

## RESEARCH PROJECT

# Optimised powders for 3D printing (OpP3D)

**Overcoming Curtailed Capability in Additive Manufacturing (AM):** This project has been designed to obtain new and efficient materials (Cu, Fe and Al being the benchmarks) to broaden the available materials palette in order to promote this technique's further rise from prototyping to production and to fulfill the European Union's growth expectations in manufacturing.

### Specific Project Goals

- > Cu, Fe and Al powder materials with suitable surface treatment (sulfidation, oxidation, metallic layer, polymer protection, etc.)
- > The required process for powder surface treatment based on the methods listed above (reactive annealing, in-situ preparation, etc.)
- > Test parts that show at least the same or enhanced properties when compared to conventional making
- > Proof of concept that can be transferred to other material classes and other applications
- > Facilitate handling for (future) users by providing parameter sets/handling guidelines
- > Improved knowledge on AM processes and its reliability of obtaining repeatable results, gained through e.g. real-time monitoring of the molten bath in LBM using high-speed thermography

### Innovation Goals

- > Develop the coatings needed to achieve the functionalization of the powder particles
- > Deliver a process for the surface treatment of powder materials using a new combination of existing techniques
- > Allow for the production of Cu, Fe and Al parts that meet the requirements for electrical conductivity (close to 100% of the bulk value) and high density (> 99.98%) and allow for the realization of thin walls in the component
- > Determine the parameters for the processing of these materials in LBM and M3DP to produce the parts

### Acknowledgement

OpP3D is an Cornet Project funded by national agencies members of the Cornet Network: German Federation of Industrial Research Associations (AiF) | Federal Ministry for Economic Affairs and Energy | Service Public de Wallonie – DGO6 (SPW)



Project: Cornet OpP3D

Duration: June 6, 2016–May 31, 2018

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