

## Automotive and transportation

# Ten Kate Racing

Motorcycle racing team uses PLM technology to improve parts – even during races

### Product

Solid Edge

### Business challenges

Improving bikes between races

Rebuilding a bike quickly after a crash

### Keys to success

Ease of use

Simulating assemblies to check fit and clearance

Modifying 3D models created by external suppliers

Easily understood design options

### Results

Cut machining lead times by 50 percent

Designed and manufactured new parts between races

Rebuilt bikes quickly after crashes



## Solid Edge helps Ten Kate Racing quickly explore design options, share information and speed up manufacturing

### Adrenalin-filled racing adventures

Netherlands-based Ten Kate Racing runs the Pata Honda World Championship team, transforming high-performance Honda motorcycles into finely tuned racing machines. The team has won eight World Supersport titles and one World Superbike title.

Running a competitive race team for the world's largest and most successful motorcycle manufacturer requires dedicated attention to detail. Ten Kate Racing's associates include experienced engine builders as well as experts specializing in data logging, suspensions and electronics.

During the 20-week racing season, 15 events take place around the world and Ten Kate Racing maintains a laser-like focus on optimal performance. "This is a top sport and our success is all about results," explains Pieter Breddels, technical co-coordinator for Ten Kate Racing. "If we happen to have two or three poor results in a row, there is obviously more pressure on us because we have to explain to Honda why this is happening."

For the design team, time is of the essence. While the winter is spent on developing a new motorcycle, development continues throughout the season. Components are often redesigned and tested in the short period between races. "Everything I design has to be finished yesterday," says Jan van der Tol, designer and crew chief. To support such demanding timescales, Ten Kate Racing uses

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Jan van der Tol  
Designer and Crew Chief  
Ten Kate Racing



Solid Edge® software from product lifecycle management (PLM) specialist Siemens PLM Software.

#### No time for mistakes

Ten Kate Racing licenses Solid Edge through Siemens PLM Software partner Bosch Engineering B.V., which has provided extensive training to the design team. “We were making the transition from a 2D system and, although the move to 3D was quite a step forward for us, we found Solid Edge to be much more intuitive and friendly than the previous system,” says van der Tol. “In addition, the team at Bosch Engineering has specialized knowledge that enabled us to learn Solid Edge quickly. Whenever we need extra

guidance we know we can turn to Bosch Engineering, and whenever there is a new version of the software we receive a full briefing.”

The in-house team designs certain parts for the Superbike, such as brackets and links, while other parts are designed by external suppliers. “Our designs are relatively straightforward. The triple clamps are probably the most advanced parts,” says van der Tol. “However, designs change quite a bit as we go through the season. In some cases, we need an instant response to a problem that crops up during a race. We cannot make mistakes. Each part needs to be absolutely correct when

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Pieter Breddels  
Technical Co-coordinator  
Ten Kate Racing

we fit it on a bike. For this reason, we use assembly simulations more and more to ensure that everything works together perfectly.”

Using assembly simulations enables the designers to gain more insight into individual parts. “We can understand their particular attributes, which means we can improve quality,” says van der Tol. “For example, we can confirm that a part meets the exact weight criteria and does not either fall below or exceed the specification. Using Solid Edge, we can work at a fine level of detail, shaving off any extra grams to achieve the perfect balance of strength and weight. Overall, this means that we get the design right the first time.”

#### Ease in working with partners

The benefits of Solid Edge were apparent within two weeks of implementation. “Compared to a 2D environment, it is easier to visualize the shapes and the form of a model,” says van der Tol. “Having the Solid Edge package and the support from our supplier gives us ultimate flexibility. We can quickly check out design options and understand exactly where and how to make trade-offs as needed.”

Many of the team’s sponsors are technical suppliers who work with the team to develop and test products in the best possible testing environment: on the race-track. Suppliers can easily accept a model created by Ten Kate Racing using Solid

Edge and incorporate it into the software they use to program their machines. When a part is designed specifically for Ten Kate Racing, it is supplied as a 3D model; van der Tol uses Solid Edge to manipulate the digital data as he brings it into an assembly. He explains, “I use synchronous technology if I need to make any changes to a part that comes from an external source. This is extremely useful. I find that Solid Edge has many positive features that make it easy to focus on the design with minimal effort.”

#### Less lead time needed

Speed is the number one benefit. “I spend less time designing new parts, so lead time has been cut in half,” notes van der Tol. “With 3D to 2D conversion, it is easy to produce reference production drafts. Because I do not have to spend time on drawings, the programming of parts for machining is 50 percent faster.”

“Machining companies can load the CAD (computer-aided design) model directly into their machines, which is quite useful,” says Breddels. “For instance, when we discover during a race that a part on the bike is not reliable enough, we can start designing a new part while we are at the event. We contact the machining company so that they are on standby, finish the design in the workshop, have it made in a small series and fit the new part in time for the next race. It doesn’t get a lot faster than that.”





## Solutions/Services

Solid Edge  
[www.siemens.com/solidedge](http://www.siemens.com/solidedge)

## Customer's primary business

Netherlands-based Ten Kate Racing develops high-performance Honda motorcycles into finely honed racing machines and runs the Pata Honda World Championship team.  
[www.tenkateracingproducts.com](http://www.tenkateracingproducts.com)

## Customer location

Nieuwleusen  
Netherlands

## Partner

Bosch Engineering B.V.  
[www.boschengineering.nl](http://www.boschengineering.nl)

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In addition, clever part design helps shorten the rebuild time after a rider has a crash. Ten Kate Racing has only one motorcycle for each rider, so it is important to get the rider back out on the track again as quickly as possible. This is a critical advantage when, for example, a rider crashes at the beginning of qualifying practice. He can be out on the track before the end of the session and still do a lap time that leads to a good starting position for the actual race.

Knowing that the design process is speedier gives the team new freedom to decide on a change when previously there might not have been enough time. "This means that we can go for what we really want," says Breddels. "The ultimate aim is perfection."

## Simulation for success

Ten Kate Racing plans to extend its use of Solid Edge, utilizing for the software's simulation capabilities, for example, to further improve triple clamps. These parts need to have a degree of flexibility in one direction and a certain level of stiffness in the other, to create the ultimate rider "feel" with the front tire. "This feel is critical to going faster, much more so than with car racing," says Breddels. "Solid Edge opens up possibilities for us to use in getting ahead of our competitors. We certainly want to be ready with all aspects of our Superbike well before the new season kicks off in February. Then we will concentrate on evolution. The future may bring some changes in Superbike regulations, and perhaps we will be racing electrical drive bikes sooner than we think. One thing is sure though: Ten Kate Racing will continue to develop and race bikes. It's in our blood."

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[www.siemens.com/plm](http://www.siemens.com/plm)

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