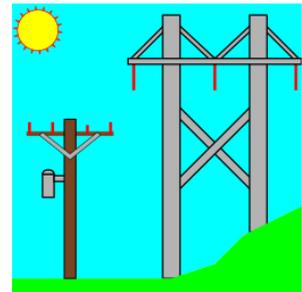


2017 PLS-CADD Advanced Training and User Group Meeting What's New in PLS-POLE™



Summary of changes since June 2015 User Group, covers versions 14.00-14.53

Engineering

- 1) Added "Pinned Face" and "Fixed Face" connection code options for cross arms. In addition to offsetting to the face of a pole, pinned to face works for any azimuth so do not have to specify "Pinned X" or "Pinned Y" anymore.
- 2) Added "Interaction-2xLong" CAN check where longitudinal load and capacity are shared, but transverse and vertical are checked separately.
- 3) Reversed sign of Torsional and Longitudinal Moments in "Overturning Moments For User Input Concentrated Loads" so that clockwise is positive in accordance with our new conventions.
- 4) Introduced the Guy Strain Insulator (GSI), an insulator that may be inserted in Guy elements.
 - a. GSI properties are edited via **Components/Insulators/Guy Strain Properties...** and are stored in your existing Insulator Library (".inl").
 - b. GSI elements are created using **Geometry/Insulators/Guy Strain...** and may be moved using the graphical move command.
 - c. GSI elements have a tension capacity and are checked using the "SF for Guys and Cables".
 - d. GSI elements have a stock number and can contribute material to a model.
 - e. GSI elements insulate a portion of a guy and impact the results produced by **Geometry/Insulators/Find Allowable Suspension Swing Angles...** and Structure Clearances in PLS-CADD.
- 5) Added a "Push Brace" modeling option to Geometry/Wood Poles that makes it easy to model a push pole brace with a pinned connection to the braced pole.
- 6) Added ANSI O5.1-2015 option for checking wood poles. Identical to the 2008 edition except frames are no longer exempted from Appendix A fiber stress reduction.
- 7) **Components/Cross Arms** geometry sub-table now has inputs for horizontal and vertical bolt hole diameter. When input the program will reduce the section modulus and cross section area for beam elements adjacent to the hole. Requires ".xrm" file format change, but conditionally save older version when this feature is not used.
- 8) May now specify bolt holes when creating joints in Geometry/Wood Poles.
- 9) Decreased the minimum ambient temperature that can be used with FRP poles to -60C from -20C at the direction of RS.

- 10) Implemented revised McFarland Cascade strength check for their laminated wood poles. Contact McFarland Cascade for details, but in short it generally results in an increase in transverse moment capacity and a slight decrease in longitudinal moment capacity.
- 11) Improved the steel shaft optimizer to better handle the case where a tube length adjustment for auto-overlap changes the pole length by an amount greater than last tube length.
- 12) Steel Pole lap gap may now be specified for a butt spliced tube in which case it is a "Butt Splice Offset". This value controls whether the inner surfaces or outer surfaces are flush when two tubes with different thickness are butt spliced together.
- 13) Added IxRect, IzRect, SxRect, SzRect, IRnd, SRnd, IPipe, SPipe functions to the built-in calculator for calculating moment of inertia and section modulus for those shapes.
- 14) Added "RSHV" function to built-in calculator that calculates "Ruling Span Horizontal Vertical".
- 15) The PhaseRaiser Wizard is now relative to pole base rather than ground line so it can be used with H-Frames with a side slope.

Standards and Codes

- 1) The Loading Method Parameters dialog has been reworked to give each code a tab that contains a "notes" section that describes what calculations the software automates for that code.
- 2) Added "NESC 2017" wind loading method to **Loads/Vector Loads** and **Loads/Wire Loads**. This is identical to "NESC 2012".
- 3) Added "EN50341-2-9:2015" (UK NNA) wind/ice model in **Loads/Vector Loads** and **Loads/Wire Loads**.
- 4) EN50341-1:2012 users may now input a "ZO override" in the Loading Method Parameters dialog which overrides the terrain roughness otherwise specified by terrain category as per table 4.1 on page 56.
- 5) Added EN50341-2-22 (Poland NNA) option for wind/ice loading method (similar to EN50341-1:2012 except $G_t = 1.05$ for towers).
- 6) Added IS802:2015 option for wind/ice loading method.
- 7) Added AS/NZS 7000:2016 option for wind/ice loading method (effectively identical to the 2010 edition).
- 8) Added IEC 60826:2017 option for wind/ice loading method including Face and Member based options.

Graphics

- 1) Now draw bolt holes on poles and arms when you enter a non-zero bolt hole diameter for an attachment label.
- 2) Now draw bolts on base plates in the geometry view.
- 3) Now draw insulator bells on very short insulators (previously did not draw bells on insulators < 40cm long).
- 4) Draw of bent arms no longer has "gaps" on the outside of the angle between segments.
- 5) Improved wireframe draw of tubular entities by showing their thickness.
- 6) Wireframe draw of steel and FRP poles now shows actual tube geometry including tube thickness, lap gap, splices, etc.
- 7) Added two render modes: "Remove hidden lines" and "Dot hidden Lines" to Structure/View "Set Rotation, Color & Label Options" dialog and inset structure view "Structure Draw Style".
- 8) The Vanishing Point drawing mode from PLS-CADD is now available in PLS-POLE. You may access it by pressing the 'V' key in the geometry view.
- 9) Load vectors are now drawn in purple to easily distinguish them from other numbers (member forces, usages, etc.) that may be printed in the view.
- 10) Deflection usage is now propagated to the view so if it controls the usage of any load case you will see it in the 3D Controls dialog.

Framing

- 1) Increased maximum number of framing elements from 16 to 32 to support complex distribution structures.
- 2) Added entity info command to select a framing element in the Framing Manager.
- 3) Drag'n'Drop of a Framing now has a prompt "Press 'R' to rotate azimuth by 90, current = 0 (deg)" in status bar. Pressing the R key does just that.
- 4) **Geometry/PLS-CADD/Material Options...** now has an "Add parts for poles and framings only" option.
- 5) Added "Include parts from elements in Framings" to **Geometry/PLS-CADD/Material Options...** which when checked does just that. This allows conductor specific parts associated with elements in Framings to resolve automatically.
- 6) Framing Explode performed on framings with stock numbers now asks if you would like that stock number added to the User Entered Material List.
- 7) The Framing Manager now checks and fixes insulator links in Framings prior to merging them into the main model. Some clients have managed to create Framings with corrupt insulator links and this fixes them.
- 8) The Framing Manager "Table" button now takes you to the row that corresponds to the current selection.

Interface

- 1) Modified window user interface so that views appear as tabs rather than icons (the "**File/Preferences**" setting "Tab location for open windows" has tab options: "top", "bottom" or "off" for same behavior as previous versions).
- 2) Added option to display "PLS-CADD Wires" for Load Vectors in the "3D Controls" dialog reached via "**View/Display Options/Set Rotation, Color and Label Options...**". PLS-CADD Wires are only available when the loads have come directly from PLS-CADD.
- 3) Numerous changes to improve look and functionality of the program on high DPI displays (like 13" notebook with 3200x1800 resolution). These include: scaling of toolbar buttons, a new fixed width font for dialogs, scaling of automatic text height for annotation and graph views, fixes for overlapping list box text, etc.
- 4) May now drag pictures inset in many dialogs to our reports and to other programs (Word, paint programs, etc.).
- 5) The "Point load placed on non-existent joint" error now has an option to remove the LCA/LIC file reference to fix the problem.
- 6) Annotation Improvements
 - a. You may now graphically copy and paste annotation. If you hold the Ctrl key while doing this you will be able to immediately move the pasted annotation.
 - b. Annotation move point and move object now support Ctrl key to force horizontal or vertical movement.
 - c. Dimension Snap has an entirely new and fully graphical user interface for selecting which axis to dimension and how much to offset from joints being measured. It can optionally add leader lines as well.
- 7) May now delete the contents of most sub-tables by pressing the "Delete" key while in the cell that contains the sub-table edit button (for example the "Interaction Capacities" sub-table for post insulators).
- 8) You may now right click on the list of attachments in the Attachment Manager to access a menu of commands that can be applied to the selected attachments. This includes a new "Relocate Files" command which allows you to move the attachments to a different folder.
- 9) **View/Cut** now has three modes that make it possible to precisely select what you want cut: "Drag a rectangle, all joints and any member intersecting this area will be cut", "Drag a rectangle, all joints and any member enclosed in this area will be cut" and "Select the member to cut and click on it to cut".
- 10) Cut and Uncut operations are now undoable via **Edit/Undo**.
- 11) Enhanced drag-to-resize of windows to also support resizing into quadrants of the screen, similar to Windows 10, and added ability to drag minimized windows to the edges of the screen to resize.
- 12) Various Member, Joint, Component, Result and Inset view dialogs when invoked graphically for editing a particular item now display a "properties-style" single column table that only lists the properties for the relevant item. Previous versions showed table including properties for all items, a presentation that is still available if one presses the new "Transpose" button.

- 13) Made the ordering of items in **File/Batch Modify** more consistent and color coded geometry and components items to make them easier to identify. Finally, added the three-letter file extension of component files to the description of Component File items.
- 14) Added **File/Batch Modify** option "Remove Raster and Vector Attachments" that does just that.
- 15) Added **View/Cycle/** sub-menu that contains entries for the major items in the "3D Controls" dialog reached via **View/Display Options/Set Rotation, Color and Label Options...** such as Color By, Load Case Display, Vector Loads, Joint Labels, Member Labels and Render Mode. You may wish to add some of these commands to a custom toolbar.
- 16) Changed entity info snapping for groups, members, and joints. If all three modes are enabled, the outer 20% of a member (on either end) will snap to a joint, the next 20% (on either end) will snap to the member, and the middle 20% will snap to the group.
- 17) Added Entity Info command to graphically rotate guys, equipment, strain and post insulators.
- 18) Made the **File/Open** dialog resizable.
- 19) Now color the background of Relative Attachment Labels for poles green if there is something attached to that joint.
- 20) Tables now check the luminance of text background color and switch to opaque draw with white background if contrast is insufficient to be readable.
- 21) **File/Preferences** now has a "Table header font" input to change font used for column headings in spreadsheet tables the bold version of this font will be used. Tables also have improved outlining of active cell, text justification, etc.
- 22) Quicksearch Toolbar now searches **File/Preferences Settings**, clicking on a setting allows you to edit it right then and there.
- 23) Streamlined upgrade experience by detecting when an upgrade code is in the clipboard and asking you for permission to perform an upgrade so that you no longer need to visit **Help/Download Upgrade**.
- 24) May now download components files directly from our Online Library using the "Open Web" button now available in **File/Preferences** file selection dialogs.
- 25) Added tab context menu command to close all graph, deformed geometry, and report tabs at once (right click on tab title to access).
- 26) Right click on Windows Taskbar icon of PLS-POLE to access most frequently and most recently used models as well as "pin" your favorite models.
- 27) Graphical Add and Move Snap Settings dialog now allows you to choose "At Joint Labels" for snap instead of "At Interval". When this is selected the program only snaps to joints with labels.
- 28) Now save all steel pole shaft optimizer parameters to the pls_cadd.ini file (previously only stored custom thicknesses).
- 29) Many more minor user interface refinements too numerous to list here.

Drafting

- 1) In the Sheets View now adjust spacing between individual characters (font kerning) to produce more consistent text widths across zoom levels. Width of text varied far more in earlier versions such that text that appeared to fit in a title block at one zoom level might not appear to fit after zoomed in or out.
- 2) Report view right click menu "Add as Annotation to Inset View" dialog now provides a graphical preview of inset view size and position adjustable with spin button controls, buttons to add additional title/notes/appendix pages, and controls to customize text appearing in inset view footers.
- 3) Inset Report views created from a table with filters applied will now respect those filters.
- 4) Can now attach Bitmaps and DXF files directly to any named inset view.
- 5) Added new context menu command for drafting sheets so can insert a new blank sheet before any other drafting sheet.
- 6) Sheets view can now display a grid that drafting functions can snap to. This is enabled and configured through the Change Snap Settings dialog.
- 7) Sheets structure inset views now have an option to draw the compass rose.

Reports

- 1) Added total Torsional Moment (for user input and automatically calculated loads) to Summary results for design of grade beam foundations.
- 2) Added sum of VTL forces on foundation joints to the Overturning Moment Summary.
- 3) Now supply complete Post Processing XML information to PLS-CADD when performing a Structure Check for inclusion in PLS-CADD's XML export.
- 4) Now supply PLS-CADD with CAN element results so it can include them in the "Summary of Maximum Element Usages" table shown by Lines/Reports/Structure Usage.
- 5) In the "Summary of Post Capacities and Usages" schema revised names of "Trans. +" and "Trans. -" Capacity columns to "Trans. Pos." and "Trans. Neg." so that derived XML tags for these columns will be unique.
- 6) Reports now highlight URLs in blue and let you click on them to open them in the system default web browser.
- 7) Restored ability to select a printer to use for reports under **File/Page Setup (Reports)**. Changes Microsoft made to the "Page Setup" dialog box took away our ability to select a printer with this command in recent versions of Windows.
- 8) "FRP Tubes Properties" output is now given for each pole in a multi-pole FRP structure when using Duratel or Shakespeare poles as these have property specific tube definitions.
- 9) Sped up generation of long reports with many page breaks by ~20% and fixed a random crash in 64 bit version when generating reports.

Commands

- 1) **View/Display Options/Show Structure Compass** which displays a compass rose in the graphics. It can be turned on and off for the Undeformed and Deformed Geometry views separately. It defaults to "On" in the undeformed and "Off" in the deformed geometry.
- 2) **File/Backup** now includes a reference to any files that have been excluded from the backup (but not the file itself) so that **"File/Restore Backup** can be used to remap any folders that do not exist on the destination system.
- 3) **File/Backup** "Transmit to PLS for technical support" now sends using secure HTTPS. It is also able to transparently navigate proxy servers
- 4) **File/Restore Backup** now allows selection of multiple ".bak" files to restore at once and has a "Change Common Directory Path" button for faster search and replace of directory paths used by a project.
- 5) **File/Export/PLS-CADD LITE** command that is equivalent to the PLS-POLE graphical member toolbar PLS-CADD/LITE button.
- 6) **Edit/Autosize Font** is now in main menu which makes it available without a mouse (used to be only in right click menu).
- 7) **File/Export/STL** improved with input to scale thickness of members (many printers have thickness design rules that preclude printing typical transmission structures), exclude insulators option (insulator bells cause trouble for some 3D printers) and fixes for "flipped triangles" and "non-manifold geometry" errors when working with PLS exported STL files. The built in "3D Builder" application in Windows 10 can 3D print a structure simply by opening the exported ".stl" file and then printing to the "i.Materialize" service which will print and mail you your structure. We recently printed a 250mm tall model of an H-Frame for \$42 with this service by entering a thickness scale factor of 2 and excluding the insulators.
- 8) Material Options dialog may now control whether to show/hide parts, decompose assemblies, and show/hide assemblies when listing components for structure.

Miscellaneous

- 1) Supports Windows 10.
- 2) Now support Acrobat Reader and Writer 2017 for display of the online help.
- 3) Maximum number of arms (cross arm and davit, tubular and generic) increased from 200 to 300 for substation modeling.
- 4) Reevaluated 2002 decision to only use physical cores rather than logical (hyper-threaded) cores for analysis. Testing on the last few generations of Intel processors (from 2012 on) shows that hyper-threading now yields 10-30% performance improvement in nonlinear analysis for models with many load cases.
- 5) XML output now respects any filtering that may have been done in a table. It also sets the *nrows* attribute to the actual number of rows output rather than the original number (the two can differ when have filtered output).
- 6) Opening large Project Reports now 10x faster.
- 7) Minor changes to reduce memory usage, improve interface or performance too numerous to mention here.