

A MESSAGE FROM THE EDITORS

We would like to acknowledge and thank the
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I first learned about Additive Manufacturing at the start of my mechanical engineering studies in 2013. By that time, the technology had already matured considerably, but still it was projected that it would take 5 to 10 years for consumer and industrial 3D printing to reach the plateau of productivity. Now, almost a decade later, it is still envisioned that it will take 5-10 years to attain plateau status. So what is happening? Why does AM still appear to be running on the spot after more than 30 years since it first became commercially available? Is the technology somehow over-hyped?

Additive Manufacturing has been seen as a disruptive technology for quite some time – with the potential to change not only the manufacturing industry, but providing solutions to service, production, and prototyping. Companies utilizing additive technologies for prototyping have already seen decrease in risks and time-to-market of products. However, the full benefits of AM has still not been reached. A major issue with AM is the relative slowness of certain phases of 3D printing, one of them being post-processing. To integrate AM into a production environment and deploy it on an industrial scale, automation and integration of post-processing is key. Furthermore, when 3D printing solutions integrate with a connected smart factory for on-demand production, companies can develop an agile manufacturing strategy that supports distributed global production and multiple products with predictable costs and lead times.

So, is the hype real? In my opinion, we are on the verge of the next steps in additive manufacturing. Companies are investigating automation possibilities, high-speed production, and the inclusion of post-processing of AM parts within their process chains. All these will contribute to the integration of AM on shopfloors. The flexibility of these systems will allow customisation or fragmentation to flourish in many product categories, further reducing the market share of conventional mass production, and hence boosting AM.

This issue of InnovationNU takes a closer look at these issues and how smart, factory-connected 3D printers can simplify the manufacturing industry.

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Gijs' editorial really made me think. In contrast to his experiences, I have been working with AM almost since the first days when it became commercially available. I was part of a group who bought one of the first ever machines in the UK, an SLA250 machine from 3D Systems, in 1992. As a (much) older engineer, I can recall what it was like before 3D printing was available. I can even recall a time before computer aided design was available, let alone in 3D solid modelling.

AM is definitely a product of the digital age. The better we are at creating 3D digital environments, the more demands we put on our digital manufacturing technologies. Not only has 3D printing developed in leaps and bounds over the last 30 years, but so have other computer-based machining technologies.

However, I do agree with Gijs that AM has been over-hyped and consequently under-delivered over the past three decades. But then again, so have many other technologies. One could say that robotics, VR and AI are also somewhat underwhelming compared to what we may imagine from their science fiction counterparts.

So let's not be so condemning as to how these technologies have failed to deliver, because all this time they have, for sure, been improving. Maybe our timelines have been skewed and our expectations have been overly-affected by our imaginings of the future. I also, however, do not want to be overly-critical of this, since it is our imagination that causes us to seek the technological advancements for the future.

What I can say is that AM is certainly here to stay and it will continue on to serve the needs of the future. To paraphrase the words of Dr. McCoy from Star Trek, we might see, some time in the future, that "it's AM, Jim, but not as we know it".

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