

Concept modeling in DEP MeshWorks refers to the creation and adaptation of models at the mesh level, enabling CAE engineers to rapidly develop new concepts and modify existing FEA/CFD models without the need for CAD.

Challenges in Converting IC to EV

In the process of transitioning a traditional internal combustion (IC) engine vehicle to an electric vehicle (EV), significant hurdles were encountered due to the existing design of key structural components such as engine mounts, firewalls, rear seat hubs, and floor pans—all tailored for IC configurations. Adapting these elements to suit an EV architecture proved to be complex, often requiring new design approaches in the absence of CAD data. This challenge was particularly evident when modifications to finite element (FE) models had to be made without corresponding CAD updates, resulting in increased development time and elevated costs.

The Solution

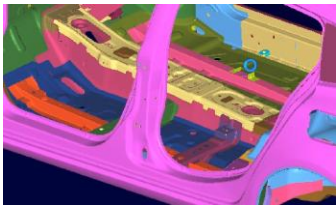
With DEP MeshWorks-enabled ConceptWorks, the conversion of an internal combustion (IC) vehicle to an electric vehicle (EV) can be accomplished without relying on any CAD data. By removing components such as the firewall, rear seat hub, and floor pan, and then reconstructing the battery mount and necessary structural members directly at the mesh level, the entire design can be seamlessly updated. This approach significantly reduces the time required for the conversion process and eliminates the need for CAD involvement, making the transition from a traditional IC vehicle to an EV far more efficient and cost-effective.

Value

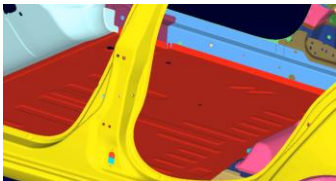
- The ConceptWorks module in DEP MeshWorks is an industry-first solution that allows the creation of conceptual finite element models directly, without CAD data—something no other tool offers.
- The patented technology behind ConceptWorks underscores its uniqueness and innovation.
- Compared to CAD-based approaches, ConceptWorks enables much faster development. For example, a complete automotive body-in-white mesh model can be created in one week by a single person—whereas other tools may take up to five times longer.
- Concept models created in ConceptWorks can include special mesh features like fillets, draft angles, ribs, and stiffeners, making them well-suited for manufacturing processes.



IC Vehicle input Model



Zoomed View of Floor



Floor recreated using Concept works



Electric Vehicle Output Model

Groundbreaking Concept Modelling

Directly Create Concept FE Model Without CAD

