LCM - Linz Center of Mechatronics

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FROM RESEARCH INTO OPERATIONAL PRACTICEFor the benefit of our customers, we translate the findings from our research projects into operational practice. We offer every company a partnership and a knowledge dialog from the initial idea to the realization of the product. The use of the latest available technologies is ensured through many years of intensive cooperation with internationally renowned research partners. The combination of economic project management and sound basic research offers our customers the best of both worlds.

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Services

LCM has two areas:

- Research: cooperation with about 30 internationally reknown universities and research organisations
- Business: development and engineering. Profit oriented.

Business

Customer projects

- Contract research/development: from research to finished product and support of commissioning). Products in small lot sizes and prototypes as a result of the projects.
- Use of methods and digital tools for the development and optimisation and automation of machines and products
- Testing and measurement services within the scope of development contracts (engine testing, testing of hydraulic drives) or individual contracts
- Technology consulting: Use of new technologies and preparation of roadmaps for the use of these technologies according to the principle of the radar of weak signals.
- Vendor-neutral advice on the selection of products and suppliers.
- Advice for the development of roadmaps for new technology trends (e.g. circular economy) for customers and simultaneous effect as sector radar
- Production of small batches as functional prototypes and finished products
- in the field of electronics and power electronics, actuators (electric and hydraulic)

- Lizensing of SW tools from Symspace Suite, such as X2C and optimisation tools as add-on.

Competence fields

Electical drives technology

- Motor development up to the finished motor on request for all motor types, power up to approx. 1 MW
- Integration of the complete infrastructure (motor-pump/gearbox...-control electronics-power electronics-SW)
- Magnetic bearing technology: world leader in technology
- Testing on the LCM motor test benches
- Development of electrical actuators in general
- Development of inverters on customer request
- Electrification concepts and implementation: replacement of combustion-based technologies or hydraulics
- Prototyping: manufacturing infrastructure for small quantities
- Development of power electronics
- Development of control electronics for actuators
- SW development for actuator control (SW toolset for virtual development of actuators and optimisation for customer developments. Possibility of licensing for customers)

Hydraulic valves

- Proportional valves and optimisation
- Digital switching valves and optimisation

Expansion valves

- Linear actuators development, optimisation
- Valves for smallest volumes (ml)
- Integration into the complete infrastructure
- Mobile hydraulics
- Integrated drives

Hybrid drives

- Optimisation of (existing) drive systems
- Optimisation of processes/production plants with drive systems
- Testing of hydraulic systems on LCM test benches

Virtual testing, commissioning and development to increase the efficiency of customer projects

Sensors/IOT

- Development and use of systems with energy harvesting
- Use of wireless communication for the development of customer solutions
- Development of systems for localisation with the following technologies
- Electronics development for all areas outside of drive technology
- Use of AI systems
- Implementation of data analytics methods
- Use of signal processing methods
- Use of sensor fusion/data fusion methods
- Development of pattern recognition systems (quality assurance of parts, process quality)

Vibration technology & piezo technology

Vibration analysis

- Development of solutions for vibration damping - passive and active (piezo, electrodynamic) constructive for machines and systems
- Development of solutions for vibration generation (piezo, electrodynamic)
- Development of systems for energy harvesting

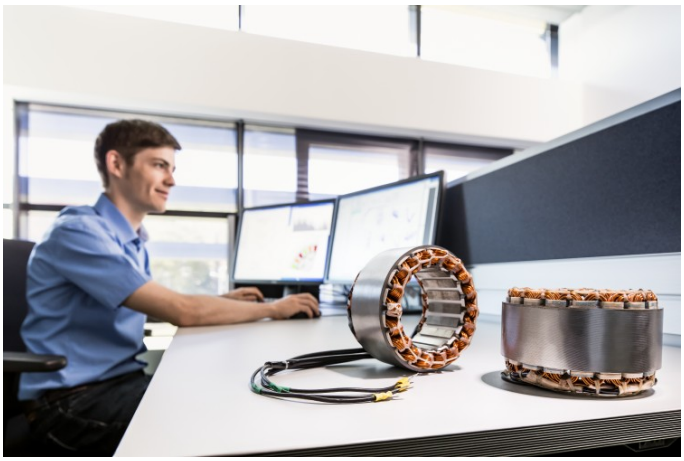
- Simulation and modelling: application of own SW or SW from other manufacturers
- Simulation of mechanical quantities: Strength, fatigue strength
- Particle simulation and flows (oil, water, air)
- CFD
- Thermal simulation
- Simulation of deformations and forming
- Control engineering
- Virtual commissioning and testing, development of a digital twin for development and operation

Public Sector

COMET - Carrying out research projects as a partner with a high scientific content within the framework of COMET, or EU projects, and other funded national projects.

Equipment / infrastructure

- Infrastructure for measurement and tests of
- Hydraulic pumps, valves, motors, efficiency and leakage measurements
- Vibration measurements
- Diagnosis and troubleshooting at the customer's site, portable industrial equipment, automatic measurements and evaluations at the customer's site
- Sound measurements, noise mapping
- Thermal measurements
- 3D measurement
- Testing of roughness and geometric tolerances
- Measurements and testbench for el. machines and actuators, efficiency characteristic measurement



Best practices / case studies of cooperation

LCM transfers findings from research into profitable products for its customers, accompanies its customers during production and series production up to certification support.

Figures:

- 450 customer form Germany, Switzerland, Austria mainly
- 120 employees and about 40 temporary ressources from partner (depending on the projects)

Branches:

- Automotive
- Machinery
- Plant engineering
- Medicine Technology (Components and Infrastructure)

Keywords

INDUSTRY 4.0 | DIGITALIZATION | LOCALIZATION SYSTEMS & TRACKING | PREDICTIVE ANALYTICS | OPTIMIZATION | COST REDUCTION | IMAGE PROCESSING | SMALL BATCH SIZES | ASSISTENCE SYSTEMS | E-MOBILITY | RESEARCH | AUTONOMOUS SYSTEMS | SENSING SYSTEMS | NETWORKED SYSTEMS | LCM IN BUSINESS – BUSINESS MODELS | DEVELOPMENTS – NEW PRODUCT DEVELOPMENT | DIGITAL TWIN | PREDICTIVE SYSTEMS | INTERNET OF THINGS | ARTIFICIAL INTELLIGENCE – AI