



Long-Haul Tooling

VOLVO TRUCKS' SLASHES TIME AND COST OF TOOL PRODUCTION WITH ADDITIVE MANUFACTURING

“The capability to produce a virtually unlimited range of functional tools in such a short timeframe is unprecedented and enables us to be more experimental and inventive to improve production workflow.”

– Pierre Jenny, manufacturing director at Volvo Trucks

CASE STUDY



Volvo Trucks 3D printed this durable, lightweight punching tool on a Fortus 3D Production System.

The Volvo Truck, an ultra-reliable paradigm of automotive innovation, is built for the long haul. And like the truck itself, the tools used to build its engine need to be rugged, streamlined and efficient. To produce tough manufacturing and assembly tools in 94 percent less time, Volvo Trucks now 3D prints many of them on a Fortus® 3D Production System.

Pierre Jenny, manufacturing director at Volvo Trucks' engine production facility in Lyon, France, estimates that the tools his plant previously machined in metal required 36 days to design and manufacture. Now in just two days, their Fortus system can 3D print lighter-weight tools and fixtures in production-grade ABS*plus* thermoplastic.



These game-changing productivity gains are improving the plant's overall flexibility, helping them meet delivery targets while reducing cost and waste. Jenny estimates that for customization or small quantities, the all-in cost of 3D printing ABS tools is, in some cases, as little as 1 euro per cubic centimeter – just 1 percent of what the same tools would cost if machined from metal.

“Stratasys 3D Printing has made an incredible impact to the way we work,” Jenny said. “The capability to produce a virtually unlimited range of functional tools in such a short timeframe is unprecedented and enables us to be more experimental and inventive to improve production workflow.”

Within three months of purchasing its Fortus system, Volvo Trucks had already 3D printed more than 30 different production tools including a range of lightweight-yet-durable clamps, jigs and supports, and ergonomically designed tool holders to organize their work environment.

“We’re working in the heavy-industry sector, so reliability is naturally critical. So far every piece that we have 3D printed has proved to be 100 percent fit-for-purpose,” said Jean-Marc Robin, technical manager at Volvo Trucks. “This is crucial from a practical aspect, but also instils trust among operators and quashes any traditional notion that everything has to be made from metal in order to function properly.”

According to Robin, developing production tools using additive manufacturing enables the equipment design team to be far more responsive, avoiding unnecessary waste in the event of last-minute design changes.

“The fast and cost-effective nature of additive manufacturing means that we are far less restricted than we were even six months ago, allowing us to constantly improve our processes,” Robin said. “We now have operators approaching our 3D print team with individual requests to develop a custom clamp or support tool to assist with a specific production-line issue they might be having. From a time and cost perspective, this is unimaginable with traditional techniques.

“Additionally, in the rare case that the design specifications of a traditionally-manufactured metal tool were inaccurate, the lengthy and costly design and manufacturing process had to begin again. With a 3D printed part, we can simply alter the design specifications and re-3D print the piece in a few hours.”

Volvo Trucks’ Lyon, France engine plant produces various engine types and sizes for the Volvo Group, including Renault Trucks, which the group bought in 2001.



This 3D printed holding fixture (gray) is used to maintain the position of an engine hose during assembly.



Volvo Trucks has reduced turnaround times on certain clamps, jigs and supports from 36 days to just 2 days.

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