DEUTSCHE BAHN UTILIZES MIMPLUS FINE-DETAIL METAL PARTS MANUFACTURED ON TRITONE'S DOMINANT SYSTEM FOR FIRST-CLASS TRAIN SEATS ON ICE 3NEO FLEET

KEY HIGHLIGHTS

INDUSTRY
Rail transportation

THE CHALLENGE
Economically manufacture pins with exceptional cosmetic surface finish incorporating integrated threading, without additional machining

THE SOLUTION
Thousands of parts were effortlessly manufactured in less than 20 hours, showcasing rapid production skill

SUCCESS
Successful integration of MoldJet pins in Deutsche Bahn's first-class cars for ICE 3neo high-speed trains, meeting functional and aesthetic requirements

ABOUT DEUTSCHE BAHN

Deutsche Bahn Group is a leading provider in the mobility and logistics sector. The integrated rail system includes passenger transport activities in Germany, rail freight transport activities, operating service units, and the rail infrastructure companies (RIC) in Germany. Deutsche Bahn Group, with its head office in Berlin, employs about 340,000 people. The company's business operations are focused on rail transport in Germany.

ABOUT MIMPLUS TECHNOLOGIES

MIMplus Technologies has great knowledge of innovative manufacturing and assembly technologies with a special focus on high-tech materials. Customers come from the medical, automotive, mechanical engineering and the luxury industry. The company provides support to customers for the selection of the appropriate manufacturing process, the suitable material, the optimization of components or assemblies for the chosen production technology to improve function and cost, determines the required level of automation and manufactures the complete assembly in-house and/or as an extended workbench at selected suppliers. The company also performs all the necessary tests for the extended workbench and purchased parts and thus assumes overall responsibility for assemblies. MIMplus Technologies GmbH & Co. KG, based in Germany near Stuttgart, is a fully owned subsidiary of OBE Holding GmbH, a precision engineering company since 1904 with about 500 employees and production sites in Germany and China.

THE CHALLENGE

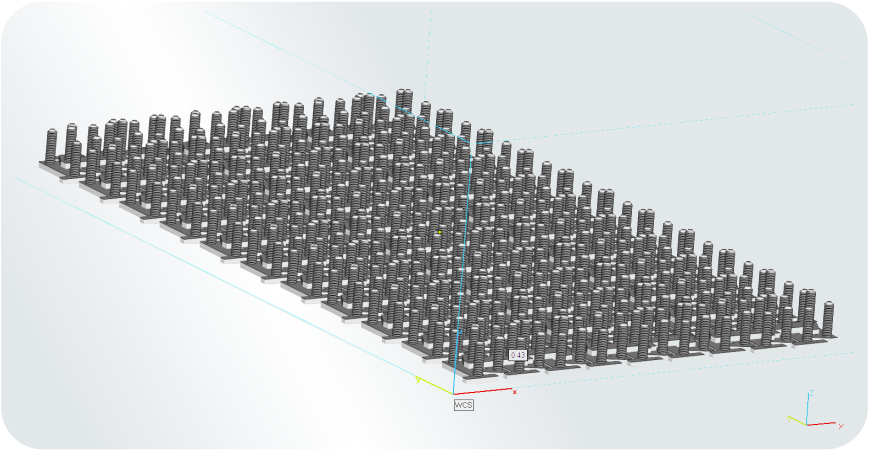
1. Batch size and lead-time: thousands of pieces in 4 weeks' time for delivery
2. Toolless production: create threaded pins without additional machining (M4 threads along two 14 mm pins).
3. Polishable material that enables outstanding final surface finish of Ra<1µm.
4. Dimensions 25mm x 16.5mm x 15.5mm

THE SOLUTION – WHY MOLDJET:

For a solution, several technologies were assessed, including milling, investment casting and additive processes like laser powder bed fusion (LPBF).

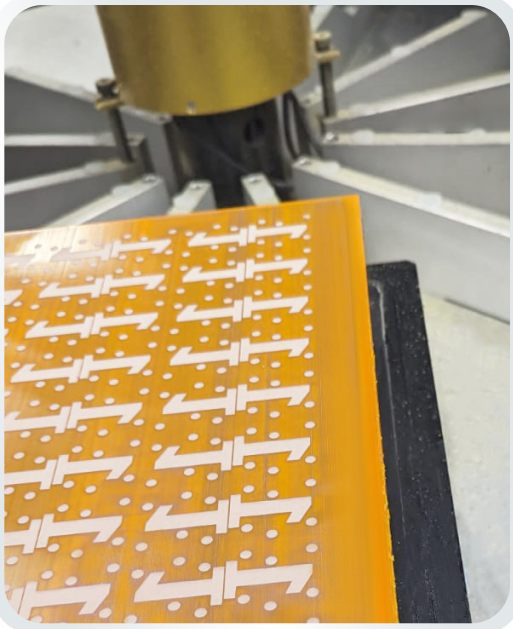
MoldJet was found to be the most suitable for the following reasons:

- Quality of machined features significantly improved.
  - Supports 8,000-piece batch size
  - A short lead time – for 1,000 pcs 1 print job in just 17 hours
- Process can accomplish the detail level and accuracy required for "as-printed" functional threaded pins.
- Highly dense green material leads to dense and polishable sintered surface.
- With the need to manufacture pins efficiently, simultaneous production provided a streamlined solution without compromising quality or incurring delays.

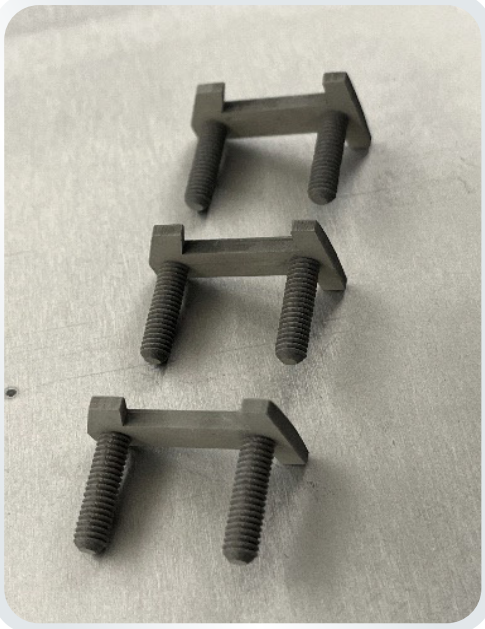


High manufacturing efficiency

Tritone



Deutsche Bahn pins manufactured on Tritone Dominant system



Pins in their green part stage

Deutsche Bahn pins post sintering

SUCCESS

- Thousands of pieces manufactured in one single print job
- Functional threads (M4) without post processing
- Surface treatment: vibratory grinding and sand blasting on the sintered pin
- Achieved Ra < 1 µm

DEUTSCHE BAHN TESTIMONIAL:

> We are thrilled with the results of this program. We look forward to expanding this success internally across our facilities and offering these fixtures on a "turnkey" basis to customers. We have proven the business case as well as the technical capabilities and are excited to help other internal and external customers realize these benefits.

Helge Schneevogt, Technology Scout & Applications Engineer Additive Manufacturing, Deutsche Bahn

MIMPLUS TESTIMONIAL:

> "Utilizing MoldJet technology, MIMplus was the perfect fit for Deutsche Bahn AG, ensuring efficiency and speed in their metal component supply chain. MIMplus Technologies is proud to contribute to Deutsche Bahn AG's transformation towards an efficient and rapid supply chain of metal components".

Dennis Marquardt, Key-Account-Manager, MIMplus Technologies

Deutsche Bahn implemented MoldJet technology through the services MIMplus, successfully installing compliant pins in their first-class ICE 3neo cars, meeting functional and aesthetic standards

Successful integration of MoldJet pins in Deutsche Bahn's first-class cars for ICE 3neo high-speed trains, meeting functional and aesthetic requirements

ABOUT TRITONE TECHNOLOGIES

Tritone Technologies transforms metal Additive Manufacturing to address the demanding standards and needs of industrial production. The company's innovative technology enables industrial throughput of accurate parts with a range of metal and ceramic materials, suitable for the Automotive, Aerospace, Medical and Consumer Electronics industries.

Founded in 2017, Tritone is led by an experienced team of experts with a track record in driving technology and business growth. Backed by private equity firm Fortissimo, Tritone is a global company and is based in Israel with presence in North America and Germany.