

MECHANICAL ENGINEERING TECHNOLOGY CLUSTER



Research Profile

The **Mechanical Engineering Technology Cluster** groups research and service to society in the field of mechanical engineering at the different engineering technology campuses of KU Leuven. Its activities are typically application-driven or application-oriented and are founded upon:

- a strong network with the industrial and services sector, which secures the position of the cluster as a liaison between industry and research. The cluster develops structural relationships with both 'technology leader' and 'technology adopter' companies;
- presence at 6 intensively cooperating campuses spread across Flanders;
- close collaboration with other disciplines as well as with more fundamentally oriented research partners, leading to a continuous interaction between fundamental and applied research activities.



Research Topics

As a logical consequence of the above, socio-economic relevance is a key criterion for defining the research fields of the cluster. The technology cluster currently carries out research in many typical mechanical engineering domains:

- manufacturing: advanced manufacturing technologies and process innovation, computer support in manufacturing, sustainable manufacturing, quality control, polymer processing, welding;
- mechanical design: design for reliability, life cycle engineering, lightweight structures, adhesive bonding analysis, mechatronics;
- robotics and automation: drive systems, integrated automation, vision & robotics, sustainable transport and logistics;
- energy: component, small-scale system and macrolevel system design and control, solar-based technologies, management and integration of systems in buildings;
- biomedical technology & biomechanics: rehabilitation and orthopaedic technology, sports, medical devices and medical instrumentation;
- management: lean manufacturing, maintenance and logistics.

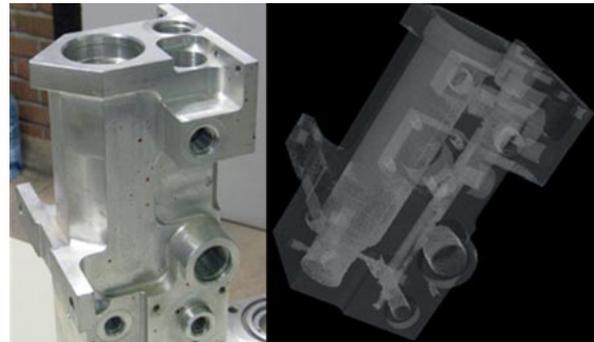


Unique infrastructure

To carry out its research mission, the cluster has state-of-the-art and high-tech equipment at its disposal on the six campuses where it is active. Some of the set-ups are unique and cannot be found elsewhere in Flanders.

Examples include:

- Manufacturing technology labs, comprising machining centers, equipment for polymer processing and extrusion-based Additive Manufacturing, as well as advanced welding infrastructure
- Fully equipped metrology labs, comprising state-of-the-art tactile and optical CMMs as well as two of the highest-power X-ray CT scanners of the Benelux
- Robots and vision systems for advanced automation, including bin picking robots, a fruit picking robot as well as a robotic chair
- In vivo motion capture facilities, equipment for in vitro load and motion experiments on tissues and joints and advanced computer simulations of the mechanical behaviour of cells, tissues, organs and joints, up to the whole body



Contact

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The research groups of the Mechanical Engineering Technology Cluster are active on the technology campuses in Diepenbeek, Ghent, Geel, Leuven, Ostend and Sint-Katelijne-Waver. In 2017-2018 the research on Campus Ostend will move to a new Campus in Bruges.