bosch, s.r.o.** in České Budějovice, that is one of the subsidiaries of Robert Bosch GmbH Stuttgart operating in the Czech Republic, CTU FME has a long-term cooperation, which was implemented, in the monitored period, within The National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering. One of the tasks was research and development for improving the properties of vibration testing equipment, which consists in optimizing thermo-barriers for vibration tests with a temperature chamber and in the mechatronic test frame for vibration tests with intellectual property protection in the form of a utility model using advanced vibration test control. The results are used directly by RB when testing its products. The second task was related to the development of components made of conductive plastics, (e.g. a functional sample of a heating part made of conductive plastic with integrated contacts for direct heating of cooling liquids suitable for installation directly into a tank or dosing system or a functional sample of a new system of electrical contacting of plastic for supplying energy potential suitable for series production). The research results were further developed in the following years and a patent application is now being prepared.

Examples of commercialized results:

The **Modular software platform for distributed production process monitoring, control, and optimization components** have so far been applied in four commercial projects in Pakistan, Egypt, India, and France.

The machine tool management system **Tos Control** has been supplied with all machine tools produced by TOS Varnsdorf since 2020. (>100 implementations on machines delivered to customers worldwide) Thanks to the financial settlement agreement, the sale of machines with the TOS Control system also has a financial effect for CTU.

The result **Prototype chimney system with a new type of joint for W3G chimney systems** brought RHI Magnesita Czech Republic an additional revenue of CZK 17,000,000 per year, with a profit of CZK 2,000,000. CTU Faculty of Mechanical Engineering concluded a license agreement with the company for the years 2023-2025.

A license agreement is concluded for the **Dataset Measured experimental data of the properties of the GE Catalyst turboprop engine**, partly covered by the knowledge provided by GE Aviation Czech used in the construction and operation of test facilities and in the modeling of the properties of the GE Catalyst turboprop engine.

Utility model **Mixing equipment comprising a vessel and at least one axial hydrofoil impeller** was applied in practice in the form of a license agreement concluded by FME CTU as the owner of the result with the company ENVI-PUR, s.r.o., which is a major Czech manufacturer of water purification and treatment equipment with global representation. The license agreement was concluded in 2023 for a period of 10 years. Currently, at least five industrial implementations per year are commercialized under this license agreement.

Revenues from sold licenses are continuously realized based on contracts for the use of results in science and research. Revenues from donations from legal entities are mainly earmarked for the support of aerospace research, automotive and support of student creative activities. This part of the own resources from the profit of the Faculty of Mechanical Engineering (approx. 70%) is earmarked for the support of scientific research projects and support of student scientific research activities, in accordance with the approved budget of the faculty.

Table 3.5.1 - Summary of non-public revenues received during the period under evaluation

Type of revenue	Revenue (in thousands CZK/EUR)				
	2019	2020	2021	2022	2023
revenues from the sale of licenses	70 / 2741	599 / 23600	814 / 32101	1294 / 51027	579 / 22822
targeted support for science and research - donations	2725 / 107479	1500 / 59164	1948 / 76820	13249 / 522622	97626 / 3851097
support for science and research projects from own resources - from profits from additional activities	11201 / 441854	7534 / 297199	8332 / 328679	8579 / 338422	8910 / 351479
Total	13996 / 552074	9633 / 379963	11094 / 437600	23122 / 912071	107115 / 4225398

Note: Enter funds raised for R&D&I from non-public sources besides grants or contract research (e.g. licences sold, spin-off company revenues, donations, etc.) in the calendar year.

POPULARIZATION OF VAVAI

3.6 The most important activities in the field of popularization of R&D&I and communication with the public

The evaluated unit shall briefly describe its main activities related to the popularisation of R&D&I and communication with the public (e.g. popularisation lectures, citizen science initiatives, etc.) during the period of 2019–2023 and provide up to 10 examples that it considers the most significant.

Maximum 500 words plus 200 words for each example given.

Self-assessment:

During the period under review, CTU FME had various activities in the field of popularization of science, research and development and communication with the public. Our academic staff appeared on television and radio programs, in the press and on social networks. We participated in the creation of the feature-length television documentary film *Budiž voda* ([Let There Be Water!](#)). We appeared in the popular TV program for children *Wifina* on the topics of S.A.W.E.R. and 3D printing, as well as in popular programs for such as the morning broadcast of TV Seznam and in radio reports, e.g. *Robot ovocnářem* (A robot fruit grower). We provided interviews to the popular magazine *Žena a život* (the topic of water as a life-giving fluid from various perspectives, assoc. prof. Matuška) or *Týdeník Květy* on the topic of *Biomaterials: Artificial body replacement*. We published popular science articles, e.g. [Machining is transformed by digital twins](#) in the newspaper *Hospodářské noviny* or [From endoprostheses to vascular replacements](#) in the *VědaVýzkum.cz* - supplement of the *Technický týdeník*. To popularize our field, we also use social networks such as Youtube ([Popularization video of cardiovascular biomechanics](#)) on the CTU FS channel, a series of lectures within the [Young Manufacturing Leaders](#)). Another form of communication is articles in popular science magazines (*Pražská technika*, *TecniCall*, *MM průmyslové spektrum*, *Letectví a kosmonautika*, *Svět motorů*, *Automobil Revue*) lectures and presentations (e.g. in cooperation with Unipetrol, the Czech Automobile Company or the organization *Technologická gramotnost*). These are aimed at both the general public and professionals, as well as specific groups, such as secondary and primary school students. CTU FME participates in a number of contact events, such as trade fairs, festivals, seminars. We regularly present ourselves at the International Industrial Fair in Brno, we actively participate in events for the public such as the Night of Scientists, the Science Fair, Vědafest. We participated in the organization of the exhibition [Až na kost](#) (To the Bone) at the Technical Museum in Brno. A regular event for the professional public are seminars for secondary school teachers, where we discuss current

attractive topics with regard to their presentation to a given age group. We offer to secondary and primary schools excursions to our laboratories according to requirements.

The CTU FME is involved in the Erasmus+ program and participates in international bilateral agreements; in hosting international trainees; in the postdoc program advertised on the University's website and on the Euraxess portal. Our English study programs were presented on the CTU's website studyatctu.cz, on the website studyinprague.cz and also on studyin.cz, we also used the Keystone portal to promote English programs.

The CTU FME has been active in the Athens programs well as in the EuroTeQ association. CTU FME, in collaboration with Grenoble INP, Slovak University of Technology, University of Tartu, Mondragon University and Uni Porto has established a doctoral school within the EIT Manufacturing project. CTU FME actively took part in EIT Manufacturing Young Leaders initiative, which aimed to create a network of students and young people who will be mobilized as ambassadors of the manufacturing sector.

The **Škoda EDU Lab mobile laboratory** (2022-2025) was created as a unique interactive project of Škoda Auto to support technical education among primary and secondary school students. The aim of the project is to show students modern technologies and to inspire them to study technology at secondary and higher education institutions. During the campaign, students and staff of the CTU FME prepared and demonstrated a robotic station equipped with the ABB Yumi robot with the necessary powered tools and fixtures. The Yumi robot is completely collaborative, stops when in contact with an obstacle or a person and can perform very precise operations. The workplace was designed to be modular and to make it possible to easily change the subject of the process and as well as the entire process. In 2022, the station served as a demo workplace for assembling flash drives, and in 2023 it helped with the preparation of tea, coffee, and chocolate. By the end of 2024, Edu Lab had been visited by 10,600 elementary school students and over 10,700 high school students in 42 cities in the Czech Republic/Slovakia, including activities directly on the CTU campus.

Career Days of the Faculty of Electrical Engineering and the Faculty of Mechanical Engineering of CTU is an annual action that addresses the hunger for graduates of mechanical engineering, computer science and electrical engineering CTU on the labour market as well as the communication between not only the students of both faculties with employers of various sizes, ranging from giants of Czech industry to small progressive start-ups. Eighty companies represented themselves at 2023 The 4th edition of this event will take place in 2025, following the zero online edition during the COVID-19 pandemic. The online edition also included chat channels with representatives of individual companies, a professional program in the form of a live stream, and online presentations of individual companies. The main partners of Career Days had been ČEZ, Škoda Auto, GE, Bosch, Valeo, Continental, Rohde & Schwarz, Qminers, ÚJV, or Altron. Representatives of the companies were available to students from 9.00 to 16.00 on both days in the corridors of the lecture halls of both faculties. Part of the Career Days will also include an accompanying programme in which companies in presentations or workshops will address students through their professional topics.

The Faculty of Mechanical Engineering of the Czech Technical University in Prague presents its research, development and innovation activities every year at the **International Industrial Fair in Brno**. In [2019](#), for example, the unique 3D metal printing technology developed together with the company Kovosvit MAS or the composite air duct for the L-39 NG trainer jet aircraft in cooperation with VZLU and Aero Vodochody Aerospace. In [2021](#), the prototype of the STOL Cruiser aircraft - a collaboration between the Brno manufacturer Direct Fly, s.r.o. and the CTU FME - attracted an attention. In [2022](#), we brought the intelligent TRIO textile with graphene application and the smart Boxie shipping box. Professor Jan Macek from our faculty was awarded the gold medal for his lifelong creative technical work and innovative achievements. In [2023](#), our exhibition featured a hybrid power unit for small sport aircraft or large unmanned aerial vehicles, the PRIMOCO UAV ONE 150 drone, or the innovative CDuro mountain bike frame. At the Congress of the Confederation of Industry of the Czech Republic,

the P-D Refractories company won the Industry 4.0 Award for the implementation of an automatic line to produce ceramic chimney liners, in which the Faculty of Mechanical Engineering of the Czech Technical University in Prague participated.

In 2023 students of the Faculty of Mechanical Engineering of the Czech Technical University built within the framework of Strategy AV21 with the support of the Institute of Plasma Physics of the CAS, an educational **DEMO tokamak model from a LEGO® kit** to illustrate what fusion reactors in fusion power plants will look like. The model contains more than 4200 pieces. At the [Science Fair](#), the model attracted the attention not only of children and teenagers but also of the Minister of Science, Research and Innovation Mgr. Helena Langšádlová accompanied by the President of the CAS Prof. RNDr. Eva Zažímalová, CSc., dr. h.c.

Italian astronaut **Paolo Nespoli** opened the first Czech training and research centre for simulated space missions **Little Moon City (LMC)** Prague on November 14 2023. As part of this festive event, Paolo Nespoli's performed [lecture – "Human Space Endeavours: Today, Tomorrow, After-Tomorrow, After-after Tomorrow"](#), in the auditorium of the Faculty of Mechanical Engineering of the Czech Technical University in Prague. From September 2023, the LMC consisting of the Deep Lab H03 Hydronaut Project deepwater station, including the control centre and its IT and project infrastructure has been located on the CTU campus in Prague 6, in front of the CTU FME and FEE, that have been also involved together with the CTU FBMI and the Department of Psychology of Palacký University in Olomouc. The Planetum, the Department of Aerospace Engineering of the Faculty of Mechanical Engineering of the CTU in Prague and especially Ambasciata d'Italia and Praga participated in the preparation and organization of Paolo Nespoli's visit to the Faculty of Mechanical Engineering of the CTU in Prague.

Many CTU FME students are active in [specialized student teams](#) that participate in international competitions, cooperate with the application sphere and regularly represent CTU to the public at university and other events. Historically, the first team is the [eForce Formula Prague](#) (in the monitored period CTU CarTech), which has been building cars and competing in international Formula Student races continuously since 2009. The [CTU AeroLab](#) student team deals with the design and production of unmanned aircraft and competes with them. The [CTU Space Research](#) team founded in 2021 has currently over 50 members from 10 different faculties and schools deals with project of ILLUSTRIA - high-power rocket developed for EuRoC in Portugal, powered by own hybrid rocket engine and reaching target apogee 3 km. The newest team [CTU Robotics](#), which is developing a space rover, with which it plans to represent CTU at international competitions, such as ERC. Similar activities include the long-term projects as [Cenelín](#) (a model of a nuclear reactor in VR) and the activities of the Young Manufacturing Leaders group, who have prepared [popular educational videos](#) in the field of high technologies for both students and public.

November 23, 2023, the Institute of Aeronautical Engineering of the Faculty of Mechanical Engineering of the Czech Technical University in Prague and AERO Vodochody AEROSPACE a.s. prepared a meeting of academics and representatives of industrial companies with students of secondary schools and universities and the professional public [Aerospace Talks](#). Enthusiastic fans of aerospace technology listened to engaging lectures and personal stories. First, however, the president of AERO Vodochody AEROSPACE a.s. Ing. Viktor Sotona, MBA, welcomed all those present with a completely informal contribution about the heart of a mechanical engineer and aerospace engineer. Representatives of AERO Vodochody or, for example, CompoTech shared their experiences from the development of the Aero L-39NG training jet aircraft and composite technologies for aerospace. And the same interest was also aroused by the amazing presentation of aerobatic pilot Marek Hyka or Space Engineer Jan Lukačevič. The presentation of Spacemanic about their successful small satellite CubeSat was also motivating. Great interest was also aroused by the presentation of projects by our student teams, CTU

AeroLab and CTU Space Research, which achieve excellent results and even cooperate with ESA BIC Czech Republic, presented by Marie Němečková.

CTU FME is a regular participant and co-organizer of the [Scientists' Night](#) event, organized annually since 2005 at the initiative of the European Commission. We did not abandon this event even during the COVID-19 pandemic, even though it was only in an online version. For example, On October 6, 2023, the part of the Night of Scientists taking place at the CTU FME was organized in the Dejvice and Karlovo náměstí locations from 5:00 p.m. to 10:00 p.m. and brought tours of the aerodynamic tunnel of the 3D Volumetric Laser Anemometry Centre; a model of cooling tower; acoustic laboratory; the C-Duro bike trainer; photobioreactors that can transform wastewater and flue gases into food supplements or pharmaceuticals; a cyber-physical factory; 3D printing and computer tomography laboratory; an aircraft technology laboratories, including a tour of the all-composite blower aircraft UL-39 Albi, a life-size model of the first Czech moon-module LVCE, and the opportunity to sit in an ultralight Typhoon aircraft; tour of the microscopic laboratory of the Department of Material Engineering

Starting in 2022, CTU FME is organizing a two-day workshop for high school students entitled "**Taste Mechanical Engineering**". The main goal of this event is to expand information about study programs, the scope of study, the equipment of faculty laboratories and the results of the development of ongoing projects, in an interesting form with an interactive part, which is a team project and the associated competition. In [2022](#), mini-lectures were held on a common topic-suspension of the chassis of the student formula. They praised the fact that, e.g., they understood the concept of a square matrix here thanks to a practical example, while they failed in doing so at their school. The afternoon program was reserved for excursions. There, they received a brief explanation of the follow-up teaching and the projects being solved. In [2023](#), mini-lectures in the field of aerospace engineering were held, where students gained basic information about the nature of flying and the principles of building a throwing aircraft, which they would build themselves the next day and compete in teams. Participants in an anonymous survey confirm that the organization of the event pleasantly surprised them and some of them are considering applying to study at the CTU FME.

The faculty organizes an [Open Day](#) (OD) event 4 times a year, during which a larger group of interested students (from 150 to 350 people) has the opportunity to get to know the CTU FME. During the presentations of all bachelor's study profiles, they meet teachers and students who will introduce them to the content of the study through real projects and demonstrations. The presentation then continues with a large lecture about the study and everything is concluded with guided visits to the laboratories. During the entire event, student teams of the faculty also present their projects and share their experiences with student life. In addition to the offer of our study programs, this event aims to offer the public a tour of the faculty, including laboratories, and to obtain information about our professional and scientific activities. Since 2023, we have been organizing the Open Day 4 times a year, two of which on Saturdays, to make the event accessible to the widest possible public.

IMPLEMENTATION OF RECOMMENDATIONS

3.7 Implementation of the recommendations in Module 3

The evaluated unit will briefly describe how it has implemented the recommendations for Module 3 from the previous evaluation period, if applicable.

Maximum 1000 words.

Self-assessment:

Several recommendations were highlighted in the evaluation of the previous period:

Perhaps, the participation in more international projects, and/or the application for international funds could provide sufficient advertisement for the faculty to attract more international clients ...

In an effort to strengthen our participation in international projects, we focused on supporting staff in obtaining international projects by engaging in research networks, especially in Europe, but also beyond. CTU is a member of the *European Association of Research Managers and Administrators – EARMA*. For CTU FME, this membership brought, among other things, an interesting connection to *Politecnico di Torino*. Based on this contact, the project *Twinning for Excellence in Morphing and Aero-Mechatronic Wing Control: A Leap Towards Eco-Smart Aviation -MECHATWIN* was submitted and supported, which is the first twinning project at CTU FME and the only H2020 project in which CTU FME is the coordinator. In 2022, CTU became a co-founder of the *Czech Association of Research Managers and Administrators CZARMA*, in which the main project manager from CTU FME, Mgr. Radka Preclíková, is the head of the thematic group *Professional Development*. We are members of other professional groups such as *The European Automotive Research Partners Association – EARPA*, that brings together the most prominent R&D providers in the automotive sector throughout Europe. We use the *Crowdhelix Network* tool to set up a consortium or participate in international research projects. In the monitored period, we managed to participate in several *HORIZON Europe* projects (*Sustainable production of Cellulose-based products and additives to be used in SMEs and rural areas, LASERWAY: Extremely High-Speed Laser at the Right Place at the Right Time, InnovAtive DeMonstrator for hyBrid-Electric Regional Application, Innovation in Supercritical CO2 Power generation systems, A Global as well as Local Flexibility Marketplace to Demonstrate Grid Balancing Mechanisms through Crosssectoral Interconnected and Integrated Energy Ecosystems enabling Automatic Flexibility Trading*) and, in 2024 and 2025 we are involved in 4 more.

... More emphasis can also be put on your innovative projects (e.g. biomedical technology, alternative/renewable energy sources), and boost their commercial implementation, in order to gain more innovative fame, which in turn will yield more international grants and contracts, as well as they can result in some notable gifts for your further activities.

In the field of innovative biomedical technologies, CTU FME continued its tradition of active cooperation not only with academic partners, including medical universities, but also with the industrial sector. In Chapter 3.5, a paragraph describing specific cooperation with the company *ProSPon* is dedicated to this. The area of innovative applications of biosciences partly includes projects that we have in the basic research project *Mechanical engineering of biological and bio-inspired systems - MeBioSys* (call OP JAK), which is focused on finding non-traditional concepts in mechanical engineering inspired by living nature. Another innovative research of CTU FME is the development of components made of conductive plastics, in cooperation with the company; Robert Bosch, s.r.o. In České Budějovice under *The National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering*.

A note can be offered for the other projects in the list (3.5.1), which sound equally promising, and could have a much greater financial and environmental impact than some of the selected ones (e.g. Complex and environmental technologies of composites surface treatment development based on zinc with low friction coefficient, ...

It was given in the document as an example of commercialization, but it was created based on an applied research grant (FR-TI1/047) implemented in 2009-2012. Despite the considerable time gap, the topic of composites and surfaces is being further developed at our Institute of Materials, e.g. in the internal doctoral grant *Nano-modified piezoelectric composites for improved osseointegration and antibacterial behaviour in medical implants*.

... Wave Micro-Power Station Designed for the Production of Heat and Electricity from Biomass, ...

It is a project by the team of associate prof. Maščuch (which also won an award for environmental friendliness). In the monitored period the team brought the solution to commercial implementation (in 2022), but it turned out that the interest in the market was not very great, so the team's activities were newly focused on the topic of energy accumulation.

... PHOENIX AIR U-15 AFL –Advanced Flying Laboratory ...

Aircraft development activities continued at the Department of Aircraft Engineering CTU FME, as shown by the presented STOL Cruiser project.

... Ideally, the emergence of more spin-offs and start-ups could accelerate this technology transfer and attract the attention of the public to FME's activities, ...

FME co-founded the CTU MediaLab foundation focused on supporting the research and innovative ideas of FME students. Our graduates, Ing. Megi Mejdrechová and Ing. Ladislav Dvořák founded the spin-off RoboTwin.

...as well as more customers, i.e. further collaborations. Intensifying the interdisciplinary cooperation and activities is also encouraged.

We continue to support the cooperation of CTU FME with the application sphere in the form of collaborative and contractual research. We emphasize multidisciplinary approach, providing coordination and participating in consortia of biomechanics, energy, manufacturing industry and biotechnology, environmental technology, material sciences in a wide spectrum from biosciences to design.

Furthermore, a frequent exchange of scientists is a good tool to achieve further recognition in international research ...

We also strive for membership in editorial boards, and exchange stages of scientists as a tool for international recognition. We are developing support for international cooperation in the form of student and staff exchanges, and we have significantly expanded the university program for creating postdoc positions so that every scientific workplace can obtain a high-quality postdoc from abroad, including financial support. Emphasis is placed on the quality of both the mentor and the applicant. We have expanded active support for sabbaticals by creating an internal regulation for our faculty.

The interest of the public could also be further attracted by organizing public and open days and popular scientific conferences, as well as workshops for university and high-school students.

In the monitored period, CTU FME organized events for high schools (Taste mechanical engineering, seminars, excursions according to the requirements of high schools), participated in public events such as the Night of Scientists, and presented itself at professional (MSV) and educational fairs. We emphasize the openness of the faculty to the public, both in the field of science and education in the form of open days, which we started organizing on Saturdays as well to allow access to the widest possible public. As part of the promotion of mechanical engineering, we also participate in events with our industrial partners (e.g. Roadshow with ŠA, a.s.)

A LIST OF SUPPORTING DOCUMENTS/LINKS FOR MODULE 3

Document name	No. criteria	Location (link in HTML)
Bozek Vehicle Engineering National Center of Competence – BOVENAC	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/ncc/bozek-vehicle-engineering-national-center-of-competence/
Josef Bozek National Center of Competence for Surface Vehicles - JOBNA	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/ncc/josef-bozek-national-center-of-competence-for-surface-vehicles/
Center of electron and photonic optics - CEPO	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/ncc/centre-of-advanced-electron-and-photonic-optics/
The National Centre of Competence ENGINEERING - NCCE 1	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/ncc/national-centre-of-competence-engineering/
National Competence Center for Mechatronics and Smart Technologies for Mechanical Engineering	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/ncc/national-competence-centre-of-mechatronics-and-smart-technologies-for-mechanical-engineering/
Center for Advanced Aerospace Technologies - CAAT	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/en-research-centres/center-of-advanced-aerospace-technology/
Research centre for low-carbon energy technologies – BIO-CCS/U	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/en-research-centres/research-centre-for-low-carbon-energy-technologies-bio-ccs-u/
Mechanical engineering of biological and bio-inspired systems – MeBioSys	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/en-results-other-than-economic/mebiosys-mechanical-engineering-of-biological-and-bio-inspired-systems/
You can also reduce emissions – uCARE	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/en-results-other-than-economic/ucare-you-can-also-reduce-emissions/
Innovative Demonstrator for hybrid-Electric Regional Application – AMBER	3.3	https://fs.cvut.cz/en/science-research/applied-research-projects/en-results-other-than-economic/amber-

Document name	No. criteria	Location (link in HTML)
		innovative-demonstrator-for-hybrid-electric-regional-application/
Modular software platform for distributed production process monitoring, control, and optimization	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/modular-software-platform-for-distributed-production-process-monitoring-control-and-optimization/
Prototype TOS Varnsdorf-2019 Machine tool management system	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/prototype-tos-varnsdorf-2019-machine-tool-management-system/
Mixing equipment comprising a vessel and at least one axial hydrofoil impeller	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/mixing-equipment-comprising-a-vessel-and-at-least-one-axial-hydrofoil-imepeller/
Heat recovery ventilation unit	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/local-ventilation-unit-with-a-rotary-recuperative-heat-exchanger/
Short Take-Off and Landing (STOL) aircraft	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/stol-cruiser-aircraft/
A set of recommended measures for the protection of persons during the transport of found unexploded ordnance	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/a-set-of-recommended-measures-for-the-protection-of-persons-during-the-transport-of-found-unexploded-ordnance/
Optimized gas ICE for vehicle decarbonization	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/optimized-gas-ice-for-vehicle-decarbonization/
Prototype chimney system with a new type of joint for W3G chimney systems	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/prototype-chimney-system-with-a-new-type-of-joint-for-w3g-chimney-systems/

Document name	No. criteria	Location (link in HTML)
Composite Blood Vessel Substitute and the Method for Producing It	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/composite-blood-vessel-substitute-and-ahe-method-for-producing-it/
Dataset Measured experimental data of the properties of the GE Catalyst turboprop engine	3.4	https://fs.cvut.cz/en/science-research/applied-research-projects/en-applied-research-results/dataset-measured-experimental-data-of-the-properties-of-the-ge-catalyst-turboprop-engine/