WHAT IS NEW IN PRSIM V1.1.0

Since PRSIM v1.0.0

Date: July 12, 2023

To display "What's New" documents for other PSCAD versions and other MHI products, please refer here.

The following is a list of bugs that discovered and fixed since the PRSIM v1.0.0 release.

Application Fixes

1. User can now select and launch alternate PSCAD sub-versions via *Application Options* (provided they have been installed). (#8690)
   - **PSCAD 46**: 4.6.0, 4.6.1, 4.6.2, 4.6.3
   - **PSCAD 50**: 5.0.0, 5.0.1, 5.0.2, 5.1.0, Beta, Free
2. Fully expanded networks will now be indicated by greyed out expand buttons on the ribbon. (#8639)
3. Added graphic support for window dpi displays other than 100%. (#8728, #8990)
4. Application no longer crashes when user resizes the canvas. (#8646)
5. Fixed crash when creating subpages from a large selections of components. (#9340)
6. Transmission Line Shunt Admittance components are no longer locked to their initial locations. Bus sort can now place them in non-overlapping locations. (#9207, #9334)
7. Branch sorting on buses and subpages is no longer activated on mouse up. User can access menu option to sort the branch connections or use the S-key when the bus or subpage is in focus. (#9333)
8. Updated PRSIM will use latest PSCAD master libraries. (#8545)
   - **PSCAD 50** master library 5.0.1
   - **PSCAD 46** master library 4.6.3

Script Editor Fixes

1. Spaces in script generated branch names have been removed to make them PNI compatible. (#9215)

   E.g. Name = TL_$I_$J_$CKT

2. The Select-Model script for Bergeron transmission lines has been modified to consider zero sequence data when the EXPORT_SEQ option is enabled. (#8769)
3. Added ability to navigate to script warnings and errors from output and message windows. (#9266)
4. The script parser has been updated to allow temporary (local) variables in #IF statements. (#8258)

   Example:

```
REAL t1 = sqrt ($X * $B) / (2 * PI * $BASFRQ)
#IF (t1 <= $TIMESTEP * 1e-6)
  ...
#ENDIF
```

Import Fixes

1. Supported PowerFactory formats now include the following editions. (#8699)
   - PowerFactory 2019
   - PowerFactory 2020
   - PowerFactory 2021
2. Imported PowerFactory system settings are now stored in the project for future reference. PowerFactory and PSSE system settings will both be displayed in the output window when the case is first loaded or an import is initiated. (#9081)
3. RXB values from PowerFactory are now imported in ohms when possible. (#8834)
4. Import process can now detect and remove Unicode characters which are not recognized and problematic for PRSIM, NETEQ, and EMTDC. (#9082)
5. Added support to re-initialize PowerFactory cases. Non-integer FIDs are now converted to integers using a fixed hash function. This will ensure the FID strings will convert to the same integer id in PRSIM. (#9341, #9297)
6. PowerFactory options have been added to allow user to import sites into subpages or substations into subpages or no subpages where no subpages will be created. (#9263)
7. PowerFactory ElmBranch elements with multiple transmission line segments now have an option to reduce the multiple lines to a single line. (#9265)
8. Added support to import the PSSE 34 and PSSE 35 raw text formats. (#8707, #8706)
9. Added new schemas for reading PSSE 34 and PSSE 35 sequence files. (#9304)
10. The PSSE raw formats 29, 30 and 31 will remain enabled however they will no longer be maintained moving forward. (#9079)
11. When you import into an existing network, PRSIM will now remove invalid network objects. A bus or branch can become invalid if it is no longer present in the new network. If this happens

the old network object and schematic component will be removed. If the new network has data objects that are not present in the existing project, they will be added to the existing network. (#9295)

12. A PSSE 33 raw file is now auto-generated for the PSSE and PowerFactory formats. A v33 raw file is a requirement for the NETEQ engine. (#8700)
13. When importing 3-Winding transformers from PSSE, the parameter CZ (impedance i/o code) specifies the format of R/X in the record. CZ=3 indicates it is represented as Load Loss (W) and total impedance |Z| (pu) per unitized using the winding voltage and winding MVA base. (#9031)
14. Fixed problem reading PSSE LOC file coordinates (new format supports GEOPHYSICAL and CARTESIAN). (#9229)

Dynamics Fixes

1. Fixed crash importing large DYR files. The dynamic table window has been replaced with a simple text window that is faster to load. (#8752)
2. ICON parameters (M0, M1, M2…) now display correct values in the dynamic table. (#9010)
3. WEHGOV and PIDGOV dynamic model initialization have been fixed. (#9178)
4. Added more dynamic models. (#9139)
5. Dynamics pane now displays bus names (#9688)
6. The PowerFactory importer task will now check for standard BlkDef names when importing dynamic models. (#9679)

PSSE Dynamic Models

MODEL	EXCITERS
AC7B	IEEE 421.5 2005 AC7B excitation system
AC8B	IEEE 421.5 2005 AC8B excitation system
BBSEX1	Brown-Boveri static excitation system model
BUDCZT	Czech proportional/integral excitation system model
DC3A	IEEE 421.5 2005 DC3A excitation system
DC4B	IEEE 421.5 2005 DC4B excitation system
EMAC1T	AEP Rockport excitation system model
ESAC1A	1992 IEEE type AC1A excitation system model
ESAC2A	1992 IEEE type AC2A excitation system model
ESAC3A	1992 IEEE type AC3A excitation system model
ESAC4A	1992 IEEE type AC4A excitation system
ESAC5A	1992 IEEE type AC5A excitation system model
ESAC6A	1992 IEEE type AC6A excitation system
ESAC8B	Basler DECS model
ESDC1A	1992 IEEE type DC1A excitation system model

MODEL	EXCITERS
ESDC2A	1992 IEEE type DC2A excitation system
ESST1A	1992 IEEE type ST1A excitation system model
ESST2A	1992 IEEE type ST2A excitation system model
ESST3A	1992 IEEE type ST3A excitation system model
ESST4B	1992 IEEE type ST4B excitation system model
ESURRY	Modified IEEE Type AC1A excitation model
EX2000	EX2000 Excitation System
EXAC1	1981 IEEE type AC1 excitation system model
EXAC2	1981 IEEE type AC2 excitation system model
EXAC4	1981 IEEE type AC4 excitation system model
EXAC1A	Modified type AC1 excitation system model
EXBAS	Basler static voltage regulator feeding dc or ac rotating exciter model
EXCAVR4	1992 IEEE type EXCAVR4 excitation system model
EXDC2	1981 IEEE type DC2 excitation system model
EXELI	Static PI transformer fed excitation system model
EXNI	Bus or solid fed SCR bridge excitation system model type NI (NVE)
EXPIC1	Proportional/integral excitation system model
EXST1	1981 IEEE type ST1 excitation system model
EXST2	1981 IEEE type ST2 excitation system model
EXST3	1981 IEEE type ST3 excitation system model
IEEET1	1968 IEEE type 1 excitation system
IEEET2	1968 IEEE type 2 excitation system
IEEET3	1968 IEEE type 3 excitation system
IEEET4	1968 IEEE type 4 excitation system
IEEET5	Modified 1968 IEEE type 4 excitation system model
IEEET5A	Modified 1968 IEEE type 4 excitation system model
IEEEX1	1979 IEEE type 1 excitation system model and 1981 IEEE type DC1 model
IEEEX2	1979 IEEE type 2 excitation system model and 1981 IEEE type DC1 model
IEEEX2A	1979 IEEE type 2A excitation system model
IEEEX3	1979 IEEE type 3 excitation system model and 1981 IEEE type DC1 model
IVOEX	IVO excitation system model
OEX3T	Ontario Hydro IEEE Type ST1 excitation system with semi-continuous and acting terminal voltage limiter
SCRX	Bus or solid fed SCR bridge excitation system model
SEXS	Simplified excitation system model
ST5B	IEEE 421.5 2005 ST5B excitation system
ST6B	IEEE 421.5 2005 ST6B excitation system
ST7B	IEEE 421.5 2005 ST7B excitation system

MODEL	GOVERNORS
BBGOV1	Brown-Boveri turbine-governor model
DEGOV	Woodward diesel governor model
GAST	Gas turbine-governor model
GAST2A	Gas turbine-governor model
GAST2ADU	Gas turbine model with speed deadband
GASTWD	Gas turbine-governor model
GASTWDDU	Woodward gas turbine-governor model with speed deadband
GGOV1	GE general purpose turbine-governor model
GGOV1DU	GE general governor/turbine model with speed deadband
HYGOV	Hydro turbine-governor model
HYGOVDU	Hydro turbine-governor model with speed deadband
HYGOV2	Hydro turbine-governor model
HYGOV2DU	Hydro turbine-governor model with speed deadband
HYGOVRU	Fourth order lead-lag hydro turbine governor model
IEEEG1	1981 IEEE type 1 turbine-governor model
IEEEG1SDU	IEEE type 1 speed-governing model with speed deadband
IEEEG2	1981 IEEE type 2 turbine-governor model
IEEEG3	1981 IEEE type 3 turbine-governor model
IEEEG3SDU	IEEE type 3 speed-governing model with speed deadband
IEEESGO	1973 IEEE standard turbine-governor model
IEEESGODU	IEEE standard model with speed deadband
IVOGO	IVO turbine-governor model
PIDGOV	Hydro turbine and governor model
PIDGOVDU	Hydro turbine-governor model with speed deadband
TGOV1	Steam turbine-governor model
TGOV1DU	Steam turbine-governor model with speed deadband
TGOV2	Steam turbine-governor model with fast valving
TGOV3	Modified IEEE type 1 turbine-governor model with fast valving
TGOV3DU	Modified IEEE type 1 speed-governing model with fast valving with speed deadband
TURCZT	Czech hydro or steam turbine-governor model
TWDM1T	Tail water depression hydro governor model 1
URCSCT	Combined cycle, single shaft turbine-governor model
WESGOV	Westinghouse digital governor for gas turbine model
WESGOVDU	Westinghouse digital governor for gas turbine model with speed deadband
WEHGOV	Woodward electronic hydro governor model
WPIDHY	Woodward PID hydro governor model
WPIDHYDU	Woodward PID hydro governor model with speed deadband
WSHYDD	WECC double derivative hydro governor model
WSHYGP	WECC GP hydro governor plus turbine model
WSIEG1	WECC modified 1981 IEEE type 1 turbine-governor model

MODEL	STABILIZERS
IEEEST	1981 IEEE power system stabilizer
PSS1A	IEEE Std. 421.5-2005 PSS1A Single-Input Stabilizer model
PSS2A	1992 IEEE type PSS2A dual-input signal stabilizer model
PSS2B	IEEE 421.5 2005 PSS2B IEEE dual-input stabilizer model
PSS3B	IEEE Std. 421.5 2005 PSS3B IEEE dual-input stabilizer

PowerFactory Dynamic Models

MODEL	EXCITERS
AC1C	IEEE 421.5 Excitation System Model
AC7B	IEEE 421.5 2005 AC7B excitation system
AC8B	IEEE 421.5 2005 AC8B excitation system
BBSEX1	Brown-Boveri static excitation system model
BUDCZT	Czech proportional/integral excitation system model
CELIN	ELIN brushless excitation system model
DC3A	IEEE 421.5 2005 DC3A excitation system
EMAC1T	AEP Rockport excitation system model
ESAC1A	1992 IEEE type AC1A excitation system model
ESAC2A	1992 IEEE type AC2A excitation system model
ESAC3A	1992 IEEE type AC3A excitation system model
ESAC4A	1992 IEEE type AC4A excitation system model
ESAC5A	1992 IEEE type AC5A excitation system model
ESAC6A	1992 IEEE type AC6A excitation system model
ESAC8B	Basler DECS model
ESDC1A	1992 IEEE type DC1A excitation system model
ESDC2A	1992 IEEE type DC2A excitation system model
ESST1A	1992 IEEE type ST1A excitation system model
ESST2A	1992 IEEE type ST2A excitation system model
ESST3A	1992 IEEE type ST3A excitation system model
ESST4B	IEEE type ST4B potential or compounded source-controlled rectifier exciter
ESURRY	Modified IEEE Type AC1A excitation model
EX2000	EX2000 Excitation System
EXAC1	1981 IEEE type AC1 excitation system model
EXAC1A	Modified type AC1 excitation system model
EXAC2	1981 IEEE type AC2 excitation system model
EXAC3	1981 IEEE type AC3 excitation system model
EXAC4	1981 IEEE type AC4 excitation system model
EXBAS	Basler static voltage regulator feeding dc or ac rotating exciter model
EXDC2	1981 IEEE type DC2 excitation system model
EXELI	Static PI transformer fed excitation system model

MODEL	EXCITERS
EXNEBB	Bus or solid fed SCR bridge excitation system model type NEBB (NVE)
EXNI	Bus or solid fed SCR bridge excitation system model type NI (NVE)
EXPIC1	Proportional/integral excitation system model
EXST1	1981 IEEE type ST1 excitation system model
EXST2	1981 IEEE type ST2 excitation system model
EXST2A	Modified 1981 IEEE type ST2 excitation system model
EXST3	1981 IEEE type ST3 excitation system model
IEEET1	1968 IEEE type 1 excitation system model
IEEET2	1968 IEEE type 2 excitation system model
IEEET3	1968 IEEE type 3 excitation system model
IEEET4	1968 IEEE type 4 excitation system model
IEEET5	Modified 1968 IEEE type 4 excitation system model
IEEEX1	1979 IEEE type 1 excitation system model and 1981 IEEE type DC1 model
IEEEX2	1979 IEEE type 2 excitation system model
IEEEX3	1979 IEEE type 3 excitation system model
IEEEX4	1979 IEEE type 4 excitation system, 1981 IEEE type DC3 and 1992 IEEE type DC3A models
IEEX2A	1979 IEEE type 2A excitation system model
IVOEX	IVO excitation system model
OEX12T	Ontario Hydro IEEE Type ST1 excitation system with continuous and bang-bang terminal voltage limiter
OEX3T	Ontario Hydro IEEE Type ST1 excitation system with semi-continuous and acting terminal voltage limiter
REXSY1	General purpose rotating excitation system model
REXSYS	General purpose rotating excitation system model
SCRX	Bus or solid fed SCR bridge excitation system model
ST5B	IEEE 421.5 2005 ST5B excitation system
ST5C	IEEE 421.5 excitation system model
ST6B	IEEE 421.5 2005 ST6B excitation system
ST7B	IEEE 421.5 2005 ST7B excitation system
URHIDT	High dam excitation system model
URST5T	IEEE proposed type ST5B excitation system

MODEL	GOVERNORS
BBGOV1	Brown-Boveri turbine-governor model
CRCMGV	Cross compound turbine-governor model
DEGOV	Woodward diesel governor model
DEGOV1	Woodward diesel governor model
GAST	Gas turbine-governor model
GASTWD	Gas turbine-governor model
GAST2A	Gas turbine-governor model
GGOV1	GE general purpose turbine-governor model
HYGOV	Hydro turbine-governor model

HYGOV2	Hydro turbine-governor model
IEEEG1	1981 IEEE type 1 turbine-governor model
IEEEG2	1981 IEEE type 2 turbine-governor model
IEEEG3	1981 IEEE type 3 turbine-governor model
IEESGO	1973 IEEE standard turbine-governor model
IVOGO	IVO turbine-governor model
PIDGOV	Hydro turbine and governor model
STEAM0	Hydro turbine and governor model
TGOV1	Steam turbine-governor model
TGOV2	Steam turbine-governor model with fast valving
TGOV3	Modified IEEE type 1 turbine-governor model with fast valving
TGOV4	Modified IEEE type 1 speed governing model with PLU and EVA
TGOV5	Modified IEEE type 1 turbine-governor model with boiler controls
TURCZT	Czech hydro or steam turbine-governor model
TWDM1T	Tail water depression hydro governor model 1
URGS3T	WECC gas turbine governor model
WESGOV	Westinghouse digital governor for gas turbine
WPIDHY	Woodward PID hydro governor model
WSHYGP	WECC GP hydro governor plus turbine model
WSIEG1	WECC modified 1981 IEEE type 1 turbine-governor model

MODEL	STABILIZERS
PSS1A	IEEE Std. 421.5-2005 PSS1A Single-Input Stabilizer model
PSS2A	1992 IEEE type PSS2A dual-input signal stabilizer model
PSS2B	IEEE 421.5 2005 PSS2B IEEE dual-input stabilizer model

NETEQ Fixes

1. Powerflows in NETEQ transformer impedance branches have been fixed. The R and X values were set correctly however the X1 value set to 0.001 pu needed to be reduced. (#9013)
2. Bus expansion with induction machines no longer crashes the application. (#9138)
3. NETEQ error and warning messages are now propagated to the PSCAD target project. Previously, the messages were reported in the PRSIM source project and not in the PSCAD project. (#9090)
4. NETEQ module will now use the largest canvas size when exporting to PSCAD V5. (#8998)
5. Application has been updated to use NETEQ version 2.0. This version was built with the Intel Fortran compiler for oneAPI. The build is 64bit with optimization 3 enabled. (#8890)

Exporting to PSCAD Fixes

1. System parameters are now saved to a log file when exporting a network to PSCAD. (#8062)
2. Voltage Source base MVA parameter is now calculated correctly for PowerFactory cases. (#9217)
3. The PowerFactory option to represent more than one parallel transformer in a single component is now handled. The exported PowerFactory parameters (ntnum, nt3nm) take this into account when calculating transformer MVA. (#9327)
4. PowerFactory common impedance (Zpu) elements now have script based option to select between zero impedance line, pi-section, and a transformer based on impedance and voltage difference between the buses. (#9042)
5. Large network equivalent modules can now be supported using an automated layout mechanism that will select the wireless (most compact) layout if the grid layout does not fit on the canvas. (#9133)
6. PSSE Transformer G,B magnetizing admittances are now imported correctly. Network transformer can now be represented as a fixed branch or a transformer (may not have matching Q output value). (#9140)
7. Added new 3 Phase 3-winding Transformer model (PRSIM.xfmr_3p3w3) based on the classical transformer model that supports all vector groups, has shunt elements, internal grounds, internal taps, numerical stability suppression branches and imports magnetizing quantities. (#9141)
8. PSSE switched shunt selection (capacitive and reactive) have been fixed to produce correct load flow. (#9212)
9. Disabled transformer and transmission line components will now appear disabled in the exported PSCAD case. (#9020)
10. Disabled layers are no longer added to PSCAD V5 cases since these components have an enable/disable attribute. (#8701)
11. PowerFactory ElmZpu elements with differing voltages at each end will be converted as a transformer. Additionally, a warning will be issued in the case that the reactance X of the element is negative. (#8746)
12. All required dependant definitions are now be copied into the test project. Failure to do this resulted in transmission lines not working properly. (#9064)
13. User can now display component conversion results using the project menu “Show Script Computations”. (#8935)
14. Fixed boundary bus inside subpage problem. The export process will create additional port connections for the boundary buses. (#9276)
15. Mutually coupled transmission line components now wired correctly when project overlapping and shortest path options are disabled. (#9332)

16. Export definitions file added for PRSIM v1.1.0:
    - DGS Export Definitions v110.dz
    - DGS Export Definitions v110.pfd
17. Custom Models can now reside in one or more user libraries. This will allow the user to organize their data more easily as they see fit. (#9360)
18. Buses are now disabled if the PRSIM Busbar was isolated or disabled. (#9475)
19. DC Lines are now disabled if the MDC of the line is blocked. (#9529)
20. Dependent reference libraries are now loaded when you launch a PSCAD case from PRSIM. (#9426)
21. The default transformer model has ben replaced with the xfrm-3p3w model. (#9408)