WHAT'S NEW

AGENDA

WHAT's NEW

- Software
- Component Models
- Hardware
- Upcoming Developments

RSCADFX2.0

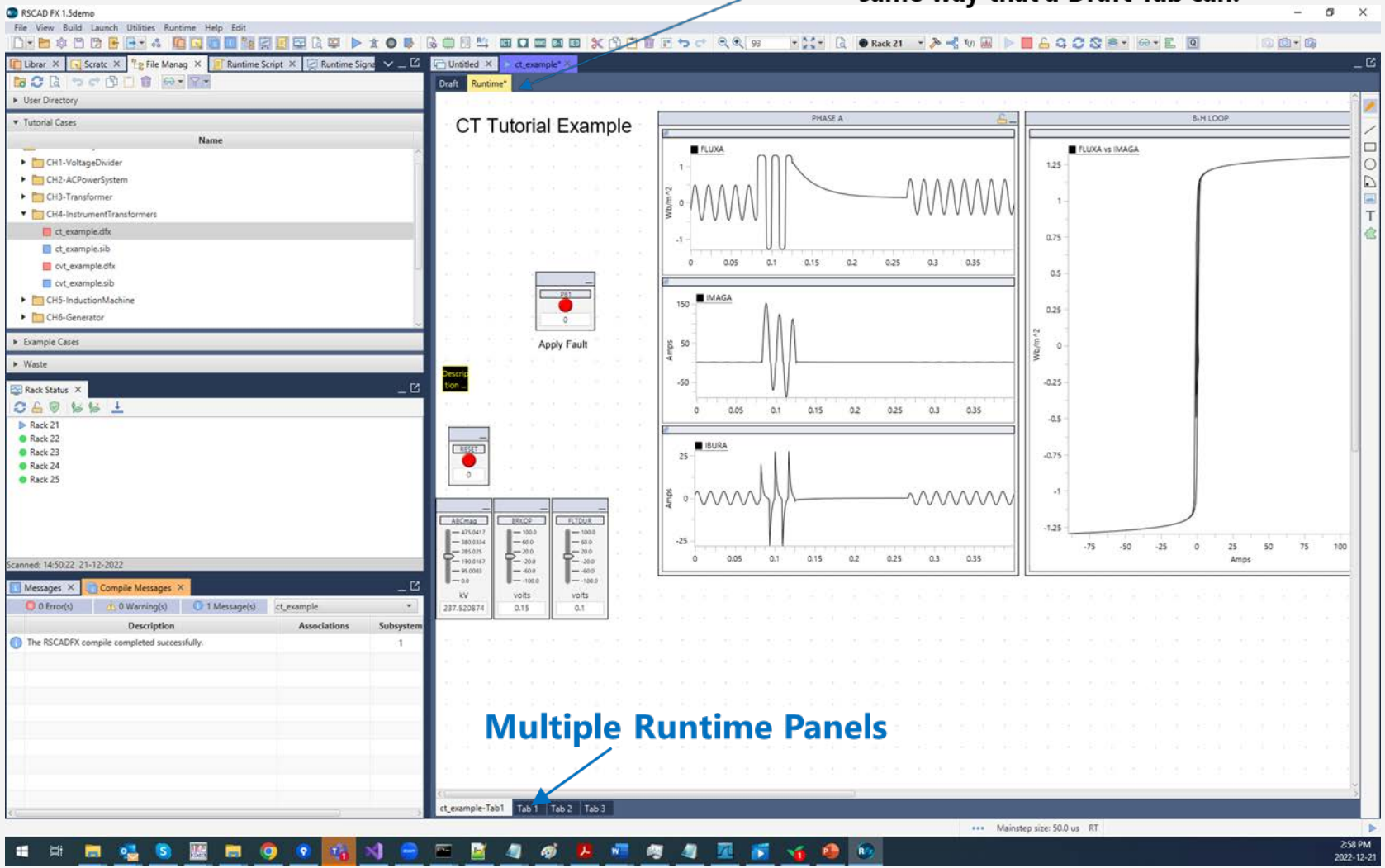
RunTime FX

- Released April 2023
- Modern look, feel, functionality

- Significant improvement for manipulating and compiling large simulation cases

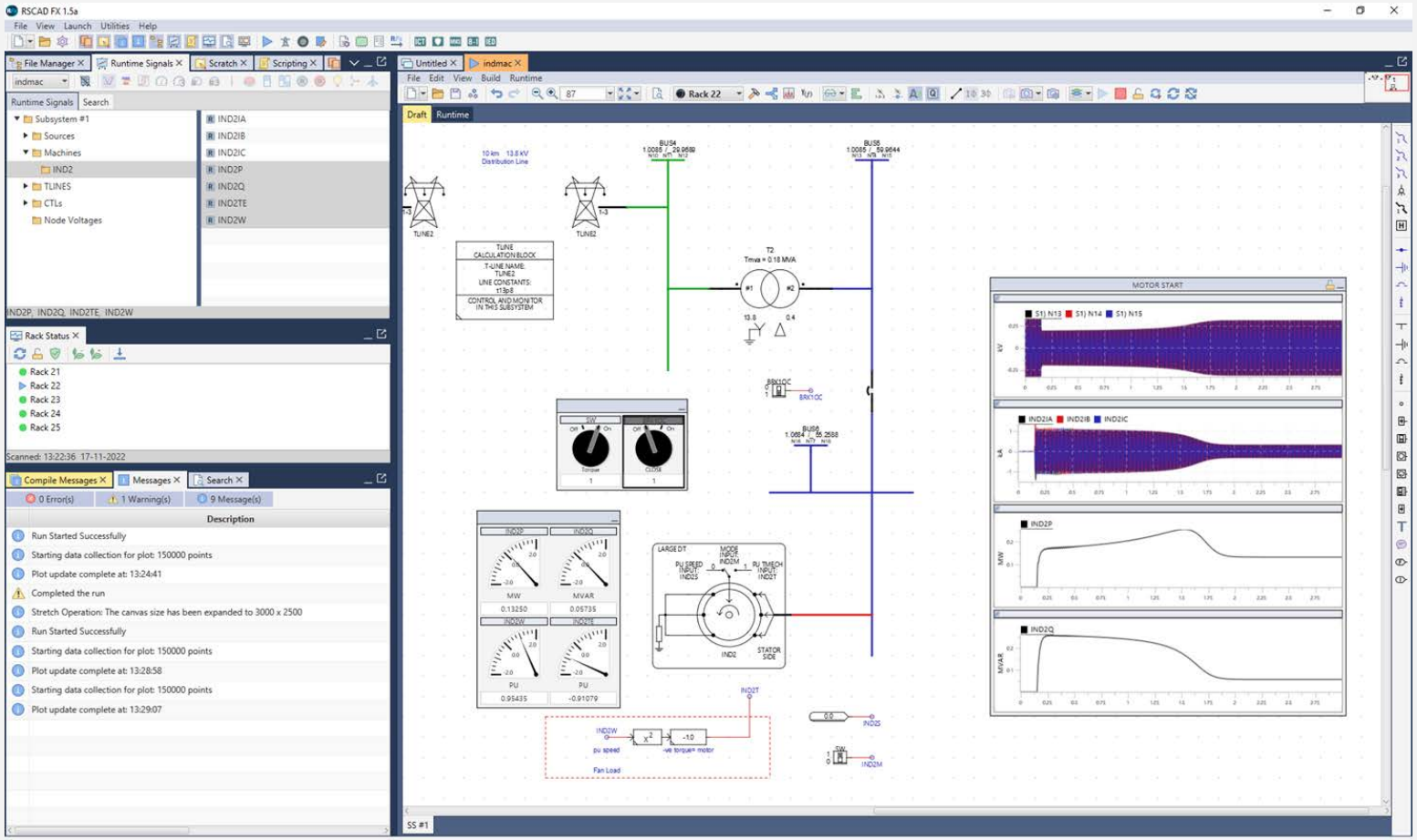
Runtime Module is now a tab under the case tab

- **Tab can be docked/undocked in the same way that a Draft Tab can.**



RSCADFX2.0

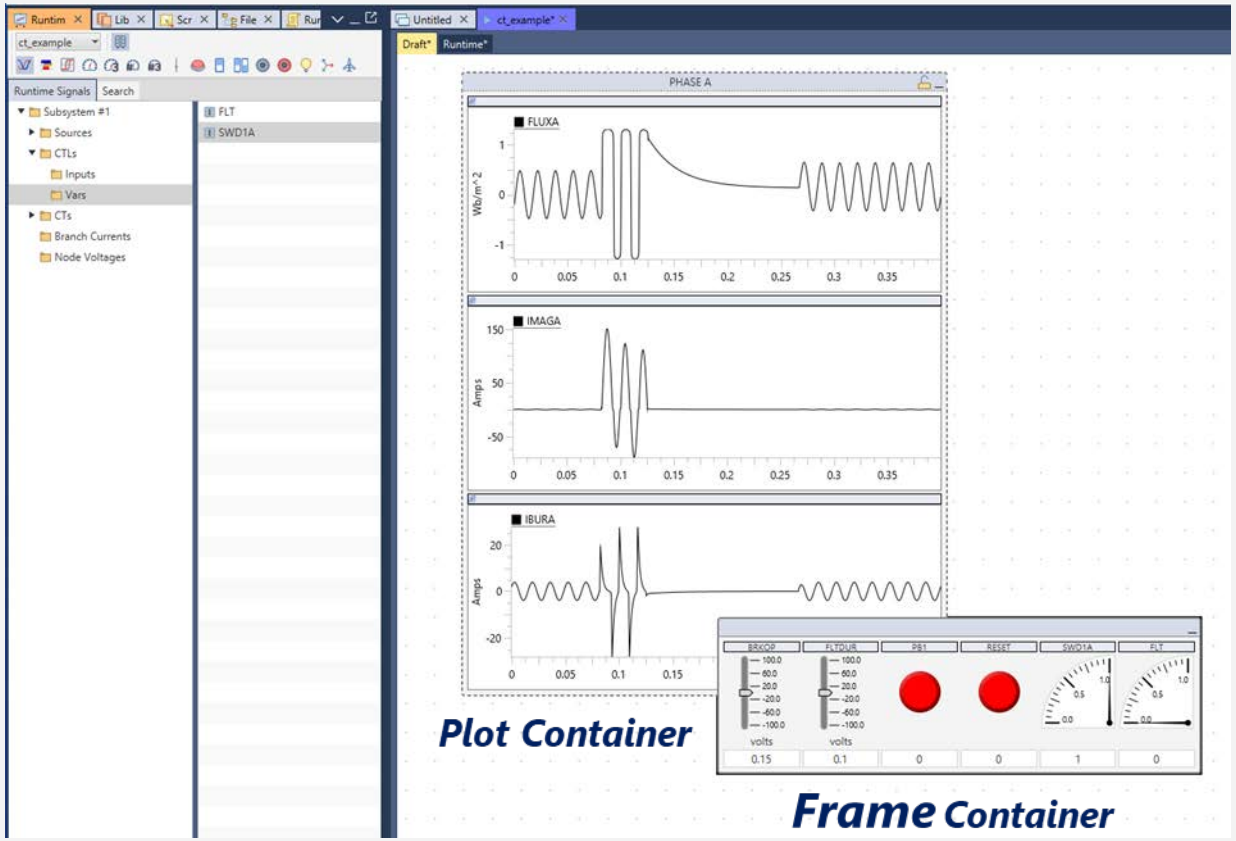
Draft – RunTime Layers



RSCADFX2.0

RunTime Signals Tab

- **Runtime Signals Utility Tab** allows signals to be drag and dropped onto *runtime objects*
- *Frames* and *Plots* will be containers that can contain one or more *runtime objects* like Meters, Graphs, 3P RMS, Vector Displays, Switches, Buttons etc.
- Support for *drag and drop re-arrangement of signals* once added to a case



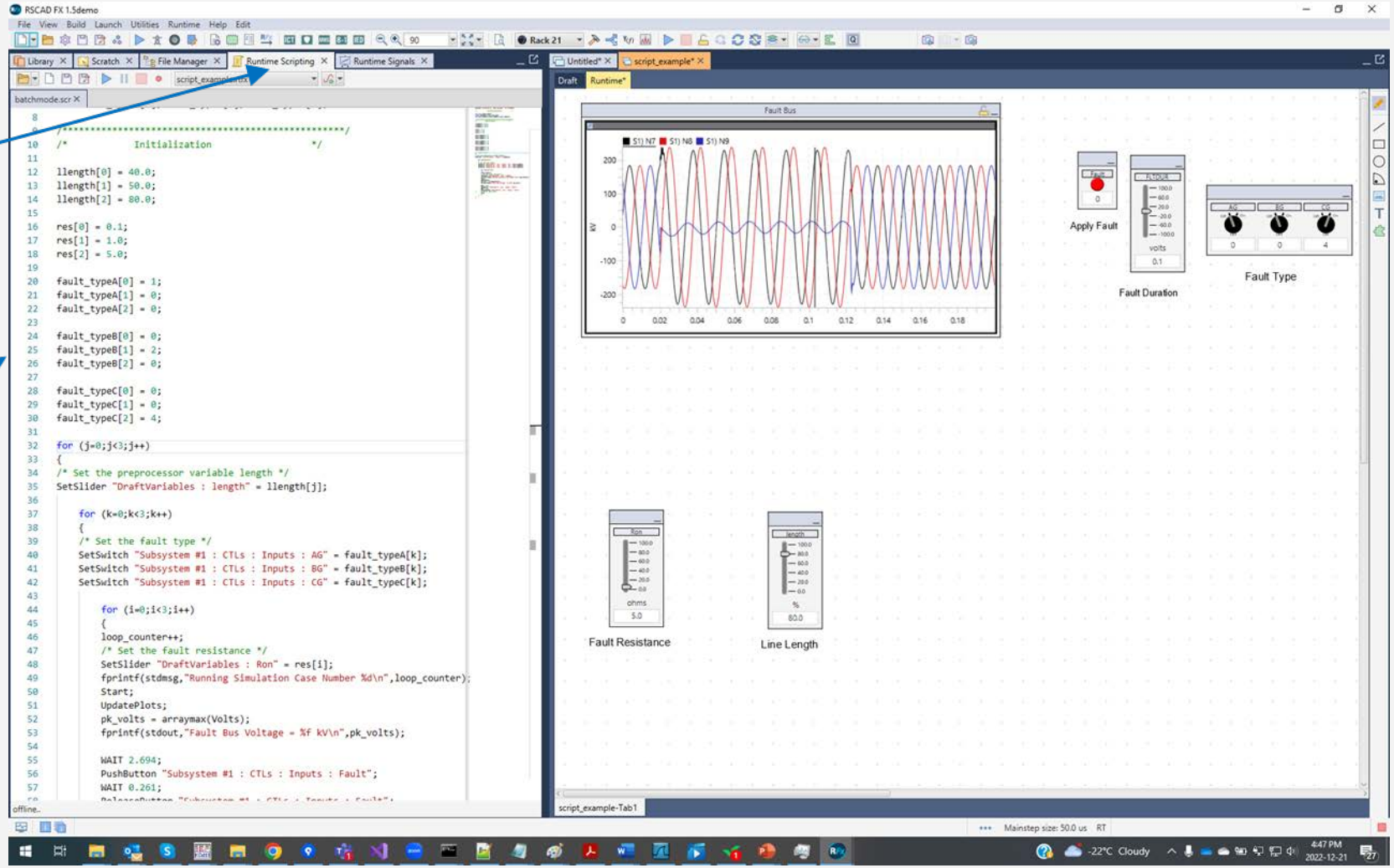
- ***Runtime Signals Utility Tab***

RSCADFX2.0

Scripting

Scripting Utility Tab

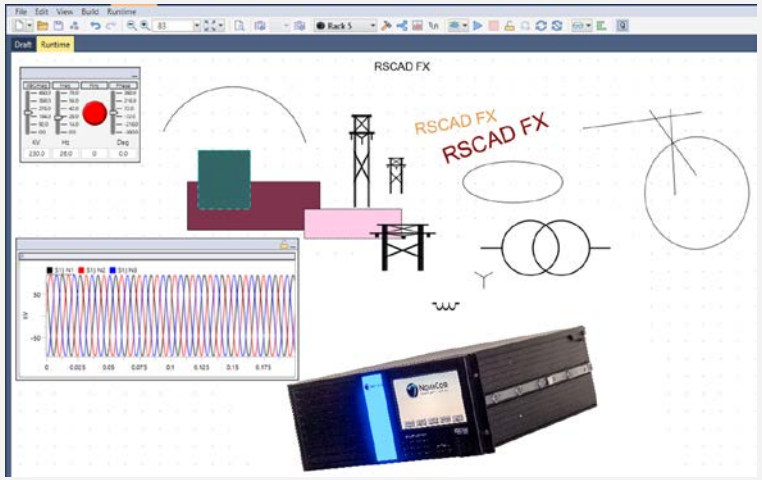
Integrated Text Editor

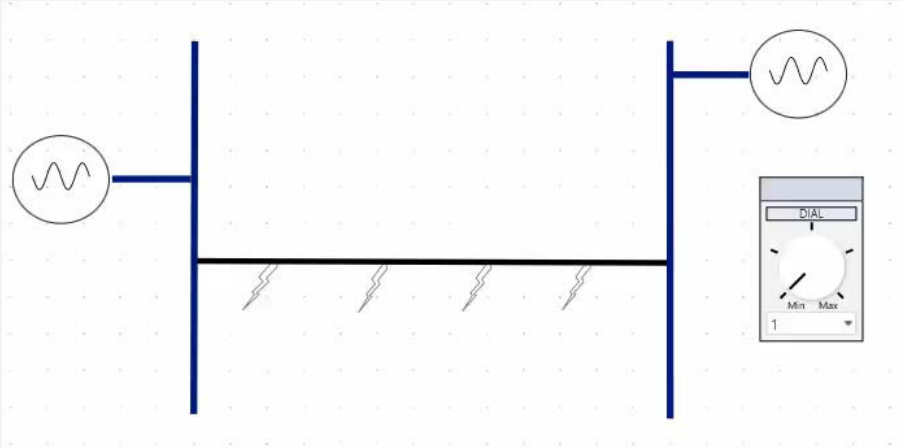


RSCADFX2.0

Enhanced RunTime Graphics

- More polished shapes for increased flexibility
- Added the ability to add multiple resizable images so that it is easier to make HMIs representing the simulation.
- Improved automation graphics



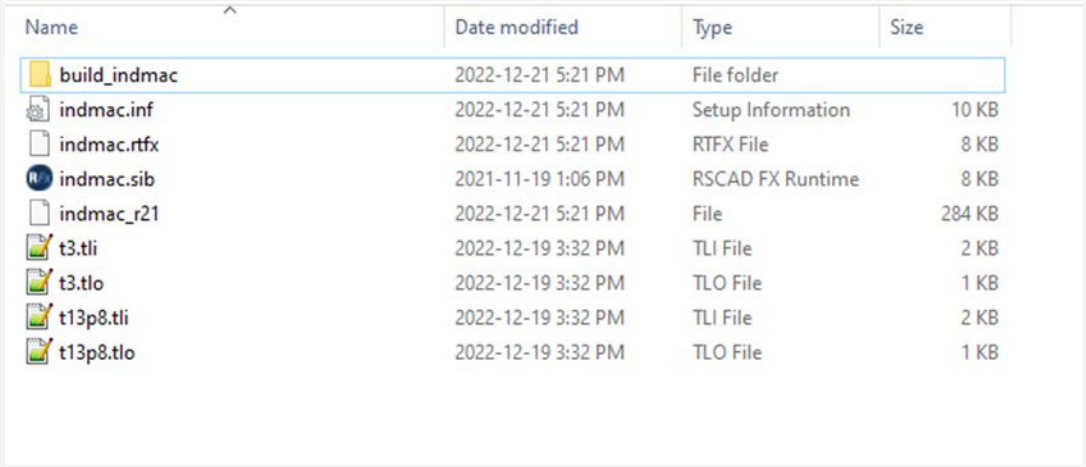


RSCADFX2.0

Integrated Case File – RTFX File

- RTFX case file
  - DFX – Draft case
  - RTX – Runtime
  - *other connecting files*
- Build folder
  - Contains files created during a draft compile
- All other files (Cable, Tline, etc.)
  - Linked to RTFX case file by being in the same directory
- When the user converts a .sib file to .rtx, the conversion will put it inside the RTFX zip file

Case Directory

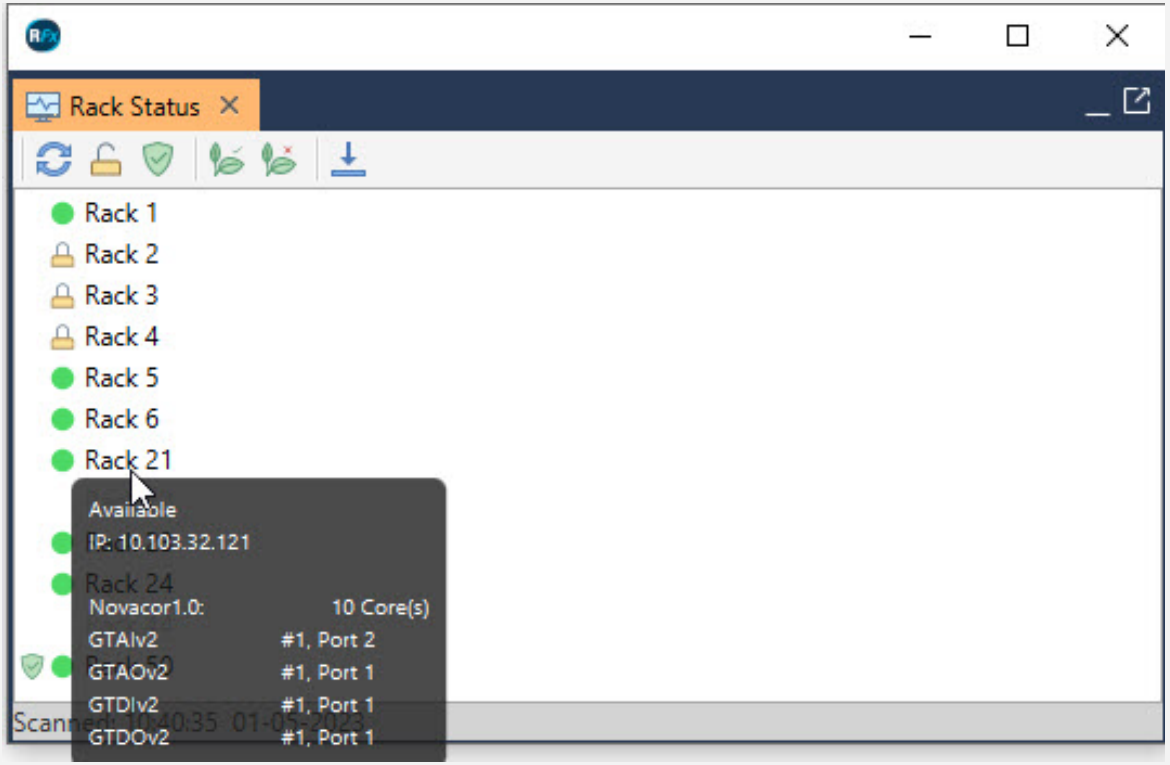


Name	Date modified	Type	Size
build_indmac	2022-12-21 5:21 PM	File folder	
indmac.inf	2022-12-21 5:21 PM	Setup Information	10 KB
indmac.rtfx	2022-12-21 5:21 PM	RTFX File	8 KB
indmac.sib	2021-11-19 1:06 PM	RSCAD FX Runtime	8 KB
indmac_r21	2022-12-21 5:21 PM	File	284 KB
t3.tli	2022-12-19 3:32 PM	TLI File	2 KB
t3.tlo	2022-12-19 3:32 PM	TLO File	1 KB
t13p8.tli	2022-12-19 3:32 PM	TLI File	2 KB
t13p8.tlo	2022-12-19 3:32 PM	TLO File	1 KB

RSCADFX2.0

Rack Status Utility Tab

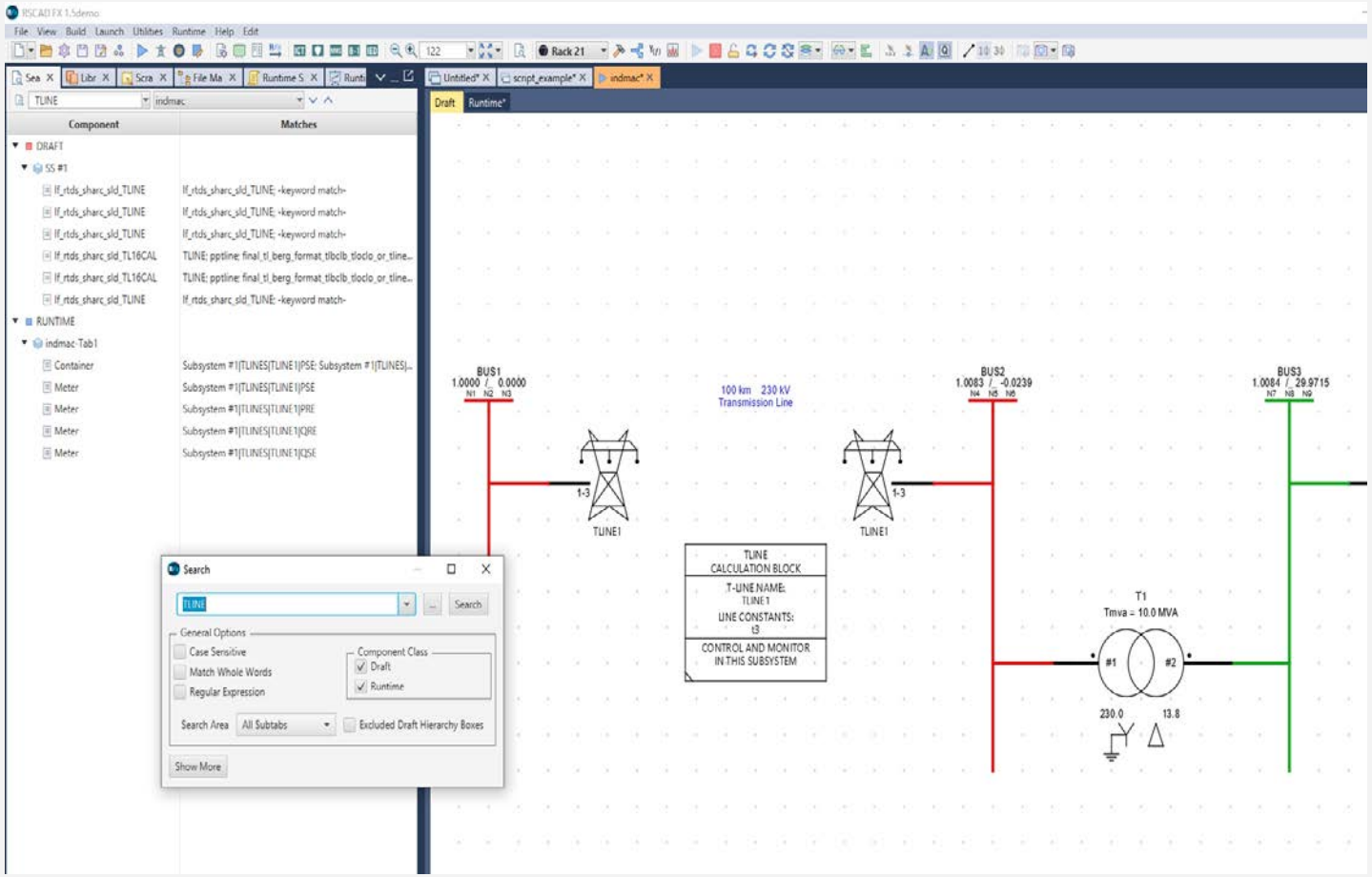
- Provides easy access to available hardware configurations
- Displays current status, IP address, connected periphial cards
- Rack Security
- Retrieve Rack Logs



RSCADFX2.0

Search Sidebar

- Moved existing functionality into a utility tab
- Required in order to consolidate Runtime and Draft searches
- Kept existing Tree view



RSCADFX2.0

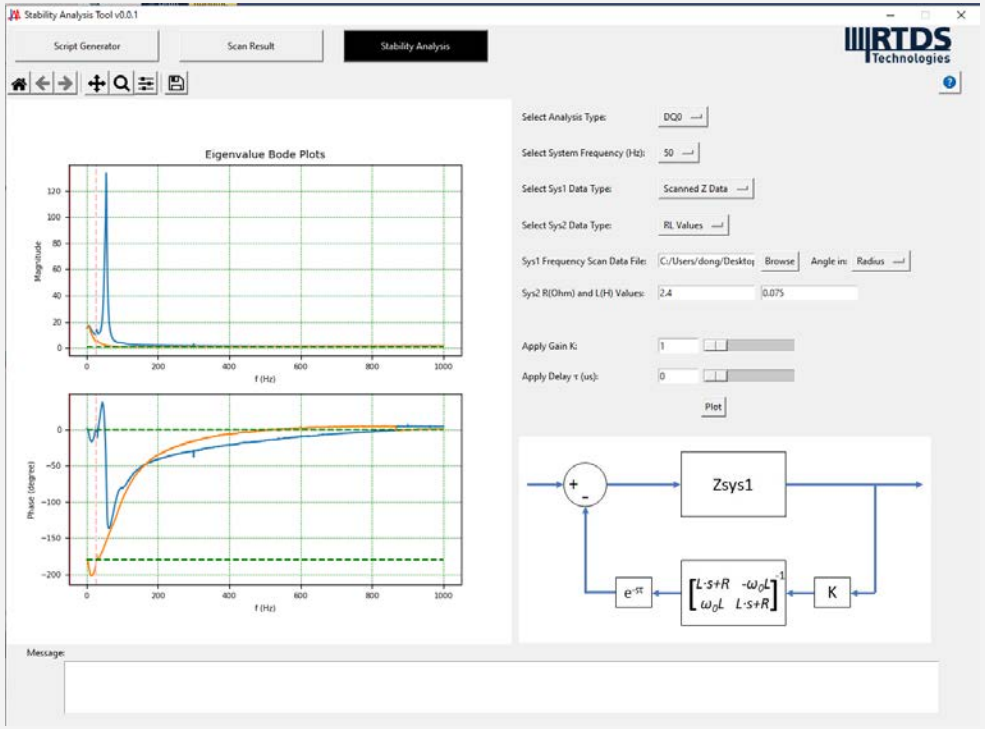
Other Notable Features in RuntimeFX

- Added Undo/Redo Functionality
- Tighter integration of Draft and Runtime so that changes in one does not break the other (moving signals between Subsystems or between Mainstep-Substep)
- Improved Relay Characteristics
- Added support for saving plot data in COMTRADE ver. 2013 format.

RUNTIME FX

Looking Forward

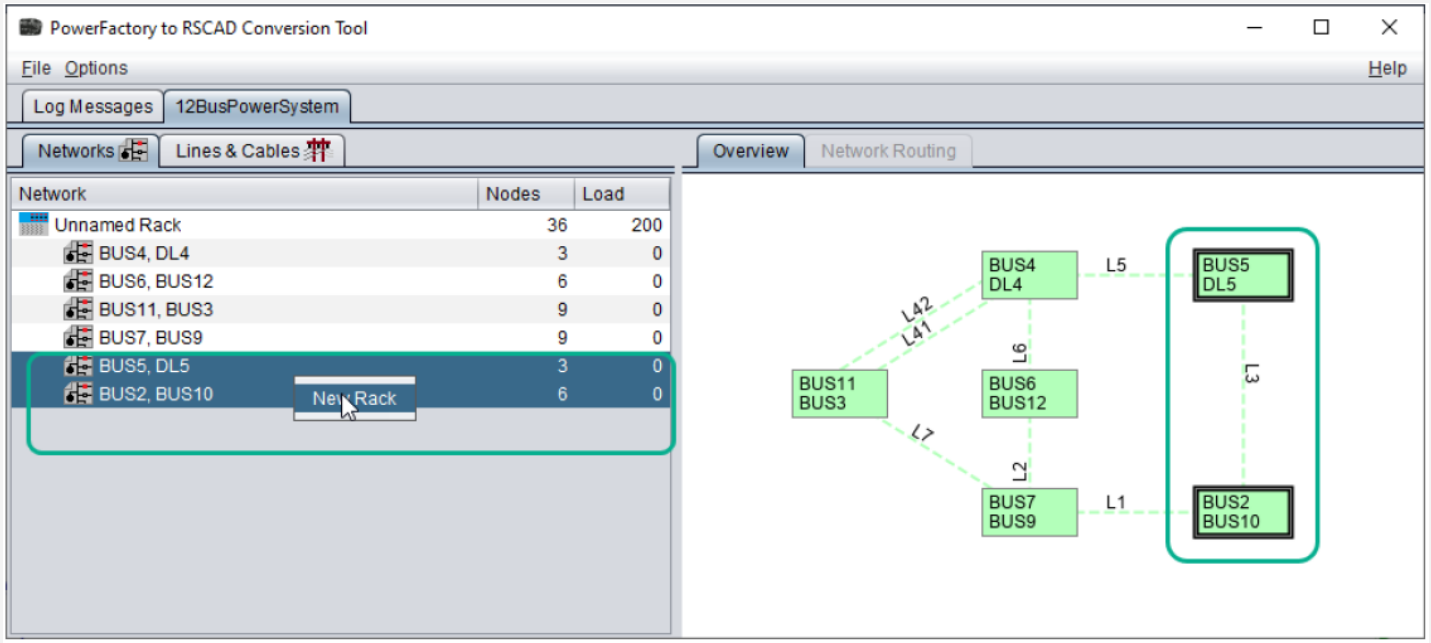
- Stability Analysis Tool



- Python Integration for writing scripts
- MultiPlot functionality built-in RunTime
- Tline/Cable Applications updated

POWERFACTORYTO RSCAD CONVERSION

- PowerFactory
  - Power system analysis tool
  - Can perform Loadflow, Short-circuit Analysis, TSA, and EMT simulation.
- PowerFactory cases exported as DGS ASCII files can be converted to RSCAD .rtfx files.
- Currently supports only 3 phase components
- Conversion tool allows users to reorganize the case before launching RSCAD FX



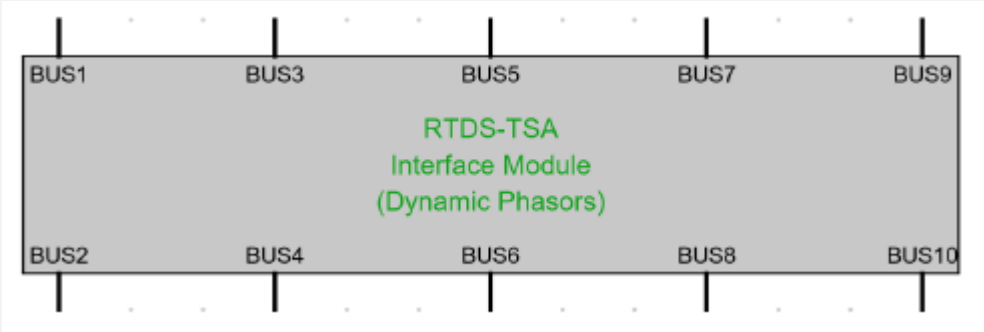
TRANSIENT STABILITY ANALYSIS (TSA) MODULE

TSA

- To determine the stability of a power system in phasor domain.
- Simulate much larger networks than EMT

- TSA module in RTDS intended to:
  - Represent a portion of a larger power system (up to ~2000 buses) using an equivalent
  - Interface TSA module with EMT simulation (co-simulation/ hybrid simulation)
  - Standalone TSA simulation also supported.
  - Reduce required number of cores (TSA module requires one core).

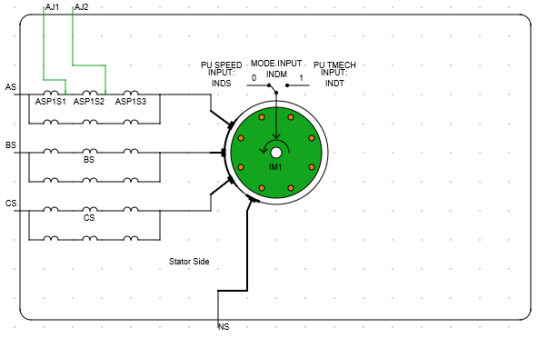
TRANSIENT STABILITY ANALYSIS (TSA) MODULE



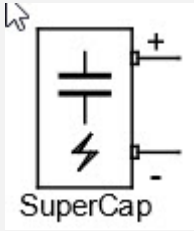
- PSS/E data files are required as input
- A GUI named “RTDS-TSA Setup” is available to initialize the TSA in RTDS.
- To interface the TSA module to an EMT model, an interface module based on Dynamic Phasors (DP) is available in the RSCAD library.
- A maximum number of EMT-DP interface buses allowed is 10, and the maximum number of DP-TSA interface buses permitted is 15.
- Large power systems can be partitioned and simulated using multiple TSA units. Up to four TSA units can be connected using the DP interface component.

COMPONENT MODELS

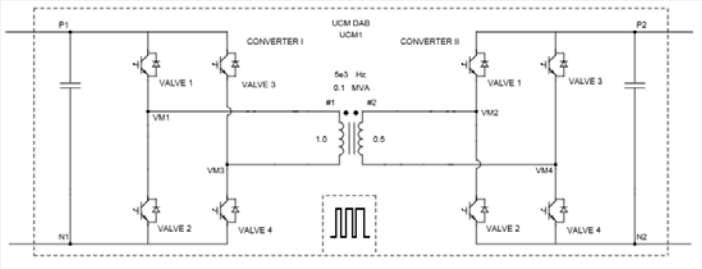
- Faulted Induction Machine



- Super Capacitor Bank
  - Parallel/series capacitor units
  - V-Q characteristic



- Dual Active Bridge (DAB) UCM with scaling



- UMEC transformer models with hysteresis

COMPONENT MODELS

Looking Forward

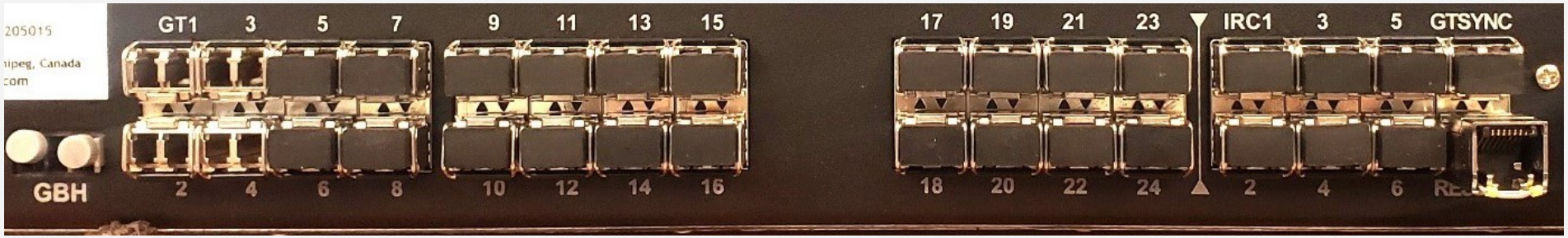
- RSCADFX2.1
  - MMC with embedded battery
  - PMSM light
  - Family of Hydrogen Models
    - Fuel cell, Electrolyzer , Storage tank, Compressor
    - Example Cases

GTSOC– BLACK BOX CONTROL INTEGRATION

- Features a powerful FPGA board with multi -processor system -on-a-chip technology
- GTSOC used for black box control
- Vendor can provide control model to customer while protecting IP
- Connects to NovaCor through fibre cable(s)
- DOTA component added to the Draft circuit to provide interface between the NovaCor and the GTSOC
- Special tool provided by RTDS required to compile the .a library file and generate firmware.

NOVACOR ETHERNET PORT

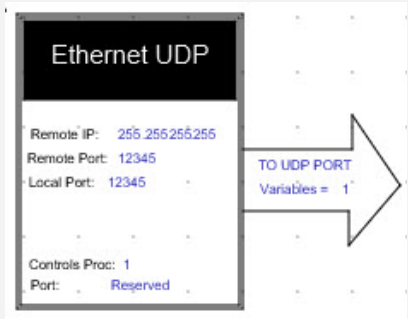
- Reserved port 32 on chassis now be used as an ethernet port.

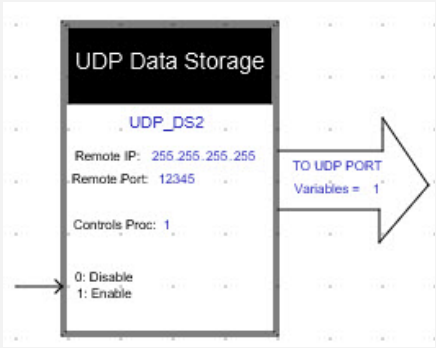


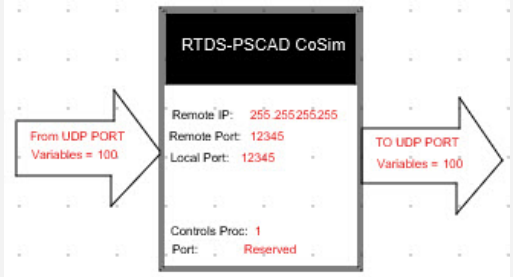
- For Port 32 supported Ethernet transceivers are
  - Avago ABCU-5731R - tri speed 10/100/1000
  - Avago ABCU-5730R - 1000baseX (1G speed only)
  - Finisar FCLF-8521 - 1000BaseX (1G speed only)

NOVACOR ETHERNET PORT

- Three applications currently supported.
  - Ethernet UDP
  - General component send out UDP packets
  - Data Logger
  - Hours of simulation data written to a text file
  - RTDS-PSCAD CoSim
  - Non real -time control interface to PSCAD dll







QUESTIONS?

rtds.support@ametek.com