DEVELOPING AN AM COMPASS FOR DESIGNERS

The ENCOMPASS project consortia will create an Integrated Design Decision Support System (IDDS). This system incorporates downstream processing constraints into the design stage, thus optimising post processing steps during part production, reducing the time and cost of AM.

THE CHALLENGE

Additive manufacturing (AM) has significant potential to enable novel products with improved performance, improved material efficiency, reduced environmental impact and reduced production costs. Commercial metal AM machines have been available for many years, and the interest from industry for the adoption of this technology for production of end parts is steadily increasing. However, for these technologies to be widely adopted by industry as a viable production method, process chain productivity needs to be significantly improved.

ENCOMPASS aims to significantly improve the overall productivity of AM by optimizing process chain efficiency through intelligent component design.

CONSORTIUM SOLUTION

- 43% reduction in design time
- 51% reduction in quality control time
- 46% reduction in post processing time
To steer the development and enable demonstration of the performance of the IDDS system, test cases from automotive, aerospace and medical industries have been selected. The three key process chain steps tackled in the ENCOMPASS project are: the component design process, the L-PBF build process itself, and the post-build processes (including post-processing and inspection). The integration at digital level enables numerous synergies between these steps and in addition, the steps themselves are being optimized to improve the capability and efficiency of the overall chain. This will enable a significant reduction in time and cost, and an enhanced level of quality for safety critical parts.