



◆ Additive Manufacturing ◆





CONTEXT

Compared to conventional technologies (machining, casting, forging, injection, etc.), additive manufacturing (AM) makes it possible to produce parts with an optimized design, weight savings and manufacturing time, which is particularly important when developing new solutions and new competitive products. The benefits can also be environmental in terms of reduced energy consumption over the entire life cycle and raw materials.

Additive manufacturing is often described as an integral part of the 3rd industrial revolution. There is a real industrial craze in Wallonia for AM, which has been strongly marked for 2-3 years. Few companies have dared to integrate these technologies into their processes until some major players, such as General Electric or BMW, invest in AM not only for the production of prototype parts, but also for functional production parts.

The research centers (SIRRIS - CRM - CRIBC - CENAERO) and the universities (ULiège - UCLouvain - ULB) have asked themselves how to promote the integration of additive technologies in Walloon industries to enable them to take this fundamental turn in maintaining their competitiveness in the future. With the help of the competitiveness clusters (Mecatech and SkyWin) and the AGORIA federation, they therefore asked the industrial partners directly. One element of the answer seems quite obvious: there is a gap between what is available at the level of R&D entities and what is mature for companies. Indeed, R&D players develop solutions that have low industrial transferability, with a low level of technological maturity (TRL of 1 to 4), but companies will only integrate new technologies if they are mature (TRL 7 to 9). There is therefore a strong industrial need to fill this gap in order to be competitive on the markets.

IAWATHA has therefore been defined in order to best meet the needs expressed by Walloon industrialists, sponsors of the portfolio, namely:

- Know the different properties of products that come out of additive technologies compared to parts manufactured by conventional technologies
- Know the cost of using AM technologies and how to manage the associated costs in order to integrate these technologies into an existing production chain
 - Easily access demonstration and information
 - Access training (implementation, technique, materials, design, conception,...)
- Validate materials and make a comparison with other technologies (costs, properties,...)
 - Obtain precise specifications (lighter, larger parts, etc.)
 - Have a long-term vision on tomorrow's technologies
- Maintain Walloon competitiveness against competitors, and be able to stand out with value-added products.



5 TECHNICAL ISSUES

VALID

The purpose of this technical issue is to determine the capabilities required to certify and qualify parts against specifications in order to make products and processes more reliable. The objective is also to guarantee the robustness of the parameters (round robin tests) determined on the products.

Partners

CRIBC, CRM Group, SIRRIS, UCLouvain, ULiège

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LATTICE

The purpose of this technical issue is to provide the digital tools necessary for the design of AM parts that integrate lattice structures in order to optimize their performance (weight reduction, thermal management, damping, etc.).

Partners

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OPTITECH

The purpose of this technical issue is to implement robust strategies for optimizing AM processes. The focus will be on improving part production capacities in terms of development time and achieving optimized parameters.

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OPTIMAT

The purpose of this technical issue is to develop a generic methodology for optimizing metallic, polymer and ceramic materials specifically developed for use in additive manufacturing. The objective will be to obtain significantly improved characteristics and performance compared to the situation with current AM materials.

Partners

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POST

The purpose of this technical issue is to develop and evaluate post-treatments for metal parts resulting from additive techniques, so that they meet industrial requirements in terms of volume properties, surface quality and dimensions.

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