

Garrett Engine Boosting Systems (part of Honeywell International) Turbochargers manufacturer has smooth ride with CATIA V5



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– Mike Howard, Engineering Technical Specialist, Garrett Engine Boosting Systems

Highlights

- *Garrett wanted to improve collaboration between its geographically dispersed design teams while improving response times and cutting costs*
- *CATIA V5 gave Garrett the collaborative power it needed while simplifying the training process and reducing infrastructure costs*
- *CATIA allows Garrett to work with native data supplied by its customers and to quickly create new iterations as a design evolves.*

Tight integration requires top tools

Garrett Engine Boosting Systems, part of Honeywell International's transportation and power systems division, manufactures turbochargers for automotive and commercial vehicle makers worldwide. The company, based in Torrance, California, employs 6,000 people in 14 countries. Its customers include auto manufacturers from Audi to Volkswagen, as well as commercial vehicle makers International Truck Company, Freightliner, Volvo Truck, Scania, DAF and Caterpillar.

Because a turbocharger is deeply integrated with a vehicle's engine, the design requires high levels of collaboration with the OEM and engine manufacturer. Turbochargers also feature complex forms that can tax even the most experienced surface designers.

So when IBM and Dassault Systemes introduced CATIA V5, Garrett was among the first to take advantage of the technology's advanced collaboration and surface design capabilities. Garrett now has nine seats of CATIA V5, which it uses for all new projects and runs in parallel with its V4 system.

Faster training, lower costs

Garrett benefits from the availability of CATIA V5 on the Microsoft® Windows® platform, in addition to the UNIX® platform offered in V4. Using CATIA V5 for Windows has helped Garrett reduce its infrastructure and maintenance costs while simplifying its training requirements.

"The transition to Windows has eliminated the need for formal training on the operating system, while CATIA Version 5 is easier to use than Version 4," says Mike Howard, Engineering Technical Specialist at Garrett's Skelmersdale, UK, facility.

Sophisticated tools for sophisticated shapes

The CATIA modules in use at Garrett include Generative Shape Design, FreeStyle Shaper, Generative Shape Optimiser and Knowledgeware. "CATIA is used for a very wide range of applications in the design process including meshing, stress analysis and critical wall thickness, as well as the design itself, providing verification of the design and quality assurance," Howard says. "Working from the inlet shape of the volute to the outlet shape through a series of sections is a complex process which is handled better by CATIA than other systems."

Honeywell

IBM Business Partner INCAT guided Garrett through the training and implementation process for Version 5. Garrett has created a V5 implementation team to share knowledge between its UK, France and US teams. Design standards and templates are being established as the migration continues, guiding the documentation of Garrett's best practices worldwide.

Collaborative design made easy

Engineers and designers from Garrett collaborate with the customer's team to create a turbocharger that can be packaged within the engine bay to produce the required power and torque. During this process a model of the engine bay is used, along with existing and new turbocharger component designs, to establish the optimum configuration and orientation.

Digital mock-up techniques are used to verify the fit. Physical models can be created using rapid prototyping techniques from stereolithographic data generated in CATIA. Different Garrett offices share models electronically over Garrett's wide area network (WAN) to maximise design efficiencies and arrive at an optimum design.

Fast iterations for fast response

The ability to work with native computer aided design (CAD) data supplied by customers also contributes to improved efficiency. During the evolution of a vehicle, changes occur quickly and frequently, and using the same design system as the customer ensures that Garrett can keep pace.

"CATIA is the leader in the automotive industry," Howard said. "We design natively in a number of different systems, and CATIA is way out in front. In the experience of the team here, CATIA is the best design software available."

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