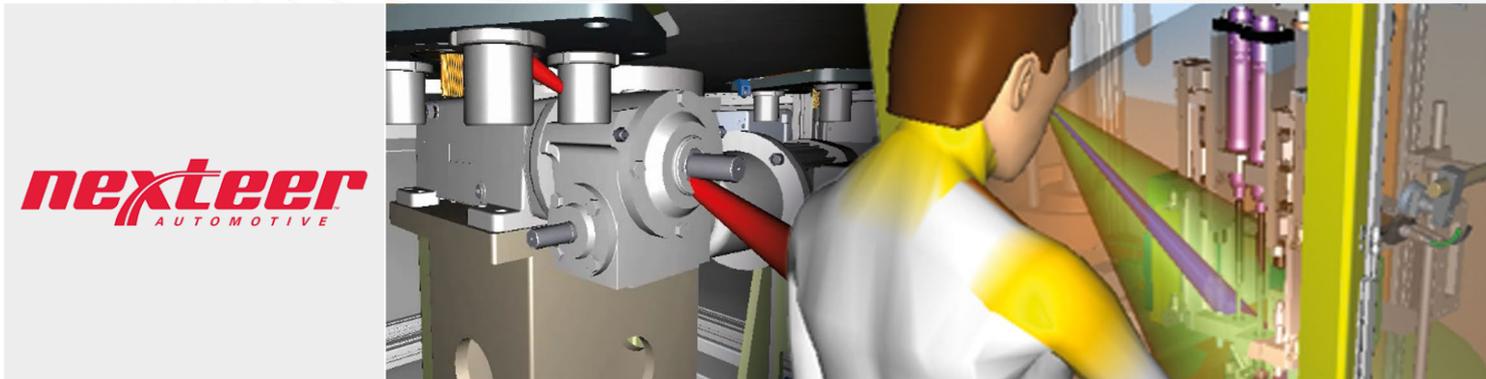


Catching Design Issues Early with VR

Nexteer Automotive Leverages Virtual Reality for Their Assembly Equipment Design Reviews



Challenge

Before adding virtual reality to their design review process, Nexteer was conducting equipment design reviews using 3D models on a 2D screen and relying on basic physical mockups. The extent of the review was limited to the viewing and commenting of the model, but there was no real interaction with the model to get a feel of how things would be experienced in a real-world setting.

Benefits

With the help of virtual reality, Nexteer's Manufacturing Engineers now perform an actual 1:1 walkaround, giving them the ability to evaluate their design as they would when built – noticing errors before they occur.

Story

In general, there is really no substitute for the real thing – or is there? Nexteer Automotive, a global leader in intuitive motion control, used to work according to the precept, “You need to build it to experience it”, and this method served them well for many years. That was until they realized that performing equipment design reviews using mockups or waiting for construction to physically evaluate their designs meant considerable risk of delays and unplanned cost. Nexteer developed a way to enhance their designs and perform reviews in an immersive virtual environment, enabling them to tryout manufacturing assembly equipment and pinpoint design issues before constructing anything. Initially, Nexteer's Manufacturing Engineers conducted onscreen reviews of their 3D data in conventional Computer-Aided-Design (CAD), which left them with too many unknowns. Nor did performing

equipment design reviews with physical mockups address all the potential interactions between operators or technicians with the assembly cells they were designing. And waiting until construction of their assembly equipment had begun to physically evaluate their designs involved a significant risk for modification delays and charges. That, combined with the need to travel between their Global Technical Center in Saginaw, Michigan, their widely distributed suppliers, and the planned production sites, unnecessarily increased tooling project timing and costs.

Once they began working in an immersive virtual reality environment, Nexteer's Manufacturing Engineers quickly realized the benefits went further than originally anticipated. Not only could they perform a walkaround of their assembly environments at a 1:1 scale, but they were now able to import their supplier's proposed CAD designs and create data groups that they enriched with physical behaviors. Then, the engineers could step inside the immersive virtual production environment, interact with the various components, and experience what they couldn't see using their previous methods. From the first-person perspective, Nexteer Engineers and their suppliers could evaluate what can be reached, installed, and maintained well in advance. Immersive reviews enabled them to discover potentially costly engineering and design oversights, which went unnoticed during on-screen reviews.

Nexteer uses ESI IC.IDO to experience their CAD models as close to the reality of the actual machines, without waiting to produce physical prototypes or beginning construction of production equipment. Their Manufacturing Engineering team is interacting naturally with their proposed production equipment, identifying potential issues, and fully understanding all aspects of their design through simulation and animation. As a result, in their first projects since implementation, Nexteer is realizing returns on their investment through reductions in costs and delay risks caused by late discovery of production issues. Within their first year of leveraging virtual reality, Advanced Manufacturing Engineering recognized risk and cost avoidance, leading ultimately to improved quality and performance of their assembly equipment.

“Working in an immersive virtual reality environment, thanks to ESI IC.IDO, enhances our understanding of complex manufacturing equipment and exposes potential issues, which can be corrected while still in the design stage.”

Brad Price

Sr. Manufacturing Engineer, Advanced Manufacturing Engineering
Nexteer Automotive



for more information
www.nexteer.com

