LKR - Leichtmetallkompetenzzentrum Ranshofen

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With many years of experience in research and innovation for the lightweight design of the future, AIT's LKR Leichtmetallkompetenzzentrum Ranshofen is a leader in the development of high-quality light metal alloys, their sustainable processing through to the development of functionally integrated lightweight components and their recycling.

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Services

For private sector/for public sector:

- LKR Leichtmetallkompetenzzentrum Ranshofen specialises in the development and processing of high-performance light metals. The focus is on the design and sustainable, efficient production of vehicles and components. LKR researchers investigate novel light metal materials (e.g. aluminium, magnesium and titanium alloys) and associated forming technologies complemented by highly specialised material characterisation and simulation methods. One particular field of research focuses on wire-based additive manufacturing, one of the most promising methods for 3D light metal printing.
- LKR’s expertise covers the entire light metal process chain, from alloying to casting and forming as well as process and lightweight design, including the simulation tools required for all these processes. This allows materials to be tailored exactly to customer requirements, while also ensuring sustainable and energy efficient processing – with the ultimate aim of creating new light metal materials with advanced characteristics for future applications.

Services:

- Materials Development
- Casting Technology
- Forming Technology
- Wire-based Additive Manufacturing
- Numerical Simulation
- Material Testing and Characterisation

Equipment / infrastructure

- Additive Manufacturing Laboratory
- Cold Chamber Die Casting Plant
- Horizontal Continuous Casting Plant
- Extrusion Plant
- Test Center: Mechanical Materials Tests
- Test Center: Pendulum Machine
- Test Center: DCS
- Test Center: Dilatometer
- Test Center: Fieldemission Scanning Electron Microscope

Best practices / case studies of cooperation

- Project We3D: Light metal components from the 3D printer
- Project SUSTAINair: Lightweight, multifunctional and intelligent airframe parts
- Project MULTI-FUN: Enabling MULTI-FUNctional performance through multi-material additive manufacturing
- Project MAST3Rboost: Novel hydrogen tanks as a contribution to decarbonising the transport sector
- Project Pro-Imagine: Novel processing methods for magnesium forming

Keywords

lightweight design, WAM, WAAM alloy development, numerical simulation, casting, forming