EVALUATED UNIT: KLOKNER INSTITUTE, CZECH TECHNICAL UNIVERSITY

FORD: 2. Engineering and Technology

MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY

MODUL 3 SOCIAL RELEVANCE

SOCIAL RELEVANCE / SOCIAL BENEFIT OF THE EVALUATED UNIT[1]

3.1 General self-assessment of the social benefit of R&D&I in the fields of research at the evaluated unit, and of the evaluated unit as a whole

The evaluated unit gives a concise, general but informative account of the benefit of R&D&I in the fields in the 2014–2018 reporting period.

Self-evaluation:

The main goal of the Klokner Institute is scientific activity, which is closely connected with tutoring. The Institute supports activities within special and commercial field and within national and international standardisation. In most of these activities the Klokner Institute within the framework of CTU in Prague and the entire Czech Republic entered the history as the first research institute at CTU and was ranked among four oldest independent scientific workplaces in Europe. The Institute was founded in 1921 under the name Research and Testing Institute of Building Materials and Constructions. The Institute has four specialized departments, the Centre of Composites, accredited laboratory and forensic workplace in the field of construction.

HTML links to additional documentation:

http://www.klok.cvut.cz/en/

APPLIED RESEARCH PROJECTS

3.2 Applied research projects [2]

The evaluated unit presents a maximum of the five most significant (from the perspective of evaluated unit) applied research projects in the 2014–2018 reporting period from the complete list in the appendix (tables 3.2.1 and 3.2.2), particularly with regard to the results achieved or a project's potential for application.

Self-evaluation:

1. TA01010269, Applied Research of Ultra-high Performance Concrete (UHPC) for thin-walled shell structures, TAČR, 2011 – 2014.
2. VG20122015089, Safety and Risk Assessment of Transport Constructions at Extra Load, Ministry of the Interior, 2012 – 2015.

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[1] In accordance with Section 22(1) of Act No 111/1998 on universities, amending certain acts (the Universities Act), as amended.

[2] Under Section 2(1)(b) of Act No 130/2002, applied research is theoretical and experimental work aimed at gaining new knowledge and skills for the developing of new or substantially improved products, processes or services; applied research includes industrial research or experimental development, or a combination of both. Under Article 2 of Commission Regulation (EU) No 651/2014 of 17 June 2014 declaring certain categories of aid compatible with the internal market in application of Articles 107 and 108 of the Treaty, industrial research means planned research or critical investigation aimed at the acquisition of new knowledge and skills for developing new products, processes or services, or for bringing about a significant improvement in existing products, processes or services. It comprises the creation of component parts of complex systems, and may include the construction of prototypes in a laboratory environment or in an environment with simulated interfaces to existing systems as well as of pilot lines, when necessary for the industrial research and notably for generic technology validation; experimental development means acquiring, combining, shaping and using existing scientific, technological, business and other relevant knowledge and skills with the aim of developing new or improved products, processes or services. This may also include, for example, activities aiming at the conceptual definition, planning and documentation of new products, processes or services.

3. CZ/13/LLP-LdV/TOI/134014, Innovation Transfer in Risk Assessment and Management of Aging Infrastructures, Leonardo da Vinci, European Commission, 2013 – 2015.
4. DG16P02M050, Optimisation of observations and assessment of heritage structures, Ministry of Culture, 2016 – 2019.
5. EF16_025/0007424, 3D printing in civil engineering and architecture, European Commission, OPVVV, 2018 -2022.

1. Pilot project UHPC connected with many other researches. The project was finished inter alia with three outputs – three complete certified methodologies for working with UHPC.
2. The research project of the leader in the field of constructions reliability focused on safety and risk of critical transport infrastructures.
3. It is a multinational project of specialized education.
4. The project dealing with applied research showing outputs for practise of extraordinary high quality.
5. A progressive project dealing with the problems of Industry 4.0 in construction.

HTML links to additional documentation:

3.3 Contract research [3]

The evaluated unit briefly comments on revenues from contract research for the 2014–2018 reporting period from the complete list in the appendix (tables 3.3.1 and 3.3.2).

Self-evaluation:

Evaluate revenues from contract research for the 2014-2018 having growing tendencion and that means that our provided serviced are very quality/superior. Major coactions having medium-term or long-term course.

Contract research – investor form Czech Republic (The total revenues from complementary activity in thousands EUR without VAT)				
2014	**2015**	**2016**	**2017**	**2018**
615	698	817	1 303	2 075
Contract research – investor form foreign provider (The total revenues from complementary activity in thousands EUR without VAT)				
2014	**2015**	**2016**	**2017**	**2018**
22	9	41	72	12

(1 EUR = 26 CZK)

HTML links to additional documentation:

3.4 Revenues from non-public sources (besides grants or contract research) from research work

The evaluated unit briefly comments on revenues for the 2014–2018 reporting period for R&D&I from non-public sources, besides grants or contract research (e.g. licences sold, spin-off revenues, gifts, etc.). It presents a complete list in the appendix (table 3.4.1).

[3] For a definition of contract research for the purposes of evaluation in the universities sector, see Article 2.2.1 of the Community framework for State aid for research and development and innovation (2014/C 198/01).

Self-evaluation:

In 2014 and 2018 the Institute succeeded in increasing the volume of revenues from non-public sources, i.e. primarily from the collaboration with companies on the solutions to their special problems in the field of material and construction research, evaluation of defects and failures, risk engineering. In the mentioned period the collaboration with over 230 partners from commercial area per annum was established. The output of this large-scale collaboration were expert reports and opinions and protocols on tests, which involved solutions to concrete tasks and problems of these contractors. In the above mentioned period every year more than about 300 expert reports, 40 expert opinions and about 800 protocols on tests and experimental measurements in average were processed and given to contractors.

Revenues from this collaboration between 2014 and 2018 are summed up in the following chart that presents the amounts in thousands EUR without VAT

Year	2014	2015	2016	2017	2018	Celkem
The total revenues from complementary activity in thousands CZK without VAT	760	882	1 014	1 578	2 276	**6 511**

In the mentioned period there was an important increase, particularly in 2017 and 2018, that went on in 2019 as well, when the volume of the collaboration reached about 3,5 million EUR. It is apparent that the interest of business sector in the collaboration with the Institute has substantial growing tendency. Every year it increases year-to-year for several periods by couples of per cents, 55% between 16 and 17 and 44% between 17 and 19. This demonstrates contractors´ satisfaction and a good reputation of the Klokner Institute among its partners.

From mentioned documented data imply that academic quality/superior basic, applied and also/even contract research have within the framework of the Klokner Institute growing quality/superior. Layouted aims of creation excellent research centre are getting on to fulfil all on the fly well.

(1 EUR = 26 CZK)

HTML links to additional documentation:

APPLIED RESEARCH RESULTS

3.5 Applied research results with an existing or prospective economic impact on society

The evaluated unit briefly comments on a maximum of the five most significant (from the perspective of the evaluated unit) applied research results that have already been applied in practice, or that will realistically be applied, in the 2014–2018 reporting period from the overview in the appendix (table 3.5.1).

Self-evaluation:

1. Crhan, D.; Baxa, P.; Bouška, P.; Vokáč, M.; Špaček, M.: Pane from safety glass, Czech Republic. Industrial Design CZ 36046. 2014-05-22.
2. Litoš, J.; Konvalinka, P.; Sovják, R.; Záruba-Pfeffermann, J.; Štemberk, P.; Čítek, D.; Huňka, P.; Bílý, V.: Prefabricate for construction of roads with concrete surface and method of making the same, Czech Republic. Patent CZ 304730. 2014-07-30.
3. Tej, P.; Kolísko, J.: A method of optimizing the layout and orientation of fibres in ultra-high-performance concrete, Czech Republic. Patent CZ 307587. 2018-11-14.
4. Kolísko, J.; Vráblík, L.: A Bridge Structure for Bridging of Unembanked Watercourses, Czech Republic. Patent CZ 306542. 2017-01-18.
5. Kolísko, J.; Huňka, P.: Heat Cured Concrete of Ultrahigh Strength Reinforced with Wires and Intended Particularly for Prefabrication, and Process for Producing Thereof, Czech Republic. Patent CZ 305508. 2015-09-23.

1. - The design is used by the company NAUPO Ltd. in its manufacturing programme.
2. – 5. - Important patent outputs of the Institute, which are mainly used as a fundament of further research.

HTML links to additional documentation:

https://www.upv.cz/en.html

3.6 Significant applied research results with an impact other than an economic one on society

The evaluated unit gives a concise account of a maximum of the five most significant (from the perspective of the evaluated unit) applied research results with an impact other than an economic one on society in the 2014–2018 reporting period (typically results from disciplines in the humanities and social sciences) from the overview in the appendix (table 3.6.1).

Self-evaluation:

1. Caspeele, R.; Steenbergen, R.; Sýkora, M.; Allaix, D.L.; Botte, W.; Mancini, G.; Prieto, M.; Tanner, P. et al.: Partial Factor Methods for Existing Concrete Structures (fib bulletin 80)
Lausanne: Fib - fédération internationale du béton, 2016. ISSN 1562-3610. ISBN 978-2-88394-120-5.
2. Sýkora, M.; Holický, M.; Marková, J.; Šenberger, T.: Probabilistic reliability assessment of existing structures: focused on industrial heritage buildings, Prague: Czech Technical University, 2016. First edition. ISBN 978-80-01-05880-0.
3. Studničková, M.: ČSN EN 1991-2 NA ed. A National Annex - Eurocode 1: Actions on Structures - Part 2: Traffic Loads on Bridges.
4. Studničková, M.: Eurocode 1: Actions on Structures – Part 1-3: General Actions – Snow Loads, Result Reflected in Legislation and Standards, 2016.
5. Kolísko, J.; Bouška, P.; Čítek, D.; Rydval, M.; Vokáč, M.; Tichý, J.; Kalný, M.: Methodology for Design of UHPC and Material Tests, Applied Certified Methodology, 2015.
1. a 2. - The researchers from the Klokner Institute are members of international scientific groups of important publishing activities. The examples of publication were rated mark1 in the Assessment 17 RVVI.

3. a 4. – Selected examples of standards that prove the Klokner Institute extensively participates in development of standards. The mentioned examples of standards were rated mark 2 in the Assessment 17 RVVI.
5. – The example of certified methodology that points out the researchers of the Klokner Institute actively participate in implementation of new advanced materials in the Czech Republic.

HTML links to additional documentation:

https://www.upv.cz/en.html

COOPERATION WITH THE NON-ACADEMIC ENVIRONMENT AND TECHNOLOGY TRANSFER

3.7 The evaluated unit's most significant interactions with the non-academic application/corporate sphere

The evaluated unit gives a concise account of the most typical users of its outputs. It explains whether and how it identifies them and how it works with them. It provides examples of a maximum of ten of the most significant interactions with the non-academic environment in the 2014–2018 reporting period.

Self-evaluation:
The Klokner Institute has been collaborating long term with the design company Pontex, Ltd. and manufacturing company Prefa, branch Štětí, originally Skanska JSC, currently KŠ Prefa, Ltd. on research and development of various UHPC options. The cooperation is mostly of the collaborative type, i.e. common scientific and research project publicly funded.
To a lesser extent there is also contract research. In a similar vein a long-term collaboration with the design company HABENA, Ltd. and production company NAUPO, Ltd. on the research and development of reinforced glass structures is carried out. It is a cooperation of collaborative type.
Within the framework of contract research the Institute regularly provides good quality services in medium or long-term format to the companies firmy EGU Prague Engineering, JSC, BASF, Ltd., SŽDC, SMP, Metroprojekt, Skanska, JSC, TSK, JSC, Metrostav, JSC, ČEZ, JSC, TBG, Ltd. and others. The Institute also takes part in the experimental installation of a 3D object together with Federico Diaz, its creator and architect. It is an experimental work with UHPC.

HTML links to additional documentation:

3.8 System and support of technology transfer and intellectual property protection (can be extended to the whole university, emphasising the specific features of the evaluated unit)

The evaluated unit gives a concise account of its system of technology transfer. It conducts an evaluation of the quality of its applied research and the effectiveness of technology transfer using the data presented in the appendix (table 3.5.1). This commentary will highlight the number of filed and granted patents (Czech and international) and licences sold.

Self-evaluation:
The Czech Technical University has a sophisticated system of intellectual property management, which is embedded in internal rules. The Klokner Institute follows these rules. The department VaV of the Institute is responsible for intellectual property management and communication with patent representatives. The management of the Institute systematically supports technology transfer both through the VaV department and participation in the University´s activities dealing for example with education of technological scouts.

HTML links to additional documentation:

https://www.upv.cz/en.html

3.9 Strategy for setting up and support of spin-off firms or other forms of commercialization of R&D&I results (can be extended to the whole university, emphasising the specific features of the evaluated unit)

The evaluated unit gives a concise account of the practical use of its intellectual property in the form of setting up spin-off firms or other forms of commercialising R&D&I results (both with or without the participation of the university) established by the evaluated unit (university), another entity controlled by the evaluated unit (university), or an employee of the evaluated unit, presenting the model for their functioning and coordination, and control of intellectual property management of the evaluated unit (university).

Self-evaluation:
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HTML links to additional documentation:

RECOGNITION BY THE SCIENTIFIC COMMUNITY

3.10 The most significant individual awards for R&D&I

The evaluated unit presents a maximum of ten examples of the most significant R&D&I awards received (in the Czech Republic and in other countries) in the 2014–2018 reporting period.

Self-evaluation:
The Rector's Prize for an outstanding doctoral dissertation
Ing. Miroslav Sýkora, Ph.D. (II. grade, 2005)

The prize (scholarship) of the Stanislav Hanzel´s Foundation
Ing. Jan Mlčoch (2017)

Prize (scholarship) of the Preciosa Foundation

Ing. Miroslav Sýkora, Ph.D. (2004)

The best doctoral dissertation according to the WTA company in the field of „Sanitation and reconstruction of buildings“
Ing. Milan Rydval, Ph.D. (1. Místo, 2019)
Ing. Šárka Nenadálová, Ph.D. (honorable mention)
Ing. Michaela Kostelecká, Ph.D. (1st place, 2014)
Ing. Petr Huňka, Ph.D. (2nd place 2014)
Ing. Martin Volf, Ph.D. (1st place, 2009)

An outstanding dissertation according to the ČBS company in the field of "Technology of concrete"
Ing. Tomáš Bittner, Ph.D. (2nd place, 2019)
Ing. Petr Huňka, Ph.D. (2014)

Many doctoral students at the Klokner Institute received awards for the best doctoral thesis. It is particularly due to the fact that they are based on outputs of grants and internships.

HTML links to additional documentation:

3.11 Recognition by the international R&D&I community

The evaluated unit provides the following information / examples demonstrating recognition by the international scientific community in the 2014–2018 reporting period, with a commentary:
It presents a maximum of ten examples of its academic staff's participation on the editorial boards of international scientific journals (e.g. editor, member of the editorial board) in the appendix (table 3.11.1),
It presents a maximum of ten examples of the most significant invited lectures by the evaluated unit's academic staff abroad in the appendix (table 3.11.2),
It presents a maximum of ten examples of the most significant lectures by foreign scientists and other guests relevant to the R&D&I field in the appendix (table 3.11.3),
It presents a maximum of ten examples of the most significant elected memberships of professional societies (table 3.11.4).

Self-evaluation:
1. International Journal of Heritage Architecture (prof. Holický, doc. Sýkora)
2. International Journal of Safety and Security Engineering (prof. Holický)
3. Structural Concrete – journal of fib (doc. Sýkora)
4. ACTA POLYTECHNICA (Journal of Advanced Engineering) (doc. Sýkora)
5. International Journal of Structural Glass and Advanced Materials Research (Ing. Vokáč Machalická)

The researchers of the Klokner Institute are active in editorial boards of international scientific journals. In the editorial boards they are, for example, the only representatives of the Czech Republic among other states like USA, Mexico, Brazil, Greece, New Zealand, Japan, UK, India, China etc. Thanks to their membership contacts for future collaboration can be established. Within this collaboration internships of mostly young researchers are organized.

HTML links to additional documentation:

https://www.witpress.com/journals/ha
http://www.iieta.org/Journals/IJSSE

https://www.fib-international.org/publications/sc-journal.html
https://ojs.cvut.cz/ojs/index.php/ap
https://thescipub.com/journals/sgamr

POPULARISATION OF R&D&I

3.12 The most significant activities in the popularisation of R&D&I and communication with the public

The evaluated unit gives a concise account of its main activities in the area of popularisation of R&D&I and communication with the public in the 2014–2018 reporting period, and presents a maximum of ten examples that it considers the most significant.

Self-evaluation:

1. Réunion internationale des Laboratoires d´Essai et de Recherches sur Matériaux et les Constructions (RILEM)
2. International Association for Bridge and Structural Engineering (IABSE)
3. International Federation for Structural Concrete (FIB)
4. International Organization for Standardization (ISO)
5. European Committee for Standardization (CEN)
6. Joint Committee on Structural Safety (JCSS)
7. Central Europe towards Sustainable Building (CESB)
8. Scientific and Technical Association for Building Rehabilitation and Monument Preservation (WTA)

An important part of the Klokner Institute activities is the development of international collaboration in research and standardisation. The Institute is a control workplace for the participation of the Czech Republic in many international institutions, in others it plays an active role.

The Institute cooperates with leading foreign universities and research centres as for example: LafargeHolcim Research & Development (R&D), France (advanced static and dynamic testing UHPC), Politecnico di Torino a Torroja Institute, Madrid (reliability of concrete structures), TNO and TU DELFT (reliability of structures and risk assessment, construction glass), TU Ghent (reliability of concrete and glass construction), de Coimbra – Pólo II (glass structures), University of Stellenbosch, JAR (principles of structure design) and JRC Ispra (reliability of structures, climatic changes and their influence on building structures).

HTML links to additional documentation:

APPENDICES (TABLES)

3.2 Applied research projects

3.2.1 Projects supported by a provider from the Czech Republic

As the beneficiary							
Provider	**Programme**	**Project title**	**Support (EUR thousand)**				
			2014	**2015**	**2016**	**2017**	**2018**
MŠMT	INGO	International cooperation in the assessment of reliability and risks of structural system	12,5	16,6	16,5		
MŠMT	LD15078	Advance analysis of glued connections in light facade systems			23,1	18,3	
MŠMT	LD15037	Probabilistic optimisation of structural monitoring		4,2	18,3	18,3	
MŠMT	ESF Mobilita	International mobility of CTU researchers				5,6	35,8
MŠMT	ESF Mobilita	International mobility of CTU researchers					28
GAČR	P105/12/0589	Probabilistic optimisation of the target structural reliability	59				
GAČR	P105/12/P281	Development of Bayesian Networks for Risk Assessment of Structures Exposed to Impacts	12,8				
GAČR	13-12676S	Advanced research of UHPC matrix for ultra thin elements with non-conventional reinforcement	75462				
GAČR	14-35225P	Analysis of Residual Stress in Sandwich Composite Structure	28,3	23,6	11,6		
GAČR	15-10591S	Impact of long-term environmental conditions on the hydrophobic properties of the surface layers		40,8	41,8	40,8	
GAČR	104/15-22670S	Experimental and numerical analysis of bond behaviour between steel reinforcement and UHPC		51,9	53,3	52,1	
GAČR	16-11378S	Risk based decision making in construction			47,7	49,7	49,7
GAČR	16-17461S	Dynamic material properties of viscoelastic interlayers used in laminated glasses			47,2	49,7	45,2
GAČR	17-22796S	Experimental and numerical analysis of bond behaviour between steel reinforcement and Ultra High Performance Concrete (UHPC) at elevated temperatures				74,8	77,6
Min. vnitra	VG2VS/073	Assessment of safety and risks of transportation structures under accidental actions	86,8				
Min. kultury	DF12P02OVV040	Assessment of safety and working life of industrial heritage buildings	127,3				
Min. kultury	NAKI II DG16P02M050	Optimisation of observations and assessment of heritage structures			120	151	151
TAČR	TA01010269	Applied Research of Ultra-high Performance Conrete (UHPC) for Precast Units of Structures	81,8				
TAČR	TA04010837	Introduction of a new materials and technologies for the maintenance and reconstruction of buildings with applied External Thermal Insulation Composite Systems (ETICS).	35,5	72,7	71,7	66,2	
TAČR	TJ01000156	Development of a new generation of mineral renders				12	47,8
Magis. Prague	OP Praha	Prague Concept				61	55,2

Magist. Prague	OP PK	Chemical and physical laboratory centre	47,4	67,3			
INOVACENTRUM	CZ.1.05/3.1.00/14.301	Material research for InovaSEED	83,9	37			
Total			564	318,1	49,2	638,1	490,4
As another participant							
Provider	**Programme**	**Project title**	**Support (EUR thousand)**				
			2014	**2015**	**2016**	**2017**	**2018**
GAČR	P105/12/2051	Model Uncertainties in Resistance Assessment of Concrete Structures	30,4				
GAČR	14-20856S	The kinetics of corrosion processes and corrosion media transport in advanced ultra-high-performance concretes (UHPC)	34	35,5	35,1		
GAČR	16-04132S	Epistemic uncertainty of crack models in reinforced concrete structures			26,8	30,1	30,1
MPO	FV 10295	Safety glass with reinforcement			6,2	28,2	27,4
MPO	FV 10509	Research and development of new floor mixture with the contents of recycled raw materials with guaranteed qualities			7,4	27,7	28,5
MPO	FV 20585	Operational methods of monitoring, assessment of safety and service life of bridges				54,6	54,6
TAČR	TA02031453	Research and Design of Bridge Structures in Floods Regions	24,2				
TAČR	TA02010751	Reinforced concrete acoustic panel next generation					
TAČR	TA02010488	Fire-resistant structures for tunnels using lightweight concrete Liapor	34,4				
TAČR	TA02030150	Application of reliability methods in research and verification of innovative road safety barriers	15,8				
TAČR	TH02020690	The concrete with excellent resistance under aggressive media condition	33,34				
TAČR	TH02020373	Service life enhancement and construction speed-up of elements of traffic infrastructure using UHPC				51,1	49,3
TAČR	TH02020730	Progressive bridge stucture formed by the connection of wood and high strength cement composites				23	32
TAČR	TH02020729	Research and Development of New Generation Silicon Carbide Briquettes in Order to Improve Their Utility Attributes				62,5	64
TAČR	TA01020068	Centre of research and experimental development of reliable energy production				35,7	36,2
MŠMT	OPVVV	3D printing in civil engineering and architecture					73,3
Total			229,9	100,9	140,9	378,4	460,8

(1 EUR = 26 CZK)

2.2 Projects supported by a provider from another country

As the beneficiary						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
0	0	0	0	0	0	0
Total						
As another participant						
Provider	Project title	Support (EUR thousand)				
		2014	2015	2016	2017	2018
0	0	0	0	0	0	0
Total						

3.3 Contract research

3.3.1 Research work contracted by a client from the Czech Republic

Client	Research title	Revenues (EUR thousand)				
		2014	2015	2016	2017	2018
Metroprojekt Praha a.s.	Diagnostic and assessment of structures	64,3				
Metroprojekt a.s.	Diagnostic and assessment of structures	24,6				
Žilinská univerzita	Testing of structures in situ	21,0				
Zakládání staveb a.s.	Material research and testing	11,5				
Sudop Praha a.s.	Diagnostic and assessment of bridges	10,6				
AF Cityplan s.r.o.	Diagnostic and assessment of bridges	9,0				
Cementárna Hranice	Diagnostic and assessment of structures	9,0				
Bogl&Krýsl a.s.	Testing of structures in situ	8,3				
Chryso Chemie s.r.o.	Material research and testing	7,5				
CBRE s.r.o.	Diagnostic and assessment of structures	7,5				
Skanska a.s.	Testing of structures in situ	7,3				
Metrostav a.s.	Testing of structures in situ	6,5				
TopCon servis s.r.o.	Diagnostic and assessment of bridges	6,3				
Červenka Consulting s.r.o.	Material research and testing	6,3				
Betotech s.r.o.	Material research and testing	6,0				
IKEM	Diagnostic and assessment of structures	5,8				
ÚNMZ	Standardization	5,8				
Eurovia a.s.	Assessment and testing of structures in laboratory	5,5				
Seele Pilsen	Diagnostic and assessment of structures	5,3				
KODL s.r.o.	Material research and testing	5,1				
Qualiform	Material research and testing	4,9				
Metrostav a.s.	Material research and testing	4,8				
Novák a partner s.r.o.	Diagnostic and assessment of bridges	4,7				

Metrostav a.s.	Testing of structures in situ	4,7				
Strabag a.s.	Testing of structures in situ	4,7				
Real Developments Design s.r.o.	Diagnostic and assessment of structures	4,7				
Metrostav a.s.	Testing of structures in situ	4,7				
CTP Invest s.r.o.	Diagnostic and assessment of structures	4,5				
Metrostav a.s.	Testing of structures in situ	4,4				
Stachema Kolín s.r.o.	Material research and testing	4,4				
Mesit Reality s.r.o.	Diagnostic and assessment of structures	4,2				
KSK- Belt s.r.o.	Assessment and testing of structures in laboratory	4,0				
Pontex s.r.o.	Diagnostic and assessment of bridges		23,0			
DAM s.r.o.	Diagnostic and assessment of structures		22,5			
Mondi Štětí a.s.	Diagnostic and assessment of structures		18,4			
Mondi Štětí a.s.	Diagnostic and assessment of structures		14,4			
ŘSD ČR a.s.	Diagnostic and assessment of bridges		14,2			
DaM, spol. s r.o.	Diagnostic and assessment of structures		13,2			
Správa a údržba jihočeského kraje	Diagnostic and assessment of bridges		10,8			
Správa a údržba Jihočeského kraje	Diagnostic and assessment of bridges		10,8			
Skanska Reality s.r.o.	Assessment and testing of structures in laboratory		10,6			
Betotech s.r.o.	Material research and testing		10,1			
TSK Praha a.s.	Diagnostic and assessment of bridges		9,1			
SUDOP Praha a.s.	Diagnostic and assessment of bridges		8,5			
PSN s.r.o.	Diagnostic and assessment of structures		7,9			
VUT Brno	Material research and testing		7,7			
Bogl & Krýsl s.r.o.	Testing of structures in situ		7,3			
Eurovia CS a.s.	Testing of structures in situ		7,3			

KB Blok a.s.	Material research and testing		7,3			
Novák partner s.r.o.	Assessment and testing of structures in laboratory		7,2			
Rephana Hotel a.s.	Diagnostic and assessment of structures		7,1			
TopCon servis s.r.o.	Diagnostic and assessment of bridges		6,5			
Projekt OKV s.r.o.	Assessment and testing of structures in laboratory		6,3			
Skanska a.s.	Testing of structures in situ		6,2			
Červenka Consulting s.r.o.	Material research and testing		6,2			
Avena s.r.o.	Assessment and testing of structures in laboratory		5,6			
Sudop Praha a.s.	Diagnostic and assessment of bridges		5,6			
Merced a.s.	Assessment and testing of structures in laboratory		5,5			
Bogl&Krýsl a.s.	Testing of structures in situ		5,3			
Betotech s.r.o.	Material research and testing		5,0			
Českomoravský beton a.s.	Material research and testing		4,9			
Fronius ČR a.s.	Assessment and testing of structures in laboratory		4,6			
Schindler Seko Architekti s.r.o.	Diagnostic and assessment of structures		4,6			
Ing. Vávra Roman	Material research and testing		4,6			
Sipral a.s.	Testing of structures in situ		4,5			
Znamení čtyř s.r.o.	Diagnostic and assessment of structures		4,5			
Rephana Hotels a.s.	Diagnostic and assessment of structures		4,4			
Obermeyer Albis s.r.o.	Assessment and testing of structures in laboratory		4,4			
B2K s.r.o.	Testing of structures in situ		4,2			
BBJ-Quality Polsko	Material research and testing		4,2			
Dvořák partner s.r.o.	Diagnostic and assessment of structures		4,1			

MDS projekt s.r.o.	Diagnostic and assessment of bridges		4,0			
TSK Praha a.s.	Diagnostic and assessment of bridges			69,2		
ŘSD ČR a.s.	Diagnostic and assessment of bridges			61,3		
ČEZ a.s. Tušimice	Diagnostic and assessment of structures			15,3		
SN Hradec Králové	Diagnostic and assessment of structures			15,3		
SMP CZ a.s.	Testing of structures in situ			15,3		
ČEZ a.s.	Diagnostic and assessment of structures			15,3		
SŽDC Praha s.p.	Diagnostic and assessment of structures			14,8		
Měst Most	Diagnostic and assessment of structures			11,5		
Metrostav a.s.	Testing of structures in situ			10,9		
VUAB Pharma a.s.	Diagnostic and assessment of structures			10,2		
G-Ream a.s.	Assessment and testing of structures in laboratory			9,6		
Gemo Olomouc s.r.o.	Assessment and testing of structures in laboratory			9,5		
Zakládání staveb a.s.	Material research and testing			9,3		
Ing. Vácha s.r.o.	Assessment and testing of structures in laboratory			8,5		
Metrostav a.s.	Testing of structures in situ			8,5		
TaK Architekti s.r.o.	Diagnostic and assessment of structures			8,4		
Skanska a.s.	Assessment and testing of structures in laboratory			7,7		
Firesta, Fišer…s.r.o.	Testing of structures in situ			7,4		
VVISS s.r.o.	Diagnostic and assessment of structures			6,5		
Pontex s.r.o.	Material research and testing			6,5		
Sudop Praha a.s.	Diagnostic and assessment of bridges			6,3		
Metrostav a.s.	Testing of structures in situ			6,2		
M3M s.r.o.	Diagnostic and assessment of structures			6,0		

M3M s.r.o.	Diagnostic and assessment of structures			5,7		
Státní oblastní archiv	Diagnostic and assessment of structures			5,3		
SŽDC Praha s.p.	Diagnostic and assessment of bridges			5,3		
Metrostav a.s.	Testing of structures in situ			5,3		
Skanska a.s.	Testing of structures in situ			5,0		
Města Příbram	Diagnostic and assessment of structures			5,0		
Schoeller Centrum s.r.o.	Diagnostic and assessment of structures			4,8		
Stavební úřad Praha 8	Diagnostic and assessment of structures			4,8		
Fact s.r.o.	Assessment and testing of structures in laboratory			4,7		
Adv. kancelář Brož s.r.o.	Diagnostic and assessment of structures			4,6		
Pontex s.r.o.	Material research and testing			4,5		
MÚ Příbram	Diagnostic and assessment of bridges			4,5		
Pontex s.r.o.	Material research and testing			4,5		
MDS projekt s.r.o.	Diagnostic and assessment of bridges			4,5		
ŘSD ČR a.s.	Diagnostic and assessment of bridges			4,5		
Hloubětín 61 s.r.o.	Material research and testing			4,2		
Sokolovská uhelná s.r.o.	Material research and testing			4,0		
Robert Bosch s.r.o.	Material research and testing			4,0		
Loxia s.r.o.	Diagnostic and assessment of structures			4,0		
CTP Invest s.r.o.	Diagnostic and assessment of structures			3,8		
TSK Praha a.s.	Diagnostic and assessment of bridges				191,8	
TSK Praha a.s.	Diagnostic and assessment of bridges				108,2	
TSK Praha a.s.	Diagnostic and assessment of bridges				81,5	
TSK Praha a.s.	Diagnostic and assessment of bridges				65,7	
SŽDC Praha s.p.	Diagnostic and assessment of bridges				41,7	
Eurovia CS a.s.	Testing of structures in situ				17,9	

CB Profil a.s.	Assessment and testing of structures in laboratory				13,1	
Němec Polák s.r.o.	Diagnostic and assessment of structures				13,0	
KŠ Prefa s.r.o.	Assessment and testing of structures in laboratory				13,0	
Aréna Liberec s.r.o.	Diagnostic and assessment of structures				11,5	
Metrostav a.s.	Testing of structures in situ				11,5	
Správa silnic Pardubického kraje	Diagnostic and assessment of bridges				11,3	
Doosan Škoda Power s.r.o.	Testing of structures in situ				11,2	
Moravský zemský archiv	Diagnostic and assessment of structures				11,0	
Lesy ČR s.p.	Diagnostic and assessment of structures				11,0	
SŽDC Praha s.p.	Testing of structures in situ				10,4	
Ústav chemie a biochemie	Diagnostic and assessment of structures				8,0	
Policie ČR	Diagnostic and assessment of structures				7,8	
VUT Brno	Material research and testing				7,7	
ŘSD ČR a.s.	Diagnostic and assessment of bridges				7,5	
ŘSD ČR a.s.	Diagnostic and assessment of bridges				7,5	
Metroprojekt Praha a.s.	Testing of structures in situ				7,4	
Firesta, Fišer…s.r.o.	Testing of structures in situ				7,4	
Novák Partner s.r.o.	Diagnostic and assessment of structures				7,2	
ŘSD ČR a.s.	Testing of structures in situ				7,2	
YIT Stavo s.r.o.	Material research and testing				7,0	
Novák Partner s.r.o.	Diagnostic and assessment of structures				6,8	
Sweco Hydroprojekt a.s.	Material research and testing				6,8	
CB Profil a.s.	Assessment and testing of structures in laboratory				10,2	
Pontex s.r.o.	Material research and testing				6,6	
Němec Polák s.r.o.	Diagnostic and assessment of structures				6,5	

Pontex s.r.o.	Material research and testing				6,2	
Pontex s.r.o.	Material research and testing				6,2	
Metrostav a.s.	Testing of structures in situ				5,9	
AF-Cityplan	Diagnostic and assessment of bridges				5,4	
SV Zlonická	Diagnostic and assessment of structures				5,3	
Škoda Doosan Power s.r.o.	Testing of structures in situ				5,2	
MDS projekty s.r.o.	Diagnostic and assessment of bridges				5,1	
Hotel Mandarini	Diagnostic and assessment of structures				5,1	
MČ Praha 6	Diagnostic and assessment of structures				5,0	
D.I.Seven s.r.o.	Material research and testing				5,0	
Cementárna LafargeHolcim	Diagnostic and assessment of structures				5,0	
TCG s.r.o.	Material research and testing				4,8	
Novák partner s.r.o.	Diagnostic and assessment of structures				4,8	
Agrom s.r.o.	Material research and testing				4,8	
UNMZ	Standardization				4,8	
ÚOCHB s.r.o.	Material research and testing				4,7	
Lázeňská investiční s.r.o.	Diagnostic and assessment of structures				4,6	
Mott Mc Donald CZ s.r.o.	Diagnostic and assessment of bridges				4,5	
MDS projekt s.r.o.	Diagnostic and assessment of bridges				4,5	
MDS projekt s.r.o.	Diagnostic and assessment of bridges				4,5	
ŘSD ČR a.s.	Diagnostic and assessment of bridges				4,5	
Mott McDonald CZ s.r.o.	Diagnostic and assessment of bridges				4,4	
Zakládání staveb a.s.	Material research and testing				4,2	
Aliacem Přerov s.r.o.	Material research and testing				4,2	
Ústav chemie a biochemie	Diagnostic and assessment of structures				4,0	
Karlovarský kraj	Diagnostic and assessment of structures				3,9	
Stas s.r.o.	Material research and testing				3,9	

TSK Praha a.s.	Diagnostic and assessment of bridges					632,8
SŽDC Praha s.p.	Testing of structures in situ					65,6
Pontex s.r.o.	Diagnostic and assessment of bridges					65,4
Pontex s.r.o.	Diagnostic and assessment of bridges					65,4
Pontex s.r.o.	Diagnostic and assessment of bridges					58,7
TSK Praha a.s.	Diagnostic and assessment of bridges					29,7
SŽDC Praha s.p.	Diagnostic and assessment of structures					24,8
Pontex s.r.o.	Material research and testing					22,5
SŽDC Praha s.p.	Diagnostic and assessment of structures					18,7
TaK s.r.o.	Diagnostic and assessment of structures					18,4
TSK Praha a.s.	Diagnostic and assessment of bridges					17,6
TSK Praha a.s.	Diagnostic and assessment of bridges					17,3
Metrostav a.s.	Testing of structures in situ					16,1
Edifice Development s.r.o.	Diagnostic and assessment of structures					14,5
Policie ČR	Diagnostic and assessment of structures					14,1
Policie ČR	Diagnostic and assessment of structures					13,7
Eurovia CS a.s.	Testing of structures in situ					13,3
TSK Praha a.s.	Diagnostic and assessment of bridges					13,3
Sev.en Engineering s.r.o.	Material research and testing					13,2
TSK Praha a.s.	Diagnostic and assessment of bridges					13,1
ŘSD ČR	Diagnostic and assessment of bridges					12,9
Betotech s.r.o.	Material research and testing					12,7
Likal	Material research and testing					12,7
TaK s.r.o.	Diagnostic and assessment of structures					12,3
SŽDC Praha s.p.	Diagnostic and assessment of bridges					12,2
TSK Praha a.s.	Diagnostic and assessment of bridges					11,2

Město Nymburk	Diagnostic and assessment of bridges					11,2
Němec Polák s.r.o.	Diagnostic and assessment of structures					11,2
TSK Praha a.s.	Diagnostic and assessment of bridges					11,1
Doosan Škoda Power s.r.o.	Testing of structures in situ					11,1
Strabag a.s.	Testing of structures in situ					10,6
Prodin a.s.	Diagnostic and assessment of structures					10,1
TopCon servis s.r.o.	Diagnostic and assessment of bridges					9,7
MDS projekt s.r.o.	Diagnostic and assessment of bridges					9,7
Pontex s.r.o.	Material research and testing					9,5
TSK Praha a.s.	Diagnostic and assessment of bridges					9,4
TSK Praha a.s.	Diagnostic and assessment of bridges					9,2
TSK Praha a.s.	Diagnostic and assessment of bridges					8,3
Eurovia	Testing of structures in situ					8,3
Letohrad	Diagnostic and assessment of structures					8,1
MDS projekt s.r.o.	Diagnostic and assessment of bridges					7,9
Sudop Praha a.s.	Diagnostic and assessment of bridges					7,7
SMP CZ a.s.	Testing of structures in situ					7,7
TSK Praha a.s.	Diagnostic and assessment of bridges					7,7
Novák partner s.r.o.	Diagnostic and assessment of bridges					7,7
Pražská správa nemovitostí	Diagnostic and assessment of structures					9,4
SŽDC Praha s.p.	Diagnostic and assessment of bridges					7,7
Carpet Invest s.r.o.	Diagnostic and assessment of structures					7,6
Silnice Group a.s.	Testing of structures in situ					7,5
MDS projekt s.r.o.	Diagnostic and assessment of bridges					7,5
SŽDC Praha s.p.	Diagnostic and assessment of structures					7,4
MČ Praha 6	Diagnostic and assessment of structures					7,4

TSK Praha a.s.	Diagnostic and assessment of bridges					7,4
Novák partner s.r.o.	Diagnostic and assessment of bridges					7,3
Pontex s.r.o.	Material research and testing					7,2
AEG projekt s.r.o.	Material research and testing					7,0
Pontex s.r.o.	Material research and testing					7,0
TCG s.r.o.	Material research and testing					6,9
OHL ŽS a.s.	Testing of structures in situ					6,7
Silnice Group	Testing of structures in situ					6,5
YIT Stavo s.r.o.	Material research and testing					6,5
Sudop Praha a.s.	Diagnostic and assessment of bridges					6,4
Red Group	Diagnostic and assessment of structures					6,0
Pontex s.r.o.	Material research and testing					6,0
TaK s.r.o.	Diagnostic and assessment of structures					6,0
TSK Praha a.s.	Diagnostic and assessment of bridges					6,0
SUPŠ Karlovy Vary	Diagnostic and assessment of structures					5,9
Správa úložišť rad. odpadu	Material research and testing					5,8
Mott Mac Donald s.r.o.	Testing of structures in situ					5,7
Skanska a.s.	Testing of structures in situ					5,7
Cemmac a.s.	Material research and testing					5,7
Saint-Gobain	Material research and testing					5,6
Edifice Bohdalec, s.r.o.	Diagnostic and assessment of structures					5,5
TCG	Material research and testing					5,4
MDS projekt s.r.o.	Diagnostic and assessment of bridges					5,3
Property Klárov a.s.	Diagnostic and assessment of structures					5,2
Property Klárov a.s.	Diagnostic and assessment of structures					5,2
Město Plaňany	Diagnostic and assessment of structures					5,1

Scheys Beton	Material research and testing					4,9
VUT Brno	Material research and testing					4,8
MDS Projekt s.r.o.	Diagnostic and assessment of bridges					4,8
ČAS	Standardise					4,8
UTAM	Material research and testing					4,5
MDS projekt s.r.o.	Diagnostic and assessment of bridges					4,5
TSK Praha a.s.	Diagnostic and assessment of bridges					4,5
Satpo Sacre s.r.o.	Material research and testing					4,4
Ateliér Slavíček	Diagnostic and assessment of structures					4,3
ČSOB a.s.	Diagnostic and assessment of structures					4,2
Com-Pakt Energy a.s.	Diagnostic and assessment of structures					4,2
ASLB s.r.o.	Material research and testing					4,2
TopCon servis s.r.o.	Diagnostic and assessment of bridges					4,1
M. Šimek	Material research and testing					4,0
MDS projekt s.r.o.	Diagnostic and assessment of bridges					3,9
MDS projekt s.r.o.	Diagnostic and assessment of bridges					3,9
Total		**288,1**	**322,3**	**432,6**	**865,8**	**1681,7**
Invoicing below 100 thousand		**327,3**	**375,5**	**384,0**	**436,8**	**393,0**
Total		**615,4**	**697,8**	**816,6**	**1302,5**	**2074,6**

(1 EUR = 26 CZK)

Note: List and describe contract research work with the revenue for the calendar year in question.

3.3.2 Research work contracted by a foreign client

Client	Research title	Revenues (EUR thousand)				
		2014	2015	2016	2017	2018
Peikko Finsko	Assessment and testing of structures in laboratory	7,6				
Neografia SR	Diagnostic and assessment of structures	5,5				
Qualiform Slovakia s.r.o.	Material research and testing	4,5				
Knafl Rakousko	Assessment and testing of structures in laboratory	4,4				
Lafarge Centre Francie	Material research and testing		4,6			
Syspro Švýcarsko	Assessment and testing of structures in laboratory		4,3			
Peikko Group Finsko	Assessment and testing of structures in laboratory			17,8		
Lafarge Centre Francie	Material research and testing			10,4		
Pfisterer Sefag Švýcarsko	Assessment and testing of structures in laboratory			8,8		
Lafarge Francie	Material research and testing			3,8		
Peikko Group Finsko	Assessment and testing of structures in laboratory				12,2	
Voestalpine	Assessment and testing of structures in laboratory				10,3	
Lafarge Francie	Material research and testing				8,7	
Peikko Group Finsko	Assessment and testing of structures in laboratory				8,6	
ER Rebosie Itálie	Assessment and testing of structures in laboratory				6,8	
Lafarge Francie	Material research and testing				6,6	
Manhal Said	Assessment and testing of structures in laboratory				5,8	
Pfisterer Sefag Švýcarsko	Assessment and testing of structures in laboratory				4,5	
Lafarge Francie	Material research and testing				4,1	
Voestalpine Profilform	Assessment and testing of structures in laboratory				3,9	
Saint-Gobain	Assessment and testing of structures in laboratory					6,8
Saint-Gobain	Assessment and testing of structures in laboratory					4,8
Total		**22,0**	**9,0**	**40,8**	**71,6**	**11,7**

(1 EUR = 26 CZK)

Note: List and describe contract research work with the revenue for the calendar year in question.

3.4 Revenues from non-public sources (besides grants or contract research)

3.4.1 Overview of revenues from non-public sources raised for the 2014–2018 reporting period

Revenue type	Revenues (EUR thousand)				
	2014	2015	2016	2017	2018
Research work contracted by a client from the Czech Republic	**615,4**	**697,8**	**816,6**	**1302,5**	**2074,6**
Research work contracted by a foreign client	**22**	**9**	**40,8**	**71,6**	**11,7**
Other professional activity and cooperation with industry – accredited laboratory, expert opinion	**122,7**	**175,7**	**156,8**	**203,6**	**189,8**
Total	**760,1**	**882,5**	**1014,2**	**1577,7**	**2276,1**

(1 EUR = 26 CZK)

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

3.5 Applied research results with an economic impact on society

3.5.1 Overview of applied research results in the 2014–2018 reporting period

List and describe the results that have already been applied in practice, or that will realistically be applied, with an existing or prospective economic impact on society. Under "patents" and "licences sold", list all the results; under other results list a *maximum* of five items. Unless otherwise specified below, the definition of a result must correspond to the definitions under the Methodology for Evaluating Research Organisations and Research, Development and Innovation Purpose-Tied Aid Programmes, Appendix No 4: Definitions of Types of Results.

Results	Year	Title
European patent	2019	METHOD OF OPTIMIZING THE CONCRETE REINFORCEMENT ARRANGEMENT AND ORIENTATION IN CONCRETE
	2019	METHOD OF OPTIMIZING THE FIBERS ARRANGEMENT AND ORIENTATION IN ULTRA-HIGH PERFORMANCE CONCRETE
American patent	0	
Czech licenced patent	0	
Other foreign patents	2015	Production Method of Prefabricated Elements Made from Porous Building Materials, Especially from Composites Materials
Licences sold	0	
Significant analyses / surveys / studies	2018	Assessment of Existing Structures
Spin-off with a stake held by the evaluated unit	0	
Spin-off with no stake held by the evaluated unit	0	

Prototypes	2018	UHPC Shell Formwork for Pillar Construction
	2018	Small Prefabricated UHPC Elements for Transport Infrastructure - Curb
	2018	Shell Lost Formwork from UHPC for Barrier
	2015	Thin-walled Façade Panels of UHPC
	2015	Protective Panel Liapor
	2015	The Tunnel Lining with LA Blocks
Varieties and breeds	0	
Other	2017	ČSN EN 1991-1-3/A1 NA ed. A. National Annex - Eurocode 1: Actions on Structures – Part 1-3: General Actions – Snow Loads
	2016	ČSN EN 1991-2 NA ed. A National Annex - Eurocode 1: Actions on Structures - Part 2: Traffic Loads on Bridges
	2015	Eurocode: Bases of Design, Amendment Z4
	2014	Assessment and Verification of Existing Structures – Supplementary Guidance

Note: "Licence" refers to a licence for a result of R&D&I in the broadest sense of the word (licences for patents, utility models, industrial designs; copyright licences for software and other works, and any other licences).

For the purposes of this methodology, a "spin-off" is a juridical person established to commercialise knowledge, usually with the inclusion/transfer of the rights to this knowledge to such juridical person. List all instances of legal persons.

3.6 Significant applied research results with an impact other than an economic one on society

3.6.1 Overview of applied research results for the 2014–2018 reporting period with an impact other than an economic one on society

Result type	Name	Anticipated impact
Important publishing activities	Partial Factor Methods for Existing Concrete Structures	The researchers from the Klokner Institute are members of international scientific groups of important publishing activities. The examples of publication were rated mark1 in the Assessment 17 RVVI
Important publishing activities	Probabilistic reliability assessment of existing structures: focused on industrial heritage buildings	The researchers from the Klokner Institute are members of international scientific groups of important publishing activities. The examples of publication were rated mark1 in the Assessment 17 RVVI
Result Reflected in Legislation and Standards	ČSN EN 1991-2 NA ed. A National Annex - Eurocode 1: Actions on Structures - Part 2: Traffic Loads on Bridges	Selected examples of standards that prove the Klokner Institute extensively participates in development of standards. The mentioned examples of standards were rated mark 2 in the Assessment 17 RVVI
Result Reflected in Legislation and Standards	Eurocode 1: Actions on Structures – Part 1-3: General Actions – Snow Loads	The researchers from the Klokner Institute are members of international scientific groups of important publishing activities. The examples of publication were rated mark1 in the Assessment 17 RVVI

Applied Certified Methodology	Methodology for Design of UHPC and Material Tests	The example of certified methodology that points out the researchers of the Klokner Institute actively participate in implementation of new advanced materials in the Czech Republic.

Note: List and describe a maximum of five results (in line with the Definitions of Types of Results) that have already been applied in practice, or that will realistically be applied. These are typically results from disciplines in the humanities and social sciences, for which you should briefly describe their anticipated impact.

3.11 Recognition in the international R&D&I community

3.11.1 Participation of the evaluated unit's academic staff on the editorial boards of international scientific journals in the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Title, publisher, city(-ies) and country(-ies) of origin of the scientific journal
Prof. Ing. Milan Holický, DrSc., member of the editorial board	International Journal of Heritage Architecture, WIT Press, Ashurst Lodge, United Kingdom
Prof. Ing. Milan Holický, DrSc., member of the editorial board	International Journal of Safety and Security Engineering, International Information and Engineering Technology Association (IIETA), Edmonton, Canada
Doc. Ing. Miroslav Sýkora, Ph.D., member of the editorial board	International Journal of Heritage Architecture, WIT Press, Ashurst Lodge, United Kingdom
Doc. Ing. Miroslav Sýkora, Ph.D., member of the editorial board	Structural Concrete – journal of fib, Ecole Polytechnique fédérale de Lausanne (EPFL), Lausanne, Switzerland
Doc. Ing. Miroslav Sýkora, Ph.D., member of the editorial board	ACTA POLYTECHNICA (Journal of Advanced Engineering), Czech Technical University in Prague, Prague, Czech Republic
Ing. Klára Vokáč Machalická, Ph.D. member of the editorial board	International Journal of Structural Glass and Advanced Materials Research, Science Publications, Dubai, United Arab Emirates

Note: List a maximum of ten examples of academic staff's participation on the editorial boards of international scientific journals (e.g. editor, member of the editorial board, etc.).

3.11.2 The most significant invited lectures by the evaluated unit's academic staff at institutions in other countries during the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Invited lecture title	Name of the host institution, conference or other event
Doc. Ing. Jana Marková, Ph.D.	Potential implications of the changes in the thermal actions on the design of bridge structures, bearing and expansion joints	Meeting on implications of climate change on structural design, 21.6.2019, supported JRC and DG Grow, EK, The JRC in Ispra, Italy
Doc. Ing. Jana Marková, Ph.D.	EU MS Case study 3: Czech Republic	The way forward for the Eurocodes implementation in

		the Balkans, 10. – 11. 10. 2018, supported JRC and EK, Tirana, Albania
Doc. Ing. Jana Marková, Ph.D.	Methodology of calculation of the National Determined Parameters to Eurocodes	Technical University of Moldova, 11.1.2018, Kišiněv, Moldova
Prof. Ing. Milan Holický, DrSc.	Reliability Required for Heritage Structures	Wessex Institute, 9.5.2017, Southampton, UK
Prof. Ing. Milan Holický, DrSc.	Probabilistic Models in Reliability Analysis	DFG-Research Training Group 1932, Stochastic Models for Innovations in the Enginnering Sciences, Technische Universität Kaiserslautern, Fachbereich Bauingenieurwesen, 9.9.2017, Kaiserslautern, Germany
Prof. Ing. Milan Holický, DrSc.	Reliability and Risk Assessment	Technische Universität Kaiserslautern, Fachbereich Bauingenieurwesen, 20.9.2017, Kaiserslautern, Germany
Doc. Ing. Miroslav Sýkora, Ph.D.	Reliability assessment of existing structures (according to ISO 13822 and prospective CEN guidance)	Ghent University, 28.4.2016, Ghent, Belgium
Doc. Ing. Miroslav Sýkora, Ph.D.	Assessment of Existing Structures focusing on Architectural Heritage	Ostbayerische Technishe Hochschule Regensburg,
Doc. Ing. Miroslav Sýkora, Ph.D.	Assessment of existing structures with insufficient reliability according to the partial factor method	Ostbayerische Technische Hochschule, 30.11.2017, Regensburg, Germany
Doc. Ing. Miroslav Sýkora, Ph.D.	Uncertainty in resistance models for historic cast-iron columns	Invited lecture-14th International Conference on Studies, Repairs and Maintenance of Heritage Architecture Conference, 13.-15.7.2015, Coruna, Spain

Note: List a maximum of ten examples.

3.11.3 The most significant lectures by foreign scientists and other guests relevant to the R&D&I field at the evaluated unit during the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Lecturer's employer at the time of the lecture	Invited lecture title
0	0	0

Note: Relevant solely for the R&D&I field. List a maximum of ten examples.

3.11.4 The most significant elected membership in foreign of professional societies relevant to the R&D&I field at the evaluated unit during the 2014–2018 reporting period

Name, surname and title(s) of the evaluated unit's member of staff	Name of professional society	Type of membership
Doc. Ing. Jiří Kolísko, Ph.D. Ing. Petr Tej, Ph.D.	Réunion internationale des Laboratoires d´Essai et de Recherches sur Matériaux et les Constructions (RILEM)	Kolísko-member Tej- Technical Comittee - Digital fabrication with Cement-based materials (TC 276-DFC)
Doc. Ing. Miroslav Sýkora, Ph.D.	International Association for Bridge and Structural Engineering (IABSE)	Member of TG6.1 Effects of climate change on infrastructures, correspondent member TG1.3 Calibration of partial safety factors for the assessment of existing bridges
Prof. Ing. Milan Holický, Dr Doc. Ing. Miroslav Sýkora, Ph.D.	International Federation for Structural Concrete (FIB)	Holický-member COM3 Existing concrete structures, TG3.1 Reliability and safety evaluation Sýkora-member of the steering group COM3 Existing concrete structures, working group leader TG3.1 Reliability and safety evaluation, correspondent memberTG3.Assessment/evaluation and decision-making procedures for the through-life management of existing concrete structures and AG8 Non-linear finite element analysis
Prof. Ing. Milan Holický, DrSc. Doc. Ing. Miroslav Sýkora, Ph.D.	International Organization for Standardization (ISO)	Members of working groups ISO/TC98/SC2
Prof. Ing. Milan Holický, DrSc. Doc. Ing. Jana Marková, Ph.D. Doc. Ing. Miroslav Sýkora, Ph.D.	European Committee for Standardization (CEN)	Holický-member CEN/TC250/WG2 Assessment of Existing Structures Marková- representative of the Czech Republic in the CEN/TC 250 Structural Eurocodes and SC1 and SC10, project team leader (PT)SC1.T4, member PT SC1.T5, SC1.T6 and SC1.T8, leader CEN/TC250 Adhoc group for Towers and Masts Sýkora-member CEN/TC250/SC1.T2 – European project team on snow loads, national contact Horizontal Group-Bridges of CEN, Representative of the Czech Republic CEN/TC250/SC1/WG 3 Traffic loads on bridges
Prof. Ing. Milan Holický, DrSc. Doc. Ing. Jana Marková, Ph.D.	Joint Committee on Structural Safety (JCSS)	Members of the JCSS

Doc. Ing. Miroslav Sýkora, Ph.D.		
Doc. Ing. Jiří Kolísko, Ph.D.	Central Europe towards Sustainable Building (CESB)	Member
Doc. Ing. Jiří Kolísko, Ph.D. Doc. Ing. Tomáš Klečka, CSc. Ing. Radka Pernicová, Ph.D.	Scientific and Technical Association for Building Rehabilitation and Monument Preservation (WTA)	Kolísko - Committee member Klečka – vice-chairman Pernicová – specialized department

Note: List a maximum of ten examples.

SUMMARY LIST OF ADDITIONAL DOCUMENTATION IN MODULE M3

Document Title	Criterion	Location (HTML link)
Klokner Istitute	3.1	http://www.klok.cvut.cz/en/
Industrial property office	3.5	https://www.upv.cz/en.html
Industrial property office	3.6	https://www.upv.cz/en.html
Industrial property office	3.8	https://www.upv.cz/en.html
International Journal of Heritage Architecture	3.11	https://www.witpress.com/journals/ha
International Journal of Safety and Security Engineering	3.11	http://www.iieta.org/Journals/IJSSE
Structural Concrete – journal of fib	3.11	https://www.fib-international.org/publications/sc-journal.html
Acta Polytechnica	3.11	https://ojs.cvut.cz/ojs/index.php/ap
International Journal of Structural Glass and Advanced Materials	3.11	https://thescipub.com/journals/sgamr