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Inspire trust.

Case study: Deutsche Bahn

Development of the “Additive Manufacturer” certification scheme

TÜV SÜD and German rail operator Deutsche Bahn have pooled their expertise to develop a certification scheme for the suppliers of spare parts and finished components produced by additive manufacturing (AM). The scheme ensures consistent and reproducible product quality throughout the process chain. Two companies – Siemens Mobility and MBFZ toolcraft – have already been certified according to this new guideline.

Challenges

To provide customers with passenger and goods transport services, Deutsche Bahn, the largest transport company in Central Europe, maintains a large and heterogeneous vehicle fleet, as well as the necessary infrastructure. To prevent vehicle downtime and infrastructure failure, the availability of various vehicle spare parts and infrastructure must be ensured.

Additive manufacturing (AM) was identified as a new technology with an increasingly important role in the procurement of discontinued or difficult to source components. However, it poses a challenge to the strictly regulated rail sector, where high quality standards are imposed on suppliers and the products they manufacture.

OVERVIEW

Customer	Deutsche Bahn AG
Industry	Rail industry
Company outline	Largest transport company in Central Europe, focusing on passenger and goods transport
Challenges faced by the company	Ensuring availability and consistent, reproducible quality of AM parts delivered by suppliers
Our solution	Joint development of the “Additive Manufacturer Certification Scheme” certification of AM suppliers
Company benefits	Assured quality of AM parts, cost reduction, fast rollout, supplier development, ongoing updating of the scheme in line with the state of the art

Deutsche Bahn - TÜV SÜD collaboration

As the relevant standards were not available in 2016, Deutsche Bahn developed an internal standard for AM supplier qualification; under the direction of its subsidiary responsible for vehicle maintenance, DB Fahrzeuginstandhaltung.

Similarly, TÜV SÜD was also focusing on the issue of inconsistent industry practices and standards in additive manufacturing and had acquired in-depth experience in this field. To address the gaps, the company was working on the development of its own certification scheme, based on existing relevant standards and the collective know-how it had acquired on additive manufacturing

In early 2017 Deutsche Bahn became aware of TÜV SÜD's initiative, and both parties decided to align their approaches by creating a cross-industry third-party manufacturer certification programme, referred to as the "Additive Manufacturer Certification Scheme".

In the initial phase, the standards of this scheme will only apply to Deutsche Bahn's suppliers of nonsafety-relevant AM products. The next phase will involve the specification of additional requirements, expanding the scheme to include safety-critical components.

On completion of the conceptual phase, the scheme was piloted in five companies - two AM suppliers, Siemens Mobility and MBFZ toolcraft in Germany, which have now all received TÜV SÜD certificates. Following the success of the pilots, TÜV SÜD has already filed the relevant applications for standardisation with the German and international standardisation agencies, DIN and ISO, respectively.

TÜV SÜD solutions

As part of the Additive Manufacturer Certification Scheme, Deutsche Bahn suppliers obtain a third-party report. This includes a gap analysis of technological performance to ensure they achieve an adequate level of quality as quickly as possible, as well as the third-party TÜV SÜD certification mark. Deutsche Bahn also benefits from other services through a single source, such as implementation of the underlying requirements/standards of suppliers; performance assessment by TÜV SÜD's technical experts; and the possibility of global quality control.

Business benefits

- Fast assurance of service and product quality delivered by suppliers of AM components.
- Elimination of time-consuming first-party audits.
- Third-party supplier certification – for individual spare parts and/or serial production in all relevant technologies.
- Ensuring guaranteed reproducibility through implementation of the relevant processes, and joint definition of relevant and reasonable quality assurance measures.
- Establishment and implementation of the culture of continual improvement within suppliers.

FLORENS LICHTER, HEAD OF ADDITIVE MANUFACTURING (DB FAHRZEUGINSTANDHALTUNG GMBH)

“ In regulated sectors, such as the rail industry, establishment of standards is critically important for introducing new technologies. Given this, our collaboration with TÜV SÜD to develop manufacturer certification for additive manufacturing centres with a clear focus on reproducible, quality-assured processes was a significant milestone. **”**

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TÜV SÜD is a trusted partner of choice for safety, security and sustainability solutions. It specialises in testing, certification, auditing and advisory services. Since 1866, the company has remained committed to its purpose of enabling progress by protecting people, the environment and assets from technology related risks. Through more than 24,000 employees across over 1,000 locations, it adds value to customers and partners by enabling market access and managing risks. By anticipating technological developments and facilitating change, TÜV SÜD inspires trust in a physical and digital world to create a safer and more sustainable future.