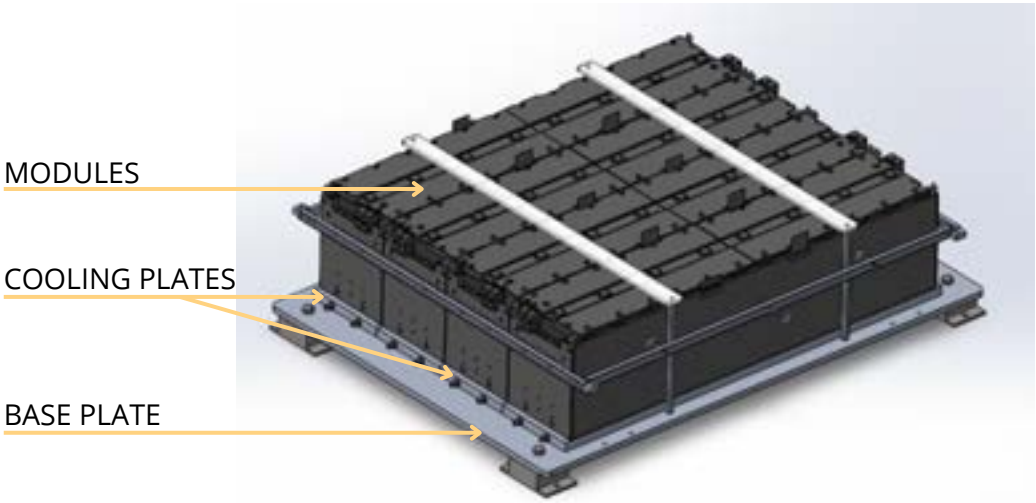
The pack design places 4 x 2 modules on the cooling plates mounted on top of the pack's base plate. All elements are attached to the solid base plate with a battery pack enclosure mounted on top to provide additional structural stability. We developed four different cooling plate designs and analyzed them using FEA and CFD to ensure structural integrity and heat removal capability.



e-MDT Battery Pack Rendering

Additionally, we investigated three different manufacturing methods, including friction-stir welding, conventional welding, and copper pipe embedding. A two-piece design with an O-ring seal was selected, and we produced a single cooling plate prototype to be used with two EcoPower battery modules. The expectation from this step of the process was to use this design and manufacturing method in the prototype e-MDT pack, and after obtaining sufficient results during testing, use it to create the production version of the battery pack.

Similarly, we examined the battery-pack enclosure using FEA static analysis or transient collision simulations for safety validation. The simulation results showed that the enclosure would be able to handle 20G acceleration horizontally and 8G acceleration vertically.

CERTIFICATION

EV battery packs are no exceptions to certification requirements. Throughout this project, we reviewed Transport Canada requirements for lithium battery packs used on vehicles over 10,000 GVW. We found that TSD 305- Electrolyte Spillage and Electrical Shock Protection defines the requirements. For our project, TSD305 is not applicable, it is only required for vehicles with GVWR below 4536 kg, and the CanEV e-MDT is heavier than the threshold weight.

UN38.3 is the certification requirement for batteries to be shipped. Although UN38.3 does not apply to new vehicle production, it is required to transport replacement battery packs. This requirement creates a significant obstacle to shipping any replacement battery packs during the vehicle's lifecycle.