Addressing the need for assurance in additive manufacturing

Additive manufacturing (AM), also known as 3D printing, is the computer-controlled process of layering materials to create three-dimensional shapes. The origin of additive manufacturing can be traced back to the mid-1980s, but its development has skyrocketed in recent years. ***Know more. Risk less.***

While many think of plastics when it comes to AM, the metals AM industry is growing rapidly. In AM, precision metal parts are built using computer-created design specifications which are fed to a laser. This laser melts a metal powder to create a melt pool which feeds a printing probe that builds a metal component layer by layer.

The growth of AM means that precision parts that would be difficult or even impossible to build with existing processes, with new processes parts can be made to very high standards much more quickly and cost-effectively. There are already several companies that offer AM, and it has been adopted by many industries.

Crying out for quality and reliability

In the AM field, factors such as quality, safety, and reliability have not been limiting factors. AM processes have found widespread applications in non-safety critical applications.

While AM is disrupting design and engineering across many sectors, skilled practitioners have little insight into the process nor its quality or reliability and thus by extension the quality and reliability of 3D printed metal parts.

This therefore presents a potential barrier to widespread adoption for safety-critical applications in industries such as aerospace and healthcare which are heavily regulated, dominated by assurance requirements, and rely on best practice quality standards.

Some of the quality and reliability challenges facing metals AM companies include:

- Variable machines and processes that cause variations in manufacturing consistency.
- Build processes that have many adjustable inputs that influence quality.
- Little-to-no industry standards for design methods or finished products.

Quality assurance for AM

In the long-term, addressing these challenges and building trust and confidence in metals AM as a technology will be crucial for further development. Many companies are choosing to get ahead of their competitors by boxing off quality assurance now.

One of these companies is our customer, Dutch metals AM specialist MX3D, famous for building the world's first 3D-printed bridge in the heart of Amsterdam.

In recognizing the importance of assuring customers that its products are safe and reliable, MX3D approached LRQA to certify its wire arc manufacturing process.

MX3D's M1 system and its AM processes are now certified by LRQA. This demonstrates quality and reliability to MX3D's potential clients and lowers the threshold to start in-house with wire arc additive manufacturing.

> “In the first years of MX3D, the biggest challenge was to prove that the printed material could also achieve the industry-required level of safety and quality. After about 4 years, there was sufficient proof and certification became a possibility.”

LRQA Additive Manufacturing Services

There are significant risks and variabilities to overcome when using additive manufacturing (AM) processes to produce materials and parts with consistent and acceptable quality and reliability. LRQA provides practical and proven solutions to address these challenges and support your organization in realizing the benefits of additive manufacturing, while also meeting regulatory and industry-specific requirements.

Our team of experts has helped to create the international and industry-specific standards for additive manufacturing, and our inspectors are chosen for their sector-specific knowledge and expertise. This means you can be confident that they’ll understand the manufacturing challenges you face and help create long-lasting value through collaboration with you, delivering a greater impact on your business, your people and your customers.

Why choose LRQA?

We’re here to help you negotiate a rapidly changing world, by working with you to manage and mitigate the risks you face. From compliance to data-driven supply chain transformation, it’s our job to help you shape the future, rather than letting it shape you. We do this by providing:

Technical expertise

Our people are sector experts. They bring with them a clear understanding of your specific challenges, standards and requirements – then deploy deep knowledge of inspection, certification, assurance, cybersecurity and training to help you meet them.

Global capability

Operating in more than 120 countries, recognized by over 30 accreditation bodies worldwide, and covering almost every sector, we can help you reduce risk, drive improvement and build credibility with stakeholders around the globe.

Unrivaled vision

Our technical know-how, sector expertise and an innovative, forward-thinking approach can help you add value today – and help you become safer, more secure, and more sustainable tomorrow.

Effective partnership

Every business is unique. That’s why our experts work with you, to fully understand your needs and goals, and work out how we can best support them.

View the LRQA and MX3D additive manufacturing video here.

For more information on our range of supply chain assurance and inspection services visit lrqa.com/us

Get in touch

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