

Research program

INNOVATION OF TECHNICAL SYSTEMS

Research activities in the field of product innovation as well as machines, equipment and general technical systems to increase their value or efficiency with an emphasis on ecology. Development activities using specific methods of innovative engineering, e.g. TRIZ type, patent analysis, etc., which will lead to effective achievement of technical innovations in various fields of technology. Research and development of machine and equipment structures made of new materials, composites, especially with focus on light strength structures.



Research activities

DEVELOPMENT OF COMPONENTS, SYSTEMS, TECHNOLOGIES FOR AUTOMATIC SYSTEMS AND MECHANISMS

- ▶ Development and optimization of advanced construction systems, mechanisms and technologies with mechatronic elements.
- ▶ Research, testing, design and optimization of components and mechanisms for the industrial sector (conveyor and frame constructions, flexible supports, vibro-diagnostics and others).
- ▶ Research and testing of parts, components and complete car seats (comfort and safety).
- ▶ Design of advanced mechatronic systems, autonomous control.
- ▶ Electromobility, renewable energy - construction.
- ▶ Development of autonomous transport and storage systems.

DEVELOPMENT OF COMPONENTS, SYSTEMS, TECHNOLOGIES FOR LIGHT STRUCTURES WITH REDUCED ENVIRONMENTAL IMPACT

- ▶ Research, development and innovation of products and new technologies for industrial use that will significantly reduce the energy intensity of production (focused on usage of light material structures, composite structures, waste, recycled and recyclable material structures). Their application in the transport and manufacturing industry.
- ▶ Replacement of classic parts with new materials - change in design and technology.
- ▶ Designed to reduce carbon footprint, water, energy and CO2 consumption.
- ▶ Construction of machine parts new, e.g. light or high-strength materials.
- ▶ Construction of parts from materials based on recycled or renewable sources.

RESEARCH AND DEVELOPMENT OF AUTOMATED SYSTEMS FOR INDUSTRY 4.0

- ▶ Research and development and optimization of advanced construction systems, mechanisms and technologies with mechatronic elements for transformation of energy forms, its accumulation and distribution.
- ▶ Solving of complex problems for which it is necessary to create comprehensive and well-founded syntheses (theoretically, simulated and experimentally based syntheses).
- ▶ Development of tools for systematic innovation and creativity.
- ▶ Elaborate Life-Cycle approaches and integrate them into transport systems.
- ▶ Application of new DFX methods in the development of systems for Industry 4.0