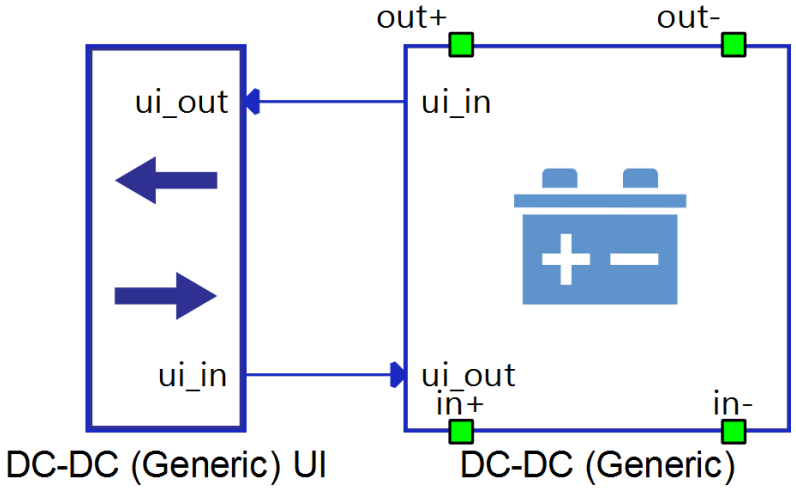
2025.2 Software Release Highlights

- **DC-DC Converter (Generic)**
- **Fuel Cell improvements**
- **Communication interface updates**
  - Parametrization of SFP Simulation Link
  - Zero-configuration networking on HIL
- **Signal Analyzer enhancements**
- **Toolbox-free Features Extended**
- **TyphoonSim updates**

DC-DC Converter (Generic)

New converter component in the Microgrid library category

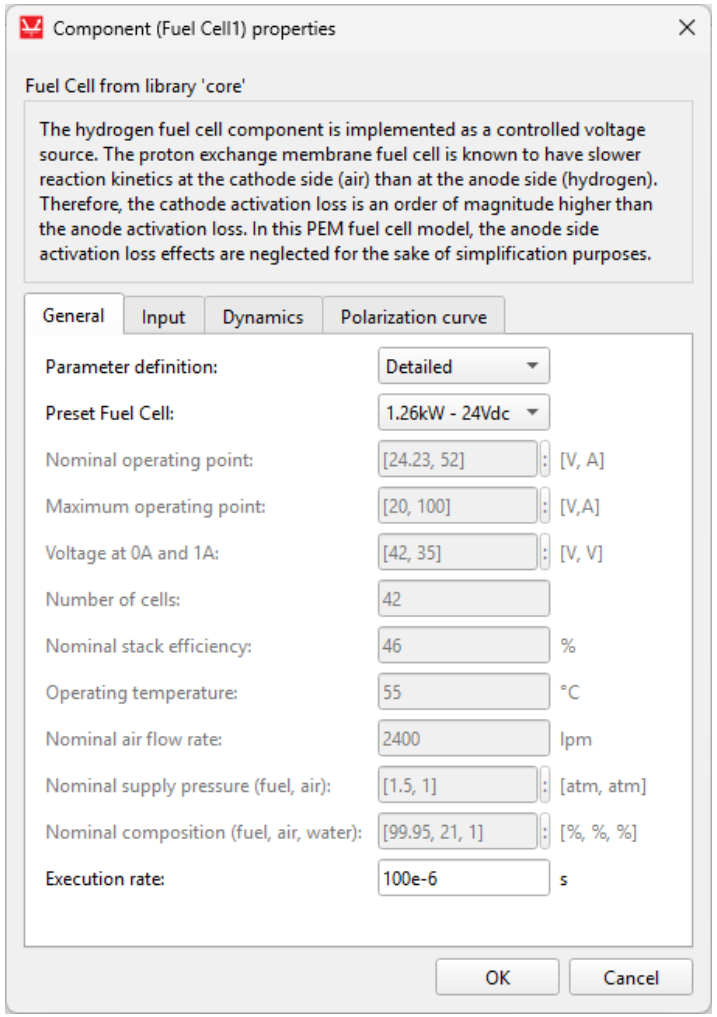
- Contains an averaged model based on a DAB (Dual Active Bridge), along with an output filter and circuit breaker
- Can operate in a wide output power range
- Isochronous, droop, and grid following operation modes available
- UI component allows easy access to inputs and outputs in SCADA
- State machine which handles circuit breaker control and fault logic implemented
- DC terminals for connecting external components to DC link



Fuel Cell improvements

Significantly simplified component parametrization process

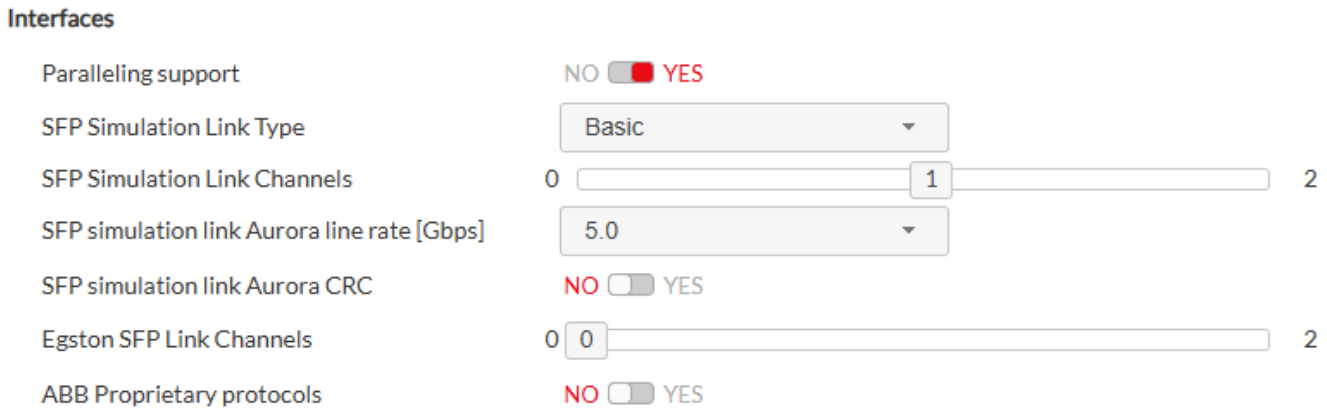
- ☐ Optimized for users with a power electronics background
- ☐ Includes presets for standard fuel cells available on the market
- ☐ Streamlined model transfer from other simulation tools (e.g. Simulink)
- ☐ Two fidelity levels available: Simplified and Detailed
- ☐ Runtime variation of selected component parameters now possible



Communication interface updates

Parametrization of SFP Simulation Link

- Enables communication with different controllers and co-simulation with other vendors
- Xilinx Aurora protocol configurable via online configurator:
  - Adjustable link bandwidth (options: 0.5, 1, 2, 2.5, 4, and 5 Gbps)
  - Option to add hardware-generated CRC (Cyclic Redundancy Check) to SSL frames



Communication interface updates

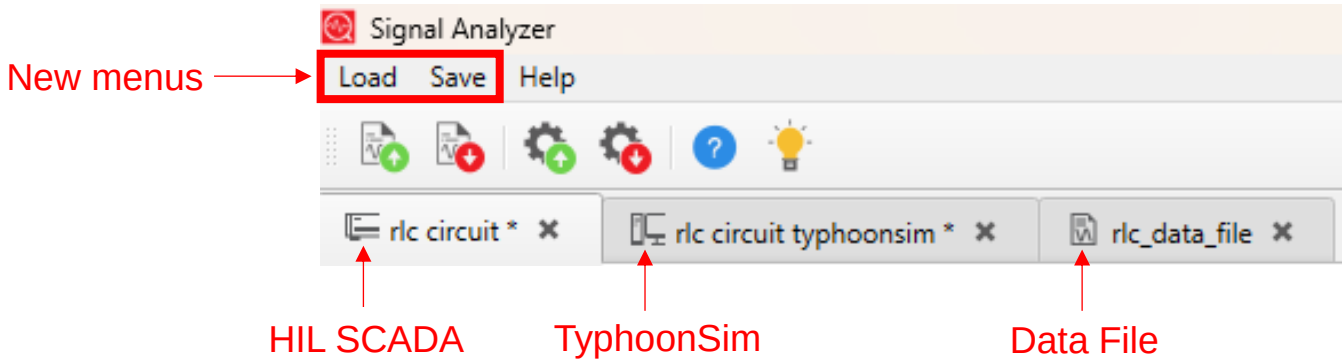
Zero-configuration networking of HIL

- Enables direct one-to-one connection between the PC and HIL device without requiring static IP configuration
- Simplifies local communication within small network setups
- The default IP address of the HIL device (192.168.42.200) has been removed
- If the HIL device cannot obtain an IP address via DHCP, it will now use an address from the APIPA (Automatic Private IP Addressing) range
  - APIPA - Windows feature that automatically assigns an IP address when a DHCP server is unavailable
  - APIPA address range is from 169.254.0.1 to 169.254.255.254

Signal Analyzer enhancements

New UX improvements in the Signal analyzer tool

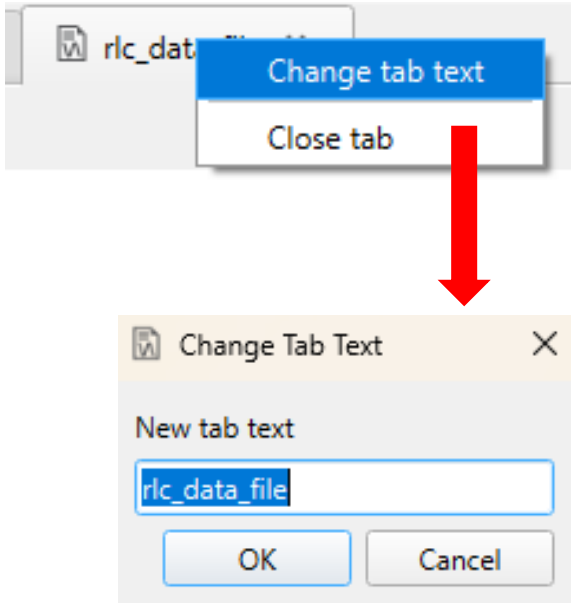
- Export/Import dialog windows redesigned
  - "Export" renamed to "Save"
  - "Import" renamed to "Load"
- Intuitive naming for imported data tabs
  - When data is imported from a file, file name is shown (without extension)
  - When data is imported from memory, model name is shown (without extension)
  - All additional data is moved into tooltips
- Added different tab icons for each data source (TyphoonSim, HIL SCADA, Data File)
- New menus added (Load menu, Save menu)

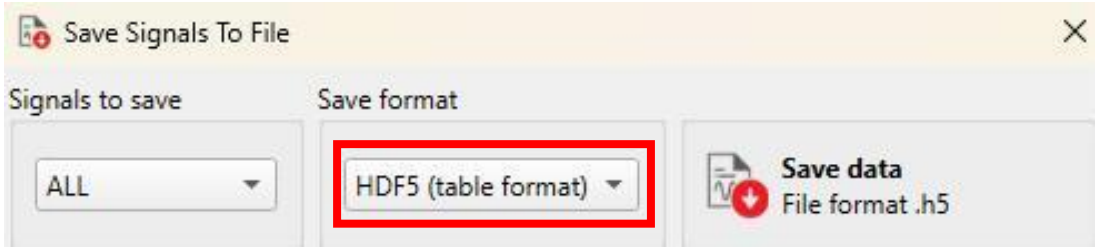


Signal Analyzer enhancements

New UX improvements in the Signal Analyzer tool

- Each opened tab in Signal Analyzer can now be renamed
- Ctrl+S now opens the Save Data window
- Upon saving, the suggested file name is the same as the imported data tab
- Default Save format changed to HDF5 (table format)





Toolbox-free Features Extended

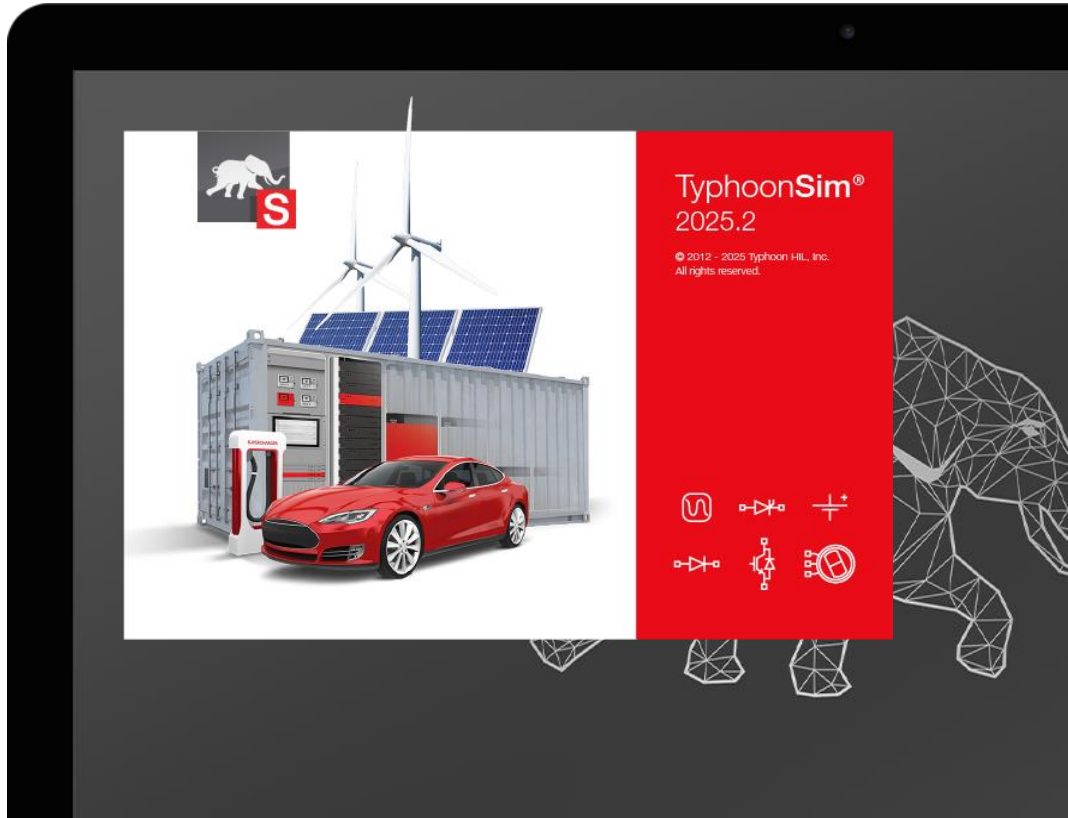
Extension of Starter Features for all HIL users

- The following features are now available for real-time simulation for all HIL users:
  - TyphoonTest
  - Ethernet Variable Exchange
  - EtherCAT Protocol
  - SFP Simulation Link

TyphoonSim updates

Extended library support

- FMU Import component now supported
- Three Phase PMSM (Ansys ECE) now supported
- 9 converters supported
  - Buck-Boost
  - Three Level Buck
  - Cuk
  - SEPIC
  - Flyback
  - Forward
  - Active Clamp Forward-Flyback
  - 5L NE Type
  - Three Phase Asymmetric Inverter
- Added option to expose auxiliary winding on Single Phase Induction Machine



Thank you for your attention!