

Project title	HylaForm - Hybrid Laser-based additive – subtractive research platform
Duration	01-01-2016 → 31-12-2019
Abstract	<p>Additive manufacturing offers a high amount of design freedom enabling unprecedented levels of functional integration and has the capability to produce personalized parts locally and with efficient material use. However additive manufacturing still has some limitations. The number of materials that can be manufactured is still limited. LMD and SLM parts also have an inferior surface roughness compared to traditional manufactured parts, typically requiring post processing. In addition, it is difficult to manufacture small internal features (e.g. holes with $d < 400\mu\text{m}$) or to do fine texturing of a surface. The infrastructure, that is proposed here, will allow addressing all these drawbacks. The required corrective operations during the additive manufacturing process can be done in-process on the same platform by laser beam (micro) machining.</p> <p>The state-of-the-art hybrid laser based additive and subtractive research platform will consist out of 2 complementary modular research machines. Each machine will combine an additive manufacturing technique, also called 3D printing, with laser beam (micro) machining as a subtractive approach. The applied additive manufacturing techniques are selective laser melting (SLM) and laser metal deposition (LMD) within the platform.</p> <p>As such the novel research machines will allow us to produce high precision mechanical components. On top of this, extended design freedom will be available compared to additive manufacturing alone.</p> <p>This infrastructure will also be a catalyst for new innovative research opportunities. These opportunities are driven by the unique capabilities that will arise when additive manufacturing techniques are combined with laser beam (micro) machining and by the modularity and complementarity of the infrastructure. The infrastructure will enable the production of unique components (e.g. SHM systems, actuators etc.) with unprecedented product features (e.g. made from specific materials, having textured surfaces, having low roughness for internal structures etc.).</p>
Project Coordinator	VUB-AVRG
Involved research partners	
<ul style="list-style-type: none"> • VUB-AVRG • KU Leuven – AM • VUB-SURF • VUB-R&MM 	
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Financing body	EWI Flanders - https://www.ewi-vlaanderen.be/en