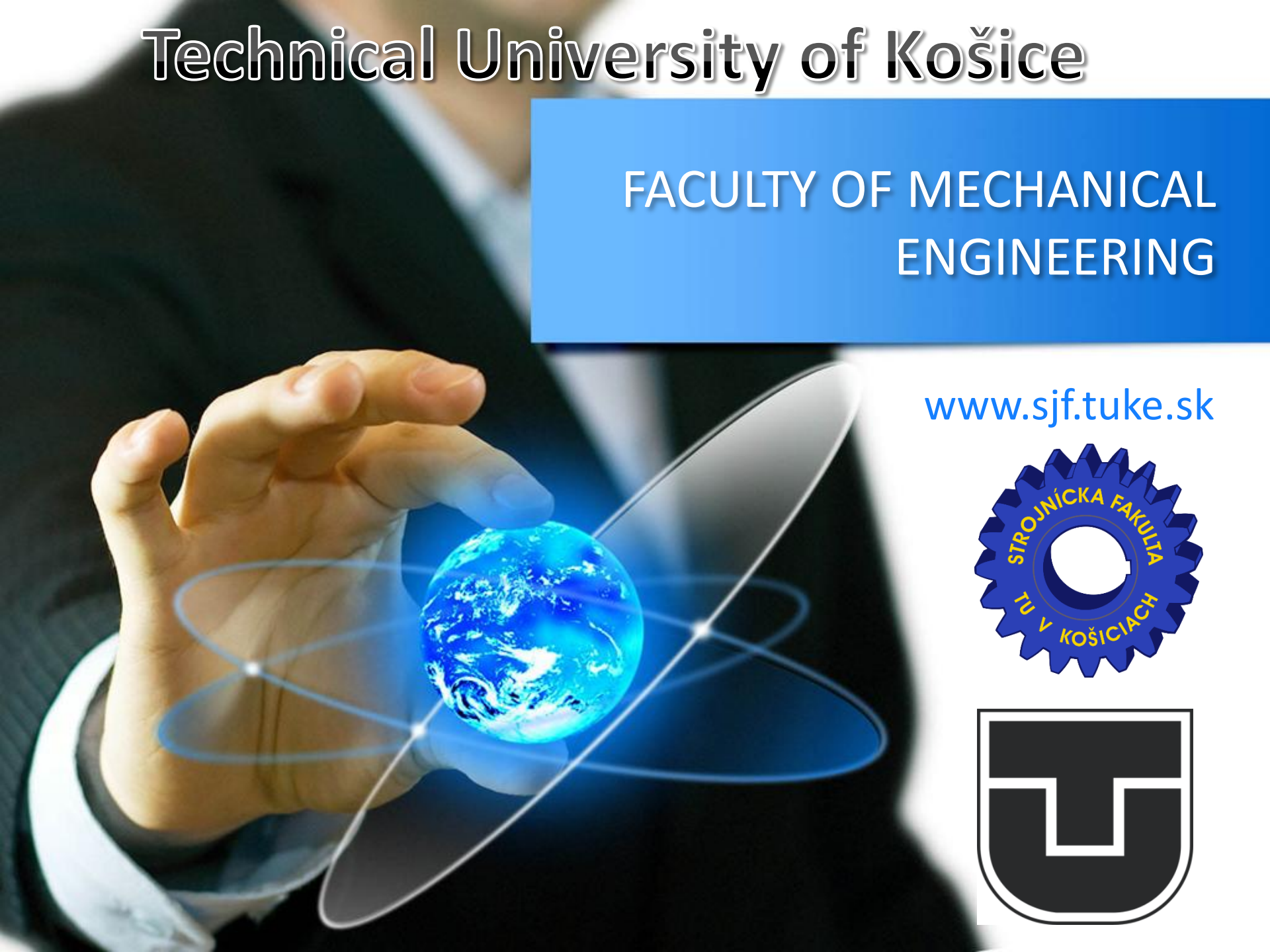
Technical University of Košice

FACULTY OF MECHANICAL ENGINEERING

www.sjf.tuke.sk



History

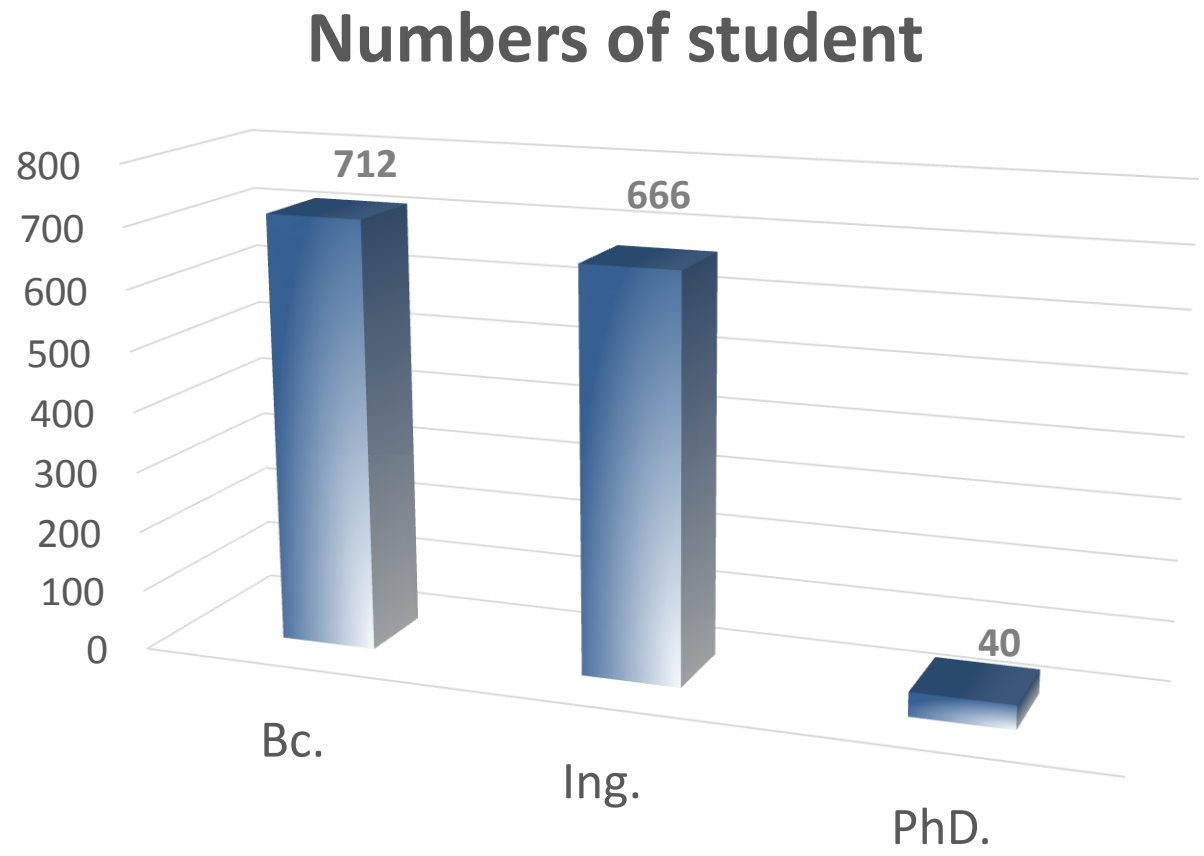
- Establishment of the Košice University confirmed Emperor Leopold I. August 7, 1660 Golden Bull (Bulla Aurea)
- Governmental Decree No.30 / 1952 created Technical University of Košice, 3 Faculties
- The origins of the faculty is connected with four departments: Department of Mathematics and Descriptive Geometry, Department of Physics, Department of Mechanics, Department of Mechanical Engineering

EXCELLENCY OF THE FACULTY

- National prize of Quality 2015
- Slovak Office of Standards, Metrology and Testing as coordinator of the state politic of quality annouced the 16. year of competition National prize of Quality

- Faculty of Mechanical Engineering won the prize in category: Organization of public sector

Structure of employees and the number of students



The Faculty has accredited study programs

- 11 bachelor
- 19 engineering
- 12 PhD
- 15 habilitation and inauguration

Education

Accreditation for:
Bachelor level

- Automotive Production
- Mechatronics
- Computer Aided Engineering Production
- Control and Diagnostics for Technology of Production, Robotics and Transport
- Industrial Engineering
- Management of Technical and Environmental Risks in Mechanical Engineering
- Mechanical Engineering
- Prosthetics and Orthotics
- Management and economics
- Technology, Management and Innovation in Machinery Production
- Environmental technology

Education

Accreditation for:
Master (Engineer) level

- Applied Mechanics
- Automation and Control of Machines and Processes
- Automotive Production
- Safety of Technical Systems
- Biomedical Engineering
- Transport Machines and Logistics
- Power Supply Machines and Machinery
- Engineering of Production Quality
- Mechatronics
- Measurement
- Engineering Technologies
- Computer Aided Engineering Production
- Industrial Engineering
- Robotic Technology
- Machines and Machinery for Building Industry, Agriculture and Raw Material Processing
- Mechanical Engineering
- Management of Technical and Environmental Risks
- Plastics Processing
- Production Machines and Machinery

Education

Accreditation for:
Doctoral study

- Applied Mechanics
- Automation and Control
- Safety of Technical Systems and Safety of Work
- Biomedical Engineering
- Parts of Machines and Mechanisms
- Transport Machines and Equipment
- Power Supply Machines and Equipment
- Mechatronics
- Industrial Engineering
- Engineering Technologies and Materials
- Technology of Environmental Protection
- Production Machines

Complex accreditation - FME

Accreditation for:
Habilitation and Inauguration

- Safety of Technical Systems
- Transport Machines and Equipment
- Machinery
- Measurement
- Biomedical Engineering
- Automation
- Engineering Technologies and Materials
- Power Supply Machines and Equipment
- Parts of Machines and Mechanisms
- Industrial Engineering
- Production Technologies
- Production Engineering
- Processing Engineering
- Mechatronics
- Applied Mechanics

Structure of faculty

- Institute of Automation, Robotics and Mechatronics
- Institute of Technologies and Management
- Institute of Machine Design and Process Engineering
- Institute of Safety and Biomedical Engineering

Structure of Institute of Technology and Management

DEPARTMENTS

- Department of Mechanical Technologies and Materials
- Department of Automotive Production
- Department of Computer Aided Engineering Production
- Department of Industrial Engineering and Management

COOPERATION WITH COUNTRIES

Germany, Austria, England, Slovenia, Poland, Hungary, France, Italy

Head of Institute

prof. Ing. Emil Spišák, CSc.
Full professor in the field
Mechanical Engineering
Technologies

ORIENTATION OF RESEARCH

- Metal Forming
- Welding
- Cutting
- Automotive Production
- Computer Aided Engineering Production
- Assembly – Virtual Assembly and Ergonomic Analysis
- Industrial Engineering and Management
- Plastics Processing

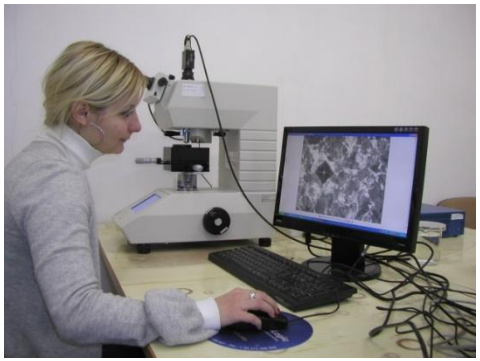
Most significant publications

CC 98,
WOS
and SCOPUS 57

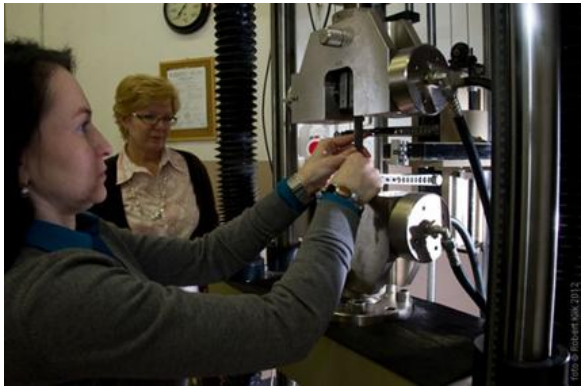
- **Research into properties of joints of combined materials made by resistance spot welding** / Emil Spišák, Ľuboš Kaščák, Ján Viňáš - 2011. In: Chemické listy. Vol. 105, no. 16 (2011), p. 488-490. - ISSN 0009-2770
- **Inhomogeneous plastic deformation of tinplates under uniaxial stress state** / Emil Spišák ... [et al.] - 2012. In: Chemické listy. Vol. 106, no. Symposia (2012), p. s537-s540. - ISSN 0009-2770
- **The experimental analysis of forming and strength of Clinch Riveting sheet metal joint made of different materials** / Jacek Mucha, Ľuboš Kaščák, Emil Spišák - 2013. In: Advances in Mechanical Engineering. (2013), p. 1-11. - ISSN 1687-8132
- **Effect of the Electrolyte Temperature and the Current Density on a Layer Microhardness Generated by the Anodic Aluminium Oxidation** / Emil Spišák ... [et al.] - 2015. In: Advances in Materials Science and Engineering. Vol. 2015 (2015), art. ID 659846, p. 1-9. - ISSN 1687-8434

Analysis of materials

Chemical analysis of steels

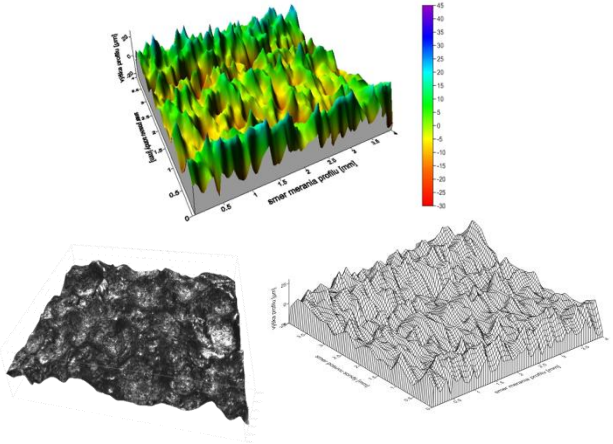


Hardness test



Analysis of mechanical properties

Corrosion testing



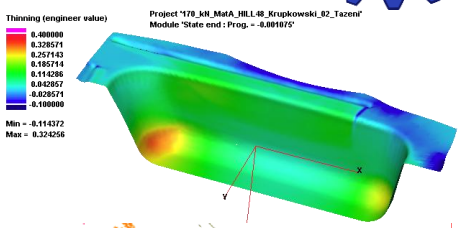
Surface engineering

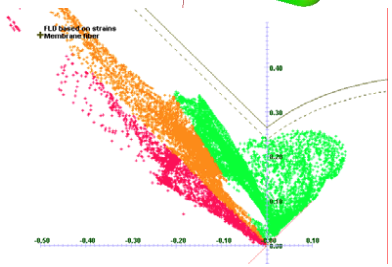
Electrochemical impedance spectroscopy (corrosion rate)

Technological testing of materials sheet metal forming

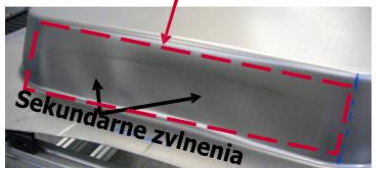
Erichsen 145-60 unique universal testing equipment for technological testing of metal sheets

Equipment for Bulge test for US Steel Košice



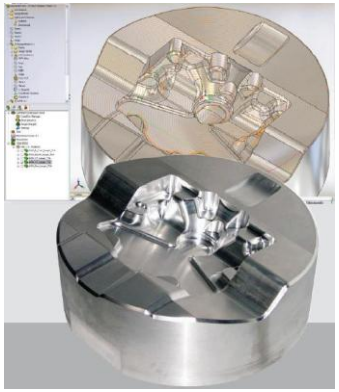


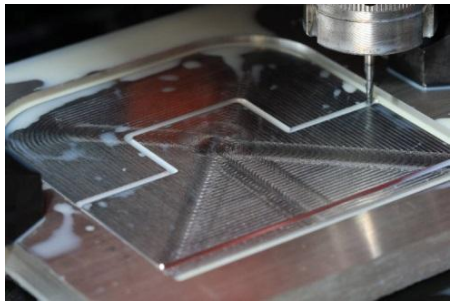
Analysis of process sheet metal forming (Pam Stemp)



Analysis of process sheet metal forming (Škoda)

Laboratory of CNC machines programming





Education of machining strategies (Catia, NX, Pro Engineer, CAM 2000, CAM 3000,....)

CNC turning center - DMG Ecoline CTX 310, DMG Ecoline CTX 510, CNC milling center - EMCO Concept MILL 155, DMG EcoMil 50,

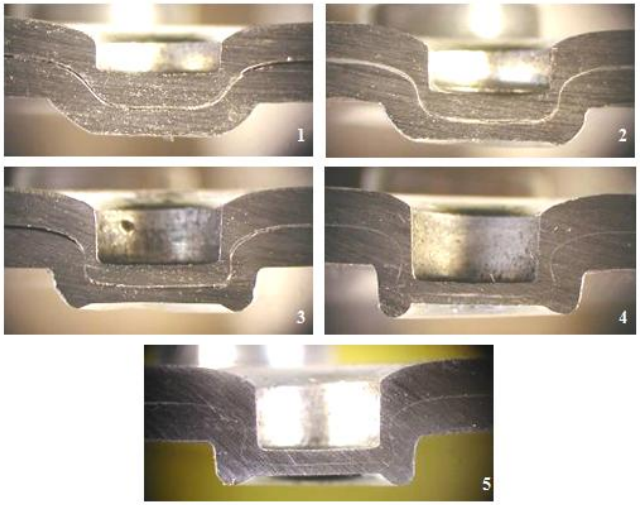
Programming laboratory - Heidenhain and Sinumerik

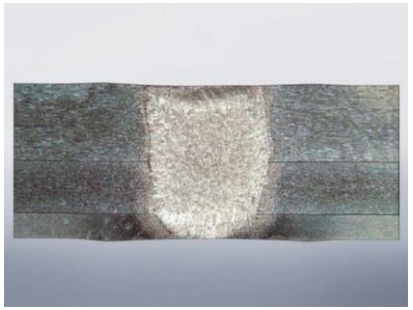
Laboratory of welding and NDT

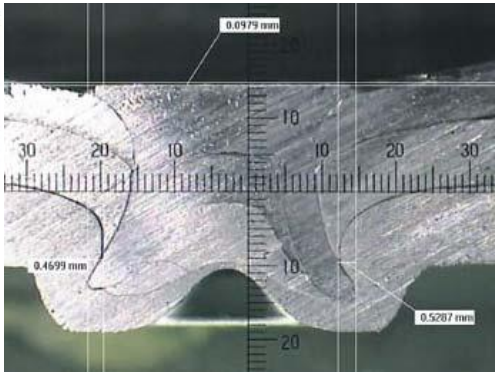
Welding for equipment for:

- Manual metal arc welding (MMAW)
- Gas metal arc welding (GMAW) (AC/DC)
- Gas tungsten arc welding (GTAW) (AC/DC)
- Oxy fuel (OFW) welding and cutting
- Plasma cutting
- Resistance spot welding
- Welding school

Analysis of materials weld-ability
(VW Bratislava)

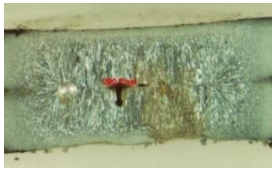






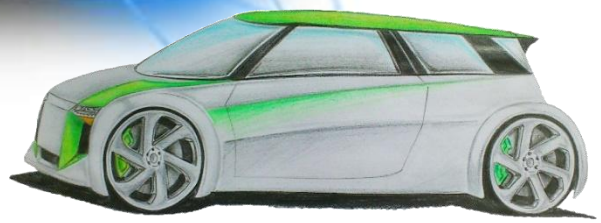
Bimetal - CuSn6 on steel

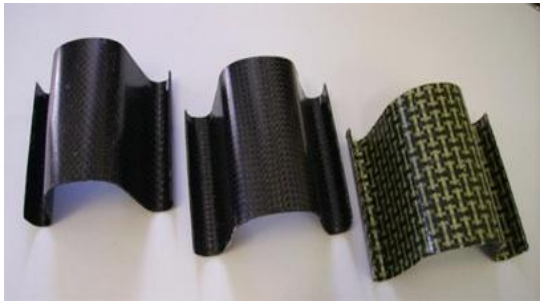
Thermal cracking



Resistance spot welding

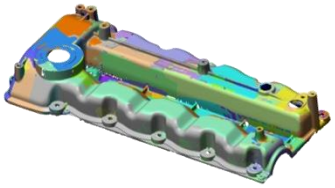
Laboratory of automotive production

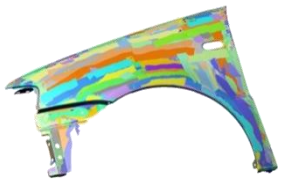


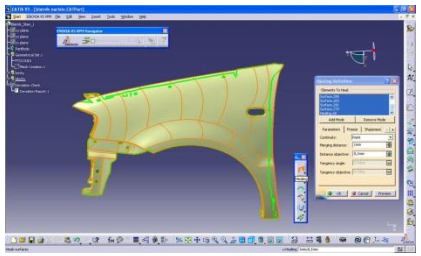


Reverse engineering and digitizing

- Producing of composites
- Testing of composites
- Manufacturing of ultra-light automotive parts based of composites

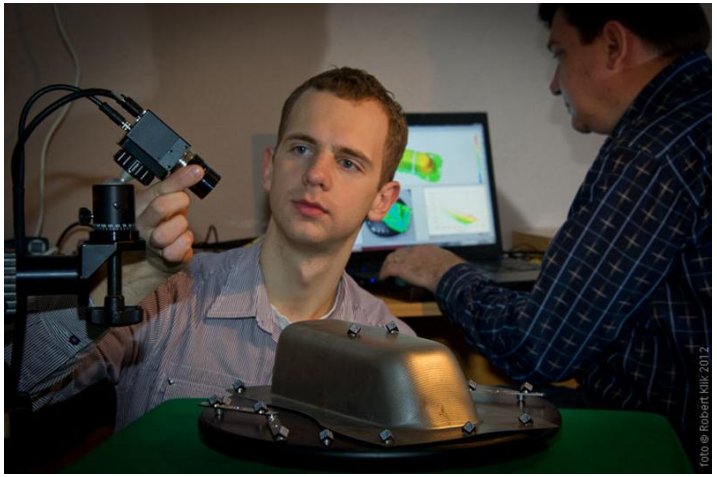


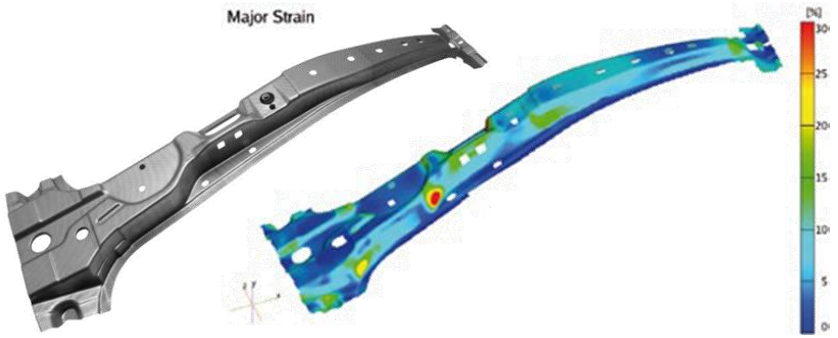




Laboratory of 3D optical measurements

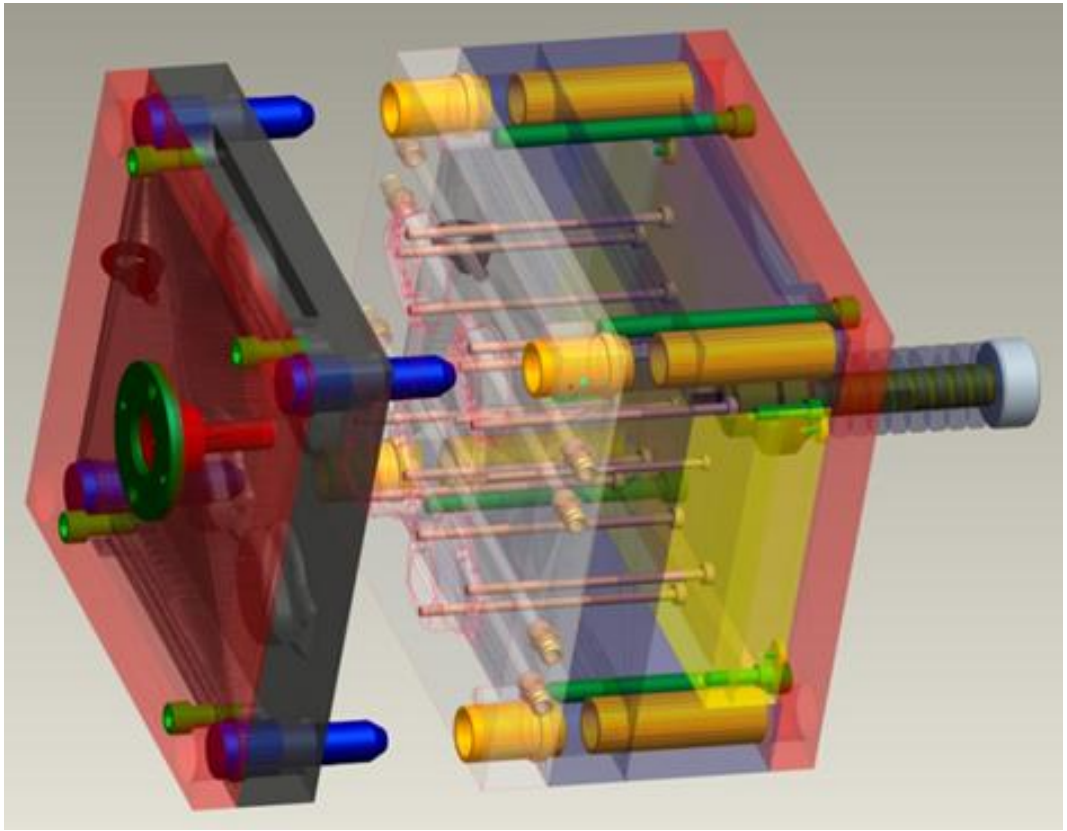
Argus - 3D optical measurement of deformations after forming



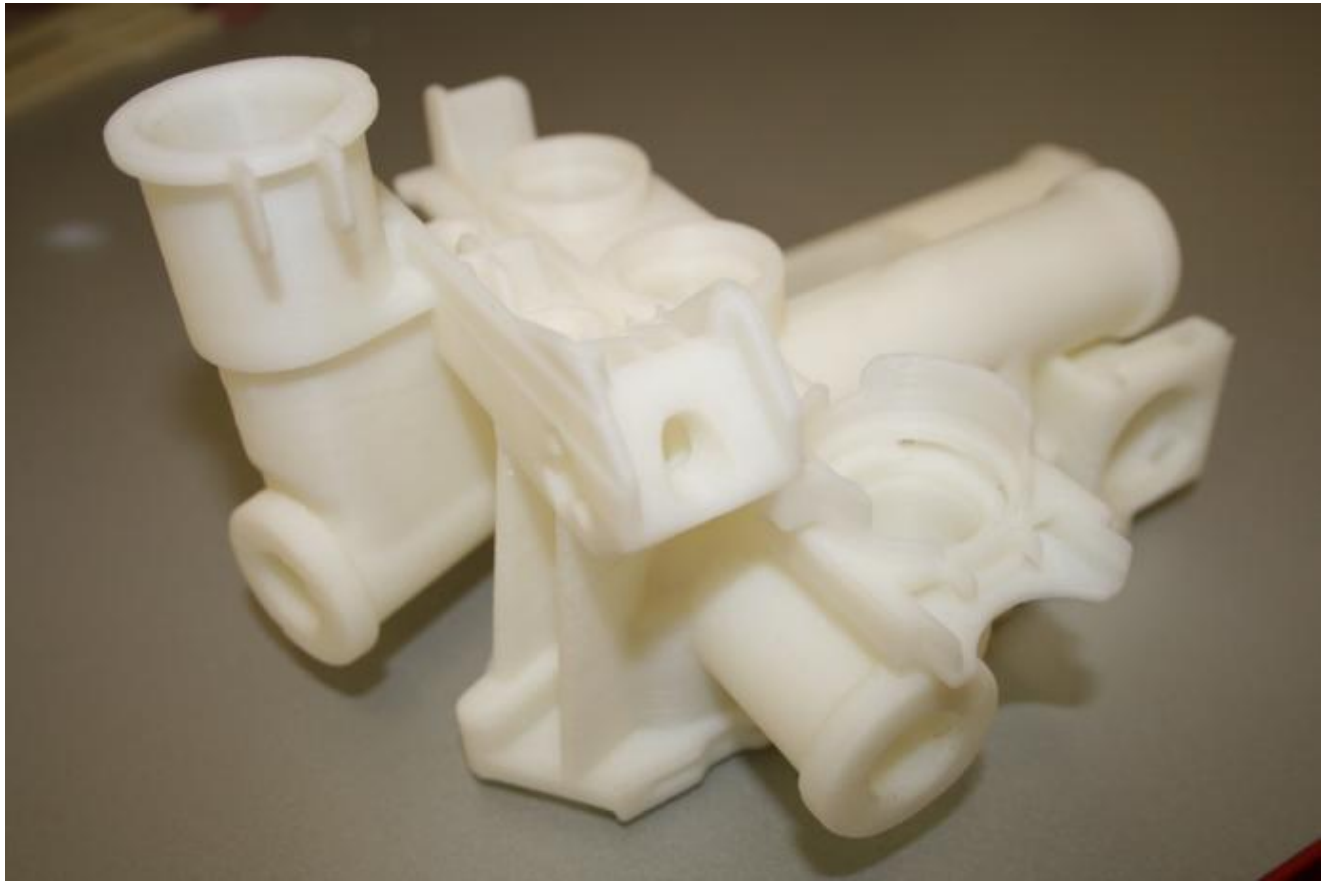


Laboratory of polymer processing

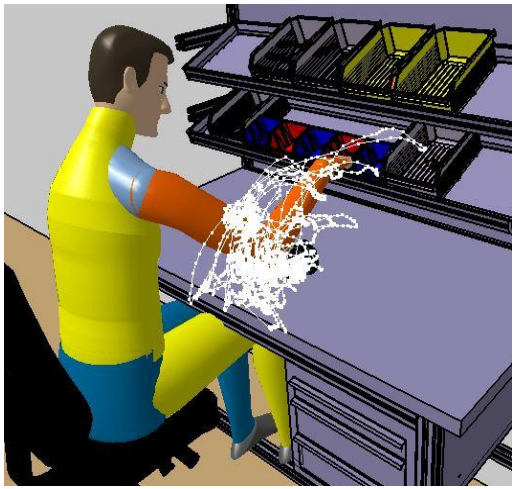
Design of injection molds
by SW Mold Flow

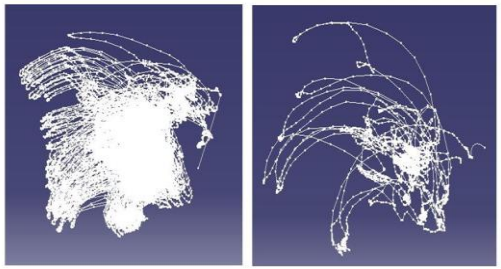


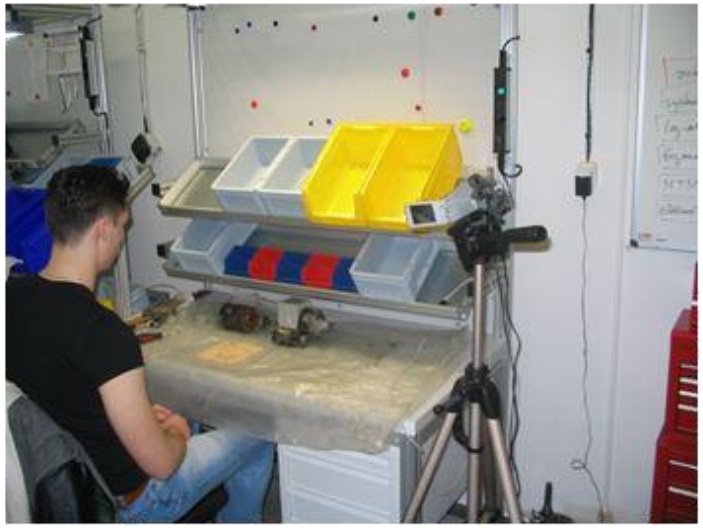
Laboratory of rapid prototyping



Dataglove application in assembly – virtual assembly and ergonomic analysis







Structure of Institute of Construction and Process Engineering

DEPARTMENTS

- Department of Applied Mechanics and Mechanical Engineering
- Department of Power Engineering
- Department of Construction, Automotive and Transport Engineering
- Department of Production Engineering
- Department of Process and Environmental Engineering

COOPERATION WITH COUNTRIES

Germany, Austria, Belgium, France, Italy, United Kingdom, Poland, Hungary, Czech Republic, Ukraine, Spain, Russia, ...

Head of Institute

prof. Ing. Jozef Bocko, CSc.
Full professor in the field
Applied mechanics

ORIENTATION OF RESEARCH

- Experimental stress analysis, automation of measurement and evaluation
- Analysis of strength and stiffness of machines and equipment
- Residual stresses in structures
- Interferential methods of measurement
- Reliability and lifespan of machines and equipment
- Hydrogen technologies
- Power machines
- Design of clutches
- Sound and light measurements

Structure of Institute of Safety and Biomedical Engineering

DEPARTMENTS

- Department of Safety and Quality
- Department of Biomedical Engineering and Measurement

COOPERATION WITH COUNTRIES

USA, Japan, China, New Zeeland, Australia, Canada
Germany, France, Italy, England, Austria, Sweden, Slovenia

Head of Institute

Dr.h.c. prof. Ing. Jozef Živčák, PhD.
Full professor in the field
Biomedical Engineering

ORIENTATION OF RESEARCH

- Production of biomaterials
- Development of implants
- Design and using of additive technologies
- Metro tomographic measurements and analysis
- Design, production and implementation of 3D implant

Head of Institute

prof. Ing. Michal Kelemen, PhD.
Full professor in the field
Mechatronic

ORIENTATION OF RESEARCH

- Automation system
- Industrial robotics, service robotics
- Design of mechatronic systems
- Simulation modeling
- Measurement of non-electrical quantities
- Sensors, actuators
- Microcontrollers and embedded systems

Prototype and Innovation Center

- In near future the Faculty will realize the prototype and innovation center – for materialization of ideas of research, which were published in important monographs, publications CC and patents
- Equipment purchased in the frame of EU funds
- Opening of Centre is planned at the beginning of next academic year on September 2016

Some important solved problems

- Intensification of technical ability of heavy supporting structures
- Risk-management in complex logistic systems
- Certification of container for radioactive waste
- Prototype of a new type of two-stage turbine
- Modernization and automation of a gas-boiler plant
- Reconstruction and innovation of engineering products
- New technologies in manufacturing and operational processes – individual applications
- New application and implementation of CA-technologies and software products
- Preparing for innovations of engineering companies and technologies
- Rehabilitation system for paraplegic patients
- Systems for handling of immobile persons
- Experimental stands and testing stands, testing methods of driving systems and modules

Cooperating companies

STROJNÍCKA FAKULTA TU V KOŠICIACH

mondi scp

HMT PRODUCTION

PSA PEUGEOT CITROËN

PEUGEOT CITROËN

SEZ

USS

CHIRANA Medical STARÁ TURÁ

Chirana STARÁ TURÁ • SLOVAKIA

KiMEX

Volkswagen Slovakia

NORD DRIVESYSTEMS

ŠKODA

ZTS VVÚ KOŠICE a.s.

KŘIŽÍK

REGADA

KIA

KIA MOTORS

embraco POWER IN. CHANGE ON.

Distribúcia SPP

SPINEA EXCELLENCE IN MOTION

B/S/H/ BOSCH AND SIEMENS HOME APPLIANCES GROUP

Whirlpool

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TATRAVAGÓNKA POPRAD

CHEMOSVIT

SMC Worldwide leading experts in pneumatics

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