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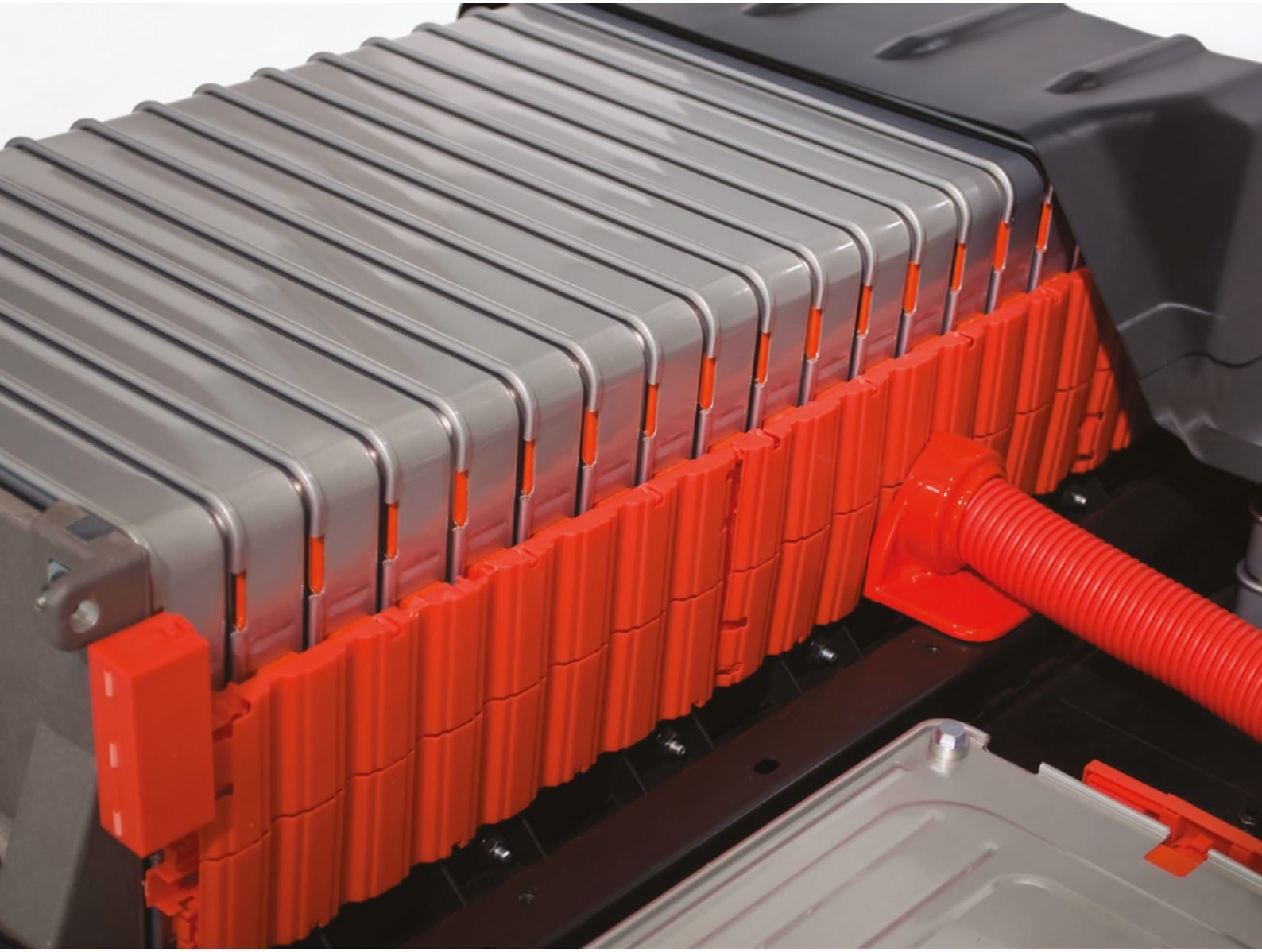
CATIA SYSTEMS ENGINEERING
BATTERY LIBRARY
Simulation of Cell & Pack Behavior with CATIA or Dymola



BRING BATTERY SIMULATION TO THE SYSTEM LEVEL

This Library is adaptable in modeling in detail and in frequency range. It accelerates the design for the coupled electrical and thermal design of electrical vehicles, mobile devices, tooling equipment, autonomous robots and many others. It is suitable for every system that requires an independent energy supply.

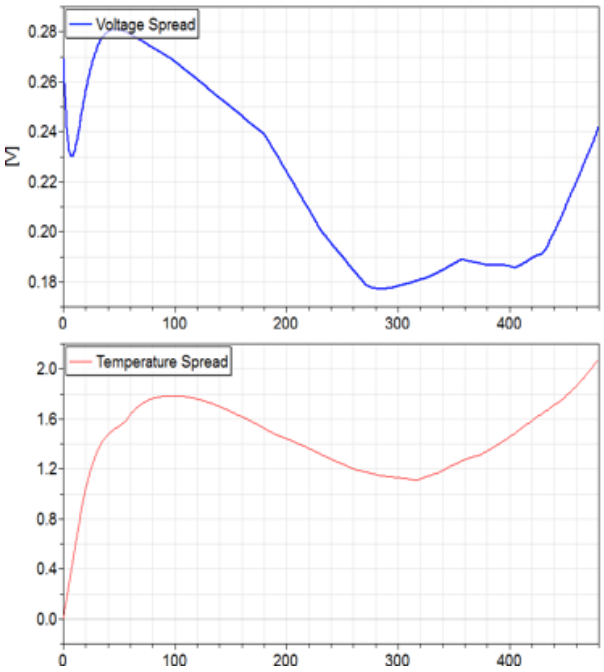
APPLICATION

The Battery Library is a Modelica-based simulation library to support the integration of battery cells in complex systems and the design of electrical storage systems.

By bringing system simulation to battery modelling it is now possible to assess a number effects for battery systems, also in a vehicle, grid or airframe context.

The system simulation approach of the Battery Library allows to gauge effects inside the storage system. Temperature and voltage spreads across battery cells due to variation of cell parameters, start values or boundary conditions can be analyzed efficiently.

Calculate the true performance of your battery system including thermal and aging effects.



Key features

- Calculate electrical performance and thermal behavior for single cells and packs
- Consider variation of cell parameters in a battery pack
- Effects of temperature spread on cell capacity and performance in packs
- Generate look-up table parameters form measurement data with inbuilt functions

LIBRARY CONTENT

Examples

Ready-to-use simulation test benches for relevant ISO-Norms for energy efficiency, cranking power and capacity.

Common

Auxiliary blocks for models across all detail levels such as power sources and material data.

Cells

Table-based and equation-based cell models for the calculation of thermal, electric and aging.

Packs

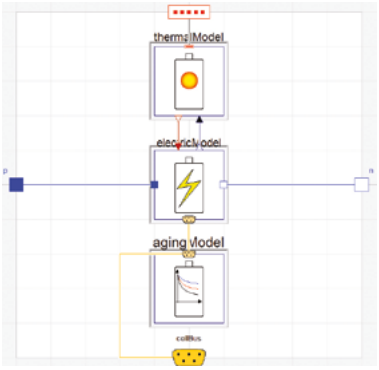
Battery pack as either high-performant scaled models or precise discretized models. Thermal models for housing and heat transfer.

BMS

Battery management system: Blocks for current, power and temperature control.

Parameter Fitting

Functions and models for parameter fitting and validation for the electric table-based model.



BENEFITS:

- Adaptable equivalent circuit models
- Preconfigured electrical, thermal and aging models with variable modeling depth for cells and packs
- User-friendly parameterization
- Ready-to-use implementation of important ISO norms
- Compatible with other Modelica libraries

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