

REFUDRIVE INDIA PVT. LTD.

ACCELERATING THE DEVELOPMENT OF INNOVATIVE E-MOBILITY DRIVE PRODUCTS WITH SOLIDWORKS AND **3DEXPERIENCE** WORKS SOLUTIONS

Case Study



REFUdrive added modeling, design, data management, collaboration, and communication solutions from the **3DEXPERIENCE** Works portfolio, which operate on the cloud-based **3DEXPERIENCE** platform, to its SOLIDWORKS implementation to improve collaboration, reduce development costs, shorten design cycles, and accelerate time to market for its RPCS 740-2x17K dual inverter, which drives electric induction and synchronous motor types without the need for a speed sensor.

Challenge:

More quickly develop innovative electrical drive and charging products by improving collaboration among design team members located on different continents, managing data transparently in the cloud, and supporting faster experimentation, resulting in shorter times to market.

Solution:

Add modeling, design, data management, collaboration, and communication solutions from the **3DEXPERIENCE** Works portfolio, which operate on the cloud-based **3DEXPERIENCE** platform—including 3D Creator/xDesign, 3D Sculptor, Collaborative Industry Innovator, 3DDrive, and 3DSwymer roles—to its existing SOLIDWORKS installation of SOLIDWORKS CAD design, Flow Simulation with Electronic Cooling analysis, Simulation Standard analysis, and PDM product data management solutions.

Results:

- Reduced design cycles by 15 percent
- Cut development costs by 7 percent
- Increased design reuse by 30 percent
- Shortened product time to market

REFUdrive India Pvt. Ltd. is the Pune-based design, engineering, and manufacturing team of REFUdrive GmbH, a system partner headquartered in Germany that develops mechatronic, electrical, and electrohydraulic solutions, including power electronic components for the electrification of commercial vehicles and mobile machines. With the mission of developing technologies to drive a green future, REFUdrive is a leading manufacturer and development service provider of power electronic components for electromobility. The company—a joint venture of the German PRETTL Group and the Indian Kalyani Group—is pioneering technologies that help to electrify and hybridize commercial vehicles and mobile machines, and is making important contributions to the global energy transition to electrical power.

Until mid-2021, the Pune-based design team utilized SOLIDWORKS® product development



“The **3DEXPERIENCE** platform plays a crucial role in the product development process for creating detailed and innovative designs, and allowing team members to apply their expertise in developing 3D models and assemblies that meet specific requirements and standards, thereby ensuring they are optimized for manufacturability and functionality. We are accelerating time to market by leveraging Cloud Services for SOLIDWORKS, which streamline 3D sharing, markup, data storage, design reviews, and collaboration, all of which effectively remove the everyday friction caused by file management tasks.”

— Vivek Singh, Manager of Mechanical Design

solutions, including SOLIDWORKS Premium CAD, SOLIDWORKS Standard CAD, SOLIDWORKS Flow Simulation with Electronic Cooling analysis, SOLIDWORKS Simulation Standard analysis, and SOLIDWORKS PDM product data management solutions. When the REFUdrive development team learned about the availability of the **3DEXPERIENCE**® Works portfolio of solutions, which operate on the cloud-based **3DEXPERIENCE** platform and are fully compatible with SOLIDWORKS solutions and data, company management decided to add important **3DEXPERIENCE** Works roles in an effort to improve collaboration between team members in India and Germany and shorten time to market, according to Manager of Mechanical Design Vivek Singh.

“Most of the challenges that we faced in the past involved coordinating and working with team members who are located on a different continent in a different time zone,” Singh explains. “Our process requires receiving support and feedback from our German colleagues, which not only helps our development process but also archives all of our data. We needed to be able to share models and drawings via a web browser—rather than viewing it on an

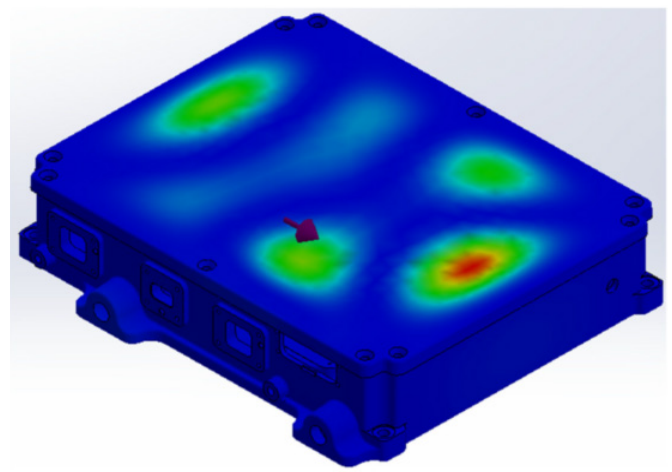
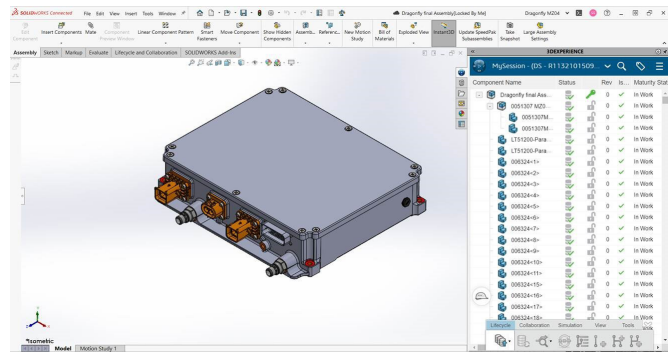
FTP site as we did in the past—to reduce the time spent on design reviews and make these reviews smoother and easier while maintaining the full design history and revision controls. This is why we decided to add **3DEXPERIENCE** Works roles to our existing SOLIDWORKS installation.”

REFUdrive added modeling, design, data management, collaboration, and communication solutions from the **3DEXPERIENCE** Works portfolio, which operate on the cloud-based **3DEXPERIENCE** platform—including 3DCreator/xDesign, 3DSculptor, Collaborative Industry Innovator, 3DDrive, and 3DSwymer roles—to its existing SOLIDWORKS installation of SOLIDWORKS CAD design, Flow Simulation with Electronic Cooling analysis, Simulation Standard analysis, and PDM product data management solutions. “Data compatibility with SOLIDWORKS solutions, improved scalability, cloud-based data storage and management, ease of use, ease of collaboration, greater efficiency, higher levels of security, cost savings, and faster time to market were the main reasons that we chose to add **3DEXPERIENCE** Works solutions, with the goal of shortening time to market,” Singh says.

IMPROVED COLLABORATION, GREATER PROJECT VISIBILITY

The first project on which REFUdrive leveraged **3DEXPERIENCE** Works solutions was the development of the new RPCS 740-2x17K dual inverter, which drives electric induction and synchronous motor types without the need for a speed sensor. With the addition of **3DEXPERIENCE** Works tools, the REFUdrive design team was able to reduce its design cycles by 15 percent through a combination of improved collaboration, increased project visibility among all team members, and greater design reuse.

“The **3DEXPERIENCE** platform provides better visibility into processes and projects with traceability of changes and decisions,” Singh points out. “By combining design, engineering, manufacturing, and project management, the **3DEXPERIENCE** platform offers a single integrated view to manage projects and processes in real time.



Using **3DEXPERIENCE** Works solutions in concert with SOLIDWORKS simulation tools, the REFUdrive design team can experiment with innovative concepts and approaches more quickly; once a final design is achieved, it can be validated more quickly and cost-effectively.

The platform empowers innovators to enhance the real world through the virtual world, creating, designing, and testing new experiences needed to drive a more sustainable economy.

“The **3DEXPERIENCE** platform plays a crucial role in the product development process for creating detailed and innovative designs, and allowing team members to apply their expertise in developing 3D models and assemblies that meet specific requirements and standards, thereby ensuring they are optimized for manufacturability and functionality,” Singh adds. “We are accelerating time to market by leveraging Cloud Services for SOLIDWORKS, which streamline 3D sharing, markup, data storage, design reviews, and collaboration, all of which effectively remove the everyday friction caused by file management tasks.”

FASTER EXPERIMENTATION AND DESIGN VALIDATION

Using **3DEXPERIENCE** Works solutions in concert with **SOLIDWORKS** simulation tools, the REFUdrive design team can experiment with innovative concepts and approaches more quickly; once a final design is achieved, it can be validated more quickly and cost-effectively. "The **3DEXPERIENCE** platform provides the ability to create virtual twin experiences that add knowledge and know-how in one continuous cycle while eliminating the gap between experimentation and learning," Singh notes. "Using virtual twins, the **3DEXPERIENCE** platform allows for realistic test scenarios in a fraction of the time it would take in the physical world.

"The primary phases of our development process are planning, product design, process design, validation, and product launch," Singh continues. "For validation, we use **SOLIDWORKS** Simulation tools to predict product failure with precise correlation to actual test results, saving tens of thousands of dollars in testing costs."

REDUCED DEVELOPMENT COSTS, INCREASED DESIGN REUSE

Overall, REFUdrive has been able to cut its development costs by 7 percent since adding **3DEXPERIENCE** Works solutions. While some of these cost savings

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relate to lower hardware and prototyping costs and increased efficiency and productivity, most of the savings involve a 30 percent increase in design reuse. "SOLIDWORKS solutions, when connected to the cloud-based **3DEXPERIENCE** platform, have been reported to increase design reuse by 30 percent," Singh explains. "This is achieved through powerful revision control tools within the **3DEXPERIENCE** Works portfolio of product data management solutions.

"The increase in design reuse has also led to a reduction in development costs by 7 percent," Singh says. "This is because reusing design elements can save resources that would otherwise be spent creating new designs."

Our **3DEXPERIENCE**® platform powers our brand applications, serving 11 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE** Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 250,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.



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