

Automotive and transportation

Ducati

Tighter development integration yields big benefits in motorbike production

Products

NX, Teamcenter

Business challenges

Extensive system of partners and suppliers

Increasing use of electronics and software in motorbikes

Keys to success

NX used for product development purposes from initial concept to product launch

Teamcenter used to integrate all product development operations and sites

NX functionality for integrated cabling design

Results

Development cycle for a new motorbike down from 36-40 months to 24

Existing models updated yearly

Parallel development of cabling, electronics, software and accessories

Paper documents eliminated from manufacturing and the warehouse

Despite the increasing complexity of its products, Ducati reduced its development cycle by one year through the use of NX and Teamcenter

Prestigious brand with passionate fans

Ducati Motor Holding S.p.A. (Ducati) was founded in 1926 to produce components for the emerging radio industry. After World War II, the company began manufacturing engines and small motorbikes,

eventually becoming one of the most valuable and popular brands in the road and racing motorbike arena. Today, Ducati delivers approximately 40,000 motorbikes annually. Its product line consists of six product families with seventeen models in the medium and high end of the market.

Of the 1,000 employees who work at Ducati, nearly 200 are involved in research and development (R&D), an area the company supports with large investments every year. The engineering staff includes



Ducati is a prestigious brand with a strong identity and supported by a wide community of passionate fans.

"We couldn't imagine working without Teamcenter."

Piero Giusti
Information Technology
Manager, R&D
Ducati



NX and Teamcenter play a key role in Ducati's development process.

approximately 90 people; 60 of those are dedicated to design. Also, Ducati has global operations and a wide network of partners and suppliers who handle 92 percent of its production. Because any delay or mistake when transferring information can translate into longer cycle times and increased costs, Ducati has been actively pursuing tighter integration between all members of its product development teams.

Among the technologies the company has implemented to achieve this are two solutions from Siemens PLM Software: NX™ software and Teamcenter® software. NX, the company's computer-aided design (CAD) system, is used to digitally model and manage the entire vehicle assembly. Teamcenter functions as the company's product lifecycle management (PLM) solution, enabling secure data sharing and distribution, both in-house and with suppliers.

Molds, body and cabling – all with NX

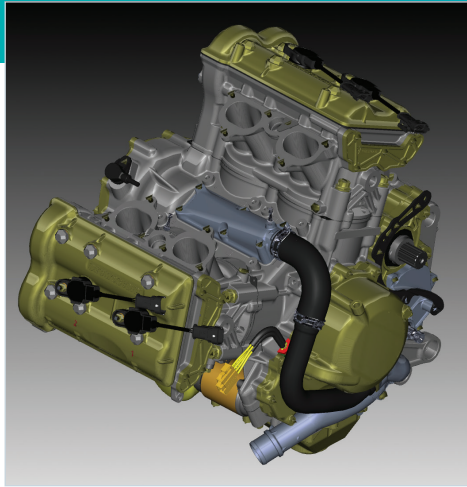
"NX is the tool we use from the moment we start thinking about a new project up to its completion," explains Piero Giusti, information technology manager for R&D at Ducati Motor Holding. "NX is used to design many different motorbike components, including the wheels, the chassis and the body, as well as custom parts – virtually everything except the engine."

There are currently more than 50 NX workstations at Ducati. "The key benefits of NX are flexibility and ease of use," Giusti says. "By 'flexibility,' I mean that it lets you generate 3D models with different methods, without constraining you to a fixed approach. NX with synchronous technology is a hybrid approach that avoids having to parameterize everything, so the user is free to choose how to achieve the final result."

Ducati engineers use the NX 3D wiring functionality extensively. It allows them to verify cable routing inside the virtual assembly, minimizing possible routing issues downstream. "The next step will be the integration of the wiring diagram to



The visualization capabilities of NX will soon replace photography in Ducati's motorbike manuals.



Ducati has more than 50 NX workstations, with plans to add more.

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eliminate the use of separate software, which inevitably causes problems with updating and referencing," Giusti adds. "We have schematized the flow so that we can create wiring diagrams using the NX schematic functionality. After that, the diagram is passed on to the NX wiring application to incorporate all electrical information into the design. And finally, using the NX electrical routing solution, we prepare the documentation for cabling installation. NX lets us cover the entire process with an integrated approach."

Secure data sharing with Teamcenter

NX supports closer collaboration both within the internal development team as well as with external suppliers, who include companies that manufacture molds and key components such as the fork. Ducati expects to achieve even closer collaboration through the use of Teamcenter. "We increasingly need to exchange model data with these suppliers," explains Giusti. "With some of our long-term partners, we are investigating the possibility of providing them with direct access to the information in our system so that we can further reduce development time by having them work in parallel with our designers. Within a few years, we will integrate all of our strategic suppliers that produce technology on our behalf." Ducati has already begun this process with several of its suppliers.

Within Ducati, the use of Teamcenter is already widespread. The company has 250 workplaces that use Teamcenter to access information generated by the engineering department. The company has also deployed Teamcenter at its Saima warehouse in Modena. All motorbikes go through this site for some assembly operations, spare parts verification, or modifications due to mounting errors.

The warehouse staff has access to the information stored in Teamcenter through a dedicated line. They can view drawings, diagrams and assembly tables for all finished products. The users at this site execute minor assembly operations, typically installing body parts and custom elements, but occasionally they perform more significant modifications as well. The users need access to product documentation. "It is worth noting that it was easy for the Saima staff to learn to use Teamcenter," says Giusti. "The fact that they had no specific training bears witness to the intuitiveness and ease of use of Teamcenter."

"We couldn't imagine working without Teamcenter. From our previous process that required tons of paper, we have eliminated paper and filing cabinets. Using Teamcenter we have implemented a digital information management system with traceable, role-based access, and a high degree of intrinsic security."

Solutions/Services

NX

www.siemens.com/nx

Teamcenter

www.siemens.com/teamcenter

Customer's primary business

Ducati Motor Holding S.p.A is a leader in the design and production of high-end motorbikes.

www.ducati.com

Customer location

Bologna, Borgo Panigale
Italy

"Our design and development cycle has been cut from an average 36 to 40 months to just 24, mainly thanks to the tools provided by Siemens PLM Software."

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Ducati delivers approximately 40,000 motorbikes annually.

More complex motorbikes, developed faster

Ducati's PLM solution has greatly accelerated the pace of product development, enabling the company to develop a new model much faster even though the use of electronics and related software has grown substantially. Today's motorbikes can have up to six or seven electronic control units (ECUs) for suspension, transmission, braking and stability. "All these systems are interacting and must be managed in an efficient and reliable way," says Giusti. We now have product configuration handling requirements very similar to those of automotive or aerospace companies."

In spite of greater product complexity, Ducati has cut one year off the development cycle for new motorbikes. "Our design and development cycle has been reduced from an average 36 to 40 months to just 24 months, mainly thanks to the tools provided by Siemens PLM Software," says Giusti. "We are also able to update all existing models at annual intervals. It would be unthinkable to achieve such results using conventional design methods."



Over the past decade, motorbikes have incorporated more electronics and software, bringing product configuration handling requirements similar to those of the auto industry.

Siemens PLM Software's PLM suite has enabled Ducati to integrate all departments and operations: prototypes, production, warehouse, spare parts, and accessories. "By integrating and parallelizing all these processes, we can now develop accessories concurrently with the motorbike," says Giusti. "In the past, it used to take 6 to 12 months before accessories were marketed. Now they are ready together with the bike, generating significant sales synergies."

Siemens PLM Software

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