

UNIVERSITY OF PADERBORN RECEIVES FINANCIAL INCREASE IN THE RESEARCH PROJECT „KITKADD“ BY THE FEDERAL MINISTRY OF EDUCATION AND RESEARCH (BMBF)

The research project „Combination and integration of established technologies with additive manufacturing processes in a process chain - KitkAdd“ started in 2017 and focuses on the development of innovative, hybrid process chains and consists of eight research and industry partners under the leadership of Siemens AG. On behalf of the Paderborn University (KAt – Prof. Dr.-Ing. Detmar Zimmer), the Karlsruhe Institute of Technology (KIT/wbk, Prof. Dr.-Ing. Gisela Lanza) is a further research institution within the project. The research project with a total duration of three years runs until the end of 2019 and will result in hybrid process chains, an adapted design methodology, design guidelines and achievable manufacturing accuracies for Laser Beam Melting (LBM).

PROJECT OVERVIEW

DURATION



01/2017 – 12/2019

PARTNER



- Siemens AG,
- H&H mbH
- Eisenhuth GmbH & Co. KG
- GKN Powder Metallurgy
- John Deere GmbH & Co. KG
- Schübel primeparts GmbH
- Karlsruhe Institute of Technology (KIT/wbk)
- Paderborn University (KAt)

FUNDED BY



Federal Ministry of Education and Research (BMBF)

RESEARCHER



Research leader
Prof. Dr.-Ing. Lanza (wbk)
Prof. Dr.-Ing. Zimmer (KAt)

Research assistant
Tobias Lieneke, M.Sc. (KAt)
Thomas Künneke, M.Sc. (KAt)
Thorsten Koers, M.Sc. (KAt)

WEBSITE



www.kitkadd.de

Financial support

The BMBF increases the financial support for the research project „KitkAdd“ (total budget 5.3 million €) in 2018 and enables the Paderborn University to extend the laboratory in the field of metal additive manufacturing with the objective to develop concept for the appropriate positioning of semi-finished products in LBM machines, taking into account extended design guidelines and geometric deviations.

Objective

Due to the forward-looking results in the current project, the Project Management Agency Karlsruhe (PTKA) granted the Paderborn University the requested funds to be able to investigate the hybrid process chains for metallic 3D printing in more detail with additional machine capacity. The work contents relate specifically to a turbine blade provided by Siemens AG, which should be produced by combining additive and established production processes. Research generally promotes the hybrid production of components with a high functional density, which significantly increases the technical product benefit. By outsourcing less complex component areas to established manufacturing processes, manufacturing costs are reduced compared to pure additive manufacturing.

Extension of LBM laboratory area

After the approval, comprehensive construction measures in the P-building of Paderborn University and the procurement of a LBM machine with peripheral systems was carried out. The cooperation of all involved departments of Paderborn University enabled the laboratory to be commissioned promptly with the following equipment (Fig. 2):

- Laser beam melting machine
- Sieving station for powder processing
- Vacuum cleaner with wet separator
- Annealing furnace for thermal post processing



FIGURE 1 Opening of the LBM Laboratory: Tobias Lieneke, Dr.-Ing. Christian Lindemann, Thomas Künneke, Klaus Watermeier, Marius Bröker, Diana Riedel, Martin Hohrath and Prof. Dr.-Ing. Detmar Zimmer

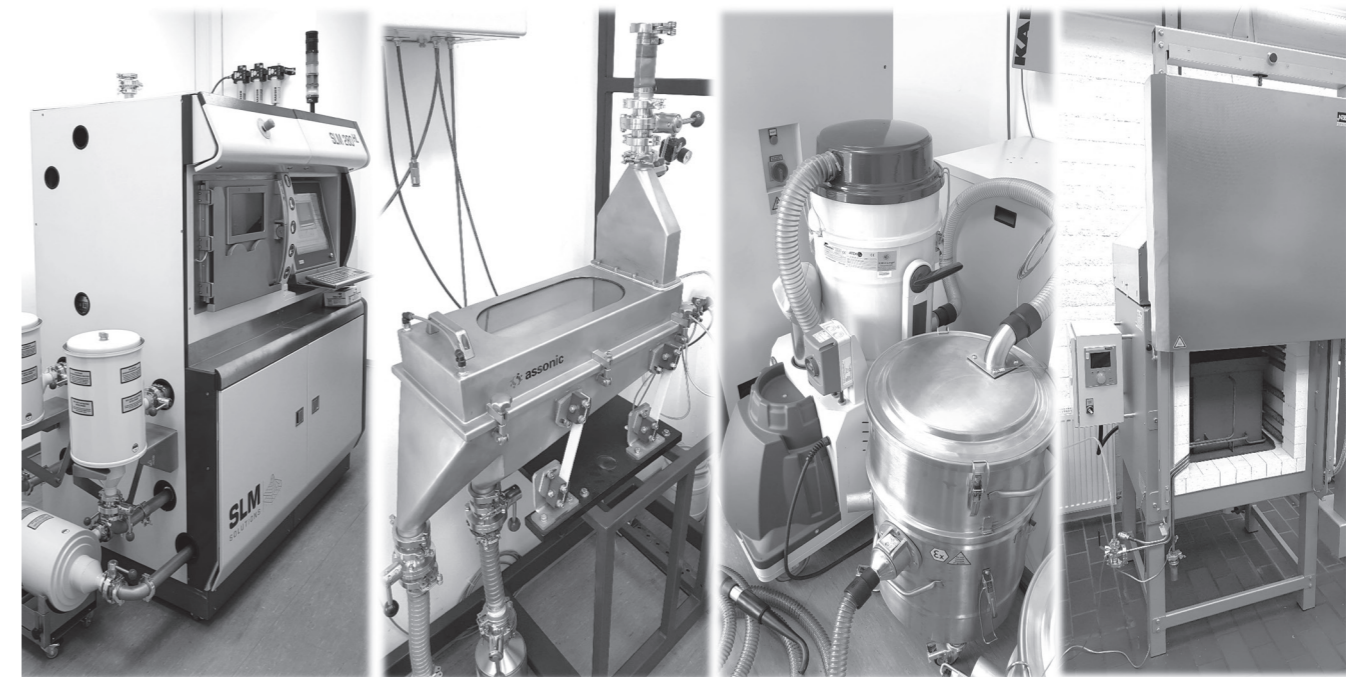


FIGURE 2 Representation of the purchased LBM machine and associated peripheral systems for the LBM process chain