



The impact of Additive Manufacturing on product sustainability

WEBINAR TAKEAWAYS

Manufacturers are becoming increasingly eager to adopt sustainable processes and solutions. The relationship between manufacturing operations and their impact on the environment is acquiring importance in decision making among industrial societies, that are holding companies accountable for the environmental impact of their offerings.

Sustainable manufacturing means the creation of processes that minimize negative environmental impacts while conserving energy and natural resources, enhancing employee, community and product safety. Additive manufacturing (AM) is considered as one of the technologies that can enable more sustainable and circular manufacturing.

CECIMO webinar “The impact of Additive Manufacturing on product sustainability”, that took place on 3 November 2020, analyzed the influence of AM on product development and discussed the implications with industry experts.



Stewart Lane, Renishaw

Stewart Lane, Corporate Manager | Renishaw PLC

CECIMO promotes AM at European level as an enabler of the Circular Economy and product sustainability. AM can reduce waste in the production phase since it uses only the material needed to produce the final object. AM supports circular design strategies by creating opportunities to extend the lifespan of a product, for instance, by enabling repairs and upgrades, even in products not originally designed to be repaired or upgraded.



Harry Kleijnen, Additive Industries

Harry Kleijnen, Senior Key Account Manager | Additive Industries

One of AM main benefits is the freedom in design, which gives the possibility to extend the product lifetime, to use less material and to attain big CO2 emission reduction. Metal AM enables to recycle unused powder, defective parts, and use them for new printing jobs. Additive industries is currently exploring this option with the SMS group. The two companies are testing a close material processing chain supplied by recycled material, which could guarantee part quality and be in line with the European Circular economy requirements.

Jakob M. Jørgensen, Head of Technology | COBOD International

The first 3d printed house in Europe was built in 2017 in Copenhagen by COBOD. The project permitted to study the economic viability of 3d printing in construction. After two years of work, that included the development of the new printer and the software, in 2019 the company printed a house in Belgium. This time they achieved great improvements in both the printing process (reducing it from a period of two and half months to two and half days) and print speed (exponentially increasing the meter cube of concrete per worker per day). According to COBOD, AM in the construction sector is still in an early stage and can currently cover roughly the 20-25% of the construction of a house. They believe that in the next 2-5 years, the technology will improve in speed and cost and bring a considerable additional value to the construction business.



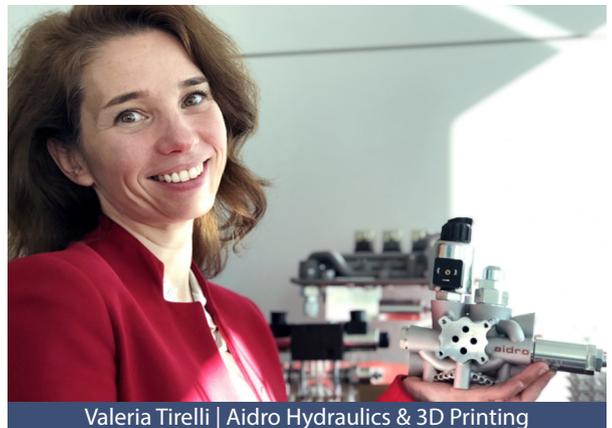
Alessio Lorusso, CEO & Founder | Roboze

3D printing can also bring sustainability to supply chains. There are still many challenges to face, particularly about raising awareness on the possibilities offered by AM and the application of new materials. Roboze is active in assisting companies in different sectors (such as aerospace and automotive) in recycling materials, ensuring product repeatability and supplying high-performance materials. Roboze pursues to implement a decentralized, customized and on-demand parts production system, resulting in considerable cuts in CO2 emissions (from product shipments) and costs (from logistics).



Valeria Tirelli, CEO | Aidro Hydraulics & 3D Printing

Aidro uses AM to redesign and optimize parts for the hydraulics sector. To investigate further the possibilities offered by AM, AIDRO conducted a study in collaboration with Western Norway University and Equinor. The study analyzed the differences between producing a hydraulic manifold with conventional manufacturing, with "simple" AM and with designed optimized AM. The design optimized AM resulted in offering the best solution, allowing to reduce both the production time (1 week instead of 8 to 10 weeks) and the weight of the product, (that translated in a reduction of 80% of CO2 emission reduction). Finally, together with the Italian start-up Fenice, Aidro is analyzing the recycling potential offered by AM in the oil and gas sector. This project aims to make use of discarded spare parts produced, and transform them into powder to be used in creating new 3D-printed components.



A common way forward

Many sectors are committing to finding a way forward to meet increasingly demanding sustainability goals. A high number of AM solutions are already available, making room for even more new solutions and improving product sustainability in very different ways. The examples presented by the speakers show that the AM sector is developing quickly, drastically raising resources efficiency, decreasing manufacturing and inventory requirements and reducing harmful CO2 emissions, opening the doors to new designs.

With the advancement in the field of applications and material development, there is no doubt that AM has the potential to boost sustainable manufacturing and sustain Europe in achieving its sustainability targets.