

JCSS WORKSHOP

WELCOME TO KLOKNER INSTITUTE

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KLOKNER INSTITUTE INTRODUCTION



KLOKNER
INSTITUTE
CTU IN PRAGUE

The Klokner Institute (KI) was founded in 1921 as the Research and Experimental Institute of Materials and Building Structures.

Today the Institute bears the name of its founder and first director, Frantisek Klokner, an outstanding CTU professor and researcher.



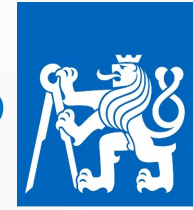
INSTITUTE NOW



- 1. Department of Structural Reliability**
 - 2. Department of Mechanics**
 - 3. Department of Experimental Methods**
 - 4. Department of Building Materials**
- 85 employees**
 - Research, teaching, standardization**
 - Industry cooperation**
 - Forensic expert institute**
 - Accredited Testing Laboratory**



MAIN RESEARCH FIELDS



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- 1) Reliability and risk assessment of building structures
- 2) Retrofitting of existing structures
- 3) Technology of concrete and special cementitious materials (**UHPC, 3D printing, HVFAC, low pH concrete, TRC, etc.**)
- 4) Design of UHPC structures
- 5) Robotic fabrication of cementitious materials – 3D printing – structural design, technology
- 6) Corrosion of metals and their protection - testing, evaluation



INDUSTRY COOPERATION



Annually KI is involved in surveys of 30-40 bridges and 30 -40 of buildings

Departments and testing laboratories issue each year:

- 1. More than 600 test reports**
- 2. More than 200 expert and research reports**
- 3. More than 40 forensic reports**

DIAGNOSTIC OF STRUCTURES

THE TROJA FOOTBRIDGE - AFTER FAILURE



Stress – ribbon footbridge

- Build up 1984
- 3 span – 85,5/96/67 m
- Failure 12/2017
- 4 people were injured

Role of KI

- Testing materials – concrete prestressing tendons, grout
- Assessment of the presence of filling grout in ducts.
- Chemical analysis of the presence of corrosive agents
- Assessment of corrosion of tendons and concrete



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TECHNOLOGY OF CEMENTITIOUS MATERIALS

UHPC DOUBLE CURVATURE ARCHE BRIDGE



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Role of KI at this project:

- Development of UHPC material
- Static analysis and design of details
- Design a completion of formwork
- Technology of casting and assistance of casting
- Material and bridge testing,
- Assistance to installation.





KLOKNERUV

ÚSTAV HMOT A KONSTRUKCÍ

INSTALLATION AT THE SOLOPISKY POND





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**Thank you for your
attention!
Good luck to the
JCSS committee**