2026.1 Software Release Highlights
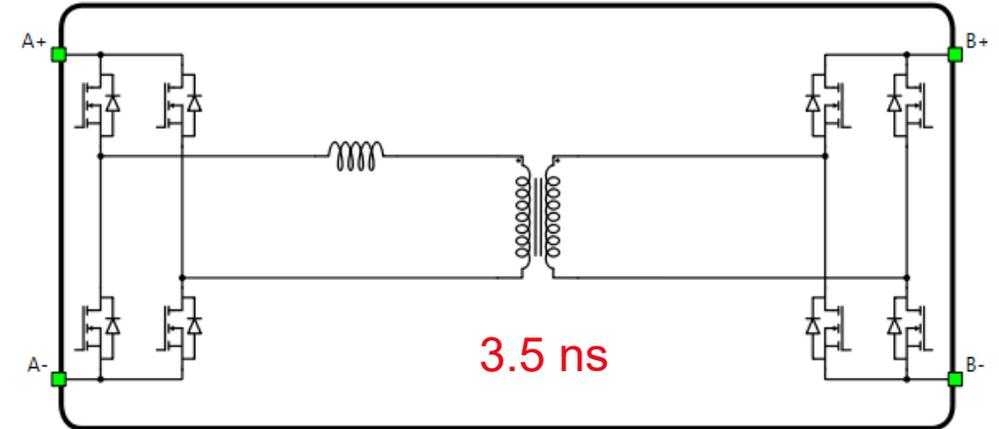
- ☐ **UltraCore Solver**
- ☐ **Typhoon Blockset**
- ☐ **TML Function**
- ☐ **General Improvements**
- ☐ **Communication Updates**
  - ■ General Updates
  - ■ Grid Modernization
  - ■ e-Mobility
- ☐ **UI Improvements**
- ☐ **TyphoonSim Updates**

Typhoon HIL

Control Center

2026.1

Typhoon HIL Control Center

Version 2026.1

UltraCore Solver

Increased fidelity for high switching-frequency applications

- ☐ The new UltraCore replaces the DC-DC Converter Solver
    - ■ Time resolution boost: runs with a timestep equal to a single FPGA clock period:
        - ☐ 3.5 ns on HIL404 / HIL506 / HIL606
        - ☐ 4.5 ns on HIL101
        - ☐ 6.25 ns on HIL402 / HIL602+ / HIL604
    - ■ Effectively doubles the range of supported SW frequencies
    - ■ Maintains a similar FPGA resource footprint
- ☐ Supported converter topologies with the 2026.1 release:
    - ■ Dual Active Bridge
    - ■ Resonant Converter
    - ■ Active Clamp Forward-Flyback

3.5 ns

Dual Active Bridge

3.5 ns
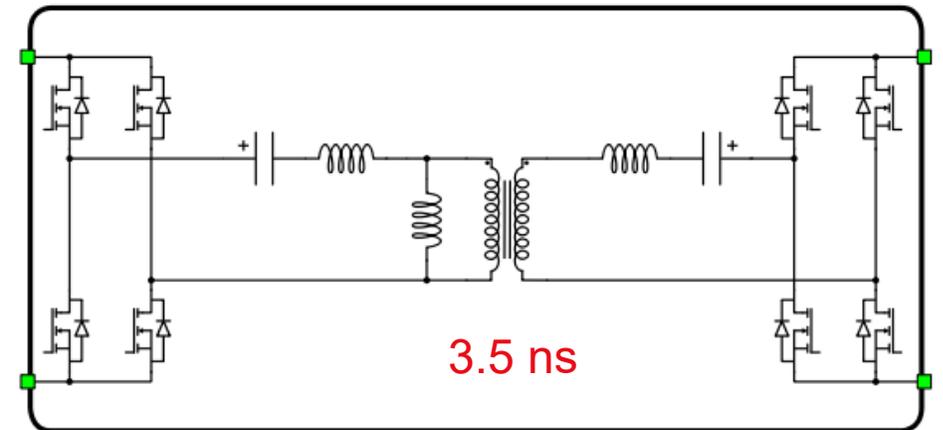
Resonant Converter

Typhoon Blockset

TyphoonSim in support of Simulink control development workflow

☐ Allows easy co-simulation between Simulink and TyphoonSim

☐ Integrates TyphoonSim into your Simulink-based control development workflow

☐ A new Simulink library (blockset) with two "blocks":

■ Typhoon Model

☐ Contains your Typhoon model (no need for external .tse files)

☐ Double-click opens Schematic Editor and the interface application

☐ Contains ports used for signal exchange between Simulink and TyphoonSim

■ Typhoon Settings

☐ Force compilation

☐ Set execution rate (if fixed step)

Typhoon Settings
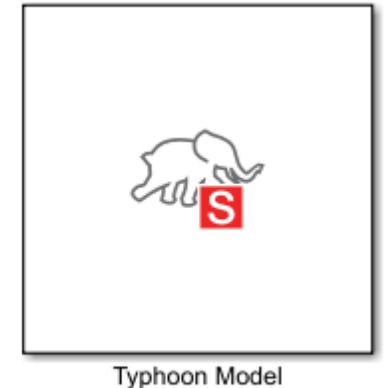
Typhoon Model

Typhoon Blockset

One-click transition from MIL to HIL

1. Develop your control in
    Simulink and test it against
    your TyphoonSim plant model
    with Typhoon Blockset

2. With one-click, deploy your
    control on the real target and
    your plant model on a
    Typhoon HIL device

3. Continue fine tuning and
    testing your control in a HIL
    setup

Typhoon HIL
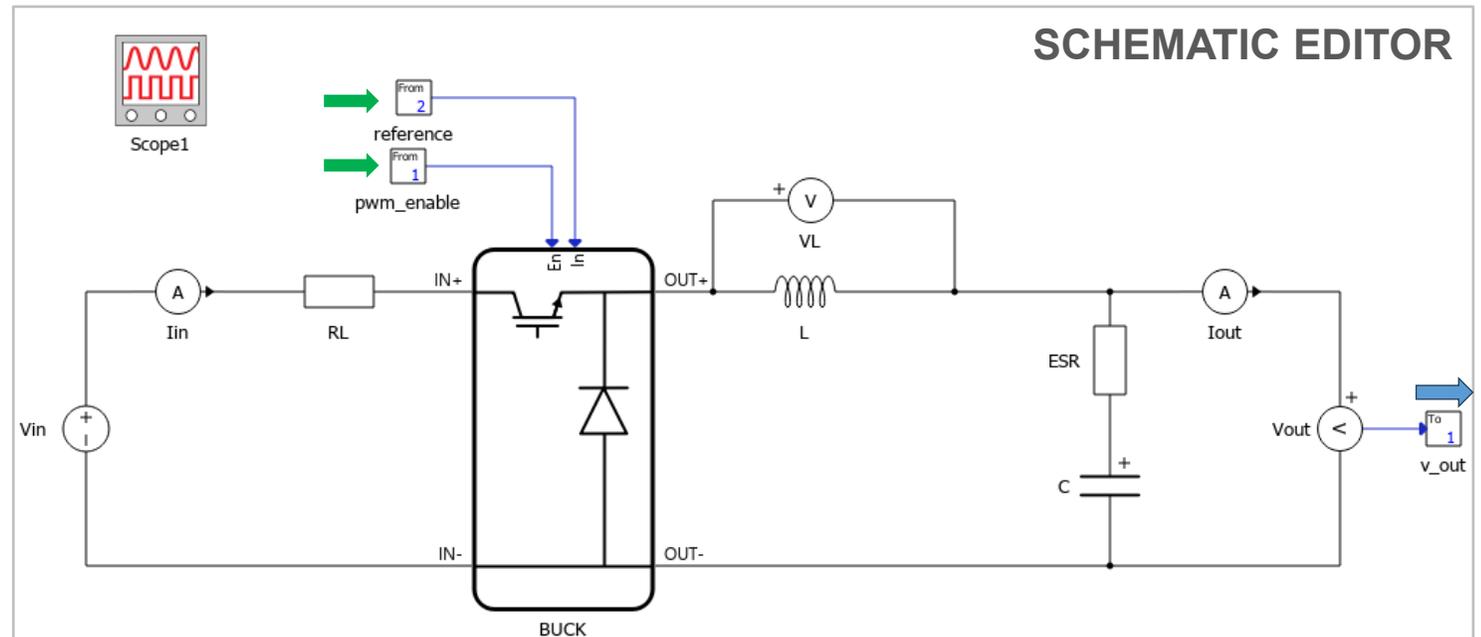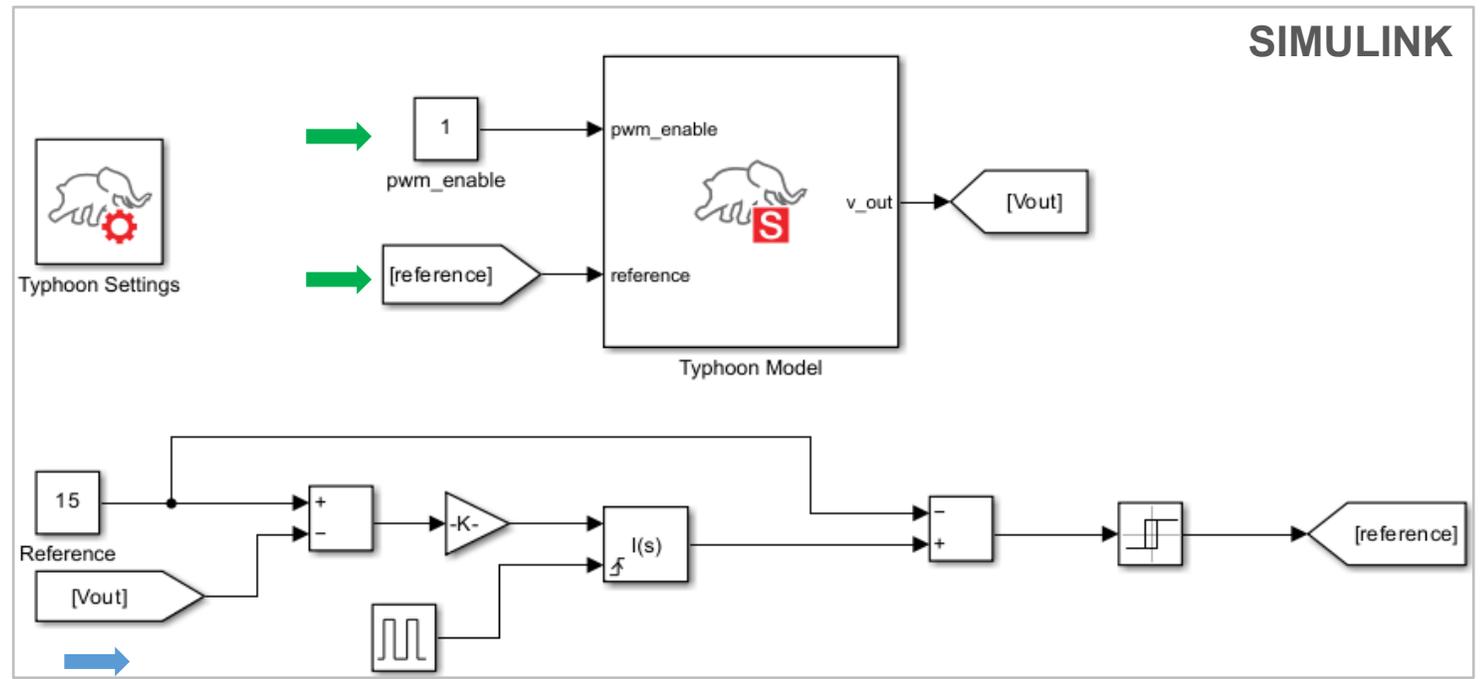
Typhoon Modeling Language

Programming language for describing dynamic systems

- ☐ Typhoon Modeling Language (TML) is a programming language for description of dynamic systems
  - ■ Allows for describing components on a much higher abstraction layer compared to the existing C/template-based approach
- ☐ Similar syntax to MATLAB, Python, and GNU Octave

Benefits

Improves readability and maintainability of code

Results in much less hidden programming errors due to comprehensive analysis

Provides means for model optimization, leading to faster model execution

Provides intrinsic support for tensors

TML Function

Write arbitrary functions using Typhoon Modeling Language

☐ TML function component added to the Functions and Tables section of the Signal Processing library

☐ Allows you to implement a component with an arbitrary function using the TML programming language

☐ TML has its own library of mathematical functions similar to C and Matlab, but with native support for tensor types

☐ Two tabs are present in the Component Properties window:

  ▪ General tab, for defining inputs, outputs, global variables and parameters

  ▪ Functions tab, where it is possible to define arbitrary init, output and update functions
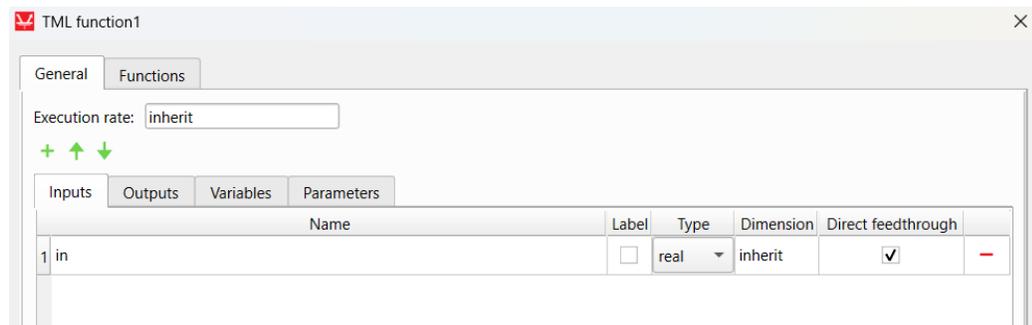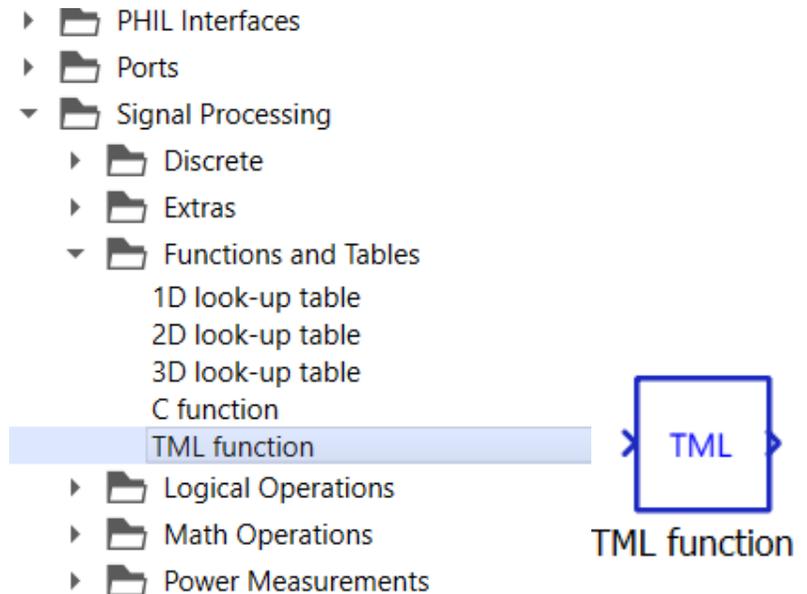
General Improvements

Support for formula-based semiconductor losses definitions in XML files

☐ Previously, only table-based XML loss definitions were supported

☐ Now formula-based and hybrid (table + formula) XML files are supported

■ User-defined variables are accessible from the component mask, if there are any
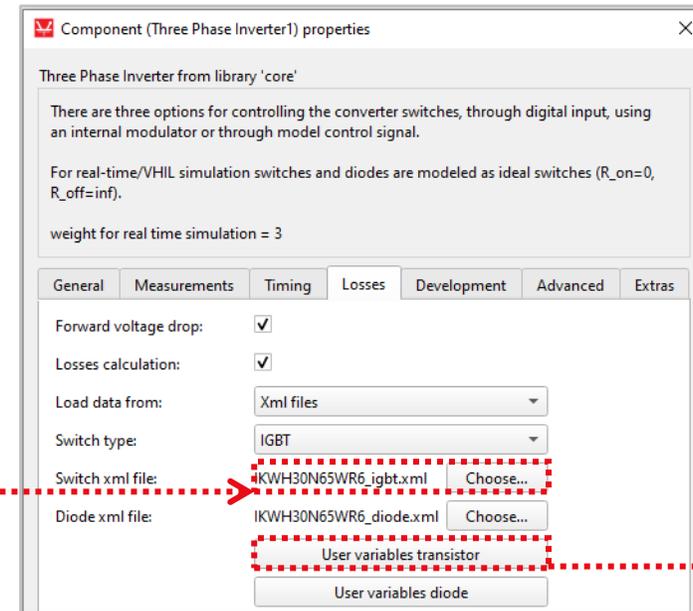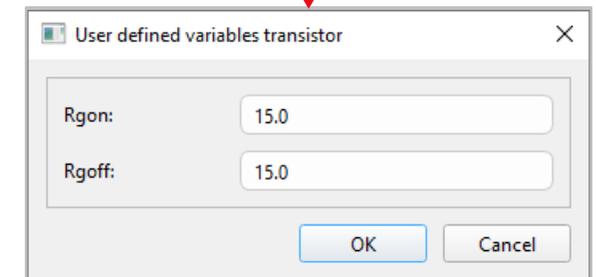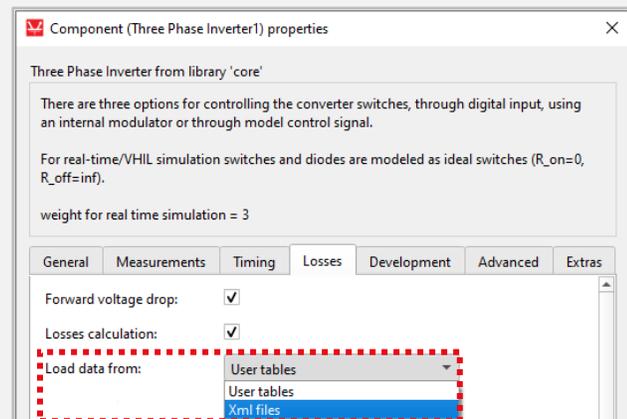
General Improvements

New options for loading losses data

☐ **Load data from** property added, which allows for:

- User tables (including table-only XML files)
- XML files (table-only, formula-only or both)

☐ Thermal network data is shared between the two options

- If defined in one option, it will be automatically applied to the other option, until modified
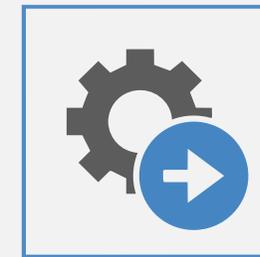

Output Settings now renamed to Initial Settings

☐ Name change better reflects component capabilities:

- Define Analog and Digital output signals
- Override converter switch control
- Backwards compatible with Output Settings
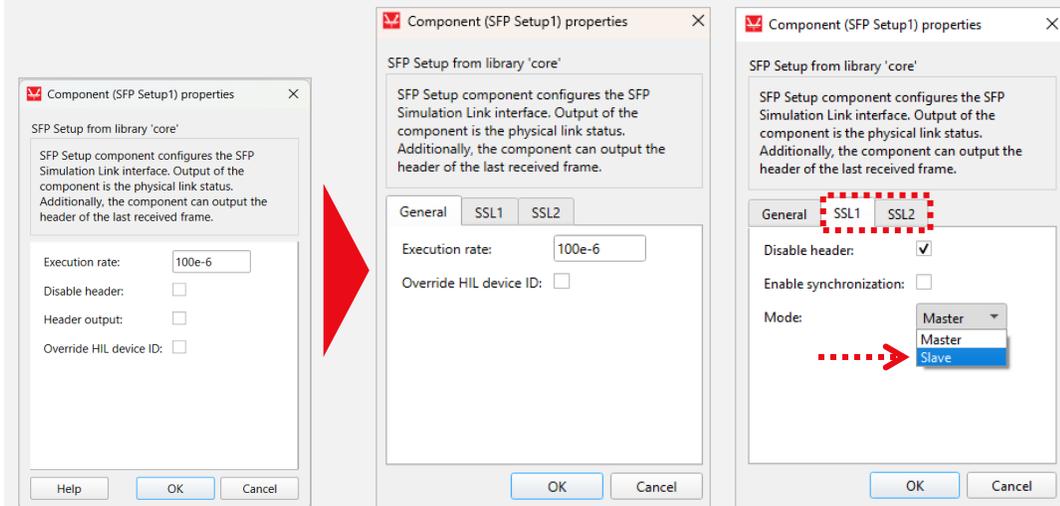

Output Settings ▶ Initial Settings

General Communication Updates

SFP Simulation Link improvements

☐ Added support for synchronization and slave mode

☐ SFP Setup component has been redesigned

  ■ Instead of one, two tabs are now present in the Component Properties Window: General and SSL

  ■ Configurability per channel added

Added support for multiple Serial Send components

☐ Up to 4 Serial Send components can now be used on a single HIL device (previously limited to 1)

☐ Each message is distinguished by its start of frame property
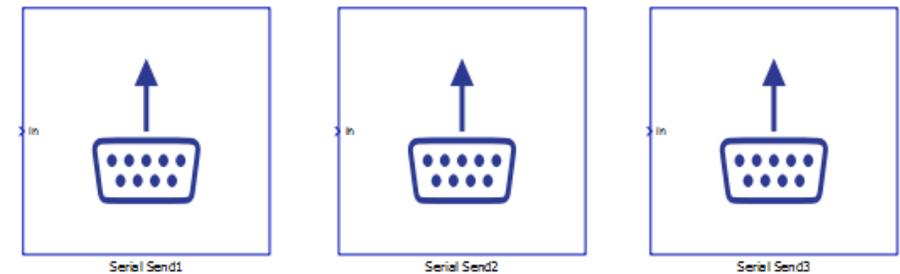
Grid Modernization Communication Updates

VLAN 802.1Q tagged messages support for GOOSE

☐ Added support for manual VLAN configuration, in addition to reading VLAN settings from a configuration file for IEC 61850 GOOSE protocol components

■ Added Enable VLAN tagging checkbox

■ VLAN priority and VLAN ID properties are also available

e-Mobility Communication Updates

CAN FD Raw data handling support

☐ Four new components have been added:

- CAN FD Pack and CAN FD Unpack handle conversion between physical signals and raw data

- CAN FD Raw Send and CAN FD Raw Receive handle raw data transmission and reception on the CAN network

☐ These components separate the data packing/unpacking operations from the actual transmission/reception

- Allows access to raw data before transmission or after reception, enabling custom data processing, manipulation, and various advanced testing scenarios

CAN FD Pack1

CAN FD Unpack1

CAN FD Raw Send1

CAN FD Raw Receive1
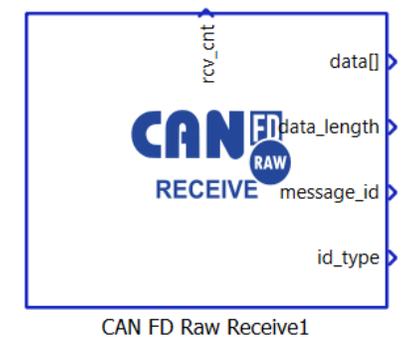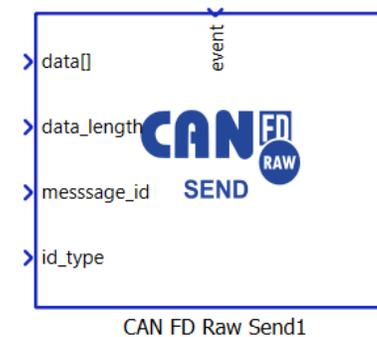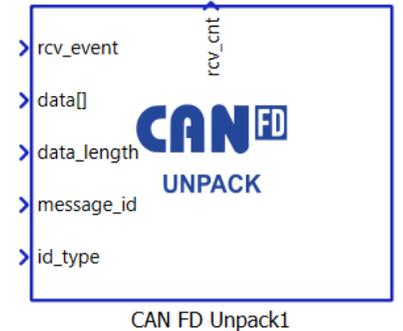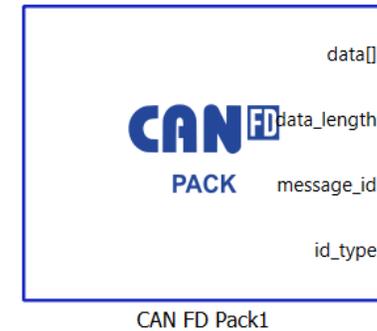
UI Improvements

Cleaning up your Schematic Editor model has never been easier

☐ **Align selected items** option added:

- ■ Alignment: left, right, top, bottom, align center horizontally, align center vertically

- ■ Distribute: horizontally, vertically
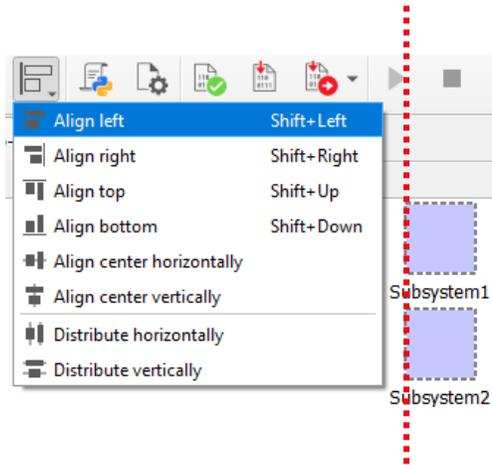
☐ Legend window redesigned:

- ■ No longer obstructs operations performed on canvas

- ■ Pop-up window retained as an option
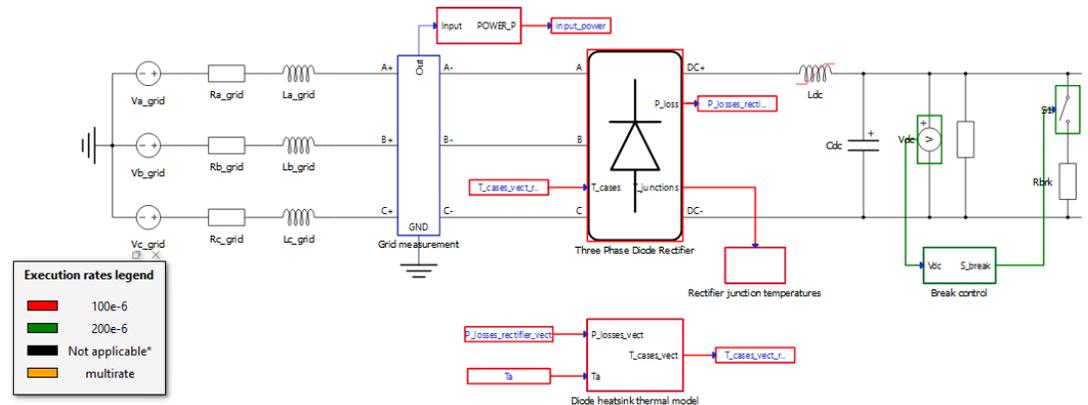
UI Improvements

Build and update your model with less clicks

- ☐ **Reload handlers** option added to Mask Editor:
    - ■ Allows for quick testing of handler modifications by applying them to the loaded library and component instances, without having to reload the library
    - ■ Available only when editing a .tlib file

- ☐ Quick tag insertion by dragging and dropping from a source tag:
    - ■ Allows for quick creation of a complementary From/Goto tag based on an existing tag
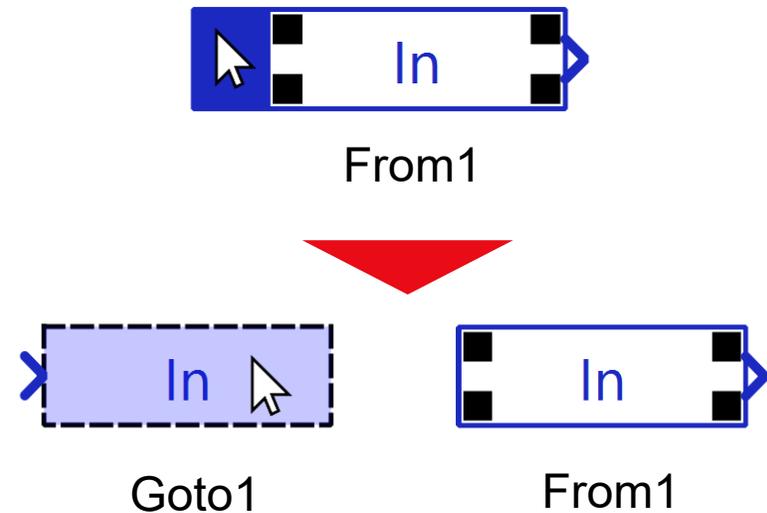
TyphoonSim Updates

TyphoonSim Standalone now also available for Mac.

Simulation preparation time reduced by skipping the GCC compilation step for the electrical part of the model.

TyphoonSim® 2026.1

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Thank you for staying up to date with our new features!

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THCC 2026.1