



BRNO FACULTY OF MECHANICAL  
UNIVERSITY ENGINEERING  
OF TECHNOLOGY

# *IEB questions*



- **Please summarise the strengths of your faculty in comparison with the Czech or European competition.**

**The largest mechanical engineering faculty in the Czech Republic with know-how in the main field of FORD 2, Engineering and technology, in FME conditions comprises practically all sub-fields 2.1 to 2.9:**

- energetics, thermomechanics;
- heat transfer and fluid flow;
- aerospace technologies;
- automotive and transport engineering;
- automation, informatics, cybernetics;
- machine design, tribology, diagnostics, additive technologies;
- applied mathematics;
- solid mechanics, mechatronics and biomechanics;
- materials science and engineering, advanced materials;
- process engineering;
- engineering technologies;
- manufacturing machines, systems and robotics.



- **Please summarise the strengths of your faculty in comparison with the Czech or European competition.**
  - The total scope of financial support for **applied research projects** amounted in the 2014–2018 reporting period to **EUR 36 mil.** in respect of **144** projects undertaken. Almost **85% projects** in effective collaboration within collaborative research with corporate partners (over **200 companies** involved as partners).
  - Total financial scope (sum of **contract research** revenues) reached in the 2014–2018 reporting period almost **EUR 9.5 mil.** (with a growing trend; in 2018 it was **EUR 2.2 mil.**) from **400** partners. More than **30%** of the research work is contracted by **65** foreign partners.
  - This area is one of the greatest strengths of FME, which qualitatively reaches the level of leading research organizations in international comparison.



- Please summarise the strengths of your faculty in comparison with the Czech or European competition.

FME R&D staff and students regularly receive foreign and Czech prestigious individual awards, which prove their professional qualities.

At the **national level**, these are the prestigious awards of the Josef Hlávka Award and **the Werner von Siemens Award** and in particular **the Czech Head Award**, which represents the highest award for authors of Czech discoveries, patents and new technologies. **Gold Medals** of the International Engineering Fair in Brno.

At the **international level**, these include the prestigious **RED DOT DESIGN AWARD** awards and awards for the best publications of the year.



- Please summarise the strengths of your faculty in comparison with the Czech or European competition.

The **social impact** of the results with public benefits in the field of health, reducing emissions, improving the quality of life of people with disabilities, water purification, etc.



Mechatronic piano for  
a wheelchair-bound pianist



Respiratory system simulator



- **Where do you see potential for improvement? With which key figures will you describe the improvements?**
  - Possible improvements linked to a lower participation in H2020 projects, which is relevant to the evaluation despite the fact that FME provides for its extensive international research cooperation in particular by means of institutional support, in collaboration with companies especially through contract research.
  - A somewhat weaker point is the transfer of technology of non-economic nature, i.e., licensing of protected solutions, or sale of intangible property.
  - **Key figures** - the total financial support for H2020 and similar projects and income from the transfer of technology.



- **Please summarise the strengths of your faculty in comparison with the Czech or European competition. Where do you see potential for improvement? With which key figures will you describe the improvements?**

Review criteria/areas	Self-evaluation described in textual appendix
3.2.	$5*4=20$
3.3.	$5*5=25$
3.4.	$5*4=20$
3.5.	$5*5=25$
3.6.	$3*5=15$
3.7.	$5*5=25$
3.8.	$5*3=15$
3.9.	$5*4=20$
3.10.	$5*5=25$
3.11.	$5*5=25$
3.12.	$5*5=25$



- **What will be the next steps to maintain the many very successful cooperations with the local industry?**

The Technology Agency of the Czech Republic - **National Centres of Competence** 1: Support programme for applied research, experimental development and Innovation (2019-2022: 13 centres in Czech republic)

- Mechatronics and Smart Technologies for Mechanical Engineering
- Aeronautics and Space
- Surface Vehicles
- Energy
- Engineering

Main aim for establishing NCC is to **enhance complex model of efficient cooperation** of RO departments and development capacities of businesses for growth of technological competence.





- **How do you assess the impact of the Corona crisis on BUT or FME? How will you react to it?**
  - The negative impact of the Corona crisis can be seen in **the contract research.**
  - Focus on National Centres of Competence and other applied research projects - The Technology Agency of the Czech Republic
  - Focus on basic research - Czech Science Foundation



- **What research topics will you push forward in the coming years? Where do you see the greatest potential for attracting European research projects?**
  - **Aeronautics and Space**
  - **Mechanical Energy Losses, Effective Low-Emission Energy Engineering, Waste Management**
  - **Smart components and technologies**
  - **Industry 4.0 & Digital Factory**



- **Will dissertations be specifically geared to these topics?**
  - Yes, in general, PhD programme is research-oriented and the aim is to prepare students for independent basic and applied research and development. That is why dissertations are connected with applied or basic research projects, preferably with international cooperation.



- **Do you see a decline in the qualifications of new students? How long are the average durations of studies in Bachelor's and Master's programmes? Have the study durations changed over the last 10 years?**

Year	Length of Bc. Study	Students No.
2009	3.41	495
2010	3.36	578
2011	3.45	553
2012	3.36	532
2013	3.35	558
2014	3.27	577
2015	3.3	587
2016	3.27	605
2017	3.34	592
2018	3.37	546
2019	3.47	524

- It is rather difficult to do some quantified comparison. There is some qualification decline in mathematics and physics as students enter the study.



- **How large is the proportion of women among first-year students? How will you increase the proportion of women?**
- **The proportion of women among first-year students is about 12%.**
- **Study programmes - Mathematical Engineering, Fine Mechanics and Optics, Industrial Design**
- **We try to explain that the mechanical engineering has changed significantly since 20th century and it can be attractive for women.**



- **How do you rate the attractiveness of BUT FME as an employer? What proportion of the best graduates can you employ at BUT?**
  - Most of PhD students are employed at BUT during their study. They solve basic or applied research projects.
  - After PhD study about 30% best graduates are employed at BUT.