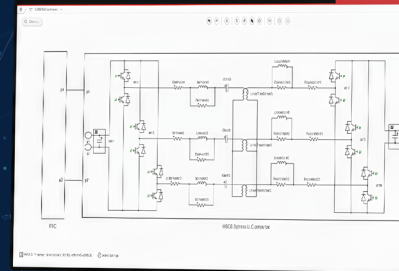
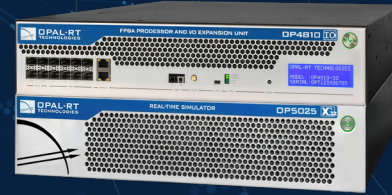




OPAL-RT
TECHNOLOGIES

Validate the most advanced power converter designs, without compromises.

Introducing the most sophisticated and intuitive power electronics solver for real-time validation.



THE CHALLENGE

GaN and SiC are enabling faster, more sophisticated power converter designs.

Many real-time simulation solutions struggle to keep pace, forcing engineers to:

- ✗ Simplify converter architectures
- ✗ Adapt designs to solver constraints
- ✗ Compromise during validation

OUR SOLUTION

Presenting the High Speed Converter Solver block, available on all OPAL-RT core platforms.

Validate advanced converter architectures in real time without being constrained by fixed topologies.



Model the converter you want to build

No topology constraints.



Scale with complexity

Built for advanced switching networks.



Close the loop faster

From concept to validation



Explore new designs

Validate innovative architectures.

Trusted by leaders in automotive, energy, industrial automation, and power conversion since 1997.

Request a demo to simplify your power electronics validation workflow today.

ABB

EATON



Schneider
Electric

SIEMENS

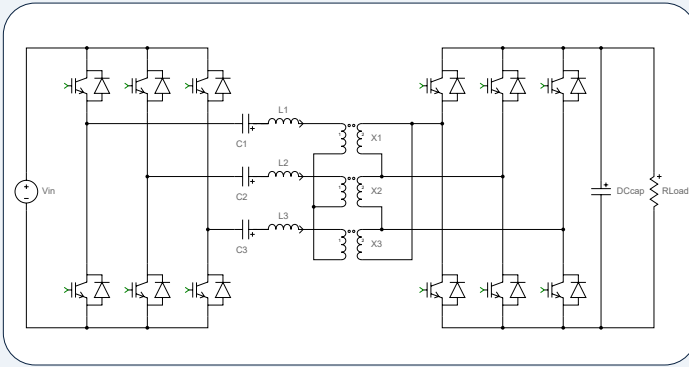
RWTH AACHEN
UNIVERSITY



<https://www.opal-rt.com/high-speed-converter-solver-lp/>

Validated on **real-world** converter systems.

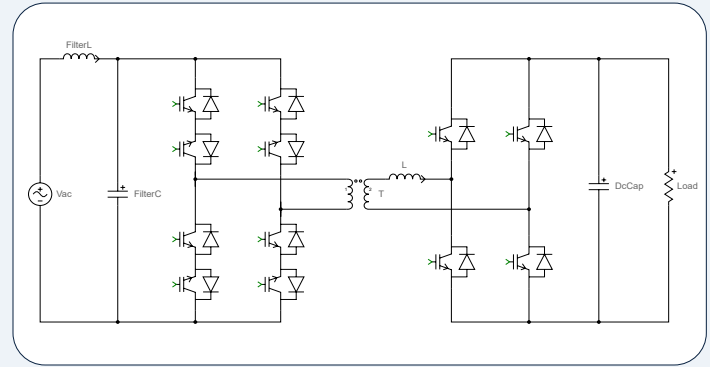
Real-time performance at **timesteps down to 32ns**.



3-phase resonant converter

High-efficiency resonant topology with complex multi-phase switching interactions.

- ✓ Multi-phase nonlinear resonant operation
- ✓ Strong cross-phase coupling
- ✓ Difficult for fixed-topology approaches



Isolated single-stage AC/DC matrix converter

Bidirectional switching and state-dependent operation demand a flexible simulation approach.

- ✓ State-dependent commutation
- ✓ Multiple operating modes
- ✓ Difficult for fixed-topology approaches

HSCS at a glance

CAPABILITY VALUE	TARGET APPLICATIONS	KEY TOPOLOGIES
Min. timestep: 32 ns Internal oversampling resolution: 4 ns Hardware: OP4810-IO, OP4815-IO (AMD Versal™) ✓ Scalable to multi-cell converter architectures ✓ Reduced model tuning effort ✓ Supports bidirectional switching devices	✓ Data Centers ✓ Onboard Chargers ✓ Solid-State Transformers ✓ Energy Storage Systems	✓ LLC Resonant Converter (1-phase, 3-phase), ✓ Dual Active Bridge (DAB), ✓ Phase-Shifted Full-Bridge, ✓ Matrix AC-AC Converter, ✓ Active Neutral Point Clamped, ✓ Modular Multilevel Converter (MMC), ✓ Multi-Active Bridge (3-winding MAB), ✓ Medium-Frequency Transformer Converters (3-winding MFT), ✓ T-Type Converter, ✓ Interleaved Buck/Boost Converter, ✓ Quasi-Z Source Inverter

Simplify your power electronics validation workflow.

Contact us to request a demo & start validating your high speed converter controls today.

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