WHAT IS NEW IN PSCAD/EMTDC V5.0.1

Since PSCAD/EMTDC v5.0.0

Date: October 29, 2021

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

PSCAD

### Functionality Deficiency Fixes

1. Conditional Statements in Flyby Script Segments (#1546)

   Conditional statement directives (i.e. #IF/#ELSE/#ENDIF) are now supported in the component definition *FlyBy* script segment.

2. Build Messages Saved to File (#5112)

   The contents of the Build Messages pane may now be saved directly to a file. This is convenient for users who are contacting support with project build-related queries.
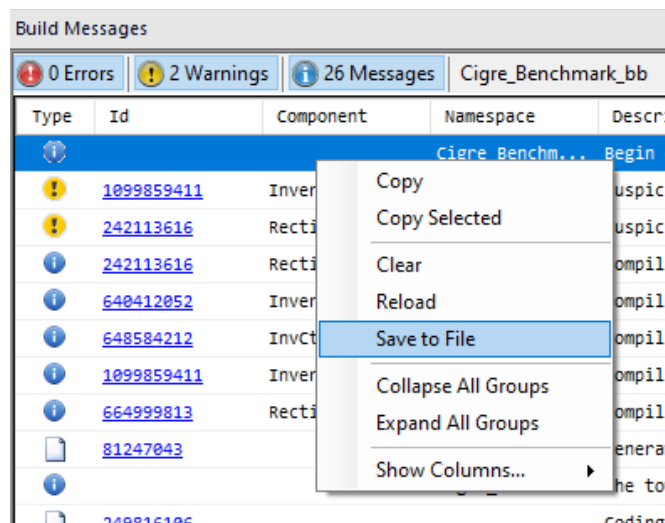
3. Status Bar Update (#8900)

    If a workspace containing multiple projects is loaded, a progress bar for the entire workspace load is now displayed in the status bar, in addition to progress bars for individual projects.

4. Python Scripting Improvements (#8755, #8879)

    Python scripting-related improvements are included.

    -   Python script record now properly records X/O marker movements.
    -   Multiple selected components can now be identified and enumerated from a Python script.

Bug Fixes

The following is a list of bugs that were discovered and fixed since the latest, previously released product.

1. Fixed all problems related to inconsistent font sizes in various viewing panes and miscellaneous frame sizing issues, resulting when increasing the Windows screen resolution (#7024).

2. Layers are now properly restored upon undo/redo actions (#8442).

3. Divider component parameters are now properly processed (specifically 3D/2D view), so that the appearance of the divider graphics no longer change following the parameter dialog being accessed (#8570).

4. When hovering over a marker label in the bottom right of a graph frame, the tooltip that appears no longer displays the title of the graph frame, but the marker's value with greater precision (#8279).

5. PSCAD will now handle illegal paste operations better: Either the Paste menu option will appear disabled, or a notification message will popup indicating the paste is illegal (#8623).

6. A blank tooltip is no longer displayed when hovering over a graph frame with no title (#8622).

7. The Topology Viewer no longer displays garbled, Unicode characters (#8262).

8. All curve properties are now properly saved upon project save (#8431).

9. When creating a new global substitution, the name field is automatically triggered for editing (#8630).

10. Current workspace name and path can now be modified via python script (#8654).

11. Sequence numbers no longer appear on invisible components when show sequence numbers is enabled (#8580).

12. Mathematical function NINT, in the component definition script, now works correctly for negative numbers (#8642).

13. **PSCAD no longer allocates memory for disabled PGBs (#8693).**

14. Only writable parameters are now recorded when recording a python script (#8697).

15. **PSCAD no longer crashes if a case is run, a component is cut from the canvas, then pasted back into the exact same place, then run again (#8712).**

16. **Fixed an issue with mutually coupled line verification, where PSCAD would get stuck in an infinite loop and hang (#8729).**

17. PSCAD V5 now supports Unicode characters in script segments, and will output to the Fortran files properly (#8724).

18. **Blackbox now supports components possessing a MANA (Modified, Augmented Nodal Analysis) script segment (#8527).**

19. NMANA and MBRANCHES tags are no longer written to the map file if Modified, Augmented Nodal Analysis is disabled for the project (#7961).

20. Element index is now properly incremented in the generated fortran code for MANA components set to 3-phase (#8761).

21. **Accessing the Communications pane following a PNI simulation, no longer causes a crash (#8771).**

22. Very large component script segments are now handled more efficiently, avoiding long hang periods (#8767).

23. **If a co-simulation has been running for a long time (several minutes), it was possible for it to remain locked in a perpetual running state. This issue has been fixed (#8780).**

24. Auto-generated Fortran code is now properly formatted in instances where there are import tags that are directly connected to export tags (#8766).

25. **EMTDC binary output (*.psout) files may now be viewed properly as a previous run, if they were generated by a case created in PSCAD V5 (#8786).**

26. **PSCAD no longer crashes upon removal *.psout file from the resources branch when it is currently being viewed as a previous run (#8788).**

27. **Graphs are now properly populated with curves when printing (#8790).**

28. Fixed text display issue in directly connected transmission line wires, where a line name with multiple 'I' characters would result in a truncated display (#8789).

29. **Fixed a crash that could occur when using a Python copy command of a component not currently in view (#8715).**

30. Text display settings in the script and script output panes now function properly (#8807).

31. Updated print interface display (#8793).

32. **Fixed crash related to multiple modules possessing the same name (#8809).**

33. Forcing a signal name to be the same as an auto named signal (ex. NT_1), no longer causes a signal conflict (#8758).

34. PSCAD V5 now properly imports v4.2.1 to v4.4 projects that contain global substitutions (#8705).

35. **If an animated graphic is invalid, then its failure during animation will no longer cause the component to fail to draw entirely, and display unnecessary error dialog messages (#8851).**

36. **PSCAD will no longer become unstable and crash if a module definition is deleted from a library project, where an instance of that module is part of a running case project (#8852).**

37. **PSCAD will no longer crash or experience unexpected behaviour if a co-simulation component is deleted or disabled between runs (#8815).**

38. Fixed positioning and size of switch component when viewed on a high DPI monitor (#8872).

39. The Python scripting library can now both read and write the table type parameter (#8875).

40. Graph x-axis property changes now properly stick and stay when modified manually in the respective property dialog (#8877).

41. Graph x-axis min and max properties are no longer force rounded according to the x-axis grid size (#8876).

42. The saved tracing option for simulation tasks no longer resets to its default on reload of the workspace (#8880).

43. When communicating with more than 5 external applications (e.g. linking a case with more than 5 or 6 PSCAD cases via alien ends transmission line interfaces), the content of the 'Inter Application Connection' dialog box now properly displays all of the information (including the case name and IP address) (#8506).

44. **A Ctrl + Shift + Drag operation (i.e. canvas panning) now works properly and does not cause PSCAD to become unstable. Previously the operation was very slow, and could even cause crashing (#8884).**

45. **MANA branch names are now fully supported in the relevant component script segments (#8765).**

46. The Component Parameters pane has been updated to include the new category tree format introduced with the v5.0.0 release (#8717).

47. Python automation no longer stalls for long periods when setting layer states in large projects (#8897).
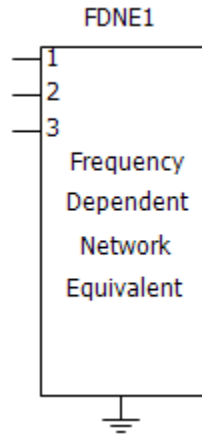
48. The licencing pop-up dialog can now be silenced (as it could in PSCAD X4) by using `'/silence:true'` (#8849).

EMTDC/MASTER LIBRARY

Functionality Deficiency Fixes

1. **Improvements to the FDNE Algorithm (#7794)**

   The FDNE has been improved with more advanced curve-fitting algorithms for better accuracy (FVF, FRVF, FMVF, etc.).

Bug Fixes

1. Improved parameter sanity checks in the synchronous machine component (#8587).

2. Fixed output file formatting of the statistical summary generated by the multiple run component (#7765).

3. The multi-meter component phase measurement is no longer output as 0.0, if the component is set as an ideal voltage source, whose phase is 90, 180 or 270 degrees (#8599).

4. Script computation NINT now works correctly for negative numbers. Both the MOD and MODULO used NINT(x) to convert a real input to integer making the results incorrect (#8643).

5. When the *resistive_load* and *reactive_load* are configured with zero load, the generated warning message now points to the proper component (#8670).

6. Enabling q-axis saturation in the synchronous machine now functions properly (#8775).

7. Integer ports are now properly disabled when the two-input selector component is set to complex signals (#8762).

8. Corrected the #STORAGE directive allocation quantities for several components (#8745).

9. Neither the 3-branch, Y-load nor the 3-branch, delta-load produce an error in evaluating a conditional statement (#8714).

10. Fixed an issue with the COMTRADE recorder component that occurs when signal variation is very small. Scaled numbers written in COMTRADE data files no longer show ****** (#8787).

11. The passive load model no longer slows simulation speed when RLC values change rapidly. The sensitivity to change was relaxed appropriately (#8783).

12. Maximum size of control signal transfer using cables has been increased from 32 to 1024. Improvements previously made to the tline interface have been incorporated into cable model, so that initial values may now be specified (#8781).

13. **When the ambient temperature is set far below the reference cell temperature, the solar cell component no longer produces oscillatory behaviour. The sensitivity was set too high for changing conductivity. (#8698).**

14. **EMTDC no longer crashes if components exist that possess an empty MANA script segment (#8723).**

15. **The coaxial cable component no longer gives an error concerning the 1st semiconducting or insulating layer, when there is only a bare conductor present (#6380).**

16. Fixed an error when the number of conductors equals 1, and *0 sequence data representation?* parameter is not equal to *Enter 0 sequence data* (although disabled), in the Manual Data entry method (#6551).

17. Certain configurations of the YLoad component now produce matching results obtained when compared with an equivalent, detailed circuit. The neutral to ground path was acting as an open branch when *shorted* is selected (#8857).

18. Fixed the sticky limit implementation in the PI controller so that it conforms to the standard. This fix affects exciter models DC4, Ac3, AC7, AC8, AC9, AC11, ST2, ST3, ST4, ST6, ST8 and the PI controller itself (#8893).

PSOUT VIEWER

Bug Fixes

1. **Time domain column is now properly added on export from *Advanced* (*.psout) to *Legacy* (*.out) formatted EMTDC output files (#8741).**

LINE CONSTANTS PROGRAM

Bug Fixes

1. Fixed loss tangent calculation to use entered value in rad/s not Hz (#8751).

2. Increased the file path handling length to 260, which is the maximum allowed by windows (#6135).

3. When the ground wires are eliminated, the shunt conductance is added to eliminate the ill-conditioning of inversion of Y matrix (#5850).

4. When identical cables are defined in pipe model, the core type property is now properly defined for all identical cables, not just the 1st (#6755).

5. Results no longer differ between selecting inner cables identical, or having multiple unique inner cables that are identical in the pipe cable model (#8098).

6. The RXB data display is now expressed in Ohms and Siemens by default, rather than per-unit (#8881).

7. Now the series Z and Y is properly displayed with Manual Data Entry + external ZY. Originally Z and Y are recalculated with modified Bergeron model parameters which is not correct (#8572).