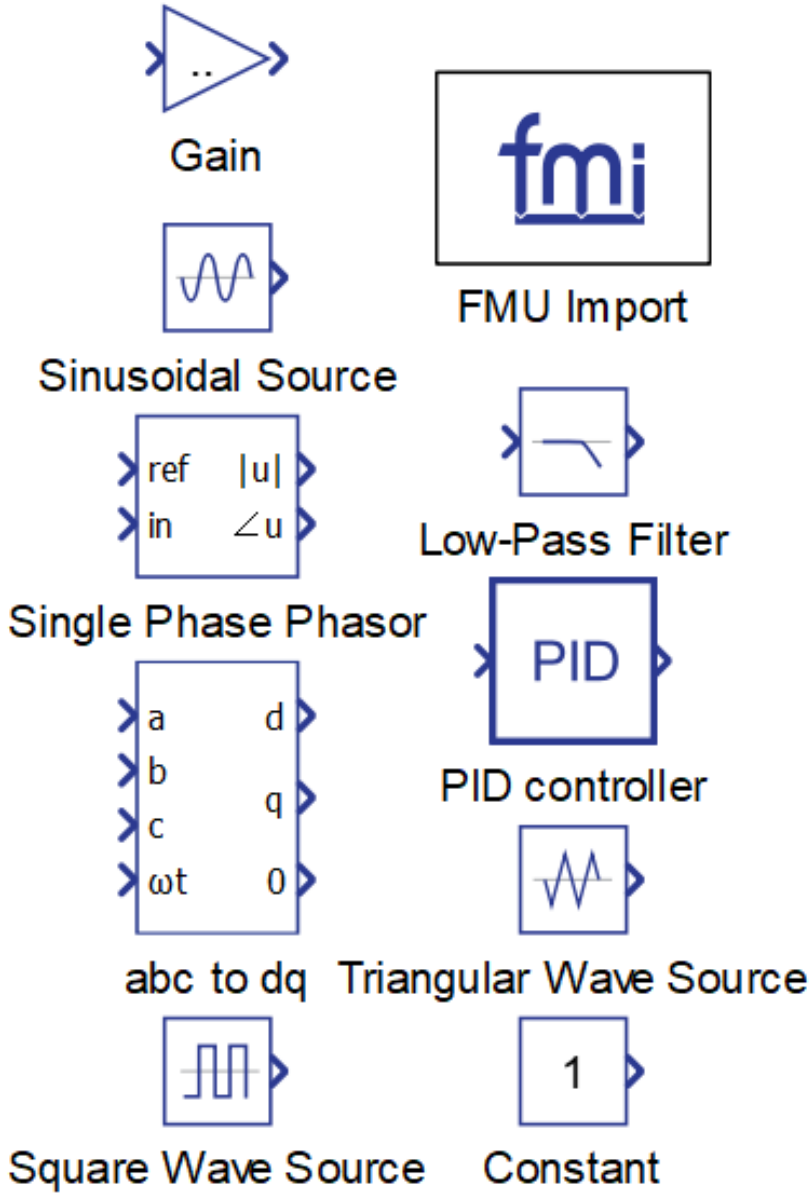
# 2021.2 Software Release Highlights

- Components with runtime-tunable properties
- Windowed mode for HIL SCADA sub-panels
- Setting AO/DO signals in Schematic Editor
- IGBT leg with switch-level oversampling
- SEL-751 high fidelity model
- DER models w/ Volt-VAr and Hz-Watt grid support

# 1.1 Components with runtime-tunable properties

Test faster, compile less

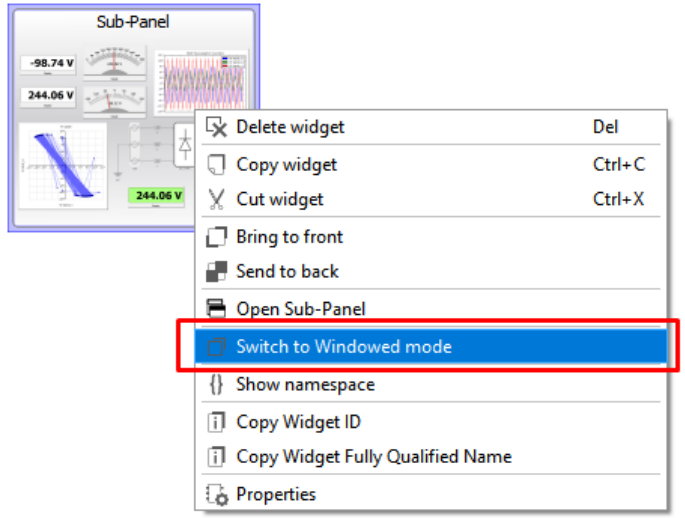
- Up until now many parameters of Signal Processing components were not tunable during runtime. This required model compilation for every parameter change.
- From now on, you can change parameters of Signal Processing components during simulation. Some of the parameters you can change are:
  - Value of the constant component
  - Amplitude and frequency of the sinusoidal, triangular and wave source
  - Filter parameters
  - Etc.
- Your manual and automatic tests now take much less time and run more fluently

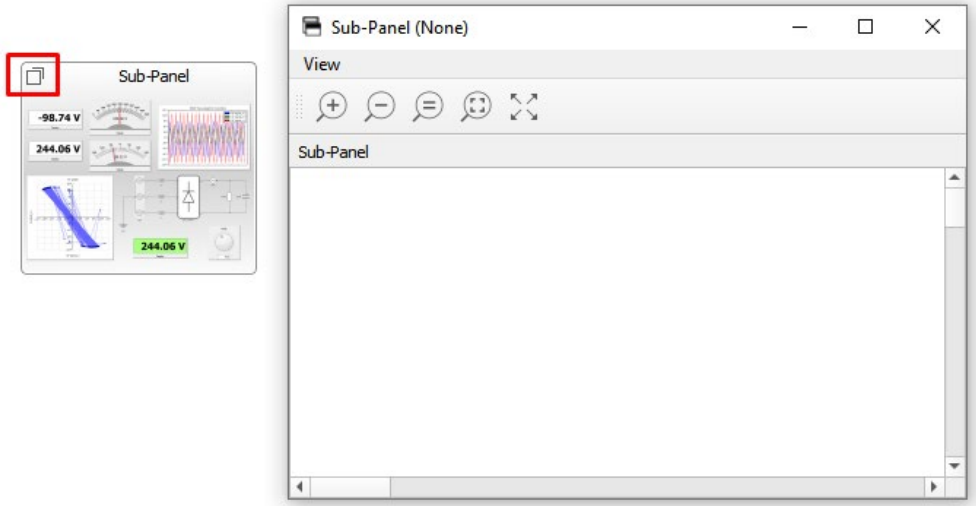


# 2.1 Windowed mode for HIL SCADA sub-panels

HIL SCADA is video-wall ready

- Support for working with a separate windows in a single SCADA panel.
- Sub-panels can now work in Windowed and Embedded modes (right click -> Switch to Windowed mode).
- If Windowed mode is selected, double clicking puts the Sub-panel canvas in a separate window.
- Sub-panels in windowed mode can be set to full screen mode.
- In Embedded mode, the Sub-panel keeps its usual behavior.
- Saving a panel saves the complete panel layout (windows sizing and positioning).

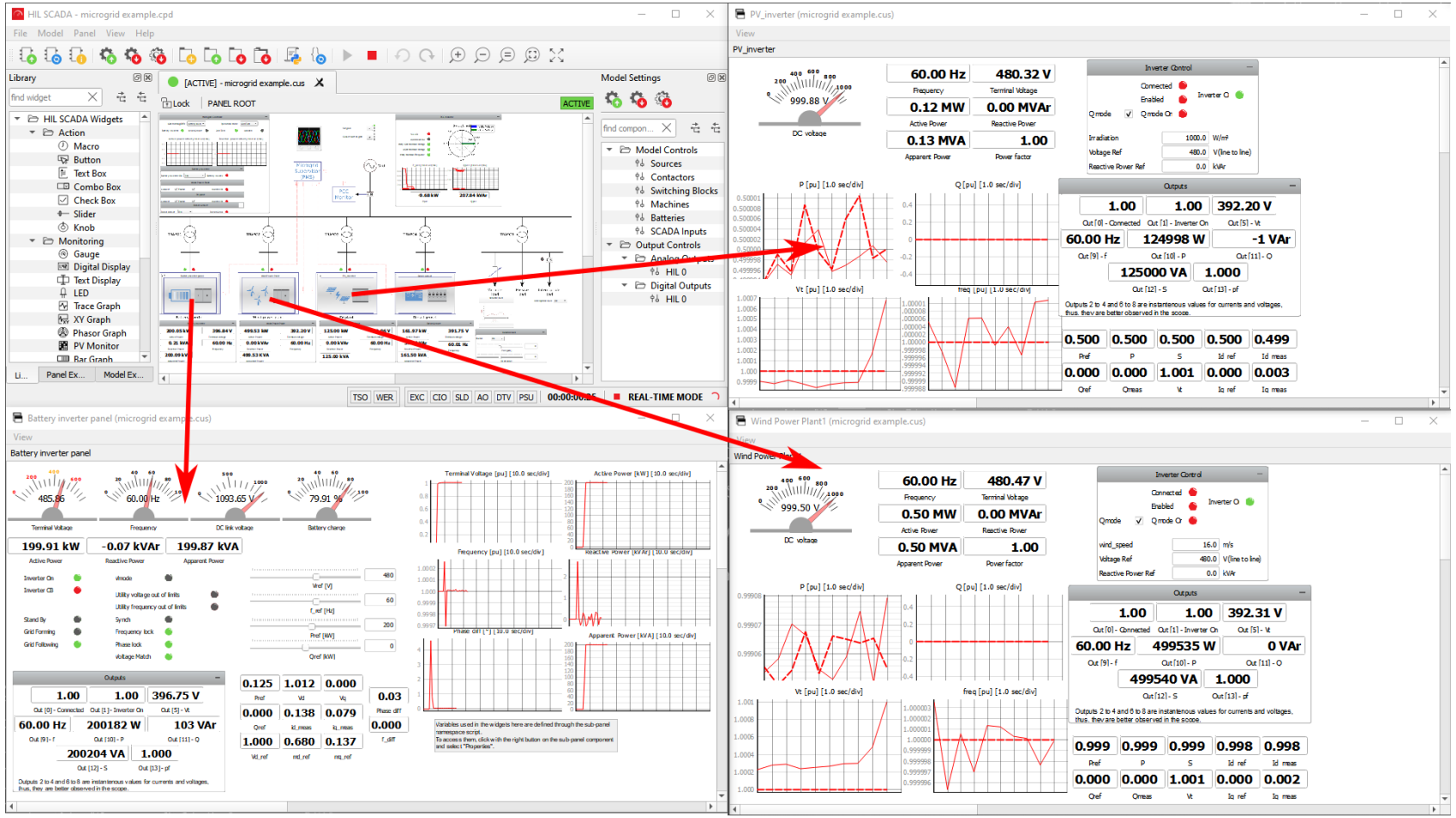


# 2.2 Windowed mode for HIL SCADA sub-panels

See more of what's important

- Especially useful when working with complex Microgrid models.
- Fast and easy navigation to commands and readings inside different sub-panels.
- Improved situational awareness on multiple screen setups (i.e. video walls).



# 3.1 Setting AO/DO signals in Schematic Editor

Improved model version control for AO/DO signal setup

- The AO/DO signal settings can now be done in the schematic file.
- Better model version control by eliminating the need for setup in HIL SCADA or in standalone tests.
- Packaging power stage models for C-HIL in library components without manually scaling adjustments in SCADA.
- In larger systems, where multiple controllers and Multi HIL setup are included, moving controller to another HIL is easier.
- Easier C-HIL model expansion from unit to system level.


Output Settings1

General

Analog Outputs | Digital Outputs

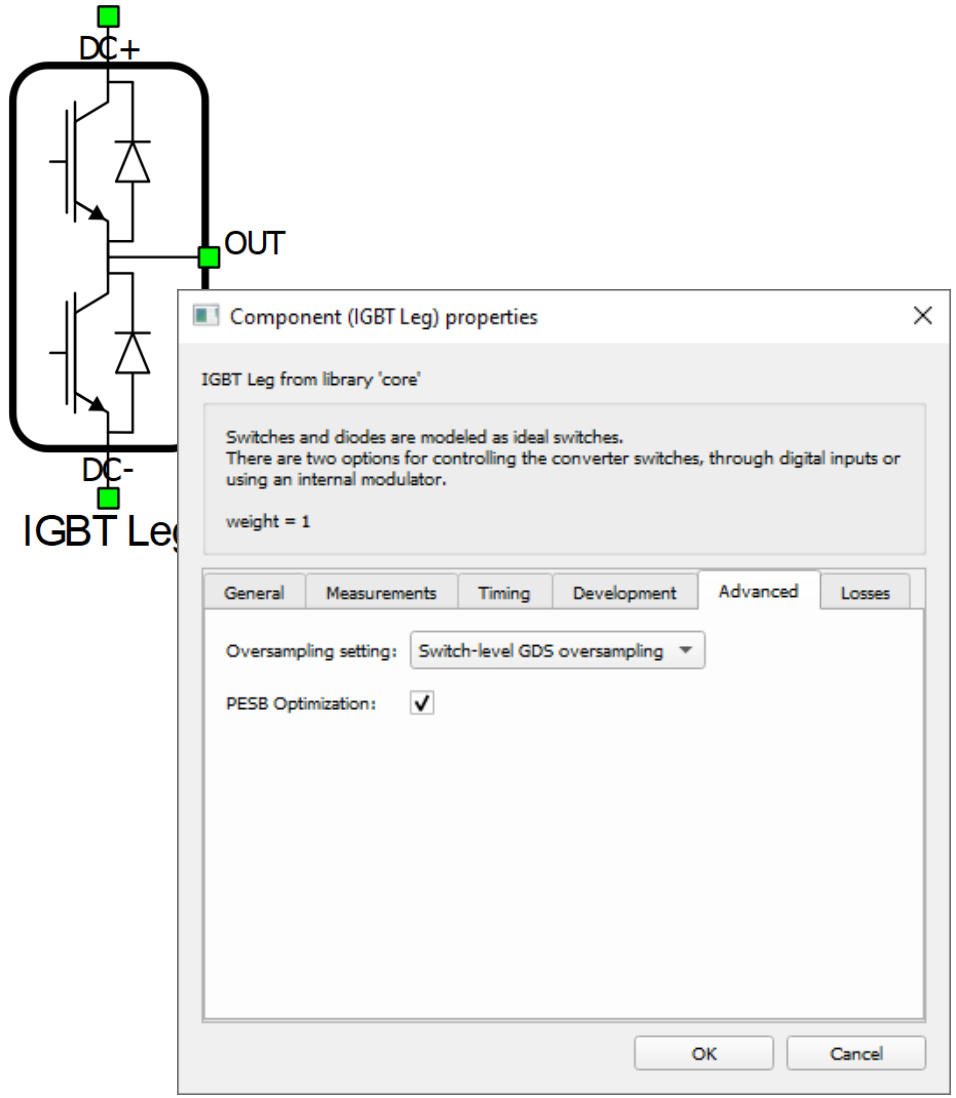
| | Name | Signal | Scaling | Offset | Enable Limits | Lower Limit | Upper Limit | Remove |
|---|---|---|---|---|---|---|---|---|
| 1 | AO1 | Ia.current | 1.6 | 0 | | -10 | 10 | − |
| 2 | AO3 | Ib.current | 1 | 0 | | -10 | 10 | − |
| 3 | AO5 | Vdc.voltage | 250 | 0 | | -10 | 10 | − |
| 4 | AO7 | Vab.voltage | 100 | 0 | | -10 | 10 | − |
| 5 | AO8 | Vca.voltage | 100 | 0 | | -10 | 10 | − |
| 6 | AO9 | Ia.current | 1.6 | 0 | | -10 | 10 | − |
| 7 | AO10 | Ib.current | 1.6 | 0 | | -10 | 10 | − |
| 8 | AO11 | Ib.current | 1.6 | 0 | | -10 | 10 | − |
| 9 | AO12 | Ia.current | 1 | 0 | | -10 | 10 | − |
| 10 | AO14 | Ia.current | 1 | 0 | | -10 | 10 | − |
| 11 | AO16 | ...(TI 2803x).i_c.current | 1 | 0 | | -10 | 10 | − |

HIL device ID: 0

# 4.1 IGBT leg with switch-level oversampling

Improved precision in high frequency switching applications

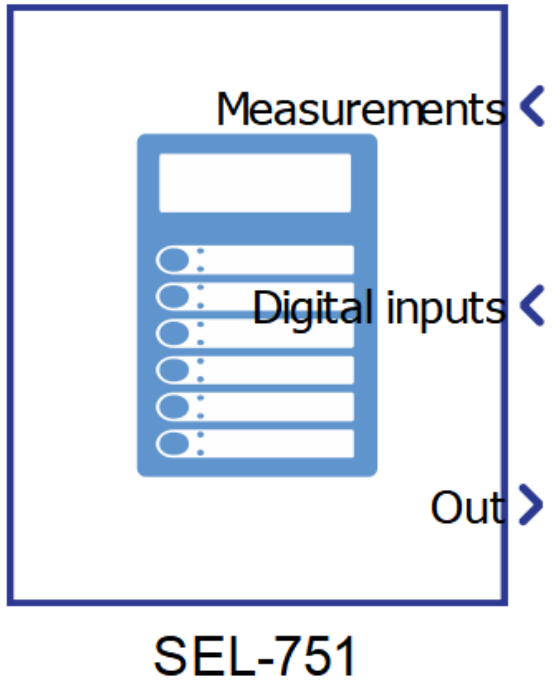
- When switch-level oversampling for IGBT leg component is enabled, **compensation is done to every switch independently,** contrary to global GDS oversampling where compensation is done on global level
- This component is useful in **Dual-Active Bridge (DAB) and resonant converter** applications since it grants much more precise simulation results on higher switching frequencies



# 5.1 SEL-751 high-fidelity model

Test faster, compile less

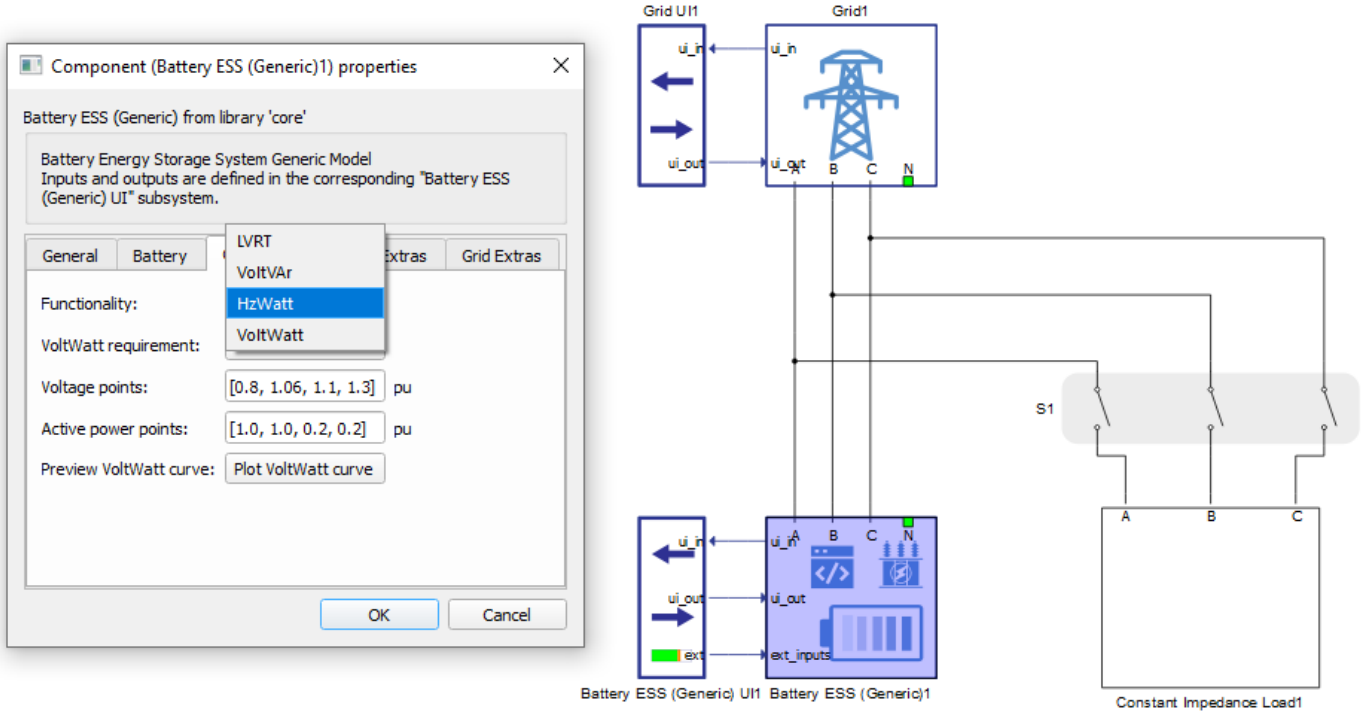
- High-fidelity model of feeder protection relay.
- Configurable with SEL settings and logic files.
- Support for following protection functions:
  - Instantaneous/Definite-Time Overcurrent functions (phase, neutral, residual, and negative-sequence protection): ANSI 50P, 50N, 50G, 50Q
  - Time Overcurrent functions (phase, maximum phase, residual, neutral and negative sequence protection): ANSI 51P, 51PP, 51G, 51N, 51Q
  - Undervoltage functions (phase, and phase to phase protection): ANSI 27P, 27PP
  - Overvoltage functions (phase, phase to phase, residual, and negative-sequence protection): ANSI 59P, 59PP, 59G, 59Q



# 6.1 DER models w/ Volt-VAr and Hz-Watt grid support

More grid support functions for generic DER components

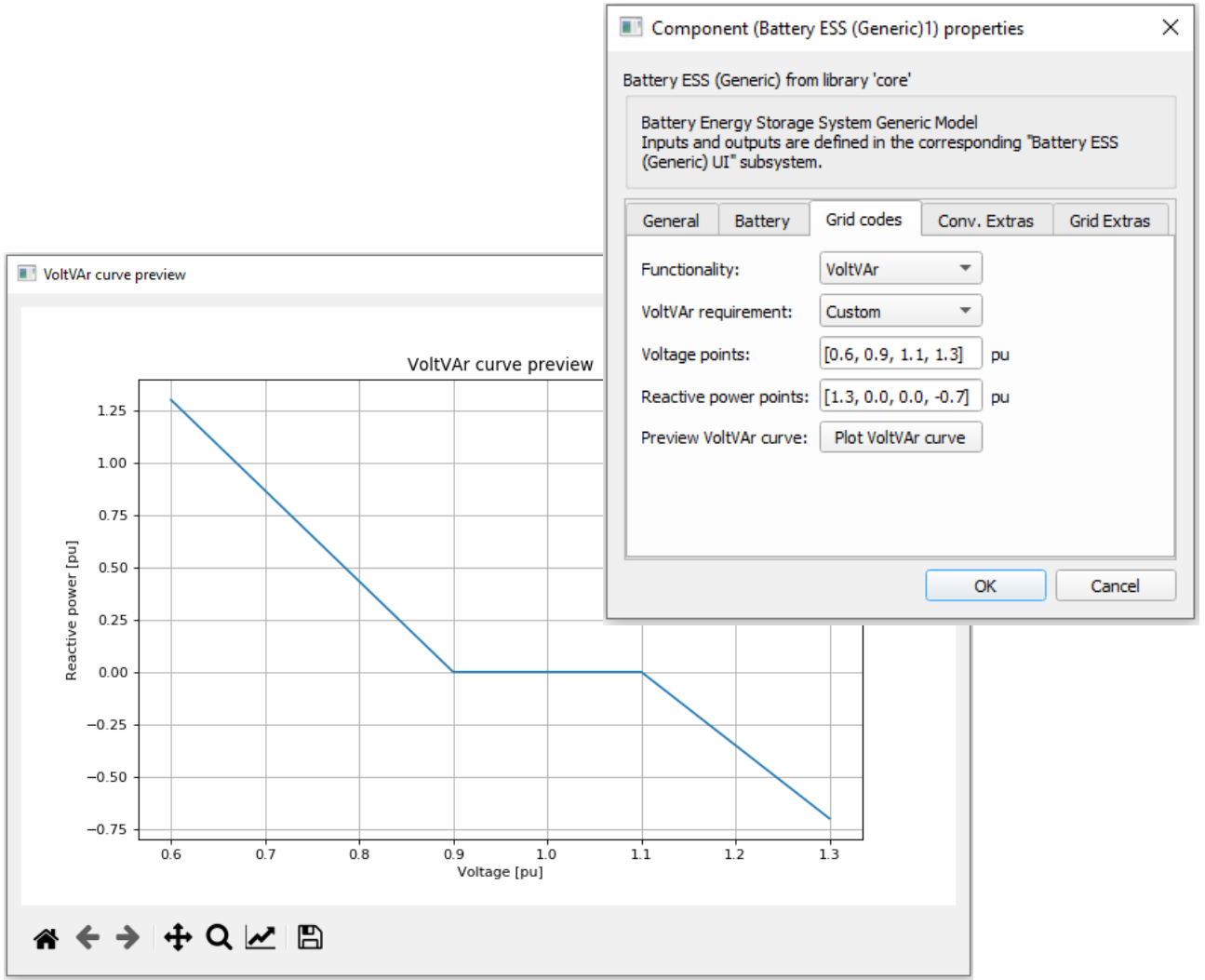
- Support VoltVAr, HzWatt, and VoltWatt grid codes in generic DER components
- Grid voltage triggers the VoltVAr and VoltWatt
- Grid frequency triggers the HzWatt
- Customize VoltVAr, HzWatt, and VoltWatt requirements



# 6.2 VoltVAr, HzWatt, and VoltWatt grid support functionality

VoltVAr functionality

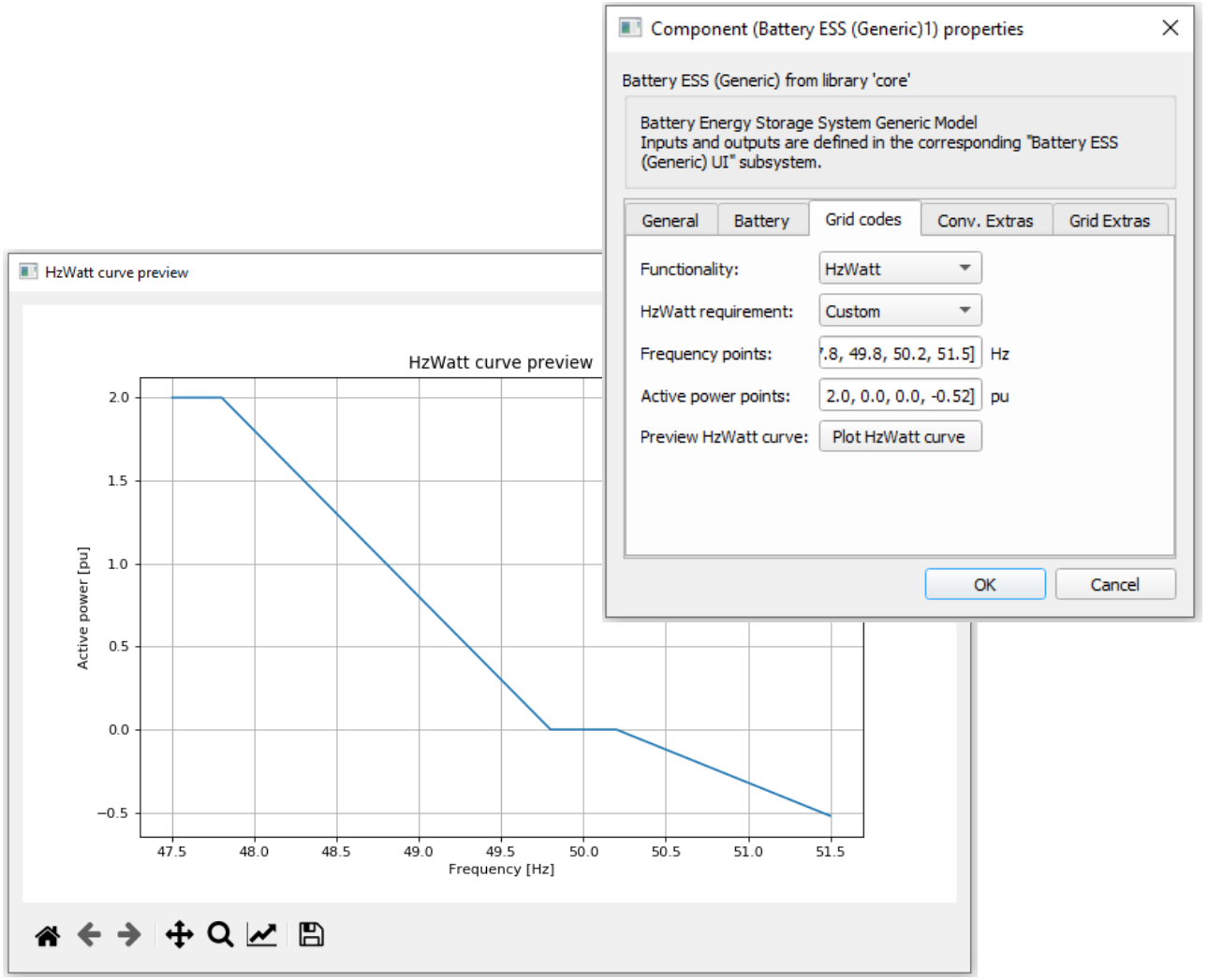
- Enabled from HIL SCADA
- The reactive power injection depends on the voltage on the terminal of the DER



# 6.3 VoltVAr, HzWatt, and VoltWatt grid support functionality

HzWatt functionality

- Enabled from HIL SCADA
- The active power injection depends on the frequency on the terminal of the DER
- If the frequency is out of range the DER will stop running



# 6.4 VoltVAr, HzWatt, and VoltWatt grid support functionality

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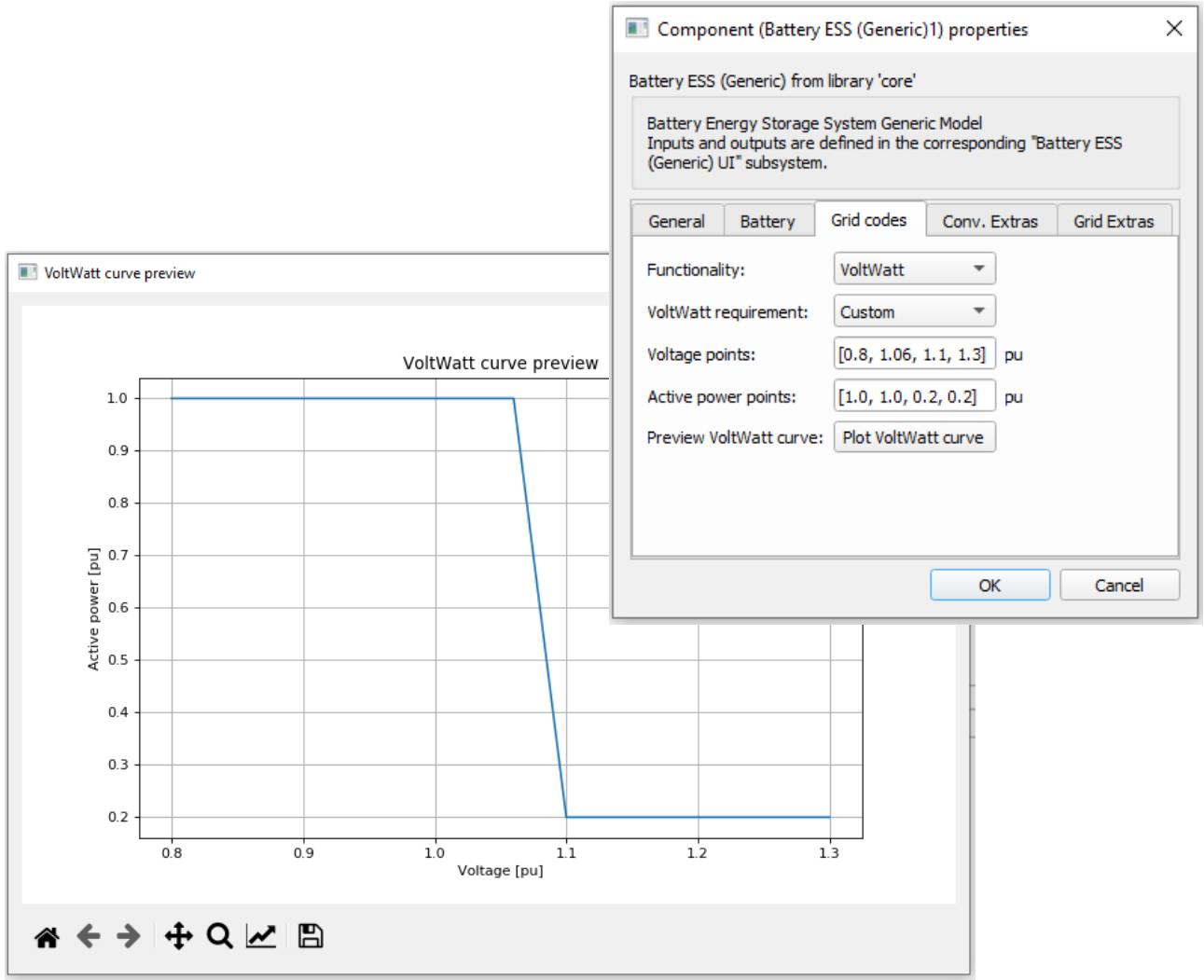
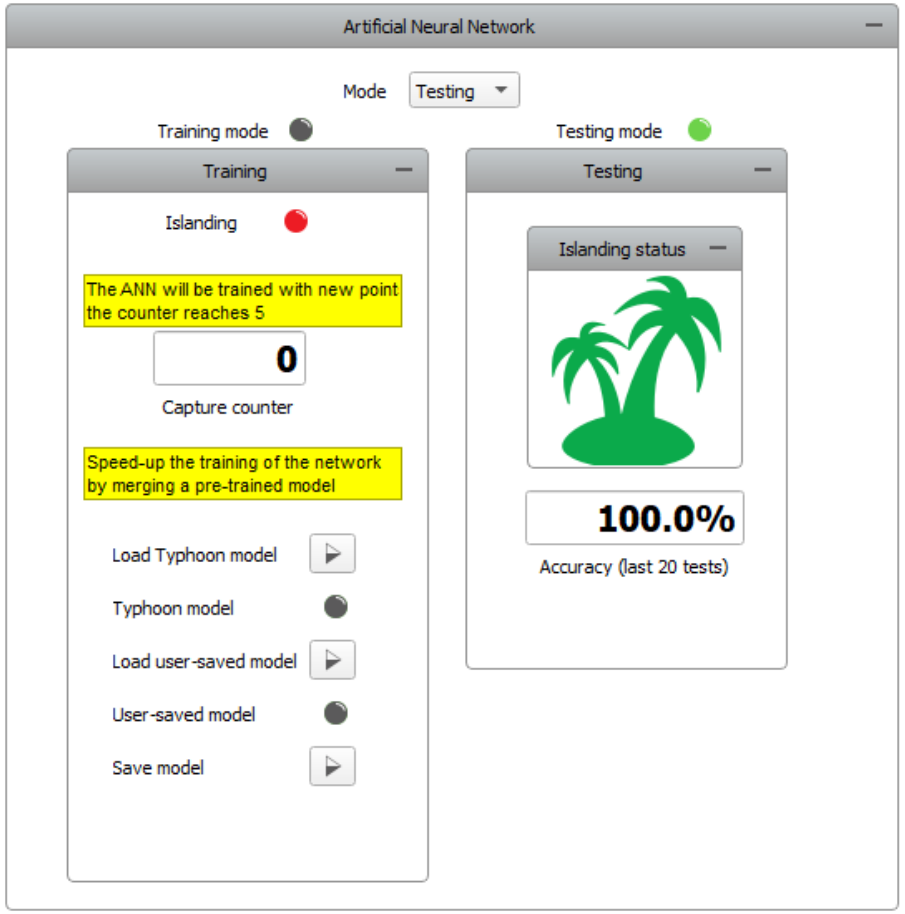


# Additional features and application examples

- Enhanced tooltips for disabled Schematic Editor components
- Documentation support for components in user libraries
- Islanding detection in IEEE34 bus using artificial neural network
- DC marine microgrid example



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