

ADVANCED VISUALIZATION TO DESIGN AND PROMOTE “HAUTE-COUTURE” CARS

Using NVIDIA® Iray® in SOLIDWORKS Visualize lets PGO Automobiles render prototypes without sacrificing speed or interactivity. Physically accurate lighting, combined with rapid previews creates photorealistic renderings faster with better quality.



CARS EXERT A GENUINE FASCINATION FOR ALL THOSE WHO REGARD DRIVING AS ONE OF LIFE'S TRUE PLEASURES.

AT A GLANCE

CUSTOMER PROFILE

Company: PGO Automobiles

Industry: Specialized car manufacturer

Location: Headquartered in Alès, France

Size: 50 employees

SUMMARY

- > Small production car manufacturer of cabriolets and coupés
- > Long render times slowed introduction of new car configurator
- > Adopted NVIDIA Iray GPU rendering with SOLIDWORKS Visualize
- > Enabled usable results to be obtained in minutes, allowing better collaboration and higher quality

This new generation of rendering software using Iray technology offers us very good quality without sacrificing speed or interactivity.

Nicolas Urffer
Studies Manager
PGO Automobiles

While the majority of vehicles on our roads are produced by a handful of global companies, small-scale producer PGO Automobiles has established a reputation as France's most exclusive sports car manufacturer. PGO's team is laser-focused on creating striking, unique vehicles that appeal to driving enthusiasts. As a boutique producer in a world of giants, every stage of PGO's business, from design and engineering to marketing and sales, must express the company's premium brand. In addition to its network of physical showrooms, PGO wanted to implement an online experience within its website that would allow customers to configure their perfect virtual vehicle.

CHALLENGE

However, the same attention to detail that defines PGO also meant that a conventional configurator based on static images was impractical. With almost every surface, dial and component available for customisation, it would have required over one million images to encompass all the different configuration options! Instead, the PGO team envisioned a state-of-the-art interactive configurator with layered renderings that would allow customers a range of interior and 360° exterior views of their fantasy vehicle.

For this new online tool, its creators established that around 100 renderings had to be created in 4K resolution. They ran tests to create imagery from the cars' original design files and found that many rendering passes would be required to achieve the desired look and feel for a variety of car positions, shadows and lighting conditions. This approach was rejected as too time consuming and complex.



5 REASONS FOR IRAY

- 1 Hardware rendering leverages available GPUs to greatly speed up rendering
- 2 Interactive modes allow collaboration with fast, accurate previews
- 3 Photo-Real mode delivers stunning, physically accurate results
- 4 Users can simulate natural lighting conditions for any location
- 5 Adding performance is as easy as adding GPUs

[With Iray,] all validation can be done interactively now. We can work on the model data, change and display it as needed. Whether we are in a design discussion, use the rendering for an internal presentation or updating our shareholders on a new design, we have a solution at our fingertips that works perfectly for us.

Nicolas Urffer
Studies Manager
PGO Automobiles

SOLUTION

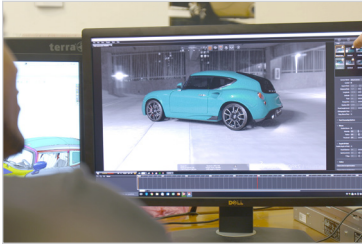
In its search for a rendering solution that would give them a better flexibility, PGO turned to the SOLIDWORKS® suite with its SOLIDWORKS Visualize rendering back-end. SOLIDWORKS Visualize software lets the designer change settings interactively while displaying them in a viewport at the same time. Depending on the level of detail required, the viewport can be used in 'Preview' mode, offering an interactive workflow with a decent quality preview. Alternatively, changing to the 'Accurate' view mode brings the NVIDIA® Iray® technology within SOLIDWORKS Visualize into play and creates a photo-real image within the viewport.

"This new generation of rendering software using Iray technology offers us very good quality without sacrificing speed or interactivity," says Nicolas Urffer, Studies Manager at PGO Automobiles.

Nevertheless, to render a car exterior with metallic paint took over 50 minutes on their workstations' CPUs. Changing to GPU mode using an NVIDIA® Quadro® K2000 reduced the rendering time to 25 minutes, but this was still not fast enough. Even simple adjustments like the numerous colour configuration options were still too time consuming.

RESULTS

PGO solved this problem by upgrading its rendering workstations to the Dell Precision R7910, equipped with NVIDIA® Quadro® M6000 . Using all the resources of this powerful system cut the rendering time fivefold to less than 5 minutes for the 4K final frame.



The performance of the Quadro M6000 let us work on the model directly in the 'Accurate' view mode of the Visualize viewport. We can control lights and shadows interactively to create the realistic renderings we need in far fewer iterations. This saves us many hours.

Nicolas Urffer
Studies Manager
PGO Automobiles

The next step for PGO Automobiles is to integrate this new interactive workflow into their prototyping design stage. As they cannot afford to build clay models like the big car manufacturers, they depend on high quality virtual models to simulate and validate new designs. From simulation of different colours to fault detection in the car body design, the interactive photorealistic rendering with SOLIDWORKS Visualize will help make the right decisions to create more beautifully built cars.

For this stage of the process, PGO chose the Dell 5810 workstation with its powerful NVIDIA® Quadro® M5000 graphics accelerator. This system enables a 4K interactive car model display which can be altered as needed on the fly.

"All validation can be done interactively now. We can work on the model data, change and display it as needed" adds Urffer. "Whether we are in a design discussion, use the rendering for an internal presentation or updating our shareholders on a new design, we have a solution at our fingertips that works perfectly for us."

The next step in PGO's cutting-edge design validation process will be the introduction of virtual reality. While cave automatic virtual environments or CAVE systems have been used by large auto makers for some time, these large, costly systems were not financially viable for smaller producers. Now, using the new generation of head mounted display technology, PGO can bring its models to life virtually and enhance design decision making even further.

"This technology supports us in delivering an outstanding online experience to our customers, creating the most beautiful vehicles and competing in a challenging marketplace," Urffer concludes.

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