



Tekla Structures

Release Notes



Product version 21.0
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1 Tekla Structures 21.0 Release Notes

Reading tip: You can browse the release notes by using the table of contents or [download the release notes as a PDF](#) in Tekla User Assistance.

Tekla Structures version 21.0 is a main version, and contains many new features and fixes.

Compatibility We suggest that you complete any unfinished models using your current Tekla Structures version.



Several different versions of Tekla Structures may coexist on your computer. You can open models created in older versions of Tekla Structures using Tekla Structures 21.0. When you create or save a model in Tekla Structures 21.0, you cannot open it in older versions of Tekla Structures.

Installing Tekla Structures setup creates a new subfolder for Tekla Structures 21.0.
You need Windows Administrator rights to install Tekla Structures 21.0.



Tekla Structures 21.0 uses .NET Framework 4.5.1, which will be installed on the computer together with Tekla Structures if it is not already installed. .NET Framework 4.5.1 can also be installed from [Microsoft Download Center](#).

Tekla Open API Release Notes To learn about the improvements in Open API development, see the Tekla Open API Release Notes that are included in the Tekla Open API Startup Package. You can get the Tekla Open API Startup Package on the Tekla Extranet.

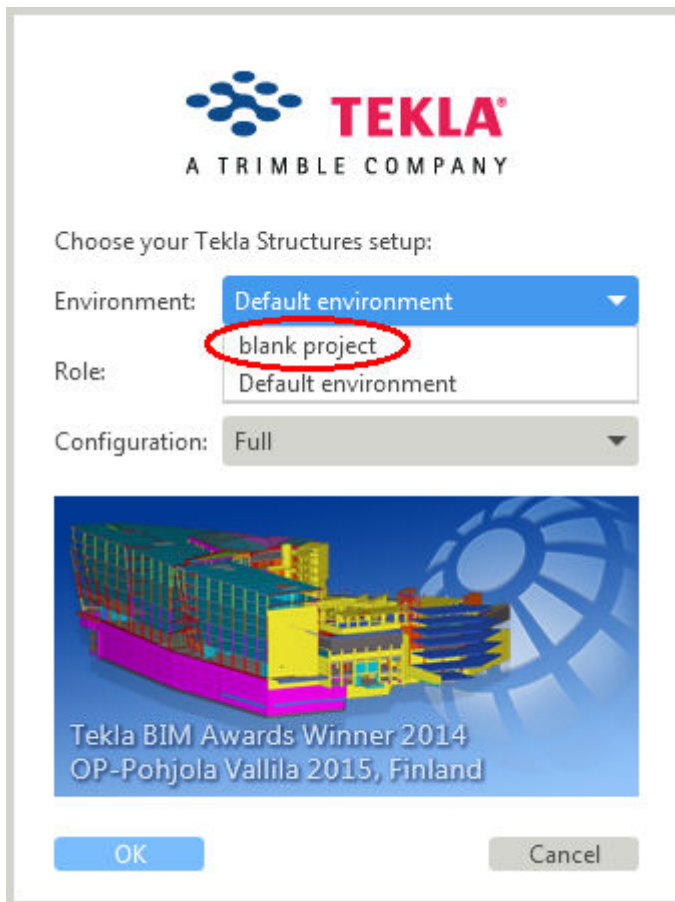
Extensions You can use extensions to expand the capabilities of Tekla Structures. These tools can be developed and enhanced rapidly. The extension helps are available through the [Extensions](#) page in Tekla User Assistance. You can browse and download extensions in [Tekla Warehouse](#) (requires login).

1.1 Setting up your project

In Tekla Structures 21.0 you can easily set up your own project from scratch by using the new **blank project** together with Tekla Warehouse. You no longer need to start your project by removing unnecessary content from an existing environment with a lot of predefined content.

Blank project The blank project is a Tekla Structures environment that includes only generic content, such as parametric profiles and undefined materials, and that can be used for gathering region-, company-, or project-specific settings, tools, and information. The blank project is included in the Tekla Structures software installation.

To start building or to use your own project settings, select **blank project** in the **Environment** list when you start Tekla Structures:



Downloading content from Tekla Warehouse You can use Tekla Warehouse to download or install content to the blank project. For example, you can download or install profiles, material grades, bolts, reinforcement, components, tools, and templates across all Tekla Structures environment- and manufacturer-specific collections, and make combinations that suit your needs.

You can download or install content from Tekla Warehouse either before starting the project to your project and firm folders, or during the project to the model folder.

1.2 Tekla Model Sharing

Tekla Structures 21.0 offers a new way to work collaboratively: Tekla Model Sharing.

Tekla Model Sharing enables global collaborative modeling within a Tekla Structures model: team members now have the freedom to work with the same model at the same time in different locations and time zones. With Tekla Model Sharing you can work locally and share your model changes globally.

With Tekla Model Sharing you can

- invite other users to your shared model
- join someone else's shared model
- share model changes

In Tekla Model Sharing each user has a local version of the model on their computer or on a network drive, and the model data is shared and synchronized over the Internet using a Microsoft Azure cloud service that is provided by Tekla. When a model is shared, it is connected to the cloud-based sharing service. You can then easily share your changes by *writing out* them to the sharing service. When you want to update your model with the changes done by other users, you do it by *reading in* the changes from the sharing service.

Even though the changes are shared over the Internet, you do not need to be connected to the sharing service all the time. You need to be online only when you want to write out or read in the changes. This enables the offline work if your Internet connection is not always available.

Prerequisites Before you can start using Tekla Model Sharing, the following prerequisites need to be met:

- Internet connection

You need to establish a connection to the Tekla Model Sharing service to perform any model sharing actions.

- Tekla Account

All sharing actions require authentication, and the authentication is done with Tekla Account username, password, and organization.

- License

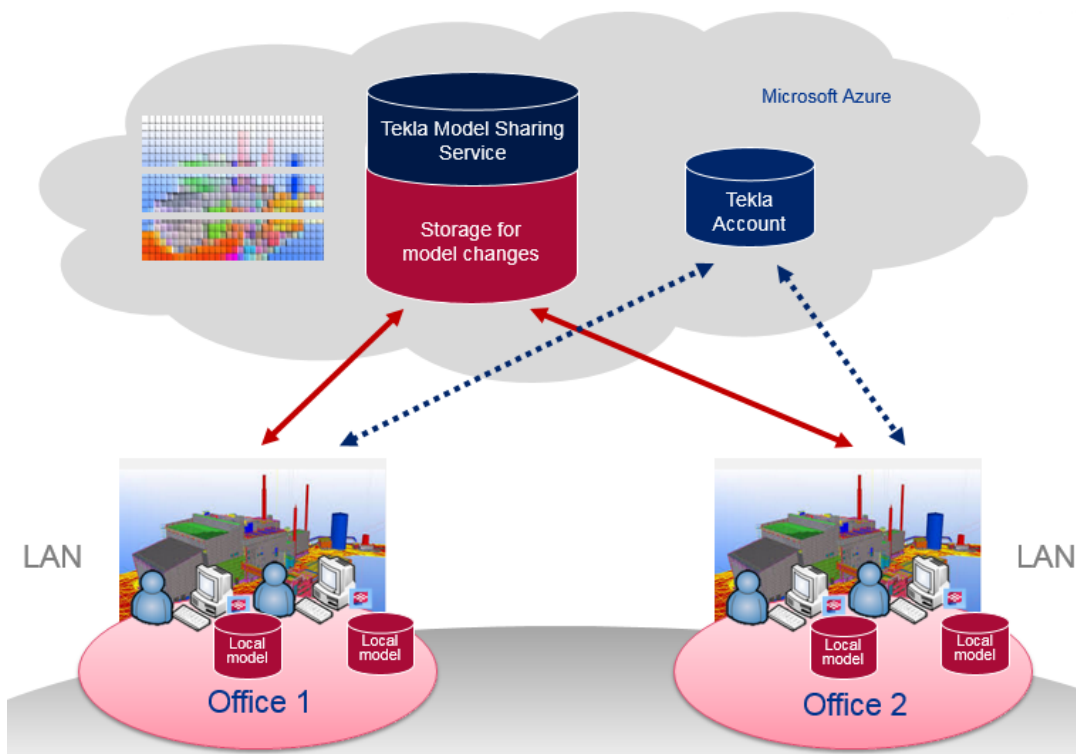
All sharing actions require a valid Tekla Model Sharing license.

If your company has a valid maintenance agreement, you can request free Tekla Model Sharing evaluation licenses.

For more information, see [Tekla Model Sharing](#) and [Tekla Account](#).

Tekla Model Sharing service The model data is stored to the Tekla Model Sharing service. To send model changes to the sharing service and to fetch other users' model changes from the sharing service, you






- write out
- read in



When you read in other users' changes, the updates to the shared model are delivered to you as incremental packages. This means that when you read in, the data that is fetched from the sharing service is merged with the data on your computer.

Note that there is no central model in the sharing service as such, only a model instance that consists of a model baseline and incremental updates. You cannot open the model in the sharing service or access any files.

Tekla Model Sharing actions


To	Do this
Start sharing a model and invite other users to your model	Click File --> Sharing --> Start Sharing , or  .
Send model changes to the sharing service	Click File --> Sharing --> Write Out , or  .
Fetch model changes from the sharing service	Click File --> Sharing --> Read In , or  .
Join someone else's shared model	Click File --> Sharing --> Shared models , or  .
Check other users' roles and their actions on the shared model	Click File --> Sharing --> Users , or  .

1.3 Tekla Warehouse – a new way of sharing Tekla Structures content

With Tekla Structures 21.0, you can use Tekla Warehouse for collaboration, and for storing and sharing Tekla Structures content.

Tekla Warehouse provides centralized access to a wide range of content that you can use in your Tekla Structures models.

Tekla Structures 21.0 has a new command **Open Tekla Warehouse** on the **File** menu, and a

new button  on the **General** toolbar, which you can use to access Tekla Warehouse.

For more information on Tekla Warehouse, open Tekla Warehouse and click **About**.

1.4 Improvements in snapping

When you use clip planes in model views in Tekla Structures 21.0, you can now snap to points and lines in the clipped cross sections of model objects.

In reference models, you can only snap to the corner points, not along the lines.

The snap symbol is bluish gray.

1.5 Improvements in highlighting objects

When you create a workshop weld to form an assembly, or add a reinforcement to a part, it is now easier to check the result.

- The assembly and the workshop weld are now highlighted after a weld has been created. Highlighting of the weld and the highlighting of the assembly is always cleared when a view or an object is selected.
- The reinforced part and the reinforcement are now highlighted after a reinforcement has been created. Highlighting of the reinforcement and the highlighting of the reinforced part is always cleared when a view or an object is selected.

1.6 Improvements in construction objects

You can now modify construction points, lines, circles, and planes using direct modification.

By dragging direct modification handles and dimension arrowheads you can easily:

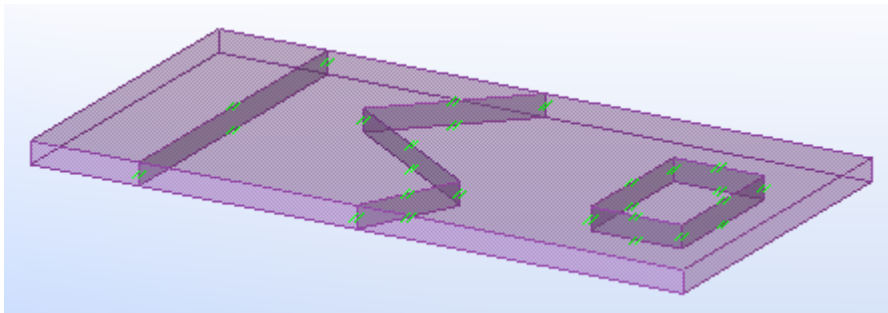
- Move construction objects
- Change the length and direction of construction lines
- Change the radius of construction circles
- Change the dimensions and rotation of construction planes

1.7 Improvements in pour breaks and pour objects

Tekla Structures 21.0 introduces new methods for creating and working with pour breaks, and improvements to the existing methods.

Creating polyline pour breaks

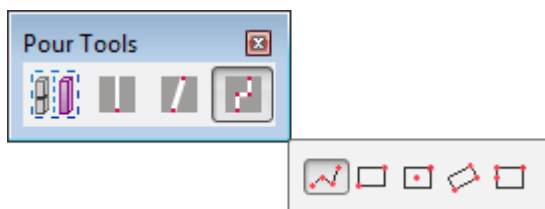
Tekla Structures 21.0 introduces a new command that you can use to create polyline pour breaks that are perpendicular to the current work plane. Polyline pour breaks traverse more than two points and can be open or closed.



You have the following options for the picked points that define a rectangular polyline pour break:

- Two opposite corners of the rectangle
- The center and one corner of the rectangle
- Three corners of the rectangle
- One side midpoint and two corners of the rectangle


These options are available on the toolbar that opens when you click **Modeling --> Create Pour Break --> By Multiple Points**, or click the **Create pour break using multiple points** button on the **Pour Tools** toolbar.



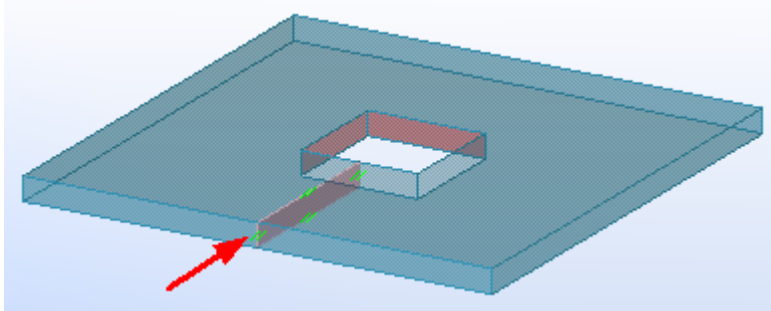
Creating pour breaks using one or two points

The existing commands for creating pour breaks have new buttons on the **Pour Tools** toolbar and new names in **Modeling --> Create Pour Break** :

- by **Inserting Single Point** is now **By One Point** 

- by **Inserting Points** is now **By Two Points** 

When you use these commands, it is no longer possible to create an invalid pour break that does not split a cast-in-place concrete part completely into two, for example:



If you try to do this, Tekla Structures prompts you on the status bar to use another pour break command.

Pour breaks adaptive to cast-in-place concrete structures

Pour breaks are now adaptive to cast-in-place concrete parts and pour objects. This means that if you change the geometry or location of a cast-in-place concrete part or pour object, its pour breaks change accordingly.

If you in Tekla Structures 21.0 open older models with pour breaks that have not been adapted to cast-in-place concrete parts or pour objects, the pour breaks do not adapt automatically. You need to modify a cast-in-place concrete part in Tekla Structures 21.0 for the part's pour breaks to become adaptive. You can also switch **Pours and pour breaks** off, and then back on in **Tools --> Options** to make the pour breaks adaptive.

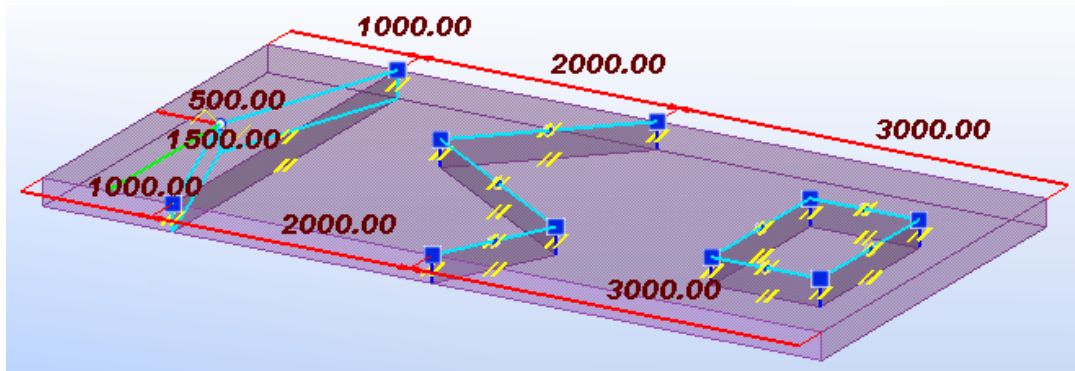


The pour breaks are not adaptive when the pour management functionality is disabled in the model.

Changes in modifying pour breaks


Pour breaks now always stay inside pour objects. This means that you can no longer accidentally create pour breaks that extend outside the pour objects or that only partly split cast-in-place concrete parts.

You can now add and remove intermediate pour break points using direct modification. When **Direct Modification** is on, all pour breaks now have segment midpoint handles that you can use to modify the pour breaks. You can also drag pour break ends and corners to new locations inside the pour object.



The old line and plane handles of pour breaks have been removed, and they are no longer available in Tekla Structures 21.0.

Selecting pour breaks

The **Select pour breaks** selection switch now has a new icon  on the **Selecting** toolbar. The functionality of the selection switch is the same as previously.

Finding invalid pour breaks

It is now easy to recognize if a pour break is invalid, meaning that the pour break does not split a pour object completely into two and needs to be remodeled. By default, Tekla Structures now shows the invalid pour breaks in red in model views.

You can change the color of the invalid pour breaks by using the new advanced option `XS_INVALID_POUR_BREAK_COLOR` in an appropriate initialization file.

You can also use the new template attribute `IS_POUR_BREAK_VALID` in reports to find invalid pour breaks. The template attribute `IS_POUR_BREAK_VALID` returns the value 1 if the pour break is valid and 0 if the pour break is invalid.

You can identify invalid pour breaks while opening older models or during modeling.

Disabling pours and pour breaks

The options that temporarily switch the pour functionality on or off for a certain model have been changed in the following ways:

	In Tekla Structures 20.1 or earlier	In Tekla Structures 21.0
Option in Tools --> Options	Disable Pours and Pour Breaks was previously switched off by default	Pours and Pour Breaks is now switched on by default
Setting in the <code>xs_user.[user name]</code> file	DPOU <ul style="list-style-type: none"> set to 0 to enable pours set to 1 to disable pours 	PAPB <ul style="list-style-type: none"> set to 1 to enable pours set to 0 to disable pours

Showing and reporting pour objects

In Tekla Structures 21.0, robustness of solid pour objects and parts in continuous material representation has been improved. This improves, for example, the accuracy of reported pour volumes and areas. Also, the part edges in pour objects or continuous material are displayed more accurately in models and drawings.

Opening models containing pour objects

Reliability and robustness of pour functionality have been improved, which prevents application errors when opening models that contain pour objects.

1.8 Splitting polybeams

In Tekla Structures 21.0, you can split polybeams in models.

You can split polybeams in the same way as straight and curved parts by using the **Edit --> Split** command.

After splitting, we recommend that you check that the following are correct:

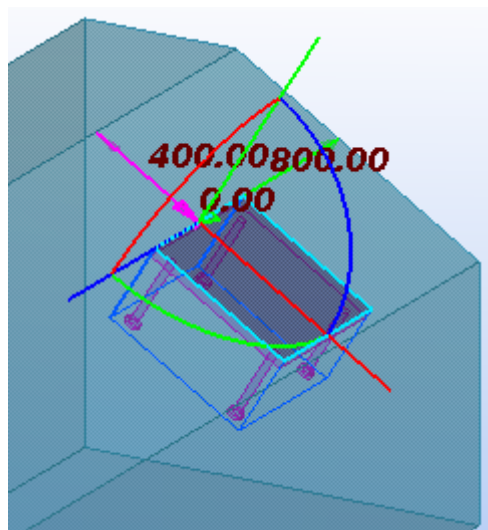
- The position and orientation settings of the split polybeams
- The components related to the split polybeams

1.9 Adding and moving custom parts in models

In Tekla Structures 21.0, you can use direct modification to add custom parts from the **Component Catalog** to the model, and to move and rotate the existing custom parts in the model.

The custom parts that you add can have one or two input points. The custom parts may be created in Tekla Structures, or imported or downloaded, for example, from Tekla Warehouse.

In direct modification of custom parts, you can easily drag coordinate axes, rotation handles, and location dimensions to new locations, and in that way modify and fine-tune the location and rotation of custom parts.



1.10 Checking clashes between bolts and bolted parts

You can have Tekla Structures 21.0 search models for clashes that occur between a bolt and the bolted parts.

To do this, modify the clash check settings before you use the **Clash Check Manager** to find clashes:

1. Click **Tools --> Options --> Options** .
2. In the **Options** dialog box, go to the **Clash check** page.
3. In the **Clash check between bolt and bolted part** list, select **Yes**.
4. Click **OK**.

Tekla Structures will check the bolts against the real geometry of the bolted part profiles including roundings, and using the real bolt dimensions.

1.11 Improvements in Rebar Shape Manager

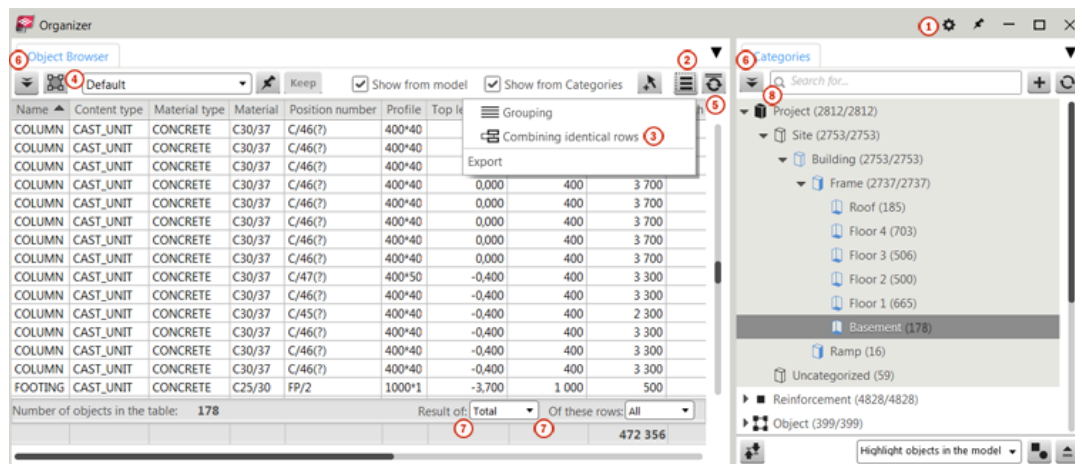
There is now a new button **Schedule Fields** in **Rebar Shape Manager**. Clicking the button opens the **Schedule Fields** dialog box where you can add, remove, modify and arrange the order of the schedule fields available and shown in the main dialog box of **Rebar Shape Manager**. You can also reset the schedule fields back to the original default.


When changing the set of available schedule fields, keep in mind that when updating an existing shape, any old schedule fields that do not exist anymore will be cleared. For this reason, it is recommended that you do not remove any of the default fields unless you are sure they have not been used in any of the existing shapes.

Note that you can give any name for a new schedule field. This field can be reported in Tekla Structures with the name `DIM_XXX` or `ANG_XXX`, where `XXX` is the schedule field name. Note that using the `ANG_prefix` will result in a radians to degrees conversion, as the value is expected to be angular.


1.12 Improvements in Organizer


The **Organizer** user interface has been improved in Tekla Structures 21.0.



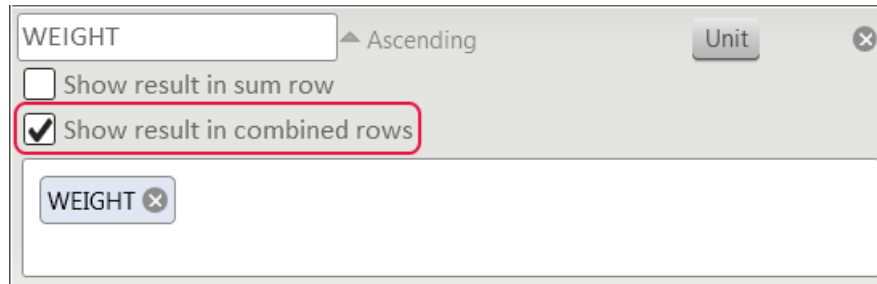
1. The **Settings** button has a new location.
2. There is a new button  that opens a menu for grouping, combining identical rows, and exporting options.
3. **Combining identical rows** is a new function that combines rows that have the same property values.
4. You can now show the objects that belong to assemblies and cast units.
5. Reloading the view has a new button.
6. The expand and collapse function has a new button.
7. The options for calculating property values are now in the bottom right corner in **Object Browser**.
8. The project that is selected for reporting now has a black icon in **Categories**.


Viewing object properties in Object Browser

- You can now combine the rows that have the same property values to one row. When you combine rows, **Object Browser** displays a **Count** column that shows how many rows have been combined. To combine rows, click the new  button and select **Combining identical rows**.


For the combined rows, you can define in **Settings**  whether a column shows a single value of a property or the sum of values of the combined rows. For example, a single





weight value could be 0.899 and the sum of weights 4.493 tonnes. To show the sum, find the property under **Columns** and select the **Show result in combined rows** option.

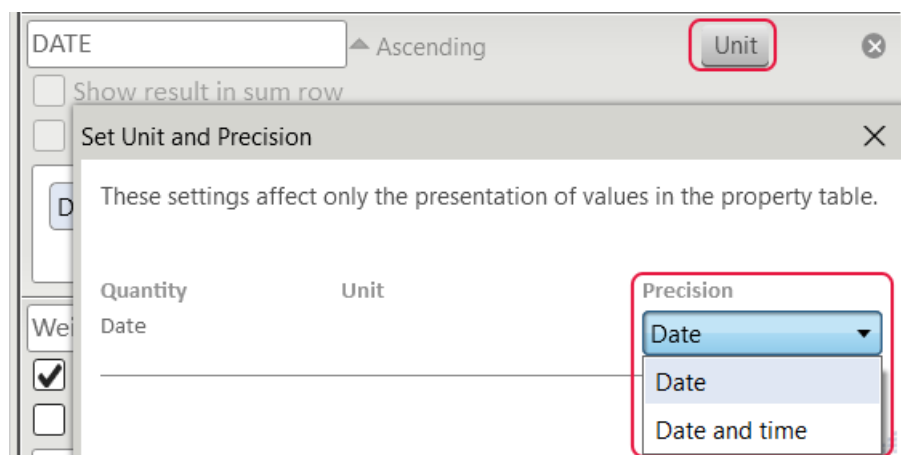




- You can now show the objects that belong to assemblies and cast units. To show the objects, click .
- When viewing calculated property values, the **Result of** list now includes the sum value options. In the **Of these rows** list you can select whether the values are calculated from all or selected rows.

As before, **Object Browser** by default shows the calculated values of properties for which it is sensible to calculate results. If you do not want to show the calculated value of such

a property, go to **Settings**  and clear the **Show result in sum row** option. Previously, the option was **Calculate the values**.

- In **Settings** , there is a new **Unit**  button for setting the unit of a property column. This button replaces the  button.
- In **Settings** , you can now select whether the precision of the **DATE** property is **Date** or **Date and time**.

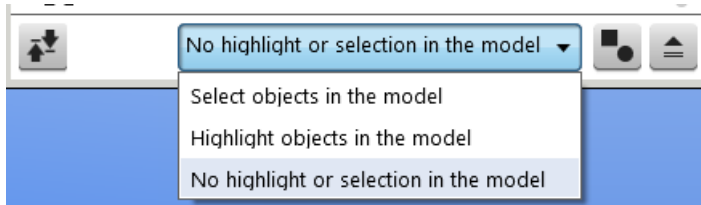


- In **Settings** , you can now set the default property template. Select a template from the template list and click **Set as default**. The default template has a checkmark .

The **Set as default** button is hidden when you have the default template open. When you select another template from the template list, the button is shown again.

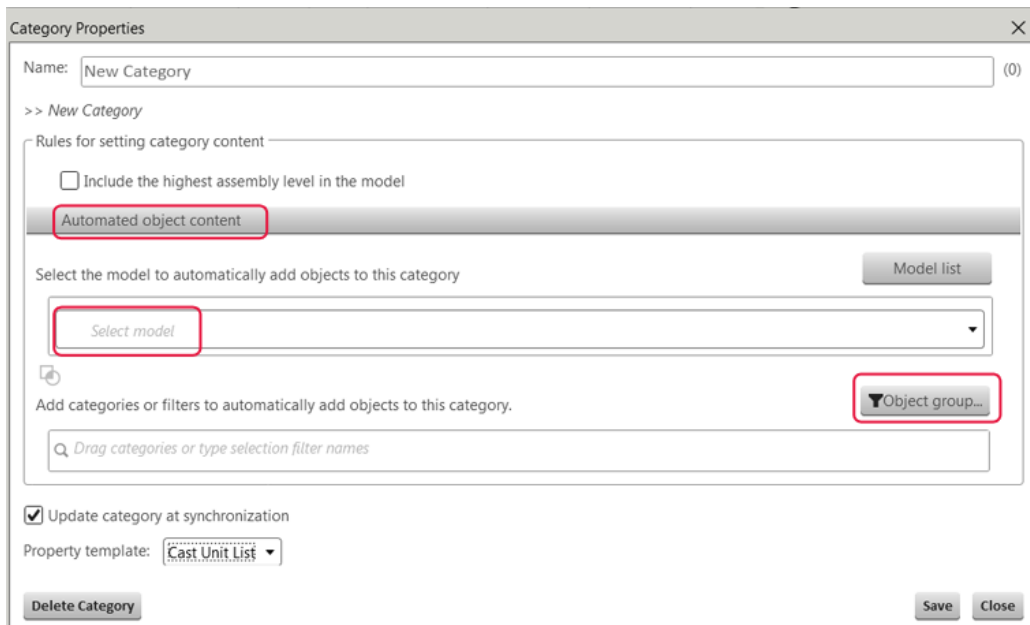
Viewing categories

- You can now define that the objects in the category are not highlighted or selected in the model. In **Categories**, select a category and from the list at the bottom of the categories select **No highlight or selection in the model**.



Creating categories

- There are new options in the rules for setting the category content of custom categories. Click the **Automated object content** button to display the rule options.



- The models that can be used in the category content are available in a list. You can select one or several models to automatically add the objects of the models to the category. You can, for example, select only a reference model to include its objects to the category. The **Model list** button opens a dialog box that lists the models used in the category.
- You can now create filters for **Organizer** in the category rules. Click the **Object group** button to open the **Object Group – Organizer** filter dialog box in Tekla Structures. When you save the filter, it will be available in the list of filters in category rules.

You can also separately create filters for **Organizer** before you create any categories.

For example, when creating a selection filter, click **>>** in the filter settings and

select **Organizer** as the filter type. These filters are also available in the list of filters in category rules.

Select the **Include the highest assembly level in the model** option to include in the category the highest level assembly of any object that you add to the category manually or automatically.

- You can now create a subcategory tree structure by property using the **Create a tree by property** command for several categories at a time. The categories do not need to include objects. If you use the command for empty categories, only the category rules are saved. Previously, you could create the tree structure for only one category at a time and the category had to include objects.

Importing categories

- You can now import the location breakdown structure of an IFC model as IFC categories to the location categories in **Organizer**. To do this, right-click a project in **Categories** and select **New IFC project**. The IFC categories are imported at the bottom of location categories.
- If a category you are importing to **Organizer** has the same name as an existing category, you now have the following options:
 - You can import the category and replace the existing category.
 - You can select not to import the category.
 - You can import the category but keep the existing category. If you import a category that has the same name as an existing category, **Organizer** adds a running number to the category name.

Excluding object types


Some object types can be excluded from **Organizer**. These object types are listed in the `ExcludedTypesFromOrganizer.xml` file that is by default located in the `\system\ProjectOrganizerData` folder in the Common environment. The location may vary depending on your environment. Excluded object types are not displayed in **Object Browser** and they are not included in categories.

You can modify the `ExcludedTypesFromOrganizer.xml` file to either include or exclude the object types. Before you modify the file, we recommend that you copy it to the `\ProjectOrganizerData` folder that is under the model folder. You may need to create the `\ProjectOrganizerData` folder as it does not by default exist in the model folder.

You should not add or remove any lines from the `ExcludedTypesFromOrganizer.xml` file, otherwise **Organizer** will not be able to use the file.

1.13 Improvements in Task Manager

Fitting the project schedule to the Gantt chart

You can now fit the whole project schedule to the Gantt chart. To do this, click  and select **Fit to the project**. This automatically selects the appropriate Gantt chart timescale option so that the whole project schedule is shown in the Gantt chart.

Defining task schedule

In Task Manager, the **Fixed start** and **Fixed start and end** settings affect the task length calculation when you add objects to a task or remove objects from the task.

- When using **Fixed start and end** as the scheduling mode, adding objects to the task increases the production rate but keeps the task length as it is.
- When using **Fixed start** as the scheduling mode, adding objects to the task extends the task length.

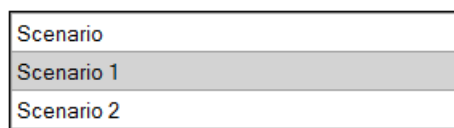
In the Gantt chart, you can now extend and shorten the tasks that have the **Fixed start and end** scheduling mode. You can also shorten and extend tasks in the task list or modify the **Planned end date** and **Planned length** of a task on the **Scheduling** tab in the **Task information** dialog box.

Creating new scenarios


When you create a new scenario, Task Manager now automatically names it as **Scenario**. If you create several scenarios, Task Manager adds a running number to the name. The new scenario does not contain any tasks. You can copy tasks from another scenario to the new one.

Open scenario highlighted

Task Manager now highlights the scenario that is open.



Calculating dates of individual objects in tasks

You can now calculate the planned dates of individual objects for multiple tasks at a time. To do this, select the tasks in the task list and click .

As before, you can still do this for one task at a time on the **Objects** tab in the **Task Information** dialog box.

1.14 New drawing property dialog boxes and automatic view-level property handling

In Tekla Structures 21.0, drawing and view properties dialog boxes and property handling have been renewed:

- Drawing properties and view properties dialog boxes for assembly, single-part and cast unit drawing settings have a completely new look and feel, even though the included

settings are the same as before. The drawing level general arrangement drawing properties dialog box is the same as earlier.

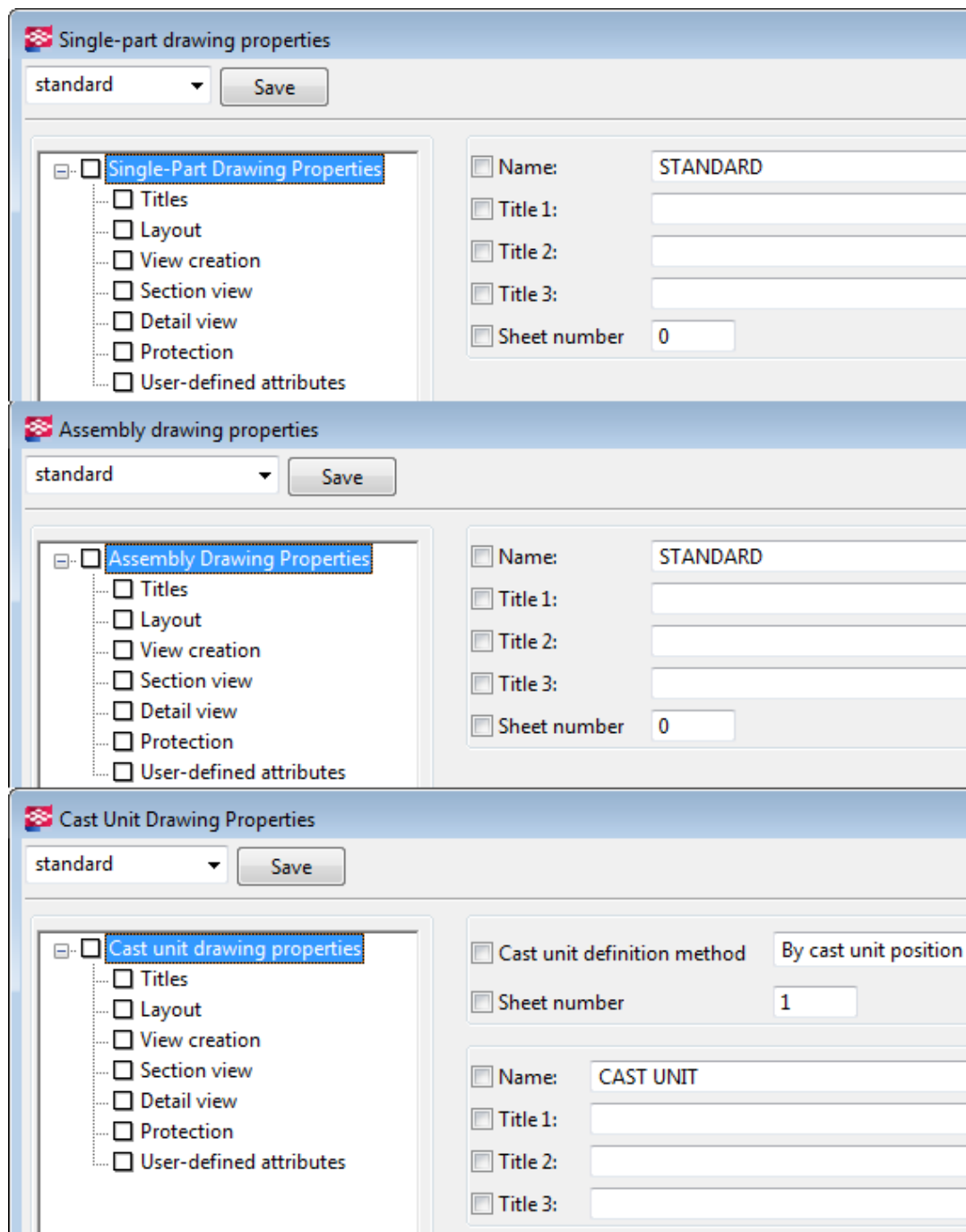
- The new properties dialog boxes collect all options in the dialog box into an option tree, which makes the navigation easier and more intuitive. When you click an option in the options tree, the related content is displayed within the same dialog box in a panel. In previous Tekla Structures versions, clicking an option button in the drawing properties dialog box opened a separate subdialog box.
- The **View properties** dialog box also contains an options tree instead of option buttons. The new **View properties** dialog box is used for all drawing views, including general arrangement drawing views.
- When you create and update single-part, assembly and cast unit drawings, the object properties and dimensioning methods and styles are now controlled individually for each view, and you can use different settings for different views.
- You also have more control on dimension creation and placement, especially if you use the new dimensioning methods, such as **Shape** or **Overall**. These new methods now work also in single-part drawings.
- Automatic view-level properties and dimensioning have been available already since version 19.1 in certain model templates, but now they are on by default.
- If you want to use the old functionality and the old dialog boxes, you can set the advanced option `XS_USE_OLD_DRAWING_CREATION_SETTINGS` to `TRUE` in an `*.ini` file. However, note that Tekla no longer maintains the old functionality and dialog boxes. In practice this means that new features, like custom presentations or automatic view-level properties will not be available in the old dialog boxes.

New properties dialog boxes The single-part, assembly and cast unit drawing properties dialog boxes include two types of properties: drawing-specific and view-specific.

The drawing-specific properties apply to the whole drawing:

- drawing name
- drawing titles
- drawing layout
- user-defined attributes
- protection settings

- some detail and section view properties

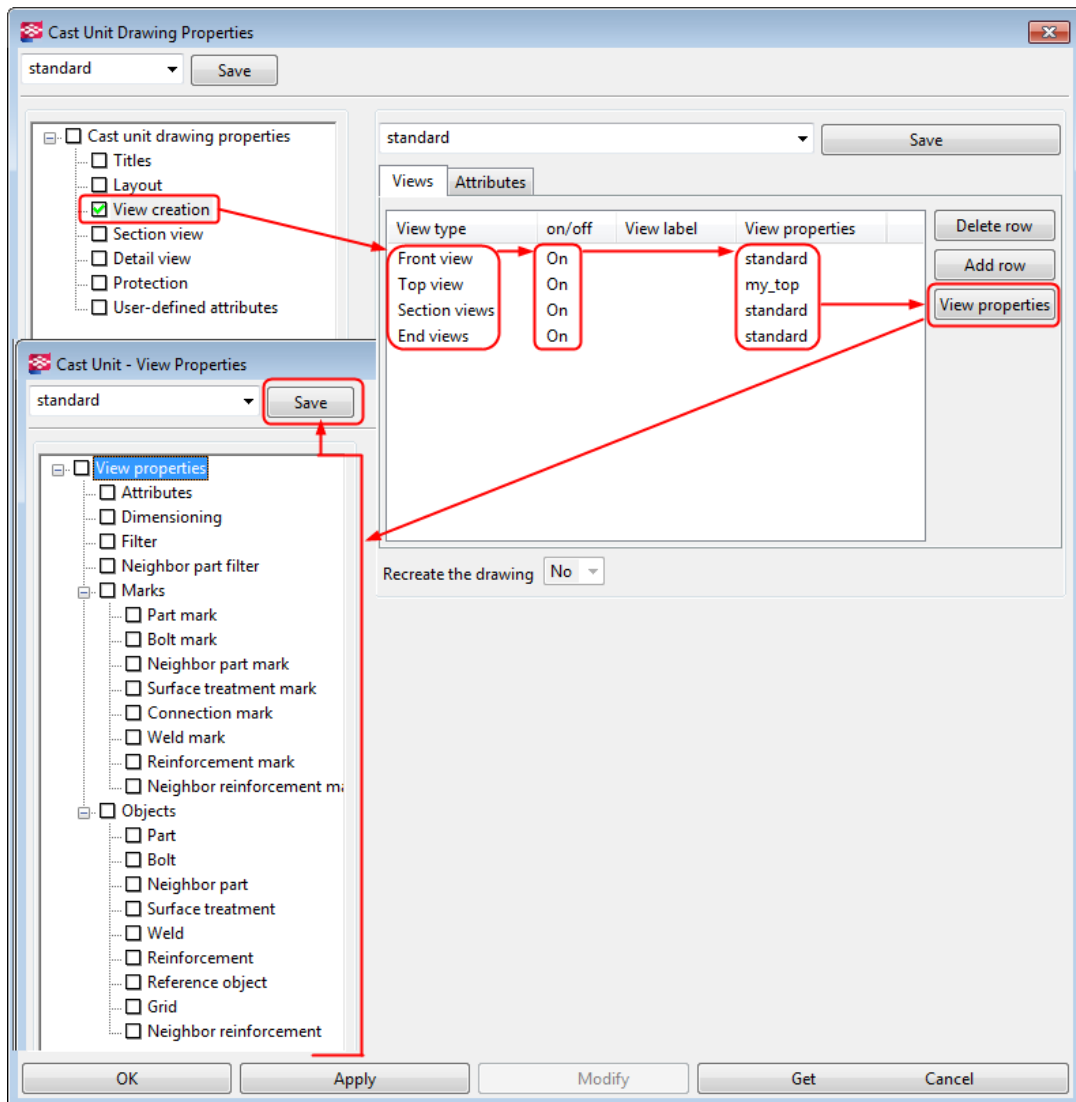


Automatic view-level properties and view creation

Automatic view-specific properties can be defined separately for each created view, already before creating a drawing. For example, you might want to show marks in one view, and surface treatment in another. You can create as many views as you need, several top views, for example, or several end views from different directions.

To specify the drawing views to create and the properties to use, follow the path shown in the image below.

1. Click **View creation**, and select the views to create and the view properties to be used for the created views.
2. If you need to change view properties or create new ones, click **View properties** and change the view properties, including the view attributes and the properties for dimensions, filters, marks and objects. Save these properties for later use.
3. Remember to always use **Save** to save the view properties, otherwise your changes are not saved.



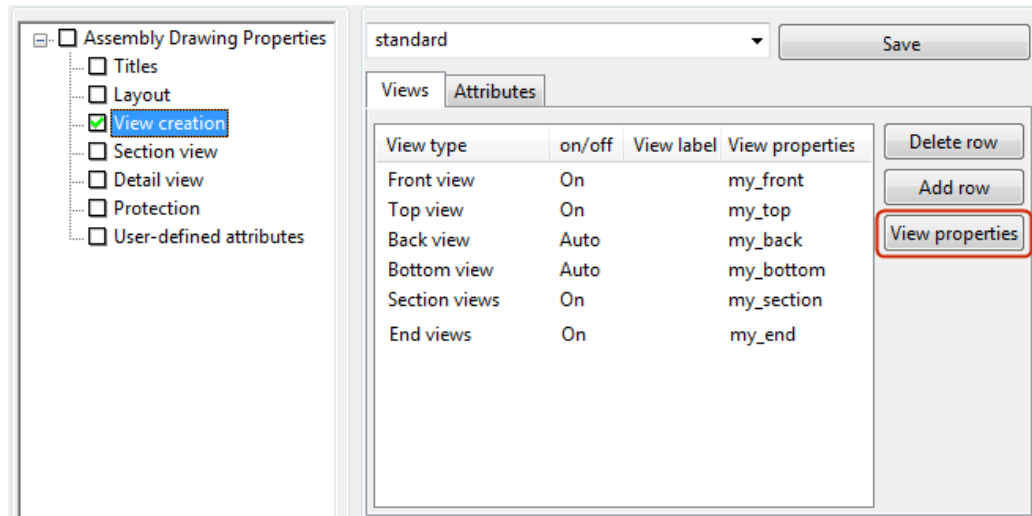
View-specific dimensioning

Automatic view-specific dimensioning offers full control on the dimensions in each drawing view you create, with a lot of dimensioning options. Automatic view-specific dimensioning can be used in single-part, assembly and cast unit drawings.

In view-specific dimensioning, the dimensions are created based on the dimensioning rules that you define. You can define what you want to dimension, where the dimensions are placed, in which order they are created, and which settings you want to use for each dimension. You can dimension shapes and holes, for example.

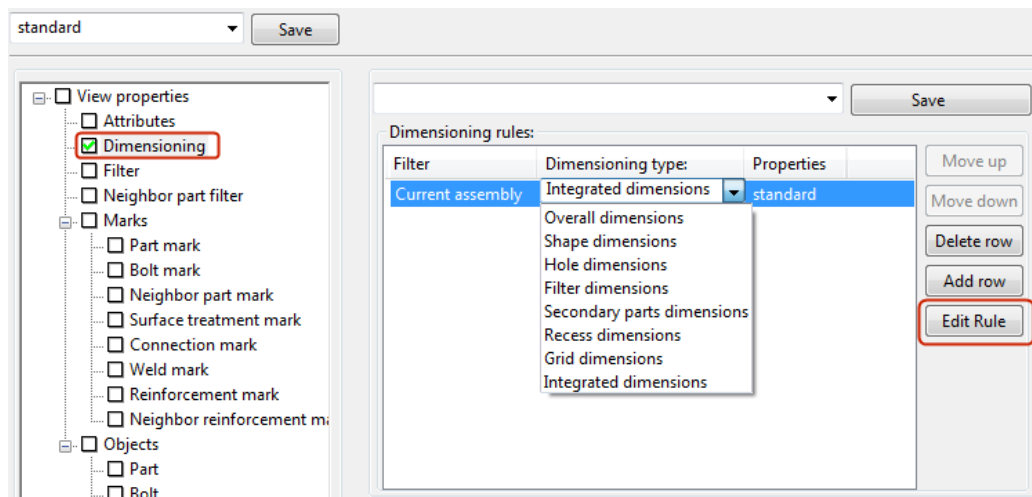
Below you can find a short description on how to proceed in dimensioning.

1. When you click the **View creation** option in the options tree in drawing properties, you are able to select the views to be created and the view properties to be used.



2. Select the desired row view and click **View properties**.
3. Click **Dimensioning** in the options tree.

In **Dimensioning rules**, you can add rules by clicking **Add row**. Then select which dimensioning rules you want to use in the **Dimensioning type** column and the desired dimensioning rule properties file in the **Properties** column.



4. You can modify the selected rule or create a new one by clicking **Edit Rule**.

In the **Dimensioning Rule Properties** dialog box, you can select what to dimension, how to dimension, which objects to measure from, where to place the dimensions, and select the dimension properties.



The **Dimension properties** list contains properties files that you have saved in the **Dimension Properties** dialog box in an open drawing (**Dimensioning** --> **Dimension Properties**). You can load these properties here. For example, you may want to use a special font or color in the dimensions, or use a different dimension format.

For more information on the dimensioning rule properties, see Dimensioning rule properties.

The screenshot shows the 'Dimensioning Rule Properties' dialog box. At the top, there is a dropdown menu set to 'standard', with 'Save', 'standard', 'Save as', and 'Help...' buttons. Below this, the 'What is dimensioned:' dropdown is set to 'Edge shape'. The 'Dimension line locations and linking:' section includes a diagram of a rectangle with dimension lines and checkboxes for top, bottom, left, and right. A note states: 'If you select both top and bottom, or left and right, dimensions are placed on the nearest side'. The 'Orientation:' dropdown is set to a diagonal line, and the 'Minimum length for skew section:' is set to '300.00'. The 'Start point:' section has 'Horizontal:' and 'Vertical:' dropdowns, both set to arrows. The 'Close lines:', 'Dimension to:', and 'Round holes:' sections each have a dropdown menu. The 'Dimension properties:' dropdown is highlighted with a red rectangle and is set to 'standard'. Below this is a '<<' button. The 'Measure from:' section has 'Cast unit / Assembly' and 'Only concrete / steel parts' dropdowns. The 'Combine on one line:' dropdown is set to 'All objects'. There is a checkbox 'Combine only objects that have the same X or Y coordinate'. Below this are fields for 'Tolerance:' (50.00), 'Preferred combining direction:' (X), 'Do not create dimensions shorter than:' (0.00), 'Do not dimension holes smaller than:' (0.00), and 'Component objects:' (By reference point). A 'Close' button is at the bottom right.

If you select **Integrated dimensions** as the dimensioning type in the **Dimensioning** panel, the **Dimensioning Properties** dialog box is displayed. You can also load saved dimension properties here.

Cast Unit - Dimensioning Properties

Save Load standard Save as standard

Reinforcement dimensions Position dimensions Dimension grouping

General Part dimensions Bolt dimensions

Number of views

☒ Minimize: Yes

Combine dimensions

☒ Options: 3

☒ Distance: 800.00

☒ Min distance: 200.00

Close dimensions

☒ All

☒ Short dimensions: Yes

Placing

☒ Forward offset: 250.00

Necessary internal dimensioning

☒ Recognizable distance: 10.00

☒ Part mark on dimension line: None

☒ Main dimension position: Auto

☒ Grid dimensions: None

☒ Grid dimension position: Main view - above

Dimension properties

☒ Straight dimensions straight_standard

☒ In X direction:

Arrow shape:

☒ US Absolute dimensions:

☒ Level dimensions:

☒ Angle dimensions angle_standard

☒ Check dimensions check_standard

Close

- When you have set the rule properties, save the changed rules file by clicking **Save**, or give a new name to the rules file and click **Save as**.
- Click **Close** to return to the **Dimensioning** panel.
- Ensure that you have selected the correct dimensioning properties files for the dimensioning rules.

8. Enter a unique name for the view properties in the box at the top of the **View Properties** dialog box and click **Save**.

Now you can select the modified and saved view properties for a view in the **View Properties** column in the **View creation** panel. These view properties contain the dimensioning properties that you just saved.

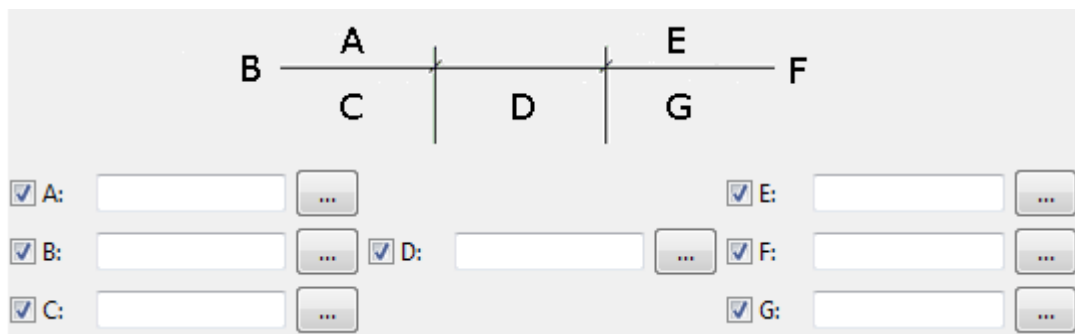
For an example of the dimensioning workflow, see Example: Creating automatic overall and hole dimensions on view level.

1.15 Improvements in neighbor reinforcement in general arrangement drawings

In general arrangement drawings, the **Neighbor reinforcement properties** and **Neighbor reinforcement mark properties** have been separated from the **Reinforcement properties** and **Reinforcement mark properties**. There are new option buttons and subdialog boxes for neighbor reinforcement properties and neighbor reinforcement mark properties.

1.16 Improvements in dimensions

Dimension tags Saved properties for one dimension tag are now available also for other tags. Previously you had to create the properties separately for each tag.



View-level dimensioning

- The view-based dimensioning methods, such as shape, overall, and filter now work in single part drawings as well. In rule creation, you need to select the new option **Current part** from the **Measure from** list, when you are dimensioning a single part.
- Previously, view-level dimensioning did not take view filter and section view depth into account correctly. Now the view filter and section view depth are taken into account in dimensioning.
- Previously, manual dimensions disappeared when you redimensioned a view in a drawing with automatic dimensions. Now manual dimensions are totally independent from the

automatic dimensions and remain in the drawing when you redimension a view using automatic dimensioning.

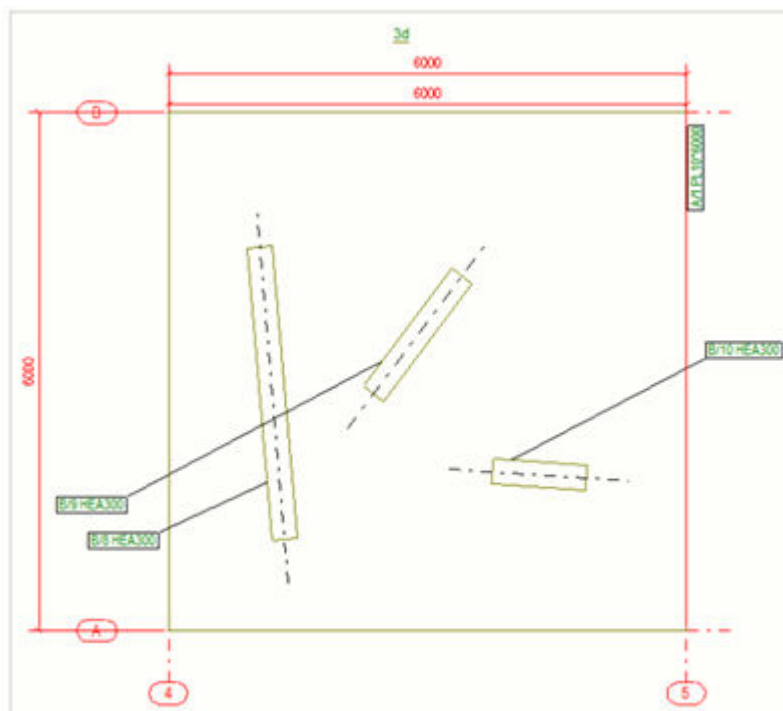
- Using the **Modify** button now works better on drawing level. For example, if you make changes to a dimensioning rule, save the rule and press **Modify** from drawing level, the drawing is redimensioned correctly.

1.17 Improvements in marks

Maximum search distance for marks

There is now a **Maximum distance** setting for marks. If no place for mark is found within the specified distance, Tekla Structures will force the mark to that distance. This setting is available in **Mark Placing** properties dialog box that can be opened in the view properties dialog boxes, and for general arrangement drawings, also on the drawing property level. This improvement affects marks of parts, bolts, neighbor parts, surface treatment, connections, reinforcement, and neighbor reinforcement.

The image below shows how the marks of the beams are placed outside a square plate.



When the maximum distance is set to 15 mm, the marks are placed near the beams.

sandwich_filter Save

Filter type: Model Drawing Other

☐ View filter ☐ All drawing types ☐ Organizer

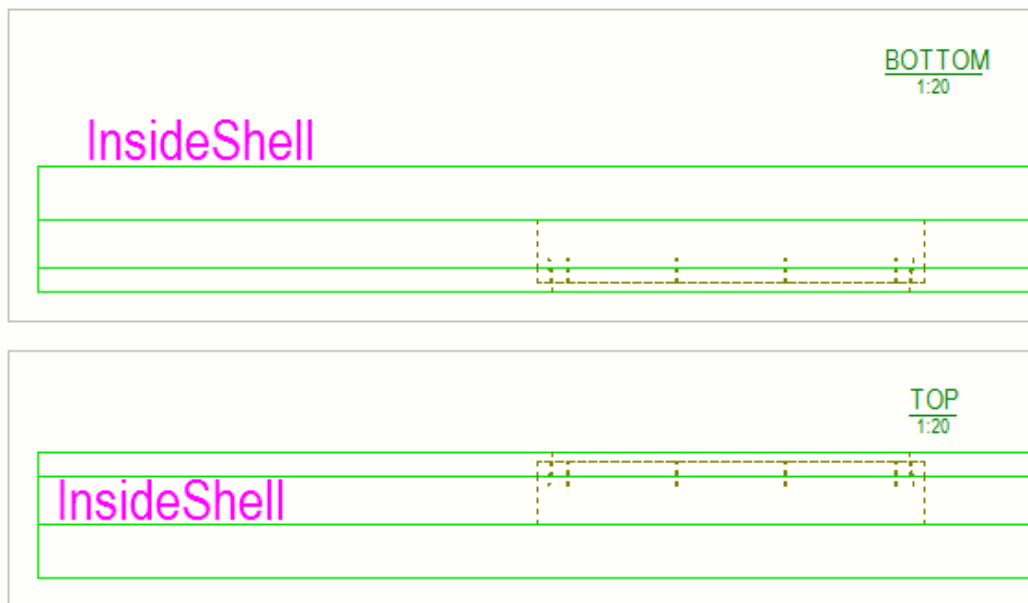
☐ Selection filter ☒ Current drawing type

☐ Object representation ☐ Selection filter

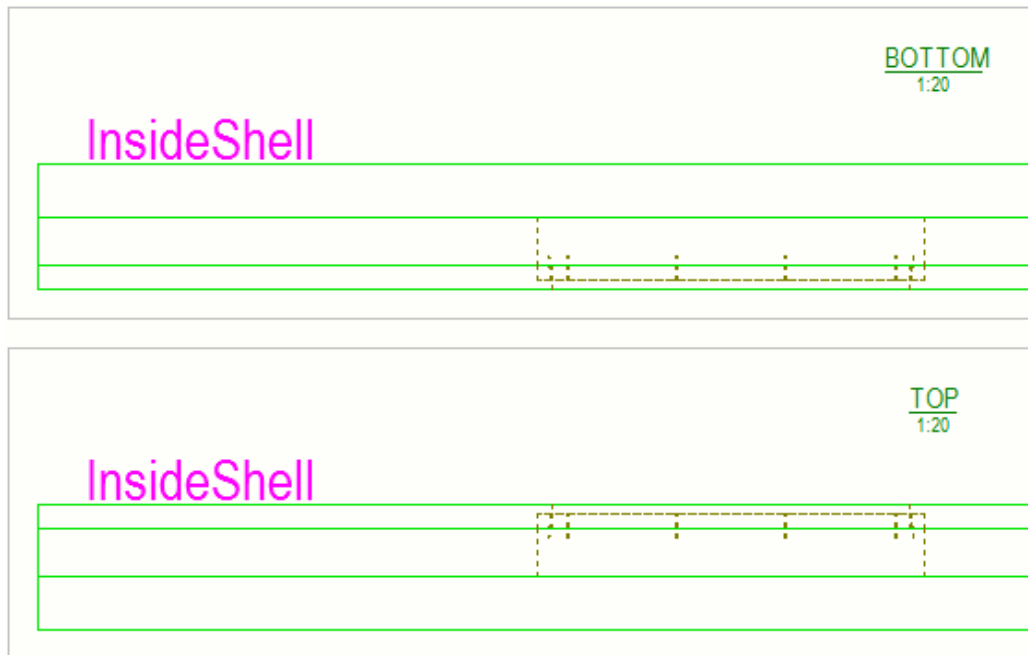
	(Category	Property	Condition	Value)	And
<input checked="" type="checkbox"/>		Part	Name	Equals	InsideShell		Or
<input checked="" type="checkbox"/>		Part	Name	Equals	Foil		Or
<input checked="" type="checkbox"/>		Part	Name	Equals	Insulation		Or
<input checked="" type="checkbox"/>		Part	Name	Equals	OutsideShell		Or

Add row
Delete row
Move up
Move down
New filter

When you (re)create the drawing, the mark place changes from this:

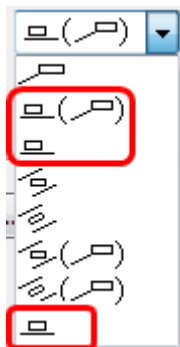


To this:



- This can only be used for main parts of assemblies or cast units, not for secondary parts.

The supported mark placing types are shown below.



1.18 New custom presentations for drawing objects

You can now modify the appearance of many drawing objects using new custom presentations that you can download from Tekla Warehouse. The custom presentations can be controlled on the view level and object level.

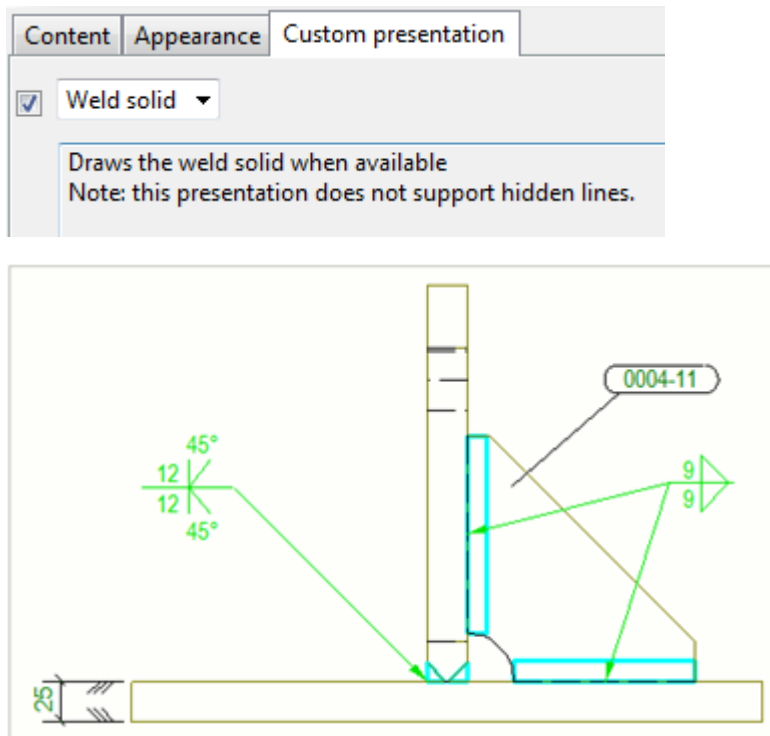
Once you have downloaded a custom presentation, the **Custom presentation** tab will become available in the properties dialog box for the object type that the custom presentation is meant for.

The following object types support custom presentations:

- welds and weld marks

- parts and part marks
- neighbor parts and part marks
- grid lines
- texts (controlled on object level)
- associative notes (controlled on object level)

In the example below, the **Weld solid** custom presentation is used for drawing the weld solids in a drawing.



1.19 Improvements in Drawing List

The **Drawing List** contains a new column **Locked by**. The **Locked by** column shows who has locked the drawing. If the user has logged in to Tekla account, the account name is shown. Otherwise the user name is shown.

1.20 Improvements in drawing views

Drawing name in section and

- You can now add the name of the current drawing in the section and detail marks.

detail mark
elements
**Curved section
views**

- The view plane and view boundary of a curved view are now shown in the curved view and in the view where the section marks are. You can drag the view plane and the view boundary just like in the ordinary section view. Now Tekla Structures shows all parts that are inside the curved view boundaries.

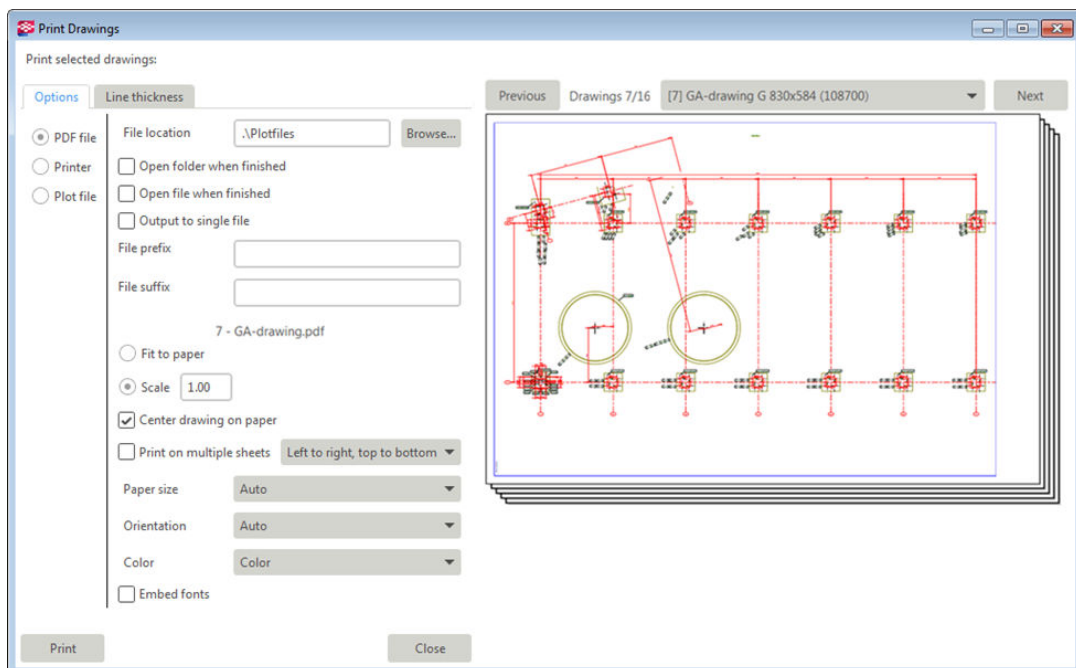
1.21 New drawing preview and printing

Tekla Structures 21.0 provides a real-time preview of drawings. You can print the previewed drawings as PDF files, save them as plot files or print them on a selected printer. Printing on multiple sheets is also supported. You can also map drawing colors to line thicknesses in the **Print Drawings** dialog box.

- To start printing, select the drawings that you want to preview and/or print from the **Drawing List**, right-click and select **Print Drawings**.

You can also start printing by selecting the drawings from the **Drawing List**, and then selecting **File --> Print --> Print Drawings**.

- The available printing settings depend on the printing option you select: **PDF file**, **Printer** or **Plot file**.
- You can browse through the selected drawings using the **Previous** and **Next** buttons at the top of the dialog box.



- You can define the needed line thicknesses on the **Line thickness** tab.
- Two configuration files are needed in printing that affect the paper sizes and drawing sizes: `PaperSizesForDrawings.dat` and `DrawingSizes.dat`, see **Printing**

configuration files. Default values are provided in the files that are installed with the printing functionality. The default values are appropriate in most cases.

- You can go back to the old printing functionality and use Tekla Structures printer instances. You can do this by setting the `XS_USE_OLD_PLOT_DIALOG` to `TRUE` in **Tools --> Options --> Advanced Options --> Printing**. Using this advanced option takes the **Printer Catalog** dialog box in use. Using the old functionality requires that Tekla Structures printer instances are set, see Printing drawings using Tekla Structures printer instances.
- There are some limitations in printing, see Printing drawings for details.

1.22 Improvements in reference models in drawings

The **Reference Model List** in drawings has been improved so that the number of objects that are visible in the list is now smaller. Previously the list contained a lot of objects, now you can easily select the model you want to include to the drawing, and maintain the object visibility and appearance on the object level in the view.


1.23 New Reference Model list

Tekla Structures 21.0 offers a completely new approach for handling the reference model import: the new **Reference Models** list is located in the new side pane, and the renewed reference model management is easier and simpler. The **Subdivide** command has been removed, and report fields and filtering are available automatically if the reference model file and format supports the reports and filters. Now it is also easier to use reference models in general arrangement drawings.

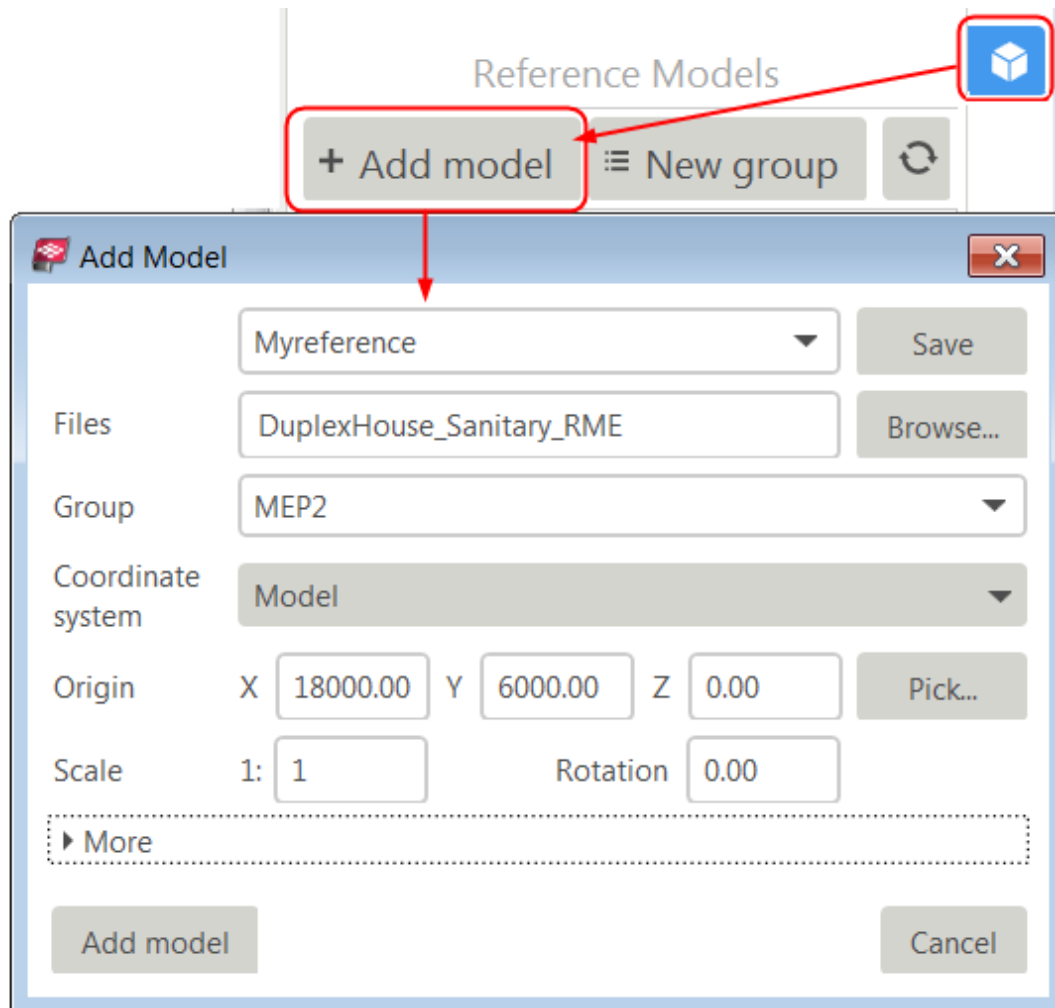
The side pane replaces the old **Reference Model Properties** dialog box, and the **Insert Reference Model** command has been removed from the **File** menu.

Adding a new reference model in a Tekla Structures model

To insert a new reference model:

1. Open a Tekla Structures model.
2. Open the **Reference Models** list by clicking the **Model list**  button in the upper-right corner of the Tekla Structures model view.
3. Insert a new reference model by clicking the **Add model** button in the **Reference Models** list.

In the **Add model** dialog box, define the settings used for importing the reference model.



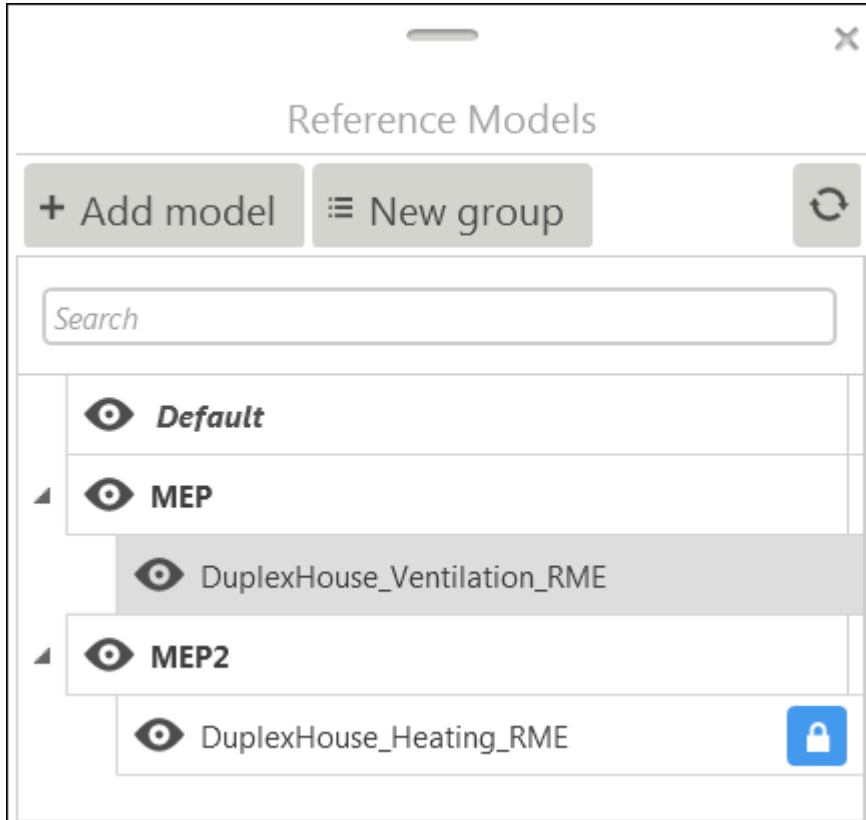
- You can load predefined import properties by entering or selecting the name of the file in the box at the top.
- You can browse for the reference model file or drag models from Windows Explorer. It is possible to drag several models at a time.
- You can add a model in a group in the **Reference Models** list when you import the model, and also later change the model group by dragging the model to the desired group, which you can create using the **New group** button. You can drag several models at a time.
- You can select whether to use **Model coordinates** or **Workplane** to place the model.
- You can define the coordinates for the origin in the X, Y, Z boxes or pick the origin in the model.
- You can define the desired scale for the reference model.
- You can rotate the model around model Z axis by entering the desired value in the **Rotation** box.






- You can save the reference model import properties in a properties file for later use. Enter a name for the import properties in the box at the top and click **Save**.

The filename extension of a saved reference model import properties file is `.rmip.json`. The properties file is saved in the `\attributes` folder under the current Tekla Structures model folder.

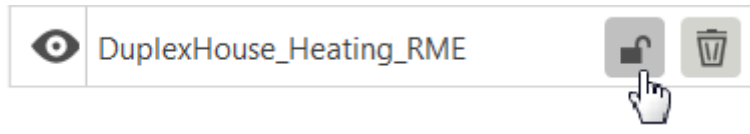
- You no longer need to subdivide the model when you import it, subdivision is automatic. The following file formats do not support subdivision: `.dgn`, `.prp`, `.skp`, `.step`, and `.iges`
- You can add models in the following formats:
 - AutoCAD files `.dxf`
 - AutoCAD files `.dwg`
 - MicroStation files `.dgn`, `.prp`
 - Cadmatic files `.3dd`
 - IFC files `.ifc`, `.ifczip`, `.ifcxml`
 - Tekla Collaboration files `.tczip`
 - IGES files `.igs`, `.iges`
 - STEP files `.stp`, `.STEP`
 - PDF files `.pdf`
 - SketchUp files `.skp`

Viewing and
modifying the
reference model

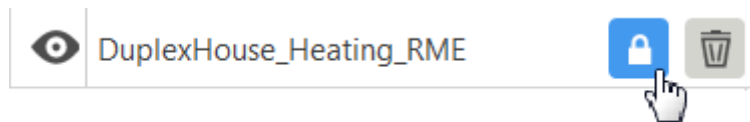


- You can show the models included in a group by clicking the small arrow icon in front of the group.
- You can highlight the model in the 3D view by clicking the reference model in the **Reference Models** list.
- You can view the reference model in the 3D view and its details in the side pane by double-clicking the model in the **Reference Models** list.
- An eye icon  is available for groups, reference models, layer list and individual layers. Using the eye icon, you can hide groups, models and layers from the 3D model. The eye icon changes when the object is hidden: . You can display the hidden objects again by clicking the eye icon in the list. If a group or the layer list contains both hidden and visible objects, the eye icon for the group or for the layer list changes: .
- You can update all reference models by clicking the **Refresh** button  at the top of the **Reference Models** list. All models that are not up to date are reloaded. If a reference model is not found, a warning sign  is displayed. When you double-click a reference model to open its details in the side pane, the **Refresh** button becomes available for the individual model.
- You can lock a reference model by clicking the **Lock** button next to it in the **Reference Models** list. When a model is locked, you can only modify its user-defined attributes,

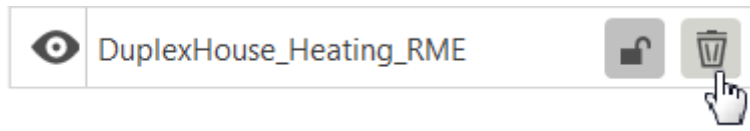
nothing else. For example, you cannot move the model. The **Lock** button becomes visible when you move the pointer over a model in the list.



Click the **Lock** button again to unlock the model.

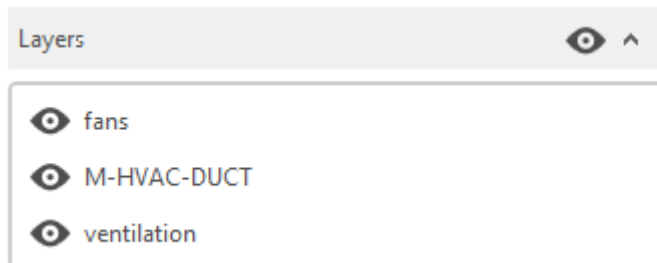



- You can delete a reference model by clicking the **Delete** button next to the **Lock** button. The layers and groups can be deleted in the same way.



- You can modify the reference model details by changing the data in the **Reference Models** side pane sections and clicking the **Modify** button.
- The values of **Code**, **Title**, **Phase** and **Description** cannot be saved in the `standard` properties file.
- You can open the list of layers by clicking the small arrow at the end of the **Layers** row.

Reference model layers



- You can hide and show reference model layers using the eye icon  on the **Layers** row or on the title row of an individual layer.
- The user-defined attributes that are specified for reference models in the `objects.inp` file are listed in the **User-defined attributes** list. Click the small arrow at the end of the **User-defined attributes** row to open the list. Enter or select a value from a list.

User-defined attributes in reference models

User-defined attributes	
Parameters	
% Complete	0
Discipline	Architect
Ref. Model Vendor	
User Phase	

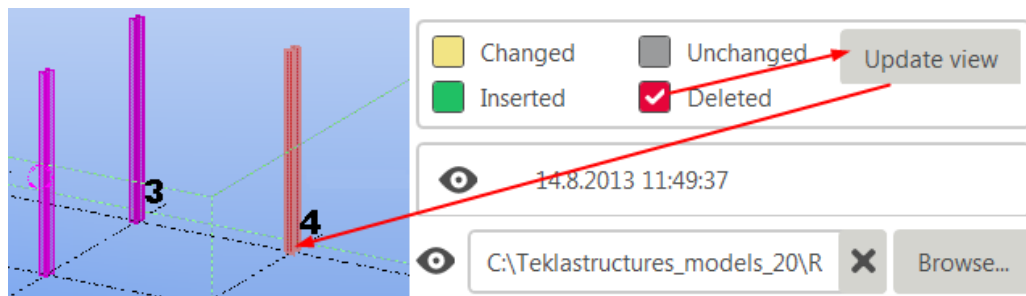
By default, the `objects.inp` is located in `..\ProgramData\Tekla Structures\<version>\environments\common\inp`. You may also have some `objects.inp` files that you modify and keep in firm or project folders

Detecting changes between reference models

You can check the changes between the old and the new reference model in Tekla Structures by using the **Change detection** feature.

1. Open a model that contains a newer version of a reference model, and double-click the reference model in the **Reference Models** list to open the details.
2. Go to the **Change detection** section and import a newer version of the same reference model.
3. Click one or all of the options **Changed**, **Inserted**, **Unchanged** or **Deleted**, and then click **Update view** to show the changes in the model.

In the example below, one column has been deleted in the newer version of the model, and it has been marked in red.



1.24 Improvements in IFC

IFC export There are several improvements in IFC export in Tekla Structures 21.0:

- The performance of the IFC export has improved, and it is now much faster to export to IFC.
- IFC output files and related log files are now saved by default to the `\IFC` subfolder under the model folder.

- The **Advanced** tab of the **Export to IFC** dialog box has been organized to three areas: **Object types**, **Property sets**, and **Other**.

- The **Use current view colors** setting has been added on the **Advanced** tab:

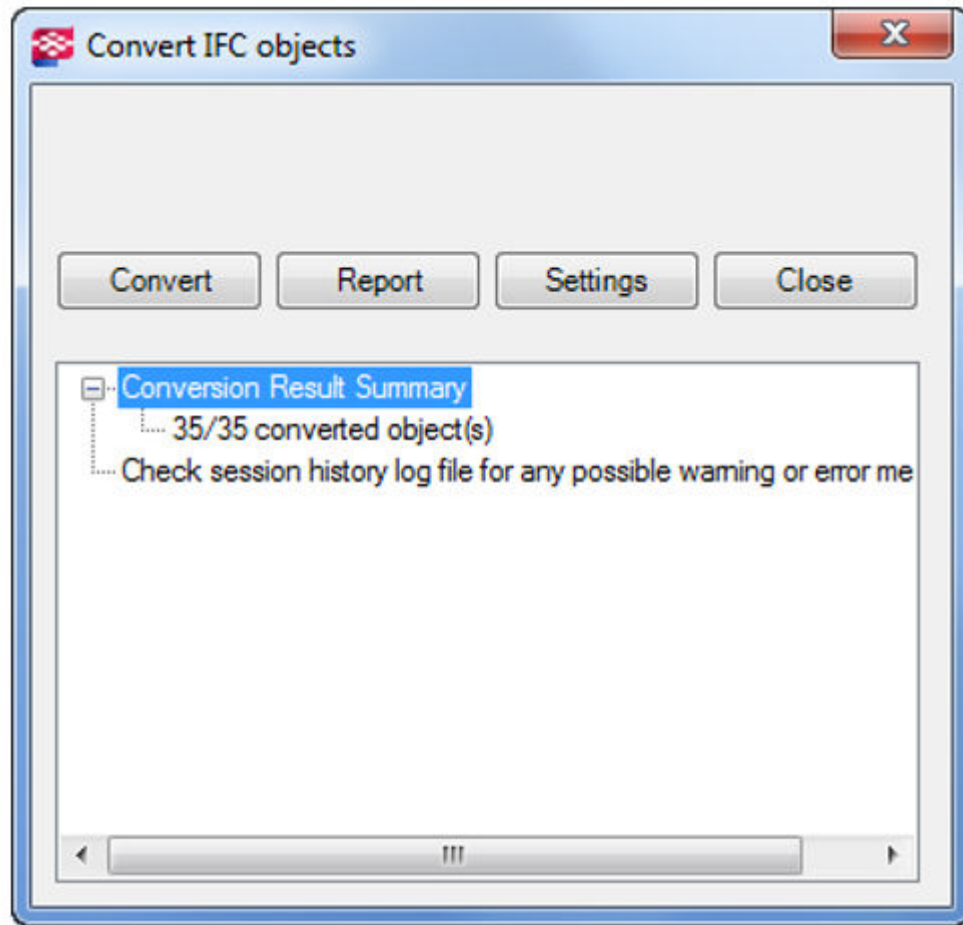
If you select **Use current view colors**, the exported objects have the colors that you have defined using the color and transparency settings of **Object groups** defined in the **Object Representation** dialog box. If you do not select **Use current view colors**, the exported objects use the color of the classes that are set for the objects in the properties dialog box.

- The **View** button for viewing the entity type and property set specific property set file has been moved to the **Property sets** area on the **Advanced** tab.
- You can now to export default property sets (**Property sets: Default**) or a minimum amount of property sets (**Property sets: Minimum**). The **Minimum** option exports a minimum amount of property sets required by the buildingSMART IFC standard.
- The **Load bearing** property has been added on the **Parameters** tab of the user-defined attributes dialog box of a part:

Set the **Load bearing** property to **Yes** to define the user-defined attribute `LOAD_BEARING` for the exported object. **Yes** is the default value. Set this property to **No** for all non-load bearing objects.

- The **Accuracy** property has been added to the **Property Set Definitions** dialog box. When you can adjust the accuracy, you are able to optimize the IFC file size better.
- The **Positive length** and **Count** options have been added to the **Property Set Definitions** dialog box as measurement types.
- You can now export assemblies and cast units also as `IfcRailing`, `IfcRamp`, `IfcRoof` and `IfcStair`, in addition to `IfcElementAssembly`.
- The `IfcPropertySetConfigurations_AISC.xml` file now supports the property sets and the properties defined in the **Steel fabrication view** and they are now available in Tekla Structures. Due to the limitations in Tekla Structures, some properties cannot be provided.
- It is now possible to add property set properties also to `IfcDiscreteAccessory` type of objects for sub-parts, and `IfcOpeningElement` type of objects for bolt holes.

IFC object converter A summary of conversion results has been added to the **Convert IFC objects** dialog box that shows errors in the conversion.



1.25 Integration between Tekla Structures and Tekla Structural Designer

In Tekla Structures version 21.0, you can pass models between Tekla Structures and Tekla Structural Designer, allowing updates in the model at both ends.

Tekla Structural Designer allows you to design reinforced concrete buildings and steel buildings. It works with real physical objects such as beams, columns and slabs. The information transferred is the physical information such as geometry, section sizes and grade as well as attributed data.

Tekla Structural Designer is a code-based modeling tool, which enables structural engineers to establish a code compliance design of the structure, and perform calculations and schema design, for example. All the design/code data is held within Tekla Structural Designer at all times.

Tekla Structural Designer analyzes and designs structures to a range of International codes of practice.

In Tekla Structures, you can import and export models using the Tekla Structural Designer integrator, which you can start by selecting **File --> Tekla Structural Designer --> Import from/Export to** in Tekla Structures. When you launch the import or export for the first time, you are guided to Tekla Warehouse to download and install the integrator.

The initial model can be started in either Tekla Structures or Tekla Structural Designer, depending on the project needs. You can import and export many times, and make use of the effective change management functionality. As the model is integrated between the two applications, the changes are updated, and the modifications that are performed after the last integration operation are maintained within the model.

Tekla Structural Designer and Tekla Structures accept and produce files in the .cxl neutral file format. The .cxl file format is an XML based neutral file format that allows applications to link Tekla Structural Designer.

1.26 Changes in template attributes

Tekla Structures 21.0 contains some new template attributes, and improvements in the existing ones.

New template attributes

- **VOLUME_NET_ONLY_CONCRETE_PARTS**: Shows the volume by the solid of concrete parts in the cast unit. If a part uses a profile where cross section area is defined manually, it is ignored in calculation (cf. **VOLUME_ONLY_CONCRETE_PARTS**).
- **WEIGHT_NET_ONLY_CONCRETE_PARTS**: Shows the weight of a cast unit. It calculates the weight by the solid of the concrete parts in the cast unit. If a part uses a profile where cross section area is defined manually, it is ignored in calculation (cf. **WEIGHT_ONLY_CONCRETE_PARTS**).
- **IS_POUR_BREAK_VALID**: Use to find invalid pour breaks.
- You can now get change, locking, freezing and issuing information from the **Drawing List** to drawing reports using the following new template attributes: **CHANGES**, **LOCKED_BY**, **IS_LOCKED**, **IS_FROZEN**, **IS_ISSUED**. **IS_LOCKED**, **IS_FROZEN**, and **IS_ISSUED** return value 0 if false and 1 if true. **CHANGES** and **LOCKED_BY** are text fields.

Changed template attributes

HOLE.DIAMETER

In drawings, the **HOLE.DIAMETER** attribute now takes only the visible holes into account.

Custom report attributes for hollow core slabs and sandwich walls in Tekla Structures installation

These custom attributes have previously been delivered as extensions. Now they are a part of the Tekla Structures installation.

- `CUSTOM.HC_GROSS_AREA`: This is the gross area calculated by formula $L*B$, where L is the maximum length of the slab and B is the width of the original hollow core slab section before any narrow cutting of the slab.
- `CUSTOM.HC_INSUL_CUT_L`: This is the total linear length of insulation cutting that is measured along insulation edges where the edge of insulation is not overlapping with exterior edges of the slab.
- `CUSTOM.HC_NET_AREA`: This is the net area of the hollow core slab. This attribute does not calculate any openings penetrating.
- `CUSTOM.HC_OPENINGS_L`: This is the total perimeter length of all openings in the slab. The perimeter is measured along the "shape boundary" of the opening.
- `CUSTOM.HC_RECESSES_L`: This is the total perimeter of recesses (not fully penetrating the slab thickness). The perimeter is measured along the "shape boundary" of the recess.
- `CUSTOM.HC_SAWINGS_END_L`: This is the total linear length of skew end sawings in the slab. Note that the straight ends are not counted to the total sawing length.
- `CUSTOM.HC_SAWINGS_END_N`: This is the total number of individual sawing lines.
- `CUSTOM.HC_SAWINGS_SIDE`: This is the total length of sawing parallel to the center axis of the slab.
- `CUSTOM.WALL_CORNER_AREA`: This is the façade area of the turning corner in the wall. The turning has to be modeled following the BEC-2010 modeling rules to get valid corner area values.
- `CUSTOM.WALL_GROSS_AREA`: This is the gross area of the wall.
- `CUSTOM.WALL_NET_AREA`: This is the net area of the wall. All openings inside the wall and/or at the exterior boundaries of the wall are excluded.
- `CUSTOM.WALL_OPENINGS_AREA`: This is the total area of all openings inside the wall and/or at the exterior boundaries of the wall.
- `CUSTOM.WALL_OPENINGS_N`: This is the total number of openings inside the wall and/or at the exterior boundaries of the wall.

1.27 Changes in advanced options

New advanced options `XS_USE_OLD_DRAWING_CREATION_SETTINGS`

- Set the new advanced option `XS_USE_OLD_DRAWING_CREATION_SETTINGS` to `TRUE` to use old drawing functionality and old drawing view property dialog boxes and subdialog boxes. In this old approach, drawing object properties can be defined on both drawing and view level, not individually for each view, like in the new view-level approach. By default, this advanced option is not in use, and is marked with `rem`

env_global_default.ini located in the ..\ProgramData\Tekla Structures\<version>\environments\common folder.

For more information, see XS_USE_OLD_DRAWING_CREATION_SETTINGS.

XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING

- The new advanced option XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING (**Tools --> Options --> Advanced Options --> Numbering**) can be used in conjunction with the orientation numbering setting. You can enter the desired part names separated by spaces. Wildcards are also allowed. Similar parts will be numbered the same even if their orientation is different and the orientation setting has been selected in the **Numbering Setup** dialog box.

For more information, see XS_EXCLUDED_PARTS_IN_ORIENTATIONAL_NUMBERING.

XS_INVALID_POUR_BREAK_COLOR

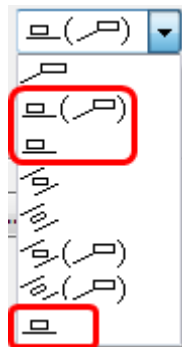
- Use the new advanced option XS_INVALID_POUR_BREAK_COLOR in an appropriate initialization file to define the color Tekla Structures will use for invalid pour breaks in model views.

For more information, see XS_INVALID_POUR_BREAK_COLOR.

XS_USE_ASSEMBLY_EXTREMA_IN_MARK_PLACING

- This new advanced option places the part on top of the assembly instead of on top of the main part. You need to create a drawing view filter and enter the name of the filter as the value for this advanced option. Then add the filter name as the value for the advanced option XS_USE_ASSEMBLY_EXTREMA_IN_MARK_PLACING in **Tools --> Options --> Advanced Options --> Marking: General**
- This works only with the main parts of an assembly or cast unit, not with secondary parts.

The supported leader line types are shown below.



For more information, see [Improvements in marks on page 27](#).

Changed advanced options XS_REBAR_REVERSE_END_SYMBOLS

- XS_REBAR_REVERSE_END_SYMBOLS (**Tools --> Options --> Advanced Options --> Concrete Detailing**) is used for reversing the reinforcing bar end symbols to a different direction. The functionality of this advanced option has now changed, because

the reinforcing bars were too short when the value `TRUE` was used. The reinforcing bars are now drawn longer if you use the new value `TRUEANDEXTEND`.

For more information, see `XS_REBAR_REVERSE_END_SYMBOLS`.

Advanced options used for view centering

- The advanced options `XS_DISABLE_VIEW_CENTERING_ASSEMBLY`, `XS_DISABLE_VIEW_CENTERING_GA`, `XS_DISABLE_VIEW_CENTERING_MULTI` and `XS_DISABLE_VIEW_CENTERING_SINGLE` required Tekla Structures restart even though the **Advanced Options** dialog box did not mention it. Now these advanced options no longer need Tekla Structures restart.

Semicolons as path separators in folder paths

The following advanced options now support semicolon-separated lists of folder paths:

- `DAK_BMPPATH`
- `XS_INP`
- `XS_TEMPLATE_DIRECTORY`
- `XS_TEMPLATE_DIRECTORY_SYSTEM`

Earlier these advanced options only supported a single folder path.

`XS_INP` is useful in environments that use their own `\inp` folder: you can now include `\Common\inp` to the `XS_INP` path and remove the duplicate files from the `\inp` folder in your environment.

Here is an example of how to define the folder paths:

```
"set XS_INP=%XSDATADIR%\environments\japan\inp\"
```

```
-->
```

```
"set XS_INP=%XSDATADIR%\environments\japan\inp\;%XSDATADIR%\environments\common\inp\"
```

Removed advanced options

The following advanced options have been removed:

- `XS_ORIENT_POLYGON_PLATE_COORDSYS`
- `XS_NO_SPLASH`
- `XS_NO_CSK_MARK`

1.28 New components and extensions available in the Component Catalog

New components in the

The following component has been added to the Tekla Structures **Component Catalog**:

- **Reinforced Concrete Stair (95)**

**Component
Catalog**
**New extensions
in the
Component
Catalog**

The following extensions are now available in the Tekla Structures **Component Catalog**:

- **Floor Layout**
- **Mesh Bars**
- **Mesh Bars by Area**
- **Wall Panel Reinforcement**

1.29 Improvements in concrete and reinforcement components

The following group of components has been updated and new options have been added:

- **Anchor (10)**
- **Wall wall teeth (12)**
- **Corbels and recesses (82)**
- **Braced girder (88)**
- **Braced girder (89)**
- **Concrete console (110)**
- **Concrete console (111)**
- **Concrete beam-beam (112)**
- **Embed (1008)**
- **Precast foundation block (1028)**
- **Concrete foundation (1030)**

**Edge and Corner
Reinforcement
(62)**

Edge and Corner Reinforcement (62) now creates stirrups instead of u-bars when the distance between the edges in the panel/slab is so small that the u-bars do not get the required cover thickness. There is also new option for setting the type of the stirrups.

**Rectangular
column (83)**

- The user interface of **Rectangular column (83)** has been reorganized.
 - Previous **Picture** tab is now **Main bars** tab.
 - Previous **Main bars** tab is now **Bar ends** tab.
 - Previous **Main bar attributes** tab has been removed. The information has been moved to the **Main bars** tab and the **Side bars** tab.
 - Previous **Stirrup attributes** tab has been removed. The information has been moved to the **Stirrups** tab.
 - The content of the **Bar ends** tab has been rearranged.

- It is now possible to set different cover thickness on different sides of a column. The side cover thicknesses of top and bottom reinforcement is calculated from the stirrups' cover thickness.
- It is now possible to use closed stirrups as intermediate links.

Sandwich wall window It is now possible to set continuous slope on the **Bottom detail**, **Left detail**, **Right detail**, and **Top detail** tabs.

1.30 Tekla multi-user server supports Windows Server 2003 until July 2015

The current version of multi-user server 2.301s will be the last version that is supported on Windows Server 2003. Microsoft has announced that the support for Windows Server 2003 is ending July 14, 2015. Because of this, Tekla will not continue supporting multi-user server on Windows Server 2003 either.

As Windows Server 2003 will not be supported anymore, Tekla recommends that all users on Windows Server 2003 upgrade their Tekla multi-user server workstations to a newer Windows operating system by the July of 2015.

The supported operating systems are:

- Microsoft Windows 7
- Microsoft Windows 8
- Microsoft Windows 8.1
- Microsoft Windows Server 2008
- Microsoft Windows Server 2008 R2
- Microsoft Windows Server 2012
- Microsoft Windows Server 2012 R2

Tekla does not guarantee that the products released after 14th of July 2015 and later will work correctly on Windows Server 2003 or that Tekla service teams will have the tools for solving Windows Server 2003 related questions.

1.31 New and improved product guides

The following improvements have been made in the Tekla Structures product guides:

- Steel connection properties have been separated from the **Steel Components Reference Guide** to a guide of their own: **Steel Connection Guide**.
- The **Detailing Guide** has been reorganized and partly rewritten.

2 Top Fixes in Tekla Structures 21.0

Modeling Snapping to construction circles

- Snapping to the intersection of construction circles and lines now works correctly.
TT108744
- In some cases it was not possible to snap to some segments of construction circles. This has now been fixed.
TT102429

Keyboard shortcuts for zooming

- The keyboard shortcuts **Page Up** for zooming in and **Page Down** for zooming out in the active window now work again.
TT106308

Reinforcing bar shape catalog

- **Reinforcing Bar Shape Catalog** can now be used to create circular reinforcement, polygonal reinforcement and circular spiral reinforcement.
TT78451

Modifying object representation settings

- If you modified the settings in the **Object Representation** dialog box and clicked **Modify**, the model views were not updated accordingly. This has now been fixed.
TT103868

Showing texts in models views

- Clip planes did not clip or hide part labels or analysis bar, member, or node numbers in model views. This has now been fixed.
TT103256
- Previously, the font size of the analysis bar, member, and node numbers shown in the model view was too large. This has now been fixed.
TT103486

Import, Export, Interoperability Contour marks for parts welded on site

- When creating contour marks for NC files, site welded parts were also considered for the creation of contours. When site welded contours were not needed, this created unnecessary contours which could be confusing on the shop floor, and also caused otherwise identical parts to receive different marks. In **Contour marking settings**, you can now select whether to create contour marks for parts which are site welded by setting **Mark parts welded on site** to **Yes** or **No**.

TT107871

S3DAdvanced

- If fitting makes a polybeam shorter, the center line is now also shorter in drawing and model views.

TT102168

Tools and components

Custom components

- When changing a formula in the custom component editor, the value is once again instantly updated.

TT106273

Task Manager

- In **Task Manager**, the **Non-working Periods** dialog box now shows the characters of all languages correctly.

TT108355

3 Fixes Released in Tekla Structures 21.0

Defect number	Development area	Description
107153	Licensing	When using a borrowed license, there was an application error when starting Tekla Structures. This has now been fixed.
97246	Modeling	Previously, right-clicking on the handle for adding a grid line or the handle for adding a reinforcing bar incorrectly added a grid line or a reinforcing bar. This does not happen anymore.
98889	Modeling	If you now select Re-use old numbers in numbering settings, assign the same family numbers when you renumber after using the Clear Numbers command. Previously, Tekla Structures assigned a new set of family numbers on every second re-numbering action.
99348	Modeling	Previously, part outlines were drawn for cast-in-place parts with any object representation option. This has now been fixed.
100548	Modeling	Previously, when you created a new model using a model template, you could not control access to the model using the <code>privileges.inp</code> file. This has now been fixed.
100852	Modeling	In slanted model views where the view plane only touched the grid planes a little, the grid lines were sometimes shown outside the grid planes. Now the grid lines are shown only at the actual intersections of the grid and view planes.
101448	Modeling	The Ortho tool now works in the sketch editor even when the focus is not in the Cross Section Sketch Editor View , but for example in the Enter a Numeric Location dialog box.
102018	Modeling	If you ran numbering after deleting an edge chamfer, sometimes there was an application error. This has now been fixed.
102395	Modeling	Sometimes exact cuts at flange level caused a solid cut failure in Tekla Structures 20.0 and newer. This has now been fixed.

Defect number	Development area	Description
102594	Modeling	In some cases where the solid creation failed for clashing solid objects, the clashing volume was not correctly highlighted with a magenta box in the model when you selected a clash in the Clash Check Manager dialog box. This has now been fixed.
102745	Modeling	Some keyboard shortcuts, for example F1, did not work if a model view was not active. This has now been fixed.
102861	Modeling	The Find Distant Objects command did not work for objects that were very far from the global origin (further than $1 \cdot 10^{11}$ mm). This has now been fixed.
104071	Modeling	The cross section variable information in the Profile Editor is now checked and refreshed correctly.
104701	Modeling	Rebar Shape Manager has been changed so that it does not anymore show the warning message about missing rules for circular, circular spiral and curved bars, which do not by default have any rules.
104921	Modeling	When Tekla Structures shows concrete structures as continuous, the structures with only one part and multiple parts now have the same color when you used the Shaded Wireframe representation option for parts.
105595	Modeling	You can now inquire from the surface treatment all properties of the cast unit to which this surface treatment belongs.
105598	Modeling	Tekla Structures now indicates on the status bar when it starts numbering reinforcement or welds after numbering parts. Previously Tekla Structures displayed a message <code>Numbering parts...</code> even when it had completed the part numbering.
106081	Modeling	When using direct modification, dimension arrowheads now again stay visible after resizing a part.
107546	Modeling	In some cases, Tekla Structures automatically selected the check boxes of the dX , dY , and dZ coordinates when copying or moving objects even if the coordinate values had not been changed. This has now been fixed.
107783	Modeling	Previously, when you pressed the middle mouse button in the sketch editor, there was an application error. This has now been fixed.
109546	Modeling	Surface treatments are now selected in the model whenever you select the assembly or cast unit to which they have been added.
83763	Drawings	Previously some of the part marks were upside down even though the parts were symmetrical. This has now been fixed, and part marks are correctly oriented.
89664	Drawings	The Adjust location command did not work with tapered reinforcing bars. This has now been fixed.
91297	Drawings	In view-level dimensioning in drawing update, unnecessary dimensions for invisible objects were been created in section views. This has now been fixed.

Defect number	Development area	Description
94591	Drawings	Moving drawing views to another drawing no longer deletes the user-defined attributes of the view.
95792	Drawings	The neighbor part reinforcing bars now get correct properties when the neighbor parts are changed from neighbor parts to ordinary parts and vice versa.
101737	Drawings	Drawing snapshot text is now light gray in all color modes.
102675	Drawings	The section view depth defined in drawing properties is now always taken into account during section view creation, also when using view-level dimensioning.
103467	Drawings	Modifying a drawing view updated marks even if the user did not change anything in the view properties. This has now been fixed.
103469	Drawings	Sometimes dimensions disappeared when the Modify button was clicked in drawing view properties. This has now been fixed.
103484	Drawings	There were several problems in opening drawings using the Open next/Open previous buttons in the Drawing List if the drawings needed an update or numbering. This has now been fixed so that if a drawing is not up-to-date, Tekla Structures skips that drawing and opens the next one.
103867	Drawings	The user-defined bolt symbol table could not find the correct symbol for all bolt sizes that were defined in the table. This has now been fixed.
104008	Drawings	Tekla Structures is now more strict when it opens drawing files. The drawing must have been created from the current model for Tekla Structures to open it. This prevents errors in multi-user scenarios.
104167	Drawings	Sometimes part marks disappeared in drawing update. This has now been fixed.
104473	Drawings	In cases where numbering caused cloning when cloning dialog was visible, cloning would fail. This has now been fixed.
104609	Drawings	Modifying a drawing view updated marks even if the user did not change anything in the view properties. This has now been fixed.
104745	Drawings	In some cases, some reference objects of reference models were missing from drawings. This has now been fixed.
104859	Drawings	Plate side marks were not always shown even if the dimension pointed to a plate. This has now been fixed.
104875	Drawings	If the cloned part was higher than the original part, the Expand shortened parts to fit command did not work correctly in cloning. This has now been fixed.
105038	Drawings	Rotating views caused some dimensions to be created incorrectly. This has now been fixed.
105054	Drawings	Reference object appearance settings were not applied when Modify was clicked in the view-level property dialog. This has now been fixed.

Defect number	Development area	Description
105341	Drawings	In the View creation dialog box, recreation of drawing is no longer forced if you change view titles, or if you change the properties of a view that is set to Off .
105478	Drawings	Bolt extrema was calculated incorrectly in intelligent update of drawing view extrema. This has now been fixed.
105846	Drawings	Sometimes Tekla Structures deleted a manually added bolt mark when you created a new section view. This has now been fixed.
106099	Drawings	The Neighbor reinforcement and Neighbor reinforcement marks buttons were missing from the General arrangement drawing properties dialog box. The buttons have now been added.
106116	Drawings	Snapping to the extension line intersection did not work correctly in drawings. In some cases, it caused an application error. This has now been fixed.
106124	Drawings	If the value for the Include single-parts option in the Layout properties of the drawing was changed from No to Yes , the views were added, but the value was not updated, it was still No in the dialog box. This has now been fixed.
106493	Drawings	If a template that contains rotated text was added to a part mark, it got an incorrect frame. This has now been fixed.
106530	Drawings	Sometimes extra lines with reference line color were drawn in skewed concrete parts. This has now been fixed.
106947	Drawings	In some cases, when editing graphical objects manually, the associativity was not updated correctly, causing the graphical object to be associated to the original creation points. This has now been fixed.
107157	Drawings	When using view-based dimensioning, new section views and detail views now use dimensioning rules from the applied view properties. When you create views by selecting areas in a drawing view, dimensioning from the parent view is still used.
107322	Drawings	The bolt mark center-to-center distance worked incorrectly if there were several bolted parts visible in the view. Now the value is not shown at all in those cases.
107465	Drawings	Sometimes polybeam centerline was too short. That happened if the sections were almost parallel. That caused, for example, that the beam was not shown correctly in a section view in a drawing. This has now been fixed.
107474	Drawings	Selection highlight was not correctly updated in drawings when you selected objects with Ctrl + click. This has now been fixed.
107554	Drawings	Deleted marks came back in different view when you added new view in drawings. This has now been fixed.

Defect number	Development area	Description
107181	Drawings	Weld length was incorrectly shown in both sides of the weld mark if the weld mark was positioned on the left side of the weld insertion point. This has now been fixed.
108227	Drawings	Merged reinforcement marks were not copied when you used the Copy to new sheet command. This has now been fixed.
108289	Drawings	When changing drawing layout settings from drawing level to Align section views with main views , the views were not placed correctly. This has now been fixed.
108334	Drawings	When trying to recreate a general arrangement drawing, the error message 'Can not load drawing to update' was displayed instead of the status bar message telling that general arrangement drawings cannot be updated and have to be recreated. This has now been fixed, and the correct message is displayed on the status bar.
108392		Tekla Structures did not show all dimensions if the user had set XS_USE_LONG_POINTS_IN_DIMENSIONING to TRUE and used integrated dimensioning. Now this has been fixed and all dimensions are shown.
108417	Drawings	Views were incorrectly placed in an assembly drawing if the part was a column and you had chosen model orientation for the views. This has now been fixed.
108477	Drawings	In assembly drawings, dimensions were sometimes removed from the included single-part views when the assembly drawing was cloned or updated. This has now been fixed.
108483	Drawings	In some cases, some parts of assemblies were missing from drawings. This has now been fixed.
108796	Drawings	When the Adjust location command was used for a mesh reinforcing bar, the reinforcing bar was shown incorrectly in some cases. This has now been fixed.
106043	Templates and Reports	Dimensions were incorrect in a pull-out picture of a reinforcing bar mesh that was not a bent mesh. This has now been fixed.
107092	Templates and Reports	Now the actual length of the above line weld (WELD_ACTUAL_LENGTH1) reports 0 if the above line weld size is 0 (WELD_SIZE1).
107542	Templates and Reports	In Template Editor, you can now use local times. By default the Time, Date and Date&Time are in the global time zone. Now the Meaning list in Value Field Properties contains three new options: Time local, Date local, Date&Time local.

Defect number	Development area	Description
98491	Import, Export and Interoperability	Studs had nuts and washers visible in exported IFC files. This has now been fixed, and they are no longer part of the exported stud.
98647	Import, Export and Interoperability	When exporting contour plates to SDNF format the plate numbers were not unique. They were -1, 0, -1, 0, etc. This has now been fixed.
102483	Import, Export and Interoperability	Now plates with full chamfer definition can be exported as extrusion format.
102886	Import, Export and Interoperability	FEM import of STAAD files now works correctly.
108475	Import, Export and Interoperability	Using CUSTOM.* properties in IFC property sets no longer causes parts to get exported into incorrect locations in IFC.
109472	Import, Export and Interoperability	Previously, there was an application error when exporting cut round tubes to NC files. This has now been fixed.
104356	Analysis & Design	Previously, when you pressed the Shift key and selected one of the load commands on the Analysis --> Loads menu, the properties dialog box did not open. This has now been fixed.
107550	Analysis & Design	Many possible error situations that occur in analysis database operations are now written more accurately to persistent log files.
40330	Tools and Components	You can now define welds for Round joining plates (124) .
46757	Tools and Components	In Weld preparation (44) , welding now works correctly. The component works faster than before.

Defect number	Development area	Description
54503	Tools and Components	In Bolted gusset (11) and Tube gusset (20) , the clip angle is now created at the center of the gusset plate. Previously, the clip angle was not placed correctly if you entered some value for the corner angle of the gusset plate.
60488	Tools and Components	You can now define a finish for anchor rods when using U.S. Base plate (1047) .
69894	Tools and Components	In Shear plate simple (146) you can now define a gap between the secondary part web and a single shear tab.
70897	Tools and Components	In End plate (144) , the Bolts tab now has an option for creating plates on the web position.
72027	Tools and Components	Concrete stairs (65) now creates the first step correctly when a bottom extension is created but no foot is created. Previously, the component created the first step with a wrong angle.
75017	Tools and Components	Bracing wrap around (46) now correctly sets the material grade for primary and secondary angles.
76011	Tools and Components	Column with stiffeners S (187) and Column with stiffeners (188) now create and weld shear tabs correctly when doubler plates are used.
76314	Tools and Components	Central gusset (169) now creates rectangular gusset plates correctly.
80014	Tools and Components	In Purlin connections (11) , slots are now applied correctly.
84877	Tools and Components	Concrete stairs (65) now creates the inside chamfer along the horizontal right ridge correctly. Previously, the chamfer dimension values were swapped.
86131	Tools and Components	Stairwells and elevator shafts (90) now correctly loads values from the attribute files of the Concrete stairs (65) component. Previously some of the values were hard-coded and they could not be changed.
86656	Tools and Components	Two sided clip angle (117) now correctly applies the Pos_No values to L profiles.
87928	Tools and Components	In Bolted gusset (11) , part offsets are now applied correctly.

Defect number	Development area	Description
89513	Tools and Components	The calculation for Sloping Slab Drainage has been changed. The input contour plate can now have chamfer properties for d1 and d2 .
91883	Tools and Components	In Wraparound gusset cross (60) , the erection clearance now works with a connection plate too.
92436	Tools and Components	Heavy brace (165) now creates stiffeners correctly without a gap between the gusset plate and the stiffener.
93508	Tools and Components	When you select a reinforcing bar size in components, you can now select in the Select Reinforcing Bar dialog box either the Main bar or the Tie or stirrup option.
93953	Tools and Components	In Beam to beam stub (135) , the top exterior flange plate is now created correctly.
93955	Tools and Components	In Beam to beam stub (135) , the plates are now welded to the secondary beam.
93958	Tools and Components	In Beam to beam stub (135) , the bottom backing plate is now created in the correct position.
93960	Tools and Components	In Beam to beam stub (135) , the stub stiffeners are now controlled by secondary beam outer flanges.
96740	Tools and Components	Clip angle (116) now has settings for defining welds.
96839	Tools and Components	Automated Reinforcement Layout – columns (57) can now be used with both the cast-in-place columns and the precast columns.
96892	Tools and Components	In Stiffened end plate (27) , slotted holes are now created in the correct plates.
97734	Tools and Components	The values of the COMMENT and REVISION user-defined attributes are now shown in Object Browser .
101571	Tools and Components	In Two sided clip angle (143) , it is now possible to change the assembly prefix and assembly start number of weld backing bars.
101618	Tools and Components	Round column reinforcement (82) does not create stirrups anymore when all spacing values are zero. Previously, the component created stirrups with incorrect geometry.

Defect number	Development area	Description
101620	Tools and Components	Round column reinforcement (82) can now create stirrup groups with maximum of 500 spacings. Previously, it was possible to create only 100 spacings.
102637	Tools and Components	In Bolted moment connection (134) , the secondary beam now remains the main part of the assembly when flange workshop bolts are used.
102754	Tools and Components	Offshore (9) now creates welds correctly when using AutoConnection rules. Previously, the component always created welds even if it should not have created them.
103159	Tools and Components	In Hss Brace Special (66) , it is now possible to add one bolt on the vertical side. Previously, if you added only one bolt, the connection did not create any bolts.
103303	Tools and Components	Lifting anchor (80) now creates anchors in correct positions when the anchors are rotated or skewed.
103474	Tools and Components	In Shear plate tube column (189) , all plate edges are now chamfered correctly also when secondary beams are somewhat sloped.
103676	Tools and Components	In Bolted gusset (11) , the gusset plate does not clash with the secondary beam anymore.
103913	Tools and Components	In Base plate (1004) and Web stiffened base plate (1016) , the leveling plate now follows the anchor rod position.
103930	Tools and Components	In Tube splice (6) , you can now define the finish on the Parts tab.
103942	Tools and Components	You can now define the Finish property for all parts in Full depth (184) .
103945	Tools and Components	In Column splice (132) , the name, material, position number and finish properties are now available for all parts on the Parts tab.
103952	Tools and Components	In Bolted gusset (11) , you can now define the finish property for parts on the Gusset, Brace conn, Stiffeners and Angle bolts tabs.
103953	Tools and Components	The finish property is now available for all parts in the Tube gusset (20) connection.
103965	Tools and Components	You can now define the Finish property for all parts created in Base plate (1004) .

Defect number	Development area	Description
103989	Tools and Components	Stiffened base plate (1014) now correctly sets the part position number (Pos_No) and name to web plates.
104099	Tools and Components	When connecting a beam to a column flange in the End plate (144) connection, the stiffeners are now always created near the connection. Previously, the stiffener placement depended on the 180-degree rotation of the column.
104223	Tools and Components	LS Brace Col End Pl (24) now correctly creates the primary slot even if the secondary parts are not in the same location.
104279	Tools and Components	In End plate (144) and Shear plate simple (146) , slotted holes are now created correctly according to the bolt direction.
104470	Tools and Components	Copes or notches on flanges are now created correctly to PEB members in Shear plate simple (146) .
104984	Tools and Components	In U.S. Base plate (1047) , the holes in the cast plate now correctly follow offsets.
105783	Tools and Components	Cuts are now created in the correct positions in hollow core profiles.
106090	Tools and Components	In Concrete stairs (65) , it is now possible to add anti-skid as a subassembly.
106290	Tools and Components	In Bolted gusset (11) part cuts and offsets now work correctly.
106366	Tools and Components	In Stiffened end plate (27) and Partial stiff end plate (65) , there is now an option on the Parts tab to select that the shear plate is created in full width so that there is no gap between the plate and the beam web. When you select this option, the rounding value in <code>XS_STANDARD_STIFFENER_WIDTH_TOLERANCE</code> is not used.
106439	Tools and Components	In Task Manager , task dependencies were not correctly displayed when you changed the order of tasks. This has now been fixed.
106457	Tools and Components	In Railings (S77) , it is now possible to extend the handrail on the start and end stanchions.
106698	Tools and Components	In Diagonal splice (53) , there is now a new bolt option for rectangular hollow sections on the Parameters tab.

Defect number	Development area	Description
106704	Tools and Components	In Concrete foundation (1030) there are new options for creating extra bends in the starter bars on the Picture tab. On the Parts tab there is a new option for creating reinforcing bars as a loose part. If the reinforcing bars are created as a loose part, they are not attached to any assembly.
106738	Tools and Components	In Seating (30) , is it now possible to create a round plate between the wind braces.
106770	Tools and Components	Using Clip angle (141) welded on a column automatically creates a cope on the bottom flange. Previously, adding a flange cut reduced the cope but did not remove the entire bottom flange. This has now been fixed. The entire bottom flange is now removed.
106771	Tools and Components	In Brace corner simple (49) , the tension brace angle is now attached to the bracing correctly.
106777	Tools and Components	Starter bars for pillar (86) and Starter bars for footing (87) now create stirrups correctly. Previously, the handles of the stirrup group were in the wrong positions so that the stirrup group could not be ungrouped.
106841	Tools and Components	Concrete stairs (65) now creates the landing in the correct position when stairs are created with the Two points - N option.
107358	Tools and Components	When defining boundary boxes for locations in Organizer , the default for the center of gravity is now based on the main part .
107853	Tools and Components	Seating (30) now applies offsets for the stiffeners at the main part correctly.
107971	Tools and Components	Corbels and recesses (82) now creates corbels as concrete objects.
108203	Tools and Components	Stub (28) now applies the offsets of the stiffeners correctly. Previously, the offset of the stiffeners in the column was not correct and also the width of all stiffeners was affected by the offset of the stiffeners at the secondary part.
108318	Tools and Components	Tensioner (7) now places all parts correctly. Previously, when the column was rotated, the connection did not touch the column.
108350	Tools and Components	In Seating (30) , the image of the option to define the gaps between the stiffeners and main part flanges has been improved on the Picture tab to better show the dimensions that are defined.

Defect number	Development area	Description
108357	Tools and Components	In Stiffener end plate (27) and Partial stiff end plate (65) you can now define Class for End plate and Front plate on the Parts tab.
109202	Tools and Components	In Round joining plates (124) , welds can now be extended.

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