CSiPlant® Version 5.1.1
Release Notes

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Notice Date: 2019-10-16

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 v5.1.0 (Released 2019-07-02)

User Interface
Enhancements Implemented

*	Ticket	Description
	413	An enhancement was implemented where the dimensional Tee design properties related to the calculation of the SIF/Flex factors are now named in a generic manner to be consistent between different codes. Results are not affected.
	414	An enhancement was implemented where the calculated SIF and Flex Factor values without the consideration of pressure correction can now be displayed in the design properties form for Elbows. This allows the values to be viewed before analysis is performed. The values with pressure correction, as used for design, can still be viewed in the tables or design reports. Results are not affected by this change.
	2543	An enhancement was implemented allowing the user to filter the list of properties or elements in the Select By form to include only those that are currently in use in the model.

Drafting
Enhancements Implemented

*	Ticket	Description
	319	An enhancement was added that now allows drafting operations to snap to an object's local perpendicular directions.
	422	An enhancement was implemented allowing for mid-point snap to pipes when drafting. The snap option "Snap to Frame Mid-Point" has been renamed to "Snap to Mid-Point". Toggling this snap option will enable/disable mid-point snapping for both frames and pipes.

Data Files
Enhancements Implemented

*	Ticket	Description
	2560	An enhancement was added to include more property definitions in the B31.3 material library.

Loading
Enhancements Implemented

*	Ticket	Description
*	2623	An enhancement was implemented to load combination results allowing users to view step results for a combination rather than purely a max/min result. The type of step result and the way they are presented depends on the type of load cases in the combination. See the help documentation for more information.
		If the load combination generates multiple steps and it is assigned a stress category that supports multi-step design (Pressure, Sustained, Occasional, and Hydrostatic Test), the load combination is designed for each individual step. If the load combination generates multiple steps or different max/min values, and it is assigned a stress category that do not support multi-step design (Displacement) then the load combination will be skipped by the designer and a warning messaged will be added to the design log.
		Note that the previous design behavior for load combination envelopes considered the max value only. As such previous designs may have been unconservative if the min value governed.

External Import/Export
Enhancements Implemented

*	Ticket	Description
*	2769	The import of models from SAP2000 versions 20.0.0 through 21.0.2 is no longer supported. Similarly, the export of support reactions to SAP2000 versions 20.0.0 through 21.0.2 using Support Reaction Export Requests is no longer supported. Users should upgrade to SAP2000 version 21.1.0 or later (when available) in order to be able to import models from and export reactions to SAP2000.

Installation and Licensing
Enhancements Implemented

*	Ticket	Description
	2946	The version number has been changed to v5.1.1 for a new intermediate release.

User Interface
Incidents Resolved

*	Ticket	Description
	54	An incident was resolved where the default design code selected by the user upon opening a new model was not being applied to the default design request.
	409	An incident was resolved that addressed the following issues affecting the Define Pipe Components form: • When the Cancel button is pressed all changes made in the Define Pipe Components form will be undone. Previously changes would be saved regardless of whether the OK or Cancel buttons were clicked or the form was manually closed. • Pressing the Convert to User Defined button on an imported pipe component will now immediately select that definition. Previously the definition would need to be deselected and then re-selected in order to view the definition properties.
	2559	An incident was resolved where an error message would display when attempting to change an object's design properties after deleting the default design request after a second design request had been added. Results were not affected.
	2587	An incident was resolved where the reinforcement-thickness property for a Reinforced Tee was not being displayed in the Tee Design Properties when using the B31.3 SIF/Flex methods. No results were affected.
	2678	An incident was resolved where one-sided flanges were sometimes being selected when using the Select > Properties > Component Properties even though the one-sided flange did not use the requested property. This could occur when the deactivated side of the flange internally referenced the requested property, although it was not actually being used in the model.

Loading
Incidents Resolved

*	Ticket	Description
*	2640	An incident was resolved where pressure and temperature loads assigned to a tee branch would be added to any previous load assignment of the same type, even when the Replace option was selected. The resulting net temperature and pressure loads on the tee branch were available for display, and results agreed with these loads.

Results Display and Output
Incidents Resolved

*	Ticket	Description
	2971	An incident was resolved where frame elements would not return results on the left and right side of intermediate mesh points. An example of this would be a cantilever frame object with a point load located anywhere other than the I or J joints. This incident would manifest itself in several ways. • Moment/shear diagrams would not appear for the frame element. • Only the right-side of the mesh point would appear in the analysis result tables instead of the left and right side. No other results were affected. Note that pipe elements were not affected.

Graphics
Incidents Resolved

*	Ticket	Description
	398	An incident was resolved where using the Restore Full View command always returned the camera position to the default 3D model view, rather than maintaining the current 2-D or 3-D view orientation and simply zooming out.
	2663	An incident was resolved where contour values for pressure and temperature loads were not being displayed on tee branches.

Drafting
Incidents Resolved

*	Ticket	Description
	2576	An incident was resolved where pipelines were being relabeled incorrectly when a new pipe was drawn from an existing pipe elbow. Results were not affected.
	2996	An incident was resolved where pipeline labels would become out-of-order through use of the program. This issue could manifest itself in several different ways: • Displaying point and pipe labels would show several objects in a row with the same name: i.e. A-S0, A-S0, A-S0. • Attempting to draw or delete objects from a pipeline would have no effect. • Extra flow arrows would appear along the pipeline. This incident will be automatically resolved by opening the model in the latest version of the program. After opening the model several messages may appear indicating what actions have been taken to correct the pipeline labeling issues.

Analysis
Incidents Resolved

*	Ticket	Description
*	2591	An incident was resolved where nonlinear static and staged-construction load cases could converge to the wrong answer under the following circumstances: (1) the nonlinear convergence iteration used line search, (2) the line-search iteration was able to find a solution without further iteration, and (3) the unbalance force in the first step of line search was significantly larger (by orders of magnitude) than the applied load. All three conditions were necessary to cause this issue. Situations that can cause item (3) include load steps where the stiffness becomes much larger, such as the closing of gaps with non-zero initial opening. Displacement-controlled nonlinear static load cases, such as for static pushover, do not use line search and were not affected. Nonlinear direct-integration load cases were not affected, even when line search was used.

Design
Incidents Resolved

*	Ticket	Description
*	2950	An incident was resolved where, for nonlinear static, staged-construction, direct-integration load cases, and sequences of such load cases, the pipe and frame member forces and stresses used for display and design could have been incorrect for a specific pipe/frame member when the following conditions are met: 1. The load case (or sequence of load cases) contained more than one load pattern that applies loads directly to the pipe/frame member, including at least one load pattern with self-weight loads. 2. A load pattern containing self-weight load (A) was applied after another load pattern containing frame loads (B); in other words, A was listed after B in the list of applied loads in the load case definition (or sequence). 3. The load patterns A and B had different scale factors. Pipe/frame members that did not meet the above conditions, such as those without pipe/frame loads assigned to the load patterns used in the load case sequence, were not affected. Load case sequences without self-weight applied were not affected. Load case sequences having only one self-weight load pattern applied and with that load pattern being listed first in the load case definition were not affected. Note that this error did not affect how the pipe/frame loads were transferred to the structure, and therefore all other analysis results were correct (displacements, reactions, forces and stresses in other objects). Nonlinear behavior, including P-delta, was not affected. Only the reported forces and stresses within the affected pipe/frame members themselves were in error, including the forces used for pipe design of those members. Because self-weight is most commonly applied first, most models were not affected by this error. Linear load cases were not affected, even if they used the stiffness from a nonlinear load case. This error affected CSiPlant versions 5.0.0 to 5.1.0.

Results Display and Output
Incidents Resolved

*	Ticket	Description
*	2751	An incident was resolved where two nodes at very nearly the same location would cause pipes and frames objects either to disappear or to appear as though they had disproportionately large displacements when attempting to display analysis results graphically. Tabular and design results were not affected.
*	2971	An incident was resolved where frame elements would not return results on the left and right side of intermediate mesh points. An example of this would be a cantilever frame object with a point load located anywhere other than the I or J joints. This incident would manifest itself in several ways. • Moment/shear diagrams would not appear for the frame element. • Only the right-side of the mesh point would appear in the analysis result tables instead of the left and right side. Note that pipe elements were not affected.

*	Ticket	Description
*	3046	An incident was resolved where, for nonlinear static, staged-construction, direct-integration load cases, the pipe and/or frame member forces and stresses used for display and design could have been incorrect for a specific pipe/frame member when the following conditions were met: 1. Results are requested for multiple load cases and/or load combinations at the same time, or a single load combination that contains multiple load cases. 2. Among all the requested load cases, only one of these was a nonlinear static, staged-construction, or direct-integration time-history load case, and only a single step was requested from that load case. 3. Among all the requested load cases, at least two of these were linear load cases (including modal or response-spectrum), at least two of these load cases used the stiffnesses from different nonlinear load cases (or zero initial conditions), and at least one of these was a linear static, linear multistep static, or modal time-history load case. 4. The affected pipe/frame object had loads assigned to it as part of the single nonlinear load case. This could include self-weight. This was not common. When this error occurred, the pipe/frame response reported in the affected object could be incorrect at all stations along the length of the object except at the start (I end). For pipe/frame objects that were discretized into multiple elements for analysis, the results would be correct at the start of each element and deviate along the length of the individual elements. This deviation in response, when present, was due to using the wrong element load for equilibrium calculations. This error would be most likely to affect table results when multiple load cases or load combinations were requested, and pipe design when the load combinations used satisfy the conditions listed above. Note that this error did not affect how the pipe/frame loads were applied to the structure, and therefore all other analysis results were correct (displacements, reactions, forces and stresses in other objects).

External Import/Export
Incidents Resolved

*	Ticket	Description
*	57	An incident was resolved where importing a CSiPlant model into an existing CSiPlant model with a non-zero coordinate offset would result in local axes not being correctly orientated for supports and other types of objects in the imported model. Results agreed with the model as imported.
	2611	An incident was resolved where existing models would not be marked as modified after importing a CSiPlant, SAP2000, or CII file into an existing model. This meant that no warning message was provided indicating that changes would be lost when closing the model without first saving it. This incident only affected the warning message. Imported changes were kept so long as the model was saved or run.
	2625	An incident was resolved where importing one CSiPlant model into another CSiPlant model would always create a second grid system if both models contained a grid with the same name, regardless of the import setting for "Items with Same Name in Model and Database". Furthermore, the added grid system could not be deleted after import. Now the second grid system will only be created if requested in the import settings, and it can be deleted later if desired. Otherwise, only one of the grid systems will be retained, as requested in the settings.
	2627	An incident was resolved where objects and definitions would not be renamed when a name conflict was found when a CSiPlant model was imported into itself even though the "Add to model with new name" option was selected. This was not a common problem, since it only applied to models imported into themselves for the purpose of replicating items. Duplicate names in different models were handled correctly.
	2630	An incident was resolved where canceling an import into an existing CSiPlant model part way through the import process would not restore the existing model to its original state before import, leaving some imported items still present in the model. This affected the import of CSiPlant, SAP2000, and C2 model files. Closing the model without saving would remove the imported items.

*	Ticket	Description
	2655	An incident was resolved where the message "Unsupported Pipe Connectivity Detected" was displayed when attempting to draw a pipe that connected to an imported pipe if one or more pipelines in the imported model conflicted with those in the original model. This could occur even if the import was successful.
	2657	An incident was resolved where models imported from SAP2000 or C2 resulted in the creation of a duplicate global coordinate system.