

How Additive Manufacturing can avoid a glass ceiling:

i AM Ready, a ground-breaking initiative to ensure industrial additive manufacturing readiness

“The success of AM solutions at industry level will only come about by defining, implementing and complying with manufacturing standards.

Today we are still lacking many of these steps”

- Gregor Reischle, Head of Additive Manufacturing, TÜV SÜD

The Additive Manufacturing industry is growing up fast. According to one 2018 industry report, the AM industry currently exceeds \$7.3 billion worldwide – up from \$5.1 billion just two years ago. However, despite this impressive growth, the future of the additive manufacturing sector faces a range of structural obstacles which will need to be addressed sooner or later. These include fundamental changes to business models, processes, training and standards.

Unless the industry as a whole deals with these issues now, it will run into a ‘glass ceiling’ which will impede further growth.

NOT business as usual: transforming the future of manufacturing

▪ Mass production => personalised production

Manufacturing runs typically produce hundreds or thousands of units in the same way. AM will allow businesses to customise every single unit in a run to the customer’s desires, if required. However, the challenge is that the effort required for quality assurance is much **higher and requires a new approach to certification.**

▪ Centralised supply chain => decentralised supply chain

In traditional manufacturing, most products are made in a central location, before being distributed to customers. AM will allow the small-scale production of goods in smaller ‘brand workshops’ close to customers, however this would mean that these workshops need to build up their manufacturing expertise.

▪ Central storage and waste => low waste, low storage

Manufacturers today must mass-produce products then store them until they are sold, which can result in significant waste. AM will mean manufacturers can produce the exact number of parts required on demand, thereby cutting waste and storage costs. **The challenge here is the assurance of part quality and IP rights which is why TÜV SÜD offer certifications and software solutions.**

Done right, AM clearly provides enormous potential benefits to businesses and their customers, in terms of cost, reduced waste and more reactive production. But, this will also require a significant change in business models and practices. Unless firms make serious structural changes to the way they produce their goods, Additive Manufacturing’s benefits cannot truly be realised.

How to initiate change processes to become “i AM ready” and benefit from AM’s potential

For a manufacturing business to become industrialised Additive Manufacturing ready (i AM-ready), significant changes need to be made throughout the business.

These include:

1. Company Management

AM will only bring limited benefits unless the wider business strategy is changed to accommodate it. You cannot simply ‘add’ an additive manufacturing section to a production plant – the benefits will be minimal. Instead, for AM to achieve its potential, a business must develop a wider strategy for AM, including development of the marketplace and planning for new customer segments and distribution models.

2. Customer Management

For customers to accept goods produced using AM, they will need assurances that those products are of the same (or higher) standard as they have come to expect through traditional manufacturing processes. This will require manufacturers to put their products through testing and certification to gain customer trust. During the early market stage in particular, companies need to consult their clients on the value of AM and to teach additive manufacturing design.

3. Order Management

Producing large numbers of 3D printed items will require very different processes to traditional manufacturing. There will be greater emphasis on CAD and CAM preparation, as well as new methods of