

CSiPlant® Version 5.1.0

Release Notes

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Notice Date: 2019-07-02

This file lists all changes made to CSiPlant since the previous version. **Most changes do not affect most users.** Incidents marked with an asterisk (*) in the first column of the tables below are more significant.

Changes from v5.0.0 (Released 2019-03-04)

User Interface Enhancements Implemented

*	Ticket	Description
	7	Improvements have been made to the speed of various operations. No results are affected by these changes.
*	19	The following enhancements to the user interface have been implemented: <ul style="list-style-type: none"> • The Escape and Enter keys can now be used to perform Cancel and OK, respectively, on the forms. • As an exception to the previous item, the Enter key can be used to select multiple items in forms that use multi-select tree views. • After pressing the Define button in the Assign Supports form with a support property selected, that property will now be automatically selected in the Define Supports form. • An option has been added to Expand All and Collapse All branches in forms that use tree views. • The ability to Select and Deselect supports by support label has been added. • An option has been added to the Display Option form allowing the Flow Arrow graphics to be enabled/disabled. • The command Assign Line loads has been separated into two commands that work on different types of objects: Assign Pipe Loads and Assign Frame Loads.
*	208	An enhancement has been added to allow users to display pipe loads and frame loads independently in the Display Load Assigns form.
	225	An enhancement was added where separate buttons were created in the Define Load Cases form allowing users to delete all load cases or delete selected load cases.
	289	The following enhancements were made to the selection label that is shown on the status bar at the bottom left corner of the graphical user interface: <ul style="list-style-type: none"> • The label now lists the various pipe types individually. • 1-Joint link and 2-Joint link labels are now combined. • Order of label has been modified as follows: Joints, Pipe Types, Frames, Links. • Commas added between list items.
	343	An enhancement was implemented giving users the ability to change the default grid bubble size in the Define Grids form. Default grid bubble size will be used whenever a new grid line is created or when a new grid system is created.
	348	An enhancement was implemented giving users the ability to reverse the flow direction of pipelines in the model via the Assign > Pipes > Reverse Flow Direction command. When executed the program will search through the model for any selected pipes and reverse the entire pipeline. Note, that if more than one pipe is selected in a given pipeline it will only be reversed once.

Graphics

Enhancements Implemented

* Ticket	Description
* 27	An enhancement was made to graphically display the location and weight of valve operators for those valves that have operators specified. An additional setting has been provided in the Display Settings allowing users to enable or disable the visibility of the operator weight.

Modeling

Enhancements Implemented

* Ticket	Description
10	An enhancement was implemented to allow selection of a default design code and spring-hanger sizing library, along with the ability to automatically import the properties.
* 264	<p>The following enhancements were made to the pipe, valve, and flange definitions:</p> <p>Pipes:</p> <ul style="list-style-type: none"> Users can specify pipe dimensions using the NPS convention. Note, custom option is still available allowing specification of non-standard sizes. <p>Valves:</p> <ul style="list-style-type: none"> Users can specify valve dimensions using the NPS convention. The ability to specify the OD directly has been removed. Users can now specify the valve standard as either ASME B16.34 Standard, ASME B16.34 Special, or Custom. When either B16.34 standards are chosen users are ability specify a pressure class and a material type to automatically generate temperature dependent pressure rating curves. Users may also specify a custom pressure class allowing for a custom temperature dependent pressure rating curve. Users can now specify a custom valve type, vendor, and end connection type. Organization of the tree view has been modified to be as follows: Valve Standard > Vendor > Pressure Rating > Valve Name. A "Component Properties - Valve - Pressure Rating Curves" table has been added to the list of available Model Definitions tables. <p>Flanges:</p> <ul style="list-style-type: none"> Users can specify flange dimensions using the NPS convention. The ability to specify the OD directly has been removed. Users can now specify the valve standard as either ASME B16.5, ASME B16.47 Series A, ASME B16.47 Series B, or Custom. When any non-custom standard is chosen, users are ability specify a pressure class and a material type to automatically generate temperature dependent pressure rating curves (utilized by the newly introduced flange leakage design check). Users may also specify a custom pressure class allowing for a custom temperature dependent pressure rating curve. Previously, pressure rating input was purely for reference and had no effect on analysis or design. Users can now specify a custom flange type and vendor Organization of the tree view has been modified to be as follows: Flange Standard > Vendor > Pressure Rating > Flange Name. A "Component Properties - Flange- Pressure Rating Curves" table has been added to the list of available Model Definitions tables.
352	An enhancement was implemented enabling the Snap to Grid Intersections feature to be used while drawing components such as flanges and valves. This feature can be disabled by turn off this snap type in the Snap toolbar or via the Snap Options form.

Design - Piping

Enhancements Implemented

*	Ticket	Description
*	13	An enhancement was implemented to add Flange Leakage design checks. The design methodology implemented follows ASME Code Case 2901. The design check results are visible in design tables or report forms. To activate the checks, the following information should be specified: <ul style="list-style-type: none">• In the Design Request form, operating load cases to be considered in the check.• In the Flange component property definition, the Flange Pressure Class and Flange material. These are used to establish the pressure rating and moment factor.• On the Flange object, the Gasket Reaction Diameter. See the Flange Leakage design documentation for more information.
	50	An enhancement was made to the B31.3-2016 design check where a setting was added to the design preferences allowing the user to specify whether temperature scaling of stresses should be considered in the displacement design check. More information can be found in the B31.3-2016 design documentation.

Results Display and Output

Enhancements Implemented

*	Ticket	Description
	286	An enhancement was added allowing users to limit which degrees of freedom are shown when displaying support or restraint reactions.
	287	An enhancement was added giving users the ability to display joint displacements by right-clicking on a joint when viewing the deformed shape of a model.
	307	When viewing stress contours on the model, the results shown at the mouse cursor location now include the Stress Location, SMax, SMin, and SVM. The principal values are only available for single step results, not envelope cases.
	354	An enhancement was implemented causing the Program Control table to automatically be included in the list of exported tables when tabular output is requested following an analysis.

External Import/Export

Enhancements Implemented

*	Ticket	Description
	14	The import of SAP2000 models has been enhanced, including the following: <ul style="list-style-type: none">• Imported mass sources now include insulation, lining, cladding, and content load patterns.• The import process has been made faster.

Documentation

Enhancements Implemented

*	Ticket	Description
*	321	Design documentation was added for the ASME B31.3 - 2016 design check.
*	322	Design documentation was added for the ASME B31.1 - 2016 design check.
*	323	Design documentation was added for the Spring Hanger Sizing design check.
*	324	Design documentation was added for the Flange Leakage design check.

Installation and Licensing

Enhancements Implemented

*	Ticket	Description
	1	The version number has been changed to v5.1.0 for a new intermediate release.

*	Ticket	Description
	279	The .Net framework used by CSiPlant has been updated from 4.5 to 4.7.1. This does not affect the behavior of the software or any results.

**User Interface
Incidents Resolved**

*	Ticket	Description
	8	<p>An incident was resolved that corrected the following issues related the graphical user interface. No results were affected:</p> <ul style="list-style-type: none"> • The "Show Last Run Details" menu item was not disabled when there was no analysis log available. • The default option on the "Unlock" form has been changed from "Yes" to "No" to reduce the chance of inadvertently deleting analysis results. • In the Help > Documentation form, when a document item was right-clicked to view its description, all text was shown as selected. • An unexpected error message would appear if a group was defined, copied, then deleted in the "Define Groups" form without closing the form before deleting the group. • Menu commands were not disabled when importing CII files. • The previous restriction has been removed on the assignment of pressure loads to pipes that prevented users from assigning a negative incremental pressure loads. Negative absolute pressure loads are still prohibited. • Imported Structural/Piping/Flange/Valve Properties were not editable after making a copy of the property. • The Undo/Redo toolstrip buttons and menu items were not disabled when the model was locked. • The OK button is now disabled on all load case definition forms while the model is locked. This was done to prevent users from making changes to a locked model. • Newly created load cases are now automatically added to all existing Design Requests. Previously, after creating a new load case, users would need to go to the Define Design Requests form and activate the newly created load case. • The "Set 3D View" form did not close with OK button. • Previously support and joint reactions would not appear if there was an object selected in the model. Note, that the restraints and supports were applied analytically. • It was possible to set both the UseIteration and the UseEventToEventStepping to False in the "Nonlinear Solution Control" form for nonlinear static, direct-integration time history, and staged-construction load-case definitions, even though at least of the two options must be True. When this occurred, the analysis assumed that UseIteration was True. • Support-to-object connection information is now shown in the Display Information form under the assignments tab. The form can be displayed by right-clicking on the support object. Previously, the support was shown as having no connection. Note, that the connection was being considered in the analysis. • Creating a copy of a support property and then modifying it also changed the original property. • In the "Define Support Reaction Export Requests" form, all of the checkbox lists required 2 clicks to check or uncheck. They can now be checked or unchecked in a single click. • An issue was corrected where an error message would appear when attempting to open a read-only CSiPlant file. The model files can now be opened; however, if a user attempts to overwrite the read-only file they will be prompted with a message indicating that the file is Read-Only. • An error message was previously generated when switching from the Modulus of Elasticity definition table to the Poisson's Ratio definition table in the Define Materials form when the second row or higher was selected in the definition table.

*	Ticket	Description
		<ul style="list-style-type: none"> • In the flange object design properties form for the ASME B31.1-2016 and ASME B31.3-2016 design checks the “include flange checks at elbow ends” property has been renamed to “flange locations”. Behavior of the property is unchanged. • ASTM Materials created in the Define Materials form were incorrectly shown to have a code standard property of ASME instead of ASTM. This did not affect the property values.
	15	An incident was resolved where the definition of a load case, in particular the specification of load patterns to be applied, could become corrupted due to changes made to the Reference Temperature and Reference Pressure fields when defining or modifying the load case. When this occurred, the analysis could not be run. Results for load cases that were able to be run were not affected.
	53	An incident was resolved where an error message would sometimes display when the ASME Materials - General table was shown. No results were affected.
	144	An incident was resolved where dialog boxes (forms) would sometimes appear in screen captures.
	295	An incident was resolved removing the Weld Strength Reduction Factor (W) from the Pipe Section design properties. The factor W is now accessed through the material design properties.
	332	An incident was resolved where the Divide Frame and Divide Pipe forms would incorrectly limit users to integer first-to-last ratios.
	342	An incident was resolved where the view of the grids in the Define Grids form would jump to the top whenever a value was edited. Current behavior should now maintain the selected of the current cell after editing is complete.
	347	An incident was resolved where users would be given the internal design load cases as options in the Previous and Modal load case property fields in the various Define Load Case forms. Internal load cases would be prefixed by "~".

Graphics

Incidents Resolved

*	Ticket	Description
	16	<p>An incident was resolved that corrects or improves the following to correct the following graphical display issues that did not affect results:</p> <ul style="list-style-type: none"> • The displayed local axes did not update when the model was changed until the view was manually refreshed. • Labels displayed in the model window were not able to be turned off after analysis if they were set to be visible before the analysis was run. • Results displayed at the mouse cursor when snapping to an object did not always update to reflect a change in the requested load case or step. • Frame objects of type Double Channel and Double Angle would display with pink faces. • Distributed load diagrams would display incorrectly when multiple, non-overlapping distributed loads were applied to an object without a uniform load. • End-release symbols for frame elements were not visible for certain models. • Joint reactions displayed at the mouse cursor were sometimes snapping to the wrong joint. • Flow arrows and restraints are now scaled by the size of connecting pipe or frame objects. • The name of the ASME B31.3 Materials Library displayed inside of the Import form has been corrected from “ASME B31.3 Power Piping 2016 Materials Library” to “ASME B31.3 Process Piping 2016 Materials Library”.
	270	An incident was resolved where deselecting all of the load checkboxes in the Display Load Assignments form did not remove the previously displayed loads from view.

* Ticket	Description
311	An incident was resolved where an error message would sometimes appear when displaying contours for forces or stresses.

Modeling Incidents Resolved

* Ticket	Description
21	An incident was resolved where snapping to the midpoint of frames in 2D views would not work if more than one frame object existed in the model. No results were affected.
26	An incident was resolved where pipes were allowed to be drawn from the branch point of a Tee when a pipe was already connected to that point. Users will now be given a warning that this particular configuration is not supported.
* 278	<p>An incident was resolved where the Tee Type selected while drawing a tee was not related to the tee type used during design.</p> <p>The following changes have been made:</p> <ul style="list-style-type: none"> • Changed the behavior of the tee such that the tee type selected during drafting is now the tee type used during design. • Modified the tee type property exposed in the tee design properties form to instead allow users to either select "As Defined" or "Override". When "As Defined" is selected the tee type used during the design of that design request will be the same as that chosen during drafting. When "Override" is chosen an additional Custom Tee Type property is exposed allowing users to modify the tee type for the current design request. This allows users to experiment with SIF/Flex calculations. • When a Tee Type of Custom is chosen, the SIF/Flex Factor methods for all B31.1 and B31.3 design codes are forced to be User, requiring the user to manually enter SIF/Flex Factor values.
291	An incident was resolved where the insertion tool would stop when the insertion into an existing pipe created an elbow or a tee. This would only be noticeable if insertion was originating from multiple points simultaneously.
308	An incident was resolved where an insufficient-space message would appear assigning a larger elbow radius such that the increased semi-tangent distance exactly fit into the available space.
341	An incident was resolved where the program would attempt to snap to grid intersections even if grid visibility was disabled while drawing point style objects such as supports or joints.
378	An incident was resolved where the wrong support property would be inserted when properties were created in a non-alphabetical order. For example, if the first created support property was B, and the second property was A; when attempting to insert a support using property A, a support object would be created that used property B.

Loading Incidents Resolved

* Ticket	Description
* 3	An incident was resolved where absolute pressure loads assigned a value of zero were not being applied to pipe elements during analysis. Note that this is different from cases where a pipe element has no pressure load assigned, which is intended not to change the loading. Assigning an absolute pressure load of zero should change the load from its current value to zero. This has been corrected. This issue did not affect temperature loads, which correctly handled absolute loading of value zero.

*	Ticket	Description
*	5	An incident was resolved where loads assigned to a curved pipe (elbow) in the pipe local coordinate system were actually being assigned in the wrong direction. In particular, loads assigned in the local-2 direction were applied in the local-3 direction with the same sign, and loads assigned in the local-3 direction were applied in the local-2 direction with the opposite sign. Affected loads include concentrated span loads, uniform and trapezoidal span loads, strain loads, and temperature gradient. Loads assigned in the local 1 direction (tangential to the curve) or in global coordinate directions were not affected.
*	73	An incident was resolved where ground displacements assigned to support points with no assigned restraints were not being applied.
*	317	An incident was resolved where distributed loads on frame and pipe objects was not being properly assigned when auto meshing was enabled on the object and the loads used a distance type of Absolute. The amount of load applied could be conservative or unconservative depending on the lengths of the various meshed elements and the locations of the absolute loads.

Analysis

Incidents Resolved

*	Ticket	Description
	276	An incident was resolved where an error message would appear if a user did the following steps: 1) Export support reactions to SAP2000. 2) Unlock the CSiPlant model. 3) Run the analysis in CSiPlant. Note, that for the error message to appear the SAP2000 model must have remained open.
*	314	An incident was resolved where elbows not drawn in the XY, YZ, or XZ plane would produce unexpected analysis results. Note, this would only occur when using the curve element representation as selected under the Model Options form of the Analysis Options.

Design - Piping

Incidents Resolved

*	Ticket	Description
*	17	An incident was resolved in which the information used for design was not cleared out when closing a model. When this happened, design information could be retained from the previous model when creating a new model, and potentially result in an error. When this occurred, design results were not available. This did not occur if the software was closed and restarted.
*	18	An incident was resolved in which design requests could become unusable if load cases were deleted from the model and new load cases added without saving the model between the delete and add operations.
*	41	An incident was resolved where design requests with combination-type load cases were not properly designed for B31.1-2016 and B31.3-2016 Displacement checks if the combination was utilizing Envelope or Range Add combination types.
*	333	An incident was resolved where if an object was removed from the view, models may not be able to be designed. When this occurred, error messages were added to the design log indicating that results could not be found for the hidden objects.

Results Display and Output

Incidents Resolved

*	Ticket	Description
	9	An incident was resolved that corrected the following issues for database tables: <ul style="list-style-type: none"> • Analysis results tables were not being limited to those applicable to the particular model. • Requesting the Pipe Temperature Loads table actually displayed the Pipe Strain Loads table. • Previously selected results tables were still being displayed after unlocking the model. None of these issues affected the results, only the selections of tables to be displayed.
	20	An incident was resolved where objects would become selected after right-clicking on them to view result information such as force/moment diagrams. Selection should only occur due to left-clicking on them. No results were affected.
*	22	An incident was resolved where analysis results were not available for load combinations that contained other load combinations.
*	23	An incident was resolved where graphical stress contours were all displaying as zero if a 1- or 2-joint link object existed in the model. No other results were affected.
	306	An incident was resolved where some analysis result table columns would sort alphabetically instead of numerically.
	355	An incident has been resolved where rounding and formatting rules in design tables were not being applied. The non-formatted results can be viewed by selecting the Show Unformatted setting in the table options.

External Import/Export

Incidents Resolved

*	Ticket	Description
*	24	An incident was resolved that corrected the following issues related to the import of CSiPlant models: <ul style="list-style-type: none"> • Elbows were not drawn properly when imported under coordinate transformation. • Load pattern and load case names were being duplicated rather than merged during import. Results agreed with the model as imported.
*	25	An incident was resolved that corrected the following issues related to import of SAP2000 and CSiPlant models: <ul style="list-style-type: none"> • When merging any model into an existing CSiPlant model, the merge would not properly account for a difference in database units between the two models. Models with matching database units were unaffected. • When merging any model into an existing CSiPlant model, any property being imported that had a conflicting name with an existing property would be ignored regardless of the setting “Items with Same Name” on the Import Options form. Results agreed with the model as imported.

*	Ticket	Description
*	397	<p>When using the "Edit > Add From Piping Model" command to import another CSiPlant model whose database units did not match the database units of the current model, the unit conversion was not applied correctly for several properties and therefore incorrect values were imported for such properties. The affected properties were as follows:</p> <ul style="list-style-type: none"> • Gravity load multipliers. • Scale factors in time history and response spectrum load cases. • Monitored displacement for nonlinear static load cases. • Rotation angle for local axes. • Damping coefficient for exponential damper. • Shear stiffness for friction isolator. • Rate parameter for friction isolator. • Shear distance link properties. • Yield force and yield moment for rubber isolator and plastic (Wen) link. • Various design parameters used in the "B31.1-2016 - HydroTest Stress" design check.
	408	<p>An incident was resolved where forces exported to SAP2000 via the Support Reaction Export Requests would not be replaced on subsequent exports. Instead, additional loads would be applied to the SAP2000 joints under the same load pattern.</p>