



DRIVING MIND-BLOWING DESIGN WITH NVIDIA QUADRO

TRAVERTSON
MOTORCYCLES
CASE STUDY

In today's product-design markets, competitive pressures and the mandate to differentiate products push designers to new and more extreme limits. High-end designers continually search for ways to remove creative barriers and transform novel ideas seamlessly from their imagination to a final, manufactured, real-world product.

The tools these designers use have progressed a long way from pencil-on-paper drawings to today's sophisticated CAD software programs. For cutting-edge designers, professional graphics solutions must deliver a clear competitive edge, enabling high-quality, real-time 3D modeling, visualization and simulation capabilities.

A prime example of this creative breed of designer is Christian Travert, founder and inventive force behind Travertson Motorcycles. Each year Travert and his company produce a few extremely customized, "mind-blowing" motorcycles for



discriminating, passionate motorcycle fans worldwide. Using Dassault Systemes SolidWorks 3D mechanical CAD and simulation software powered by NVIDIA Quadro technology, Travertson has been able to stand out, even in the rarified, yet highly competitive world of custom motorcycles.

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"We refuse the notion that everything that could possibly be thought of has already been done," says Travert, a former motorcycle racer in Europe and designer of some truly groundbreaking custom motorcycles. "We can always do better. It's just the way you look at things. It's important that our design tools help us think outside the box. And with the ultrarealistic and real-time capabilities of SolidWorks and the Quadro GPU, I feel like my creativity has no limits."

Bringing imagination to life

Travertson Motorcycles, founded in 2006 and located in Fort Lauderdale, Florida, is run by Christian Travert and his design partner, Tim Cameron. Travertson produces highly customized works of mechanical, motorized art. Projects have included a jet turbine-powered motorcycle made famous by Jay Leno, a custom, street-legal bike with transparent wheels lit up by neon tubes, and a production model famous for replacing the standard motorcycle front forks with a unique swingarm.

What all these innovative motorcycles share is an impeccable melding of engineering and art into brand-new, rideable forms, made possible by breakthrough design tools.

“We design all our motorcycles using Quadro-powered SolidWorks software to visualize and simulate everything from the washers and bolts in the assembly to the seats, handlebars and custom paint colors,” says Travert. “Each of our motorcycles is highly customized, so we have to play with options continually. The more realistic the image, and the faster and more naturally it can be manipulated, the better our final product.”

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Motorcycles can't just look great, though; they also have to perform well and be comfortable to ride. Thus, engineering design accuracy and detail are crucial. Travert can use SolidWorks Simulation to answer questions such as:

- Will moving parts, which might have clearances of only a few thousandths of an inch, touch or interfere with one another?
- How much weight can the motorcycle carry and still provide a comfortable ride?
- How much will a specific part deform under operational stresses?
- Will fuel and air circulate properly through the engine and exhaust systems?
- Will the design specifications meet street-legal requirements?

“We can run a simulation in SolidWorks, and we can see with tremendous precision exactly how everything works together and where we might need to tweak the design a bit,” Travert says.

For example, by simply clicking and dragging any part in a SolidWorks 3D simulation, Travert can add new features, resize or change the shape of existing features, or try out various options and see how each works in the design. Using Quadro professional graphics solutions with hundreds of processing cores, rendering and visualization all happen interactively.

Breaking barriers - of speed and imagination

“In the past, we had to make do with workstations that took a long time to manipulate complex 3D models and that didn't show all the details we needed to see,” says Travert. “With the Quadro GPU from NVIDIA, everything responds in real time. It's like holding a model in your hand and being able to turn it and see it from any angle, instantly.”

The Quadro-powered SolidWorks tools save Travertson time in many phases of their design process. For example, the real-time responsiveness means that Travertson can model and test an estimated 95 percent of its products before moving from software to the first physical prototype.

With clients located across the U.S. and throughout the world, Travertson eliminates costly design changes with the ability to share realistic visualizations before any actual fabrication begins.

“We provide 3D images to our customers so they know what their finished bike will look like,” Travert says. “That way, there are no surprises and the client gets exactly what he wants – without us having to redo things on the physical motorcycle. For customers who can't visit in person, having detailed photorealistic renderings lets them see and almost touch the final product.”



To learn more about NVIDIA Quadro, go to www.nvidia.com/quadro