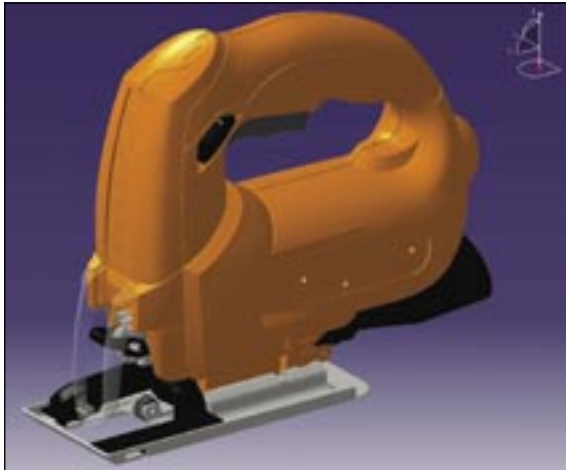


## Black & Decker minimises prototypes with CATIA V5



*"We know components will fit as we have checked the assembly in CATIA. We can go directly to a working prototype."*

*– Brian Kennedy,  
Engineering Support Manager,  
Black & Decker Spennymoor*

Black & Decker began designing products on CATIA in 1989, and it is now used throughout the company's design centres, enabling sharing of information and providing collaboration among design teams, with manufacturing teams and with suppliers.

After 14 years on CATIA, Black & Decker had amassed a sizable collection of Version 4 design data when CATIA V5 was introduced. But Black & Decker was eager to take advantage of the new V5 tools for surfacing and assembly modelling. Spennymoor has 26 seats of CATIA, including tools for Generative Shape Design, FreeStyle Shaper, FreeStyle Optimizer, Digital Mock Up, Kinematics, Photo Studio 2, and Surface Machining.

CATIA V4 had helped Spennymoor cut development times from two and a half years to about 14 months; with CATIA V5, the company is targeting development times of less than a year. The design of CATIA V5, which facilitates a phased transition from V4, would significantly simplify the process by protecting Black & Decker's investment in legacy data.

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### Highlights

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- *Power tool manufacturer Black & Decker needed to cut product development times and costs by minimising physical prototypes while improving collaboration*
- *Black & Decker at Spennymoor, UK, chose CATIA Version 5 for design and manufacturing, with Photo Studio 2 to control concept-to-production development*
- *CATIA V5 allowed Black & Decker to reduce lead times, enhance collaboration and aid in the development of new organic shapes.*

### Global supplier depends on CATIA

From its humble beginnings as a small machine shop in Baltimore, Maryland, in 1910, Black & Decker has grown into a global manufacturer whose name is synonymous with power tools for the home in more than 100 countries worldwide.

Black & Decker's largest engineering design centre is in Spennymoor, UK, where a team of about 110 people work on product design and development. The team is split into two groups, creating products for the consumer and professional markets. Other design centres are located in Idstein, Germany; Perugia, Italy; Towson, Maryland; and Brockville, Canada.

## Virtual prototypes used for most functional tests

With CATIA V5, standard components such as switches and motors are stored as solid models in a design vault. This speeds the creation of the envelope inside the clam shell that houses the tool, together with the fittings required to support internal working parts. Ribs and screw boxes can all be matched to the standard components, with additional features positioned to provide stiffness and strength to the finished power tool.

In working mechanisms, the kinematic capabilities of CATIA prove out the operation during the design phase. Stereolithography data is generated directly from the CATIA model and sent out to model makers to create a rapid prototype of the finished product.

“The quality and dimensional accuracy of the prototype created with STL techniques is so good that the model can be used for full functional testing, excluding drop testing,” said Brian Kennedy, Engineering Support Manager for Black & Decker Spennymoor. “Detailed drawings have been eliminated. Previously each clam shell would have had six of them, but now all the information is held in the solid model.”

He adds, “Because the toolmaker can work directly from the model, interaction between the design team and the toolmaker is greatly simplified, eliminating misunderstandings by marking up changes directly on the solid model.”

## Collaboration streamlined with CATIA V5

New product design includes delivering the concept and handing over production to the resident engineer at one of Black & Decker’s manufacturing sites. Downstream collaboration with these sites is also possible with CATIA V5. The engineer responsible can take the design right onto the production line, using a CATIA system at the manufacturing site to make any necessary adjustments to achieve a first build and adapt the design to any local market requirements.

“Styling and the ability to package the components in the most economical way is the benefit of CATIA V5,” Kennedy said. “It is a big success in Black & Decker, there are no two ways about it.”

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