PRESS RELEASE
Aachen, July 4th, 2023

Successful Milestone Meeting in The Research Project "addFlex - Additive Manufacturing For Lightweight Construction of Flexible Grippers"

On May 23 and 24, 2023, the milestone meeting for the research project "addFlex - Additive manufacturing for lightweight construction of flexible grippers" took place at the project partner Zimmer Group in Rheinau. The research project started in June 2022 and consists of a consortium of five industrial partners and two chairs of the Machine Tool Laboratory of RWTH Aachen University. The WZL is the consortium leader. The project is funded by the Technology Transfer Program Lightweight Construction of the German Federal Ministry of Economics and Climate Protection (BMWK).

The aim of the research project is the resource efficient use of industrial robots through the use of lightweight-optimized gripping systems. To this end, the use of additive manufacturing processes for the economical production of lightweight structures in gripper fingers is being investigated. The design of an automated configuration tool will ensure that the developed optimization approaches find their way into industry and that end users can assemble intuitive, optimized gripping systems.

At the two-day milestone meeting, the interim results of the first months of the project were presented. In addition to the analysis of product and process requirements for the gripping systems, the first work packages also focused on the development of weight savings in existing gripper components. With the preparation of a Life Cycle Assessment (LCA), the ecological effects of the optimizations are compared with the current status quo of the gripper technology during the project. By presenting a first UI prototype of the configuration tool, the entire digital process chain could be viewed in a software environment for the first time. In workshops on the digital process chain, the user story of the configurator was further detailed and software interfaces that have to be considered during automated design were defined. During a tour of the factory premises of the host ZIMMER Group, the project partners gained an insight into the company's broad product portfolio, such as the manufacture of handling and damping systems.

Finally, a lot of attention is paid to the further course of the project. Developed adaptations to the existing gripping technology are to be built and validated in the first prototypes. These will be tested under realistic conditions on the demonstrator test benches set up at the WZL. By investigating the return possibilities of used gripper components, their recyclability will be considered. R-strategies, such as the shredding of additively manufactured gripper fingers and the subsequent reprocessing of the regrind into new filament, are evaluated for their influence on sustainability by means of the advanced LCA. The further development of the configuration tool is driven by the integration of existing databases, a simulation for the calculation of optimal grip points as well as a topology optimization suitable for 3D printing. By further optimizing the user interface, an intuitive operation of the configurator is being developed.

In addition to the technical exchange and the further elaboration of project results, the cross-project dialog was also sought during the breaks and social networking was strengthened.
PRESS RELEASE
Aachen, July 4th, 2023

Overall, the project partners look back on a successful milestone meeting and are motivated to continue the already good results in the further course of the project.

Contact
Aileen Blondrath
+49 175 8361798
a.blondrath@wzl.rwth-aachen.de

Laboratory for Machine Tools and Production Engineering (WZL)
The Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University enhances the innovative strength and competitiveness of the industry with trend-setting basic research, applied research and the associated consulting and implementation projects in the field of production technology. In the research fields of manufacturing technology, machine tools, production engineering, gear technology as well as production metrology and quality management, practical solutions for rationalizing production are developed with industrial partners from a broad range of branches.