BigRep 3D Printers Help Overcome COVID-19 Supply Chain Challenges in Aerospace

CNE Engineering relied on BigRep machines to 3D print molds to produce lacquering equipment needed for Scandinavian Airlines (SAS) to safely store grounded planes during COVID.

Berlin, Germany. June 1, 2021 – BigRep, a global leader in large-format 3D printing solutions, is supporting its customers to bypass traditional supply chains and produce large-scale parts for aircraft maintenance.

The onset of the COVID-19 pandemic halted most travel, resulting in the immediate grounding of 62% of passenger planes. Airplane engines need protection from the elements when parked for long periods, and standard procedures require covers to prevent damage from moisture and other objects. With the sudden grounding of many planes, SAS did not have the necessary inventory of off-the-shelf engine covers, exhaust plugs, etc. The domino effect of supply chain shortages worldwide meant that it was impossible for SAS to simply order more equipment protect their fleet.

BIGREP SOLUTIONS FOR LARGE-SCALE PARTS

SAS determined that shortening the supply chain was the key—harnessing more locally available resources. They considered 3D printing solutions but needed technology large enough to produce engine exhaust covers. SAS turned to CNE Engineering, a local specialized supplier using BigRep 3D printers, to find a solution. The engine exhaust covers would need to withstand high temperatures, exhibit chemical and UV resistance, and be soft enough to not damage the engine upon removal and installation. Based on these requirements, castable urethane, a widely available and low-cost material, would be the best option.

CNE's Nathan Brown, Managing Director of CNE said, "There was an opportunity to not only fill their need for this tool they couldn't acquire through the normal supply chain, but we also saw the opportunity to make it better."

FAST TIMELINES, AGILE PRODUCTION, AND LOW-COST PARTS

CNE planned to use its two BigRep machines to 3D print molds to produce several cast parts. The BigRep ONE's cubic meter build volume could accommodate the primary, large-scale piece. BigRep's STUDIO was a perfect choice to print the smaller features, like removable mold inserts. CNE used various BigRep materials for different parts: bio-based PLX for the outer shells, HI-TEMP CF for the center core, and TPU for the insert molds. Thanks to large-format 3D printing, CNE was able to meet SAS's timing requirements as tooling was printed in a few days, and castings required only hours.

Jason Deadman, Production Engineer at SAS says, “There is so much that goes into aircraft maintenance that you don't see. Technology is something SAS is embracing.” Within two months of the kick-off meeting, SAS received its initial order. CNE's success with their BigRep machines shows the full range of what 3D printing offers: fast production, design flexibility, low volume, low cost, and minimal waste. BigRep's Chairman of the Board and Managing Director of 360 Aircraft Finance Peter Smeets said, “This case study is a shining example of how BigRep's large-format 3D printers are already changing the game in aerospace MRO. We believe this is only the beginning and that 3D printed solutions will become the gold standard for custom, cost-effective manufacturing free from traditional supply chain issues.”

About BigRep

A global leader in large-format FFF 3D printing, BigRep strives to transform its user’s productivity and creativity with easy-to-use additive manufacturing solutions. With an aim to help companies accelerate innovation and rethink manufacturing, BigRep’s German-engineered 3D printers enable engineers, designers and manufacturers from start-ups to fortune 100 companies to go from prototyping to production faster, getting their products to market first. Through collaborations with strategic partners – including BASF, Bosch Rexroth, Etihad Airways, and Deutsche Bahn – BigRep continues to develop complete additive manufacturing solutions comprising of industrial 3D printers, software, and advanced materials. Founded in 2014, BigRep is headquartered in Berlin with offices and technical centers in Boston and Singapore.

About CNE Engineering

CNE Engineering leverages the flexibility of industrial 3D printing quickly and efficiently to produce functional prototypes, tooling and small production runs. Whether you have an idea, concept or market need CNE can help. Beginning with the design of the initial prototype we can help you iterate throughout the product development process to create manufacturable products faster and more efficiently. Modern, innovative prototyping & small batch production. Learn more at https://www.linkedin.com/company/cne-engineering

About Scandinavian Airlines (SAS)

SAS, Scandinavia's leading airline, with main hubs in Copenhagen, Oslo and Stockholm, is flying to destinations in Europe, USA and Asia. Spurred by a Scandinavian heritage and sustainable values, SAS aims to be the global leader in sustainable aviation. SAS wants to reduce total carbon emissions by 25 percent by 2025, by using more sustainable aviation fuel and our modern fleet with fuel-efficient aircraft. In addition to flight operations, SAS offers ground handling services, technical maintenance, and air cargo services. SAS is a founder member of the Star Alliance™, and together with its partner airlines offers a wide network worldwide. Learn more at https://www.sasgroup.net

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