CSiPlant v6.2.0 Release Notes

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This document lists changes made to CSiPlant since v6.1.0, released 30-November-2020. Items marked with an asterisk (*) in the first column are more significant.

Analysis
Enhancements Implemented

*	Ticket	Description
*	5573	An enhancement was implemented to optimize the number of internal load cases created for design purposes. Previously, the software would create a separate internal load case for each item in each load-case chain that was created for each design request. This resulted in the analysis of many load cases with identical definitions and dependencies. The new behavior identifies unique configurations required across multiple design requests such that no duplicate internal load cases are created and analyzed. This significantly reduces the number of internal load cases analyzed, thereby significantly reducing overall analysis time for design requests.This change also affects how result sets are created and named. Previously, a separate result set was created for each load case or load combination to be designed and named as <Design Request Name>(<Name of Load Case To Be Designed>), such as DR(GR->P1). Now, the load cases and load combinations to which the same stiffness modifications are applied are grouped with result sets named as <Design Request Name>~<i>, such as DR~1, where <i> identifies a stiffness modification that is potentially shared by multiple load-case chains.The new table "Result Sets" was added to show load cases associated with each result set. Load cases associated with result sets can also be reviewed on various forms used for displaying results (such as Show Deformed Shape form)> A tool tip is displayed showing the list of load cases associated with the active result set when the mouse hovers over the result-sets combo box.Other than changing the name of the result sets, this enhancement has no impact on the design results themselves.

Data Files
Enhancements Implemented

*	Ticket	Description
	3078	An Incident was resolved where CSiPlant would suddenly terminate when attempting to run an analysis when the model file was in a folder for which the user did not have authorized write access, such as the "C:\Program Files" folder. CSiPlant now displays a message that the user is not authorized to save the model file in such a location.

Database Tables
Enhancements Implemented

*	Ticket	Description
	5951	A new table named "Result Sets" was added to display the association between load cases and result sets.

Design – Piping
Enhancements Implemented

*	Ticket	Description
	72	An enhancement was made to the existing design reports for the B31.1, B31.3 and B31.8 design codes addressing result rounding and other minor formatting changes. Demand-Capacity Ratios are now consistently reported to two decimal places. Other numeric results are reported to 4 significant figures (the design table results display more significant figures/decimal places). The analysis results and design tables are unaffected by this enhancement.

*	Ticket	Description
	6160	An enhancement was made in the design manuals for B31.1-2016/2018, B31.3-2016/2018 and B31.8-2016/2018 to clarify the displacement-check load cases that are automatically generated by the software.

Drafting and Editing
Enhancements Implemented

*	Ticket	Description
	110	An enhancement was added to include a warning when inserting an identical support at the same location of an existing support. The warning is only given when the new support is assigned the same support property and is the same support type as the existing support.
	120	An enhancement was added to display a selection form which includes all of the objects in the model within a tolerance to the mouse cursor when the user CTRL+clicks on a point. If the left mouse button is clicked, the form will allow picking multiple objects using SHIFT + Click or CTRL + click, and each object that is picked in the form will have its selection state toggled on or off, opposite of its current selection state. If the right mouse button is clicked, the form will allow picking one object for which the Display Information form will be shown.
	141	An enhancement was added to include Joint Masses in the Display Loads form. The form includes the option to display joint masses as mass, weight or volume and material property.
	245	An enhancement was added to warn users when a flange or valve component is inserted onto or adjacent to an existing element with a different diameter than that of the inserted component. The warning gives the user the option to continue with the insert or to cancel the operation.
	5456	An enhancement was added to prevent empty distributed loads being shown on the Loads tabs of the Display Information form. Empty distributed loads have zero uniform load and no point loads. This condition occurred in situations where a point load was applied to an existing element and then the element was divided, either by using the Divide Pipes command or by inserting a new object along the existing length. Now the point load remains in the same global location of the corresponding segment of the divided pipe and no extraneous empty distributed loads are displayed for the other segment of the pipe. This was a display issue only, and results were not affected.
*	5791	An enhancement was implemented allowing for the replication of pipes and all other object types that were previously not supported. In addition, a new option was added to the replicate form allowing for pipeline repair to be turned on or off during replication. If enabled, pipeline repair will occur in situations where replicated pipes overlap with existing pipes. If disabled, any occurrence of overlapping pipes will result in a cancellation of the replication.

External Import and Export
Enhancements Implemented

*	Ticket	Description
	5467	An enhancement was added to include the option to eliminate the export of moment effects on supports when exporting support reactions to SAP2000. Support moments are included or excluded during export based on the user selection in the Auto Drafting Options form in the Options menu. This enhancement affects guides, line stops, hangers and vertical stops, while moment effects are always reported on other support types. The excluded moments are typically due to the supports actually acting at the outside of the pipe rather than, as often assumed, at the centerline of the pipe.

Installation and Licensing
Enhancements Implemented

*	Ticket	Description
*	5726	The version number has been changed to v6.2.0 for a new intermediate release.

Results Display and Output
Enhancements Implemented

*	Ticket	Description
	4165	An enhancement has been implemented which allows users to hide internal objects and properties when displaying tables by unchecking the "Show Internal Objects" checkbox in the Table Options form.
	5379	An enhancement was added to include the ability to create custom filters when displaying tables. The menu that appears by right-clicking on a column header now includes "Set Custom Filters". This option allows defining up to 4 different custom filters that can be applied to the selected column. The filter options include equal to, not equal to, greater than, greater than or equal to, less than, and less than or equal to. This menu item is only available for columns that contain numerical values.
	5429	An enhancement was added to update the default zero tolerance of translational and rotational displacement values in the analysis results tables to account for display units. When absolute value of calculated displacement is less than the zero tolerance, such displacement value is then reported as zero in the result tables.

User Interface
Enhancements Implemented

*	Ticket	Description
	5302	An enhancement was added to include an Apply button to the Define Pipe Property Sets form, the Define Pipe Sections form and the Define Frame Sections form, so the user can apply changes without closing the form.
	5517	An enhancement was added to the Display Load Assigns form to set the default Temperature and Pressure type to absolute instead of incremental.

Analysis
Incidents Resolved

*	Ticket	Description
	5466	An incident was resolved where all load cases were always run when running design, rather than only the necessary load cases. Now only those load cases that are required for the specified design requests are analyzed when running only design. This speeds up the design of models by eliminating the time used to analyze load cases that are not necessary.
	5705	An incident was resolved where nonlinear stiffness-formation, event-determination, and state-update operations for pipe elements were not parallelized regardless of the number of available analysis threads. Now, certain nonlinear load cases should run faster. Results for well conditioned models are not affected to within the convergence tolerance of the load case.
*	5787	An incident was resolved where load combination results could not be obtained for any model that contained nested load combinations. This problem occurred when the following circumstances were true:(1) The model included nested load combinations, i.e. at least one load combination included a different load combination(2) The child load combination was created after the parent load combinationWhen running analysis for models meeting both these criteria, results for load combinations were not available and the status for the load combinations on the "Set Load Cases to Run" form was "Not Run". However, running the model again without unlocking would make all results available.

Design – Piping
Incidents Resolved

*	Ticket	Description
	5724	An incident was resolved where Design Request Reports did not always show summary results for each design stress category included in the Design Request. Other design reports and the design tables were unaffected.
*	6159	An incident was resolved where the displacement checks for B31.1-2016/2018 and B31.3-2016/2018 did not limit the hot and cold stresses (Sh and Sc) when calculating the allowable stress SA. The following behavior is now implemented: For B31.1-2016/2018, Sh and Sc are limited to a maximum of 20 ksi when a material has a minimum specified tensile strength in excess of 70 ksi per footnote 2 of 102.3.2(b), For B31.3-2016/2018, Sh and Sc are limited to a maximum of 20 ksi for all materials per 302.3.5(d) Previous displacement design results could be affected and should be verified.
	6428	An incident was resolved addressing minor aspects of the SIF and Flex-factor display: The design tab (accessed by right-clicking the object of interest and selecting the design tab) now displays 1.0 as the minimum value for any program-calculated SIF or Flex factors. Previously, when viewing SIF/Flex-factor values on the design tab, values less than 1.0 could be displayed. Analysis and design results are unaffected by this change as CSiPlant limits the SIF and Flex factors to a minimum of 1.0 in accordance with the design code.When designing tees in B31.8-2016/2018, not all the relevant SIF/Flex-factor values were visible on the design tab (accessed by right-clicking the object of interest and selecting the design tab). SIF and Flex-factor values are now shown on the design tab. These were display issues only. Analysis or design results were not affected.

Drafting and Editing
Incidents Resolved

*	Ticket	Description
	5735	An incident was resolved where the incorrect support properties were displayed when the Define Support Properties form was opened using the Define button on the Change Support Property form. This only affected the display of this form and did not affect the model. However, if the Define Support Properties form was closed and the user selected a support in the Change Support Property form which previously had the wrong display properties and then assigned that support to an existing support in the model, the change-support command would not be executed and instead no support would appear at the point where the existing support once was. Another related incident was resolved where, in some cases, the program would terminate if a new pipe support property was added and then the user tried to display its properties. This situation only occurred when the Define Support Properties form was opened using the Define button on the Change Support Properties form and when adding snubbers, vertical stops, or spring hangers.

External Import and Export
Incidents Resolved

*	Ticket	Description
	2516	Implemented an enhancement to the SAP2000 import feature allowing for the import of links with None property. Previously, the import process would terminate if a link with the None property was encountered.

Graphics
Incidents Resolved

*	Ticket	Description
	4909	An incident was resolved where repetitive use of the Rubber Band Zoom button and the Restore 3D View button caused the model to disappear from the view.
	5642	An incident was resolved where the contour key did not correctly correlate to the contour colors shown in the model in certain circumstances when displaying results, generally when the values were very small.
	5942	An incident was resolved where the graphical grid-bubble labels did not properly account for non-zero minimum gridlines in the Z direction. Grid bubble labels will now be properly aligned with the minimum ordinate of the Z gridline.

Loading
Incidents Resolved

*	Ticket	Description
	6023	An incident was resolved related to program generated Time History functions. The following behaviors have changed: For periods > 1.0, the sine and cosine functions reported additional points with y-value equal to the Amplitude shift. These additional points are no longer introduced. Setting the phase-shift equal to the period will now produce the same function as when phase-shift equals 0. A positive phase shift will now move the wave form to the left to be consistent with mathematical convention. For example, a sine wave with a phase-shift equal to period/4 will now result in a cosine wave.

Miscellaneous
Incidents Resolved

*	Ticket	Description
*	6290	An Incident was resolved where creating a copy of material and then editing the allowable, ultimate, or yield stresses for either the original material or any of its copies would also modify value for all of those materials. The issue did not exist when the model was saved and reopened prior to editing the material stresses.

User Interface
Incidents Resolved

*	Ticket	Description
	5367	An incident was resolved where an invalid load case could be set as the reference load case for a combination load, causing an error to occur during design. When this occurred, design results were not available for the affected design requests. Now when a model is opened, any invalid reference loads found are set to ambient, and the user is warned of such changes by a message box upon opening the model.