

TAKEAWAYS

"LATEST PRODUCTIVITY SOLUTIONS IN THE AM MARKET"



The 2019 edition of the International Conference on Additive Manufacturing (ICAM) confirmed the positive evolution of the Additive Manufacturing (AM) technology in Europe. The AM industry is experiencing a period of growth and progress, which is investing the whole value chain, from service providers to machine tool manufacturers, as well as software providers.

ICAM explored the latest solutions in the industrialization of additive manufacturing. Companies explained how they are developing innovations in areas like process control or support solutions for design decision. These new technologies are going to unlock new opportunities, reduce time and cost to manufacture, as well as collect reliable data which could be used to increase the delivery of first-time right AM components.

Filip GEERTS, Director General CECIMO

The AM industry is living a positive trend as more companies develop production equipment, more materials become available, more businesses join the market, and more end-user industries adopt the technology. Such a growth matches the increase in benefits, such as locate production closer to the place of demand. The increased level of productivity has pushed companies to look for new solutions to increase efficiency, quality and precision of processes. These developments can ensure stronger market competitiveness and consolidate the maturity of the sector.











David EWING, Application and Software Manager Renishaw

AM in metal opens new product design possibilities, but there are still challenges in process development and gualification to overcome. A widespread adoption of metal AM in the production process needs a reliable method to detect, identify and eliminate the cause of defects. It also requires minimizing development lead times and process control costs. New technologies (e.g. real-time spectral monitoring) can provide the necessary high-speed and high-resolution data, enabling traceable production and rapid process optimization. The collected data opens new possibilities for process control and defects detection giving the possibility to identify and solve the issues during the building progress. Such solutions are bringing AM manufacturers closer to defect-free AM components.

Philip ORIS, Business Development Director at SLM Solutions Group AG

In laser powder bed fusion, the increase in productivity has been achieved through the development of a multi-laser system in combination with higher power lasers. The use of such a solution can help companies optimizing the topology and production process, as well as increasing build rates and reducing costs. The case studies presented showed that the improvement on product quality could be fully exploited by the customer, because a use case analysis was performed together with a technical and economic impact assessment. Such evaluation helps companies to understand how to introduce new parts in their manufacturing process and consider the work of a 3D metal printing as complementary to traditional manufacturing technique.

Harrison RAYBOULD, Research Engineer, at MTC

The rapid productivity increase in AM needs integrated design decision-support solutions, capable of guiding design engineers towards right first-time designs. With the European project ENCOMPASS, it is possible to consider the entire AM process chain, rather than the AM machine in isolation. The integration of process decision making tools and produce substantial can result in an increase of AM productivity. It will also mean reducing overtime and redesign.

Patrick MEHMERT, Product Manager, at Simufact (Hexagon's MI division)

Companies need to optimize their entire manufacturing process and they should not focus only on the single stage they wish to improve. The process and test simulation solutions presented by









Hexagon help companies by optimizing processes, minimizing distortions, selecting the most suitable machine and material, and avoiding failures. The result is the reduction of trials, error, time and cost. These solutions will be complemented with post-processing test, quality assurance and data management which help the company to be in control of the entire process lifecycle.

Marco GÖBEL, Industry Manager for Surface Technologies, LMD, at Trumpf.

Laser metal deposition (LMD) is one of the most versatile technologies for producing high-quality build-ups and coasting at very high speed on nearly every surface. This production process can be used in AM to modify or reinforce geometries, improve the quality and delivery of components and help to achieve mechanical properties which would be unfeasible if using other methods. With the high-speed variant of LMD (EHLA), it is possible to improve productivity, reduction of brittle phases and risk of cracking for coating of rotational symmetric parts. Examples of this application can be found in printing, machine & tool builder and automotive industry.

Panel debate

During the panel debate, two new speakers joined the discussion moderated by Matthias SCHMIDT-LEHR, Managing Partner at Ampower, on "Accelerating the industrialization of Additive Manufacturing": Stewart LANE, Corporate Manager at Renishaw and Chairman of CECIMO AM Committee, and Nick CRUCHLEY, Research Engineer at MTC. The discussion touched on important aspects such as the growth of the AM sector and the challenges that still need to be overcome.

<u>Growth</u>

The growth of the sector and the multiplication of fields of application have attracted new companies in the AM market. There are sectors, such as aerospace, aviation, gas and power generation that are gradually pushing for more component optimization. The growing demand of new parts to be 3D printed can become challenging for the industry, which needs to

keep the same high quality and to have time to work on consistency and replicability of the end-product.

Challenges

There is still room for improvement in many aspects of the AM sector. For instance, further research in data management could help the control of the process and the number of "first time right". Education and training in the AM sector need to be furthered supported. Many universities find costly to access machinery, materials or data, which can preclude or make it more difficult to train the future AM workforce. Finally, if end users want to exploit all the benefits offered by the AM sector, they need to develop a good understanding of how it can have a role in their industry.