

RAPTEE.HV

INNOVATING FIRST HIGH-VOLTAGE, EV-CHARGING-COMPATIBLE MOTORCYCLE WITH SOLIDWORKS AND EXPANDED 3DEXPERIENCE SOLUTIONS

Case Study



By adding 3DEXPERIENCE SOLIDWORKS modeling, design, routing, simulation, data management, product lifecycle management (PLM), collaboration, communication, model-based definition (MBD), rendering, sketching, and surface modeling solutions, which operate on the cloud-based 3DEXPERIENCE platform, to its existing SOLIDWORKS installation, Raptee.HV accelerated time to market for its innovative Raptee.HV T30 motorcycle, the only high-voltage, electric two-wheeled vehicle in India that is compatible with CCS2 car-charging stations, by 30 percent.

Challenge:

Quickly develop, validate, and bring to market a new high-voltage electric motorcycle design with more speed, longer range, and EV-car-compatible charging, which distinguishes it from existing electric motorcycles and two-wheeled vehicles.

Solution:

Implement SOLIDWORKS and expanded modeling, design, routing, simulation, data management, product lifecycle management (PLM), collaboration, communication, model-based definition (MBD), rendering, sketching, and surface modeling solutions.

Results:

- Shortened time to market by 30 percent
- Cut development costs by 20 to 30 percent
- Reduced prototyping costs and cycles by 25 percent via simulation
- Decreased engineering change order (ECO) processing time by 30 percent

Raptee.HV is the brand name under which Raptee Energy Pvt. Ltd. designs, manufactures, and markets electric vehicles. The company's first product, the Raptee.HV T30, is the only high-voltage, electric two-wheeled vehicle in India that is compatible with CCS2 car-charging stations. Unlike existing electric motorcycles and e-bikes, which carry the disadvantages of low voltage and slow speeds, ultimately resulting in severely limited range, the T30 electric motorcycle is built on a high-voltage platform and is marketed as "The Motorcycle With an Electric Car DNA."

With a top speed of 135 km/h and an estimated range of 200 km, the T30 is the first motorcycle built on high-voltage architecture. Raptee's high-voltage technology, which it refers to as HV-TEC, utilizes a high-voltage battery that carries significant advantages. These include less heat generation during operation and better performance, which make the T30 more stable and more reliable than traditional electric two-wheelers.

Developing the T30 involved substantial challenges that not only required advanced design, engineering,



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– Dinesh Arjun, CEO

simulation, and manufacturing tools in order to shorten time to market for this first-of-its-kind product, but also demanded improved, cloud-based collaboration, communication, data management, and product lifecycle management (PLM) solutions, according to CEO Dinesh Arjun. "While our designers and engineers initially used other software, over time we transitioned predominantly to SOLIDWORKS® software," Dinesh recalls.

"Then, in early 2024, we began using the expanded solutions on the cloud-based **3DEXPERIENCE**® platform and fully integrated our operations into the SOLIDWORKS ecosystem," Dinesh adds. "Having used SOLIDWORKS previously, we learned about the cloud-based platform through our value-added reseller, BEACON. We chose it because we wanted to transition to a cloud-based solution to accommodate our growing company strength."

Raptee chose to move to SOLIDWORKS software, and then added modeling, design, routing, simulation, data management, product lifecycle management, collaboration, communication, model-based definition, rendering, sketching, and surface modeling solutions from the expanded SOLIDWORKS product development portfolio. "The cloud-based **3DEXPERIENCE** platform, along with SOLIDWORKS software, has significantly improved our productivity," Dinesh stresses. "It streamlines collaboration, eliminates confusion in file sharing, and provides a clear overview of how the product evolves over time."

BETTER COLLABORATION, INTEGRATED TOOLS SPEED TIME TO MARKET

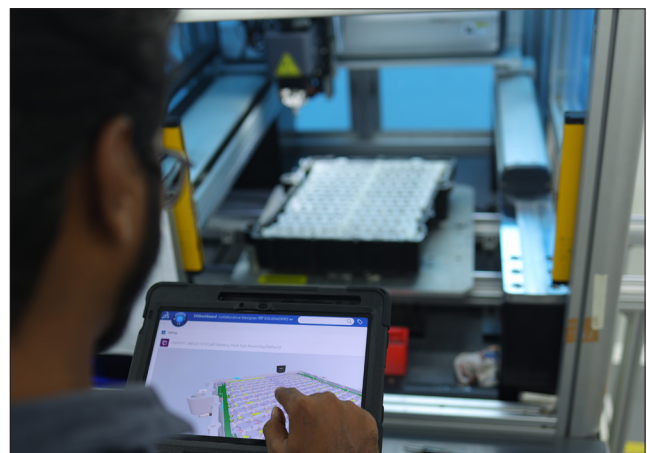
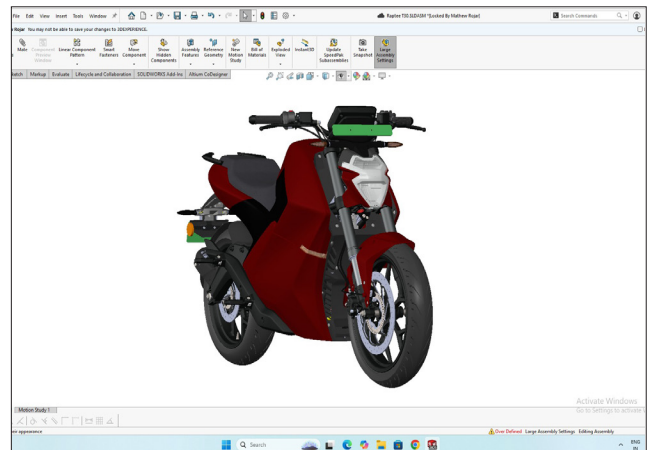
Using the combination of SOLIDWORKS and its expanded platform, Raptee shortened time to market for the T30 motorcycle, which was introduced in 2025, by 30 percent. Dinesh attributes these productivity gains to the tight integration between the solutions, allowing data to be leveraged in multiple ways, and the improved collaboration afforded by data management in the cloud.

“We use **3DEXPERIENCE** primarily for mechanical design and data management,” Dinesh explains. “Tools like 3DSwymer and Project Planner play an integral role in our collaboration and project tracking. Collaborative Designer for SOLIDWORKS is frequently used for daily design tasks and efficient team management, ensuring seamless integration across our workflows. Additionally, with a large number of electrical connections, the routing option has been extremely helpful in optimizing the design and packaging within the frame. Most of the mounting structures are sheet metal tabs, and the SOLIDWORKS sheet metal tools have greatly improved our designs, enabling us to utilize various features that are beneficial for designing the mounts.”

“With these tools, we have accelerated our time to market by up to 30 percent,” Dinesh continues. “This improvement is due to streamlined collaboration, faster design iterations, and reduced prototyping, which enable quicker product development and faster launch times.”

SAVING TIME AND MONEY WITH SIMULATION

In addition to accelerating time to market, Raptee leveraged **3DEXPERIENCE** SOLIDWORKS simulation capabilities to reduce development costs, prototyping costs, and prototyping iterations, reducing development costs by 20 to 30 percent and prototyping costs by 25 percent. “Because we are in the EV [electric vehicle] industry, some of the key



With the addition of **3DEXPERIENCE** SOLIDWORKS solutions, Raptee.HV was able to tap powerful simulation tools in the cloud — cutting development costs, prototyping costs, and prototyping iterations — as well as realize data management and PLM solutions on the cloud-based **3DEXPERIENCE** platform, providing access to product design data from anywhere on any device.

challenges include optimizing the balance between vehicle performance, efficiency, and weight. Reducing weight is critical for improving range and energy efficiency,” Dinesh notes.

“The **3DEXPERIENCE** platform, and SOLIDWORKS tools, have helped us to reduce development costs by at least 20 to 30 percent — by helping us optimize our design based on the manufacturing process used — and to reduce prototyping costs by up to 25 percent,” Dinesh says. “This is due to more accurate virtual simulations and design validation, leading to fewer physical prototypes and less material waste. The number of prototypes required has also decreased, speeding up the development process and cutting overall costs.”

GAINING CLOUD-BASED PLM AS A BONUS

With the cloud-based data management and PLM capabilities afforded by **3DEXPERIENCE** platform solutions, Raptee anticipates additional productivity gains, such as the 30 percent reduction in engineering change order (ECO) processing times that the company has already realized. "Data management and PLM solutions on the cloud-based **3DEXPERIENCE** platform enable us to save on additional investments in separate PLM systems," Dinesh explains. "Moving to the cloud for data management was essential for maintaining version history within the product development team and improving communication across teams. It also eliminated the need to maintain heavy servers, significantly easing administrative work and IT management."

"At Raptee.HV, speed and efficiency are critical, and **3DEXPERIENCE** has been a game-changer for us," Dinesh says. "These intuitive tools and reliable support have streamlined our development process, enabling rapid iterations and seamless collaboration. We highly value this partnership as it empowers us to push boundaries and bring cutting-edge technology to the market faster."

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