Power electronic systems modelling

With the increasing demands of power quality improvement, simulation has become essential for power electronic designers. **Simulation solutions are required to achieve fast and efficient analysis** and ease the development of new products like power conversion systems, embedded electrical systems, power modules, etc.

WEB ACCESS

Multi chips modules

Static converters

Plate busbars

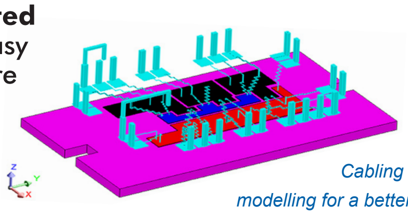
Improvement of electrical characteristics

EMC

Power electronic design and analysis

PEEC Cabling modelling with InCa3D

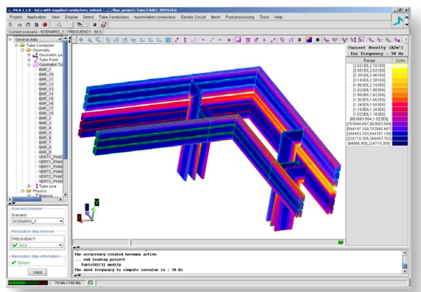
InCa3D® is the unique completely integrated cabling modelling software for quick and easy modelling of any interconnections types: busbars, wire bondings, internal connections of power modules…



Cabling modelling for a better knowledge of power modules.

A complete range of results is available thanks to Partial Element Equivalent Circuit (PEEC) method: parasitic elements (inductance, resistance), loop inductance, current distribution, losses, Laplace forces, magnetic flux density…

To help optimizing your designs, the package features much convenient and user-friendly interface, parametric geometric description and python command language which enables the coupling to any optimizer. Determining the electrical behaviour of the cabling becomes much faster and easier thanks to InCa3D® software solution.

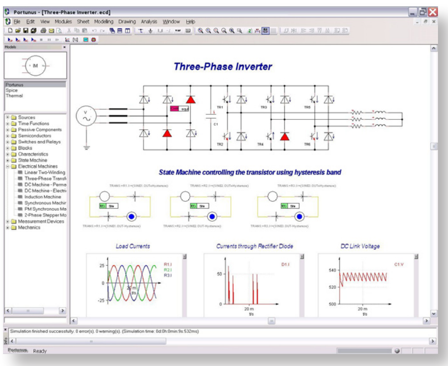


Higher efficiency thanks to fully integrated software and user-friendly interface.

System simulation with Portunus

Among the numerous system simulations tools, **Portunus stands out from the rest as it is specially addressed for the calculation of mechatronic systems.** Thanks to its various description approaches (network, block diagram, state machines), Portunus® allows to model within the same interface the energy conversion system, its drive, rotating machines and the load.

For complete and easy modelling, Portunus® features:



Multiple description approaches specially addressed for mechatronics systems.

- Simulation models of common power electronic topologies (inverters, rectifiers, etc.).
- Possibility to design easily custom components in C code in addition to the standard model library
- Multiple analysis types (frequency and time domain simulation, steady-state and operation point calculation).

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Power electronic systems modelling

The power electronic structure and its cabling

The cabling plays a decisive role in the electrical behaviour of a power electronic system during commutation. Better prediction can be reached by modelling the electrical components and the connections between them. Data exchange from InCa3D® to Portunus® makes it possible to run circuit simulations including the electrical influence of the cabling.

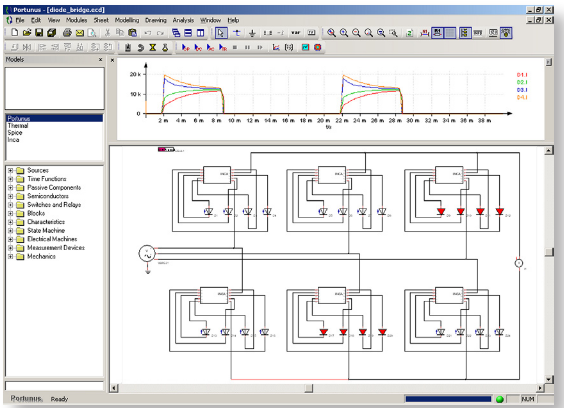
It provides all required results for improved system analysis by taking into account ohmic and inductive voltage drops, overvoltages, current unbalances, etc.

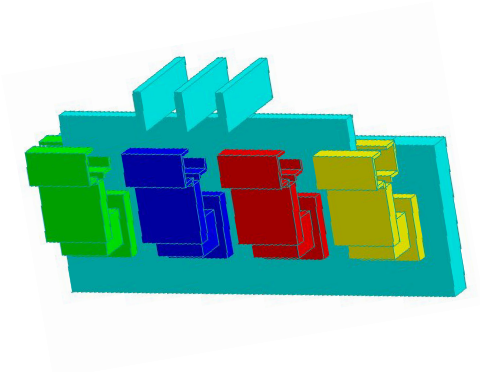
InCa3D® to Portunus® chaining is the perfect association to optimize the design regarding electrical performances during commutations.

WEB ACCESS

InCa3D for cabling modelling

Portunus for circuit simulation





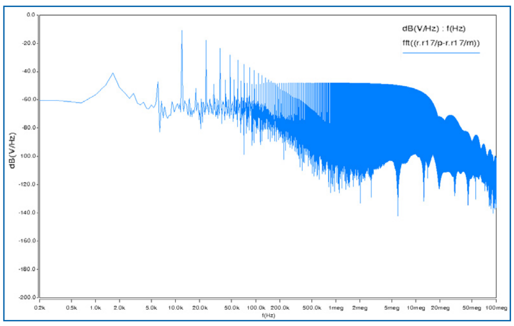
The highest levels of accuracy reached thanks to InCa3D and Portunus chaining.

EMI

For power electronic devices, the level of ElectroMagnetic Interference is a leading aspect for the electrical performance. The knowledge of the non ideal behaviour of electrical interconnections is required to build realistic electromagnetic compatibility (EMC) models and forecast correctly the magnitude of emitted noise.

InCa3D's link to circuit simulators like Saber helps forecasting more precisely the conducted EMI effects.

InCa3D® and Portunus® are distributed by CEDRAT SA, Meylan.



Better conducted EMI forecasting with InCa3D and systems simulators.

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