Germany's National Railway Improves Additive Manufacturing Part Identification Time by 99.2%

Founded in 1994, Germany's national railway provider, Deutsche Bahn, is the largest rail company in Europe, with more than 300,000 employees.[1] Each year, Deutsche Bahn services nearly 1.5 billion rail passengers, making it the top earning railway company worldwide with over $48.12 billion in revenue in 2019.[2]

PROBLEM

Like many companies within the railway industry, Deutsche Bahn's fleet of trains and passenger cars is aging, which makes it challenging to find suppliers with legacy spare parts in stock. Deutsche Bahn knew it needed to be proactive to find a solution to produce spare parts faster, with fewer supply chain disruptions and a lower total cost of ownership.

SOLUTION

Deutsche Bahn looked to additive manufacturing to make parts in less time, closer to the part's required end-use, and with less capital in storing overstock parts. With only a small number of additive manufacturing experts in the organization, identifying and qualifying additive manufacturing spare parts from thousands of inventory parts was time-consuming and overwhelming. Deutsche Bahn selected 3YOURMIND as its technology partner to help address these needs, an intelligent solution to analyze stock lists and prioritize parts for additive manufacturing. In addition, the solution needed to be centralized so Deutsche Bahn personnel could access information from remote repair locations.

IMPLEMENTATION

Deutsche Bahn equipped its employees with 3YOURMIND's Agile PLM software to empower its more than 300,000 employees to share information more easily through one centralized software tool. In addition, by using Agile PLM, employee's organization-wide can now submit part ideas to additive manufacturing experts for qualification.

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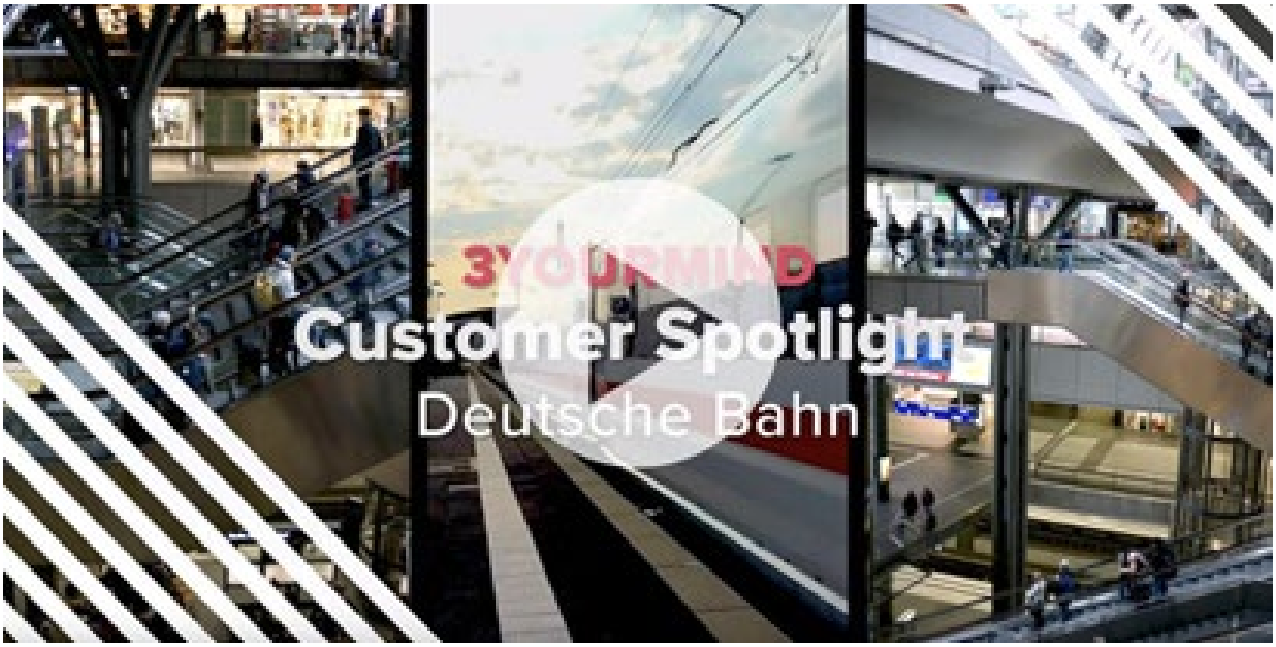
addition, Deutsche Bahn implemented 3YOURMIND's Additive Manufacturing Part Identifier (AMPI) tool to scan existing inventory and stock lists to identify parts that are strong candidates for additive manufacturing.

"The reason we chose the AM Part Identifier was to make our operation more efficient," says Floren Lichte, Head of AM at Deutsche Bahn. "We have a great funnel for filtering these ideas and structuring this information so we can process the data quickly."



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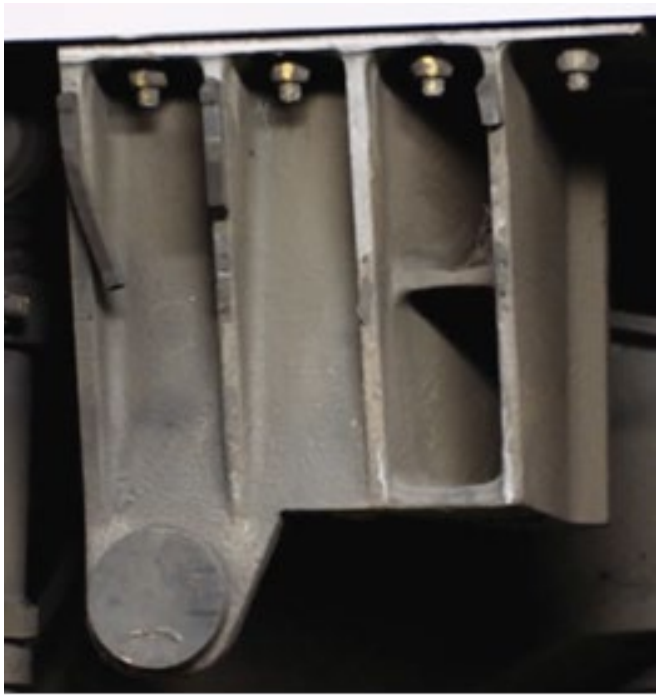
OUTCOME

As a result of leveraging their employees' expertise and empowering them with the right tools for the job, Deutsche Bahn has vastly improved its part identification and qualification efforts. For example, before using 3YOURMIND's Agile PLM solution, Deutsche Bahn evaluated 50 parts for every suitable additive manufacturing part. On average, Deutsche Bahn's additive manufacturing experts spent 95 minutes assessing each part, which, in total, required approximately 80 hours to identify a single strong use case.

With Agile PLM, Deutsche Bahn increased its ratio of suitable additive manufacturing parts from 50:1 to 3:2, signifying a 6x increase in parts identified relative to the number of parts assessed. In addition, Deutsche Bahn also improved its part assessment time from 95 minutes to 25 minutes – a 74% increase in part assessment efficiency.

As a result, Deutsche Bahn can now identify and assess suitable additive manufacturing parts in just 37.5 minutes, demonstrating a whopping 99.2% decrease in total time spent identifying strong additive manufacturing use cases.



Deutsche Bahn 3D printed, tested, and implemented a secondary roll-stop in half the time of a conventional part.

To see this in practice, Deutsche Bahn successfully used 3YOURMIND's AMPI tool to identify an additive manufacturing use case for secondary roll stops. This component bolts underneath the train car body and limits the lateral movement of the car body for safe cornering on tight track curves.

As a result of additive manufacturing realization, Deutsche Bahn successfully reduced its production lead time for secondary roll tops from 10 months in a foundry using conventional manufacturing methods to 5 months with additive manufacturing, factoring in testing time.

"We want to reduce downtime for our customers," says Lichte. "We want to have all our assets in operation and not standing in our maintenance facilities – and that's what AM delivers."

References

[1] Deutsche Bahn Facts & Figures 2020. Deutsche Bahn, https://www.deutschebahn.com/resource/blob/692868/2f7ebf8a1478785f0ea896f429f0a51f/facts_and_figures2020-data.pdf.

[2] Top Ten Railway Operators in 2020." Railway Technology, 8 Nov. 2021, https://www.railway-technology.com/analysis/top-ten-railway-operators-in-2020/