



DEVELOPMENT OF MANUFACTURING PROCESSES BASED ON INTEGRATION OF DIGITAL TWINS, PROCESS AND QUALITY CONTROL

Ideas for the project:

- Industrial experiments and processes' evaluation based on precisely defined and realized industrial trials
- State-of-the-art simulation software and physical modeling methods to predict the production process of ferrous and non-ferrous alloys
- Sampling planning, sampling and preparation of metal samples and material analysis
- Non-contact 3D measurement of dimensional and shape deviations directly in operating conditions and CMM measuring supported for evaluation of dimension and shape of engineering parts
- Unique sensors design and development
- Sensors and analytics for fault prevention

Infrastructure offered:

- More than 200 m² of relevant laboratories
- Workstations for long term simulations
- Laboratories for digital image analysis
- Infrastructure for materials analysis, equipment for CMM and non-contact 3D measurement
- Infrastructure for numerical and physical simulations

Recent projects solved, related to the issue:

- CZ.01.1.02/0.0/0.0/20_321/0023812 → Development and verification of new technology of industrial automation and digitization of the production process of zinc pigments, obtained by recycling and utilization of waste
- CK01000190 → Sensor measurement of pedestrian roads in the urban environment to support the mobility of people with disabilities
- CZ.01.1.02/0.0/0.0/20_321/0025266 → Advanced devices for autonomous mobile machines
- FW03010323 → Research and development of shaped moulds from hardenable steels for casting zinc alloys in the application of modern technologies of additive production, heat treatment, surface treatment and numerical simulations
- FW03010609 → Research and development of shape molds made of H-13 and HEATVAR for die casting of aluminum alloys in the application of modern technologies of additive production, heat treatment, surface treatment and numerical simulations

Active participation in relevant associations:

Cluster WASTen, Czech Foundrymen Society, Czech Metallurgical Society, The Czech Society for New Materials and Technologies, Automotive Industry Association, Czech Society for Mechanics

Digital Innovation Hubs:

- South Bohemian Science and Technology Park

Partners in previous research projects:

University of Hradec Králové, VSB-Technical University of Ostrava, Technical University of Liberec, University of West Bohemia, Silesian University of Technology

Contacts with industrial partners:

GD Druckguss s.r.o., COREZINC s.r.o., MULTICORE s.r.o., ITB Engineering & Production s.r.o., TRINECKÉ ŽELEZÁRNY, a. s., MOTOR JIKOV Stojírenská (Machining) a.s. → Machining Division, MOTOR JIKOV Slévárna (Foundry) a.s. → Iron Foundry Division / Die-Casting Division, MOTOR JIKOV Fostron (Tools) a.s. → Tool Shop Division, KOVOSVIT MAS Foundry a.s., PKS servis spol. s r.o., T.W.I. spol. s r.o., AUFEER DESIGN, s.r.o.

Topic:

HORIZON-CL4-2022-RESILIENCE-01-19: Advanced materials modelling and characterisation (RIA)

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