

MACHINE DESIGN AND COMPONENT ENGINEERING

This competency focuses on the design, analysis, and optimisation of machines and their components, including gears, bearings, drives, and structural parts. It combines theoretical foundations in mechanics, geometry, and technical drawing with practical expertise in CAD/CAM, prototyping, and manufacturing. The activity supports partners in creating reliable, high-performance mechanical systems, transforming engineering concepts into functional, market-ready solutions, and strengthening applied RDI in industrial engineering.



ACHIEVEMENTS

- Designed and optimised special-purpose machinery for industrial partners in manufacturing and materials testing
- Contributed to the development of mechanical systems supporting experimental RDI projects at Óbuda University
- Integrated CNC-based prototyping workflows with simulation and component verification methods
- Published applied research in machine element design and component reliability



INFRASTRUCTURE

- Workshop facilities for prototyping, assembly, and testing of mechanical systems
- HAAS Mini Mill CNC machining centre for precision part manufacturing
- Dugard Eagle BNC 1800 CNC lathe for component prototyping and small-series production
- ELMAG MFB 50 LGT universal milling machine for mechanical part fabrication and testing
- CAD/CAM software suite for mechanical design and simulation



REFERENCES

- Partnership with DewertOkin Kft. (Kecskemét) for dual education and precision-parts manufacturing using Industry 4.0 methods
- Collaboration with Ferzol Lemezmezmunkáló Kft. (Tápiószőlős) on sheet-metal processing and CNC automation, supporting dual-training and project work in machine design and component manufacturing