

RISA-3D

The goal of this document is to provide an overview of the scope and steps to use the integration between Tekla Structures and Risa3D. At this time, the transfer of information is both ways of primarily steel geometry information using the CimSteel2 (CIS/2) file transfer schema. See below for the scope of information transferred as well as the steps for performing the import and export in each application.

Scope of Integration

A scope of object type information that is transferred between Tekla Structures and Risa3D is defined below in Table 1. As noted, primarily geometry data is transferred as well as end reaction information to be used for connection design coming from Risa3D to Tekla. Boxes not checked represent information NOT transferred at this time.

<i>Data Type</i>	<i>Risa3D to TS</i>	<i>TS to Risa3D</i>
Section Properties (AISC or custom) ¹	X	X
Material Properties	X	X
Member Orientation Angles (local)	X	X
Steel plates		
Steel built-up sections		
End Forces (A, M, V)		
Update Model ²	X	
Grids		
Loads		
Design parameters		
Supports		
Releases		
Camber		

¹ Profile mapping files are used to ensure proper transfer of AISC member types like W, C, WT, HSS rectangular, HSS round, and pipe sections. These mapping files are not set up out-of-the-box in Tekla and Risa3D for the 2 products integration, however, it is quite straight forward for customers to create mapping file themselves.

² The ability to update a current model with new, modified or deleted geometry information from a new model, without having to rebuild information into the current model after import.

Table 1: Scope of Data in Tekla Structures – Risa3D Interoperability (CIS/2)

How to Export from Risa3D to Tekla Structures

A workflow is supported where the design engineer wishes to transfer their completed analytical model to Tekla Structures. With the model objects created natively in Tekla Structures, the user can create or modify their design drawings, coordinate with other design disciplines using various import/export formats, performing connection design and share their design model with the steel detailer. Some overall steps are defined below to export a CIS/2 file from Risa3D. Also read the provided *Risa3D CIS2 Translator* help documentation provided with the Risa3D translator installation.

1) Setup in Risa3D before Export:

The beam offsets should be defined in the Risa3D model within the **Member** properties by changing the cardinal Point values to **"8 Top – Center"** as shown. That way the Position setting in the Tekla beam objects will be automatically set as **Behind** as desired.

Member Detailing Data							
Primary	Advanced	Hot Rolled	Cold Formed	Wood	Concrete Beam	Concrete Column	Detailing
	Label	I Cardinal Point	I x Offset[in]	I y Offset[in]	I z Offset[in]	J Cardinal Point	J x Offset[in]
1	63833	8 - top center	0	4.313	0	8	
2	63884	8	0	6.83	0	8	
3	63871	8	0	6.83	0	8	

Figure 1a: Defining Member Offsets in Risa3D Model (Method 1)

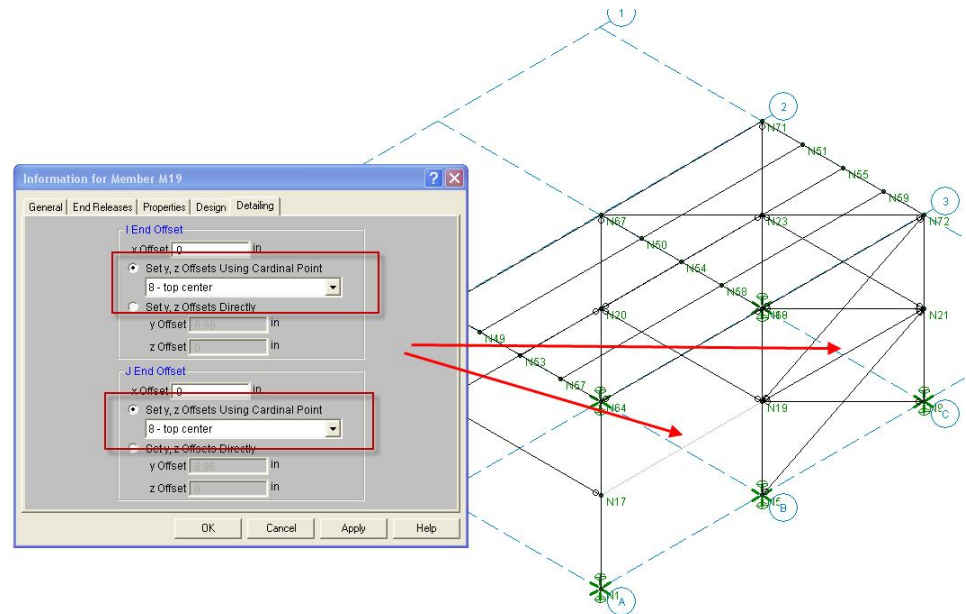


Figure 1b: Defining Member Offsets in Risa3D Model (Method 2)

2) Using the Risa CIS/2 Translator

Risa Technologies has a separate CIS/2 Module that is free to download off their website (<http://www.risatech.com/products.asp>) which also has documentation explaining the required setup and steps for exporting a CIS/2 model to Tekla. A couple of hints in using this tool in conjunction with Tekla Structures are defined here:

* Tekla prefers to receive a CIS/2 analysis model from Risa. Do not export a design model.

* Mapping files for section shapes and material properties may be needed to be set up on either the export from Risa3D or the import into Tekla Structures.

* Use the Cardinal Point export option to utilize the cardinal point definitions described above for beam elements.

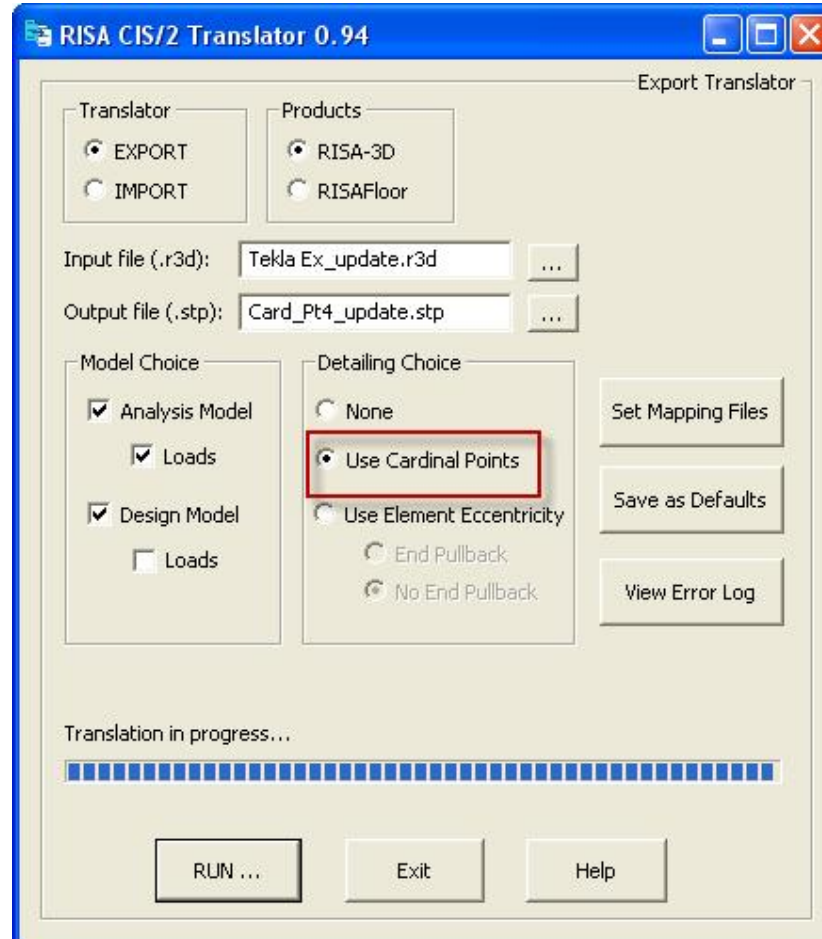


Figure 2: Risa3D CIS/2 Translator – Export

3) Import to Tekla Structures

Once the CIS/2 file is created (with a suffix of *.stp), the file can be imported into Tekla Structures. The steps for importing the CIS/2 file are shown in Figure 3 and outlined here:

Step 1: File/Import/CimSteel

Step 2: Select New model. Give the import file a name

Step 3: With the import parameters box open, go to the Filename box and search for the file. Note that the filepath length should be verified such that the entire stp file path fits in the filepath.

Step 4: Select OK. The model should import

Step 5: Once the model is imported, go to the View Properties and change the View Depth to be large enough to include the model. Also right click on the View and select Fit by Parts.

One thing to check if you ever get CIS2 files from customers and they aren't importing. Look at the heading of the CIS2 file and see if it says which Logic Product Model it is. If it's anything other than LPM6 (most likely you might see 5) I don't think we can import it. There is an LPM5 or LPM6 option on our export but not on our import. If customers have old analysis & design applications and haven't upgraded they might be sending you old file formats. Also, some CIS21 files come across, which are not valid.

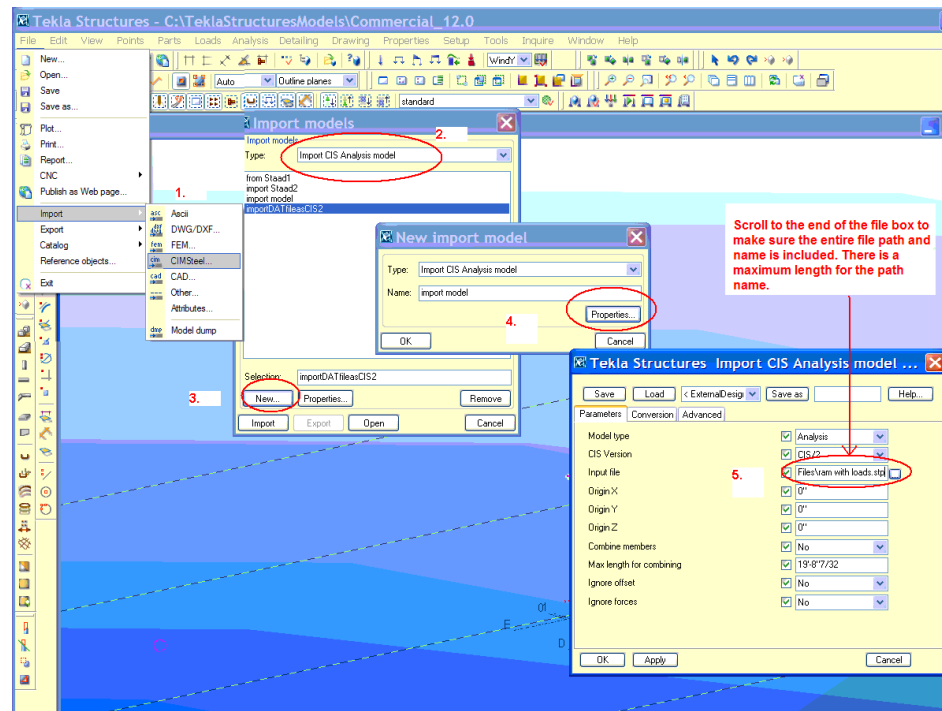


Figure 3: Tekla CIS/2 Import Interface

How to Export from Tekla Structures to Risa3D

A workflow is supported where the design engineer wishes to transfer their initial design model in Tekla Structures and export it to Risa3D. Some overall steps are defined below in exporting a CIS/2 file from Tekla Structures. Also read the provided Risa3D CIS2 Translator help documentation provided with the Risa3D translator installation for importing the file into Risa3D.

Tekla CIS/2 Export:

Below is a step by step guide in exporting a CIS2 analysis model from Tekla Structures.

Step 1 - Open the model in Tekla Structures that you want to export, and **open a view** showing the parts you would like to export. Make sure to load the View settings for exporting via CIS2.

Step 2 – Make sure the Select Objects in Components icon is selected.³ If no connections are to be included in this export, only select the parts icon as well.



Step 3 – Select entire model.

³ If the *Select Components* or the *Select Assembly* icons are selected instead, the parts themselves will not export, even though they show up as selected in the view.

Step 4: File/Export/CimSteel/Analysis

Step 5: Type in name of file ending in .stp.

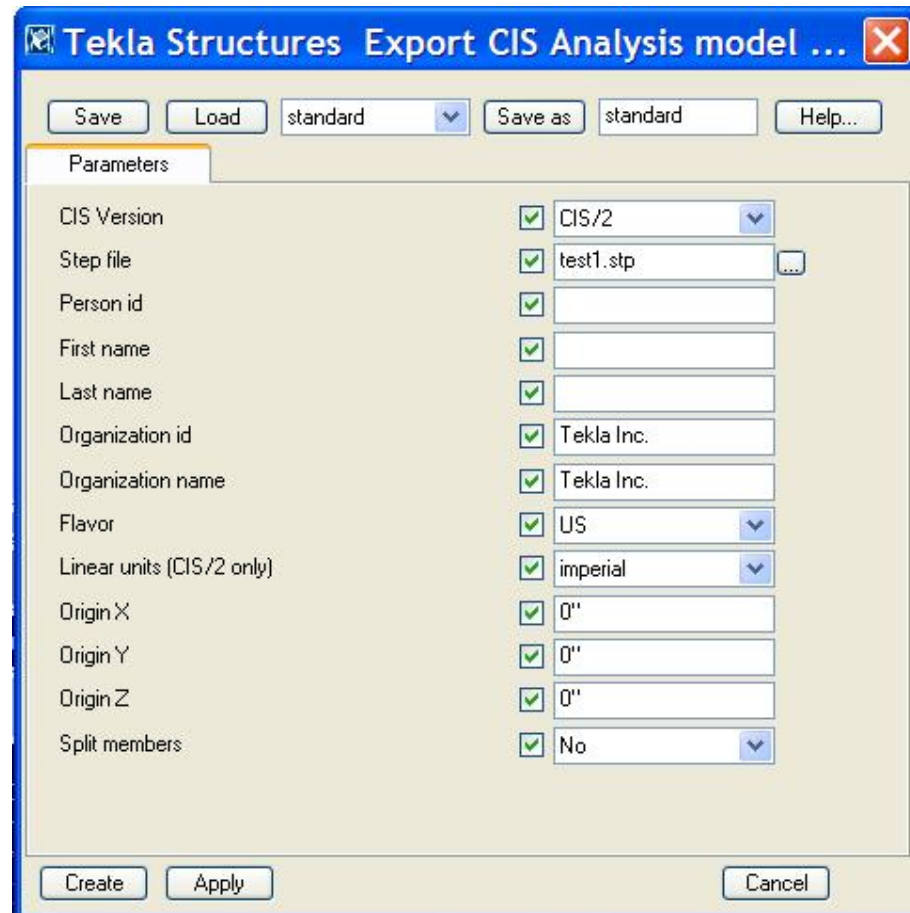


Figure 4: Tekla Structures CIS/2 Export

Note that once the user sets up their standard settings, they should save away an attribute setting in the upper right corner of the dialog box. This value can be used in the future by loading it from the Load icon.

Step 6: With settings defined, select Apply, select Create. The CIS2 model will run. A DOS window may appear in the background. That is a normal routine in the export. A note should appear in the lower left corner of the TS window that states "parts were successfully."

Risa3D Import:

Again using the CIS/2 Translator of Risa3D, the user specifies a .stp file created from Tekla and imports it as an analysis model into Risa3D. See Figure below for the interface of the Risa3D CIS/2 Translator.

For the steps to set up and import a CIS/2 file, see the CIS/2 Translator documentation provided by Risa3D.

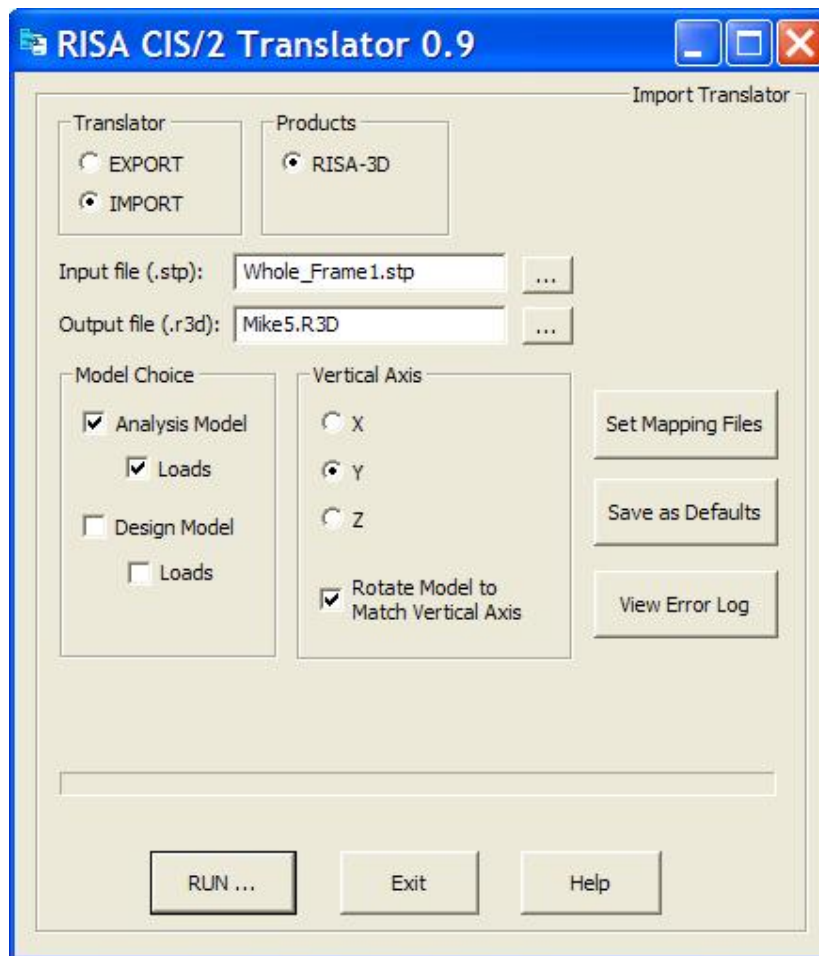


Figure 5: Risa3D CIS/2 Translator – Import

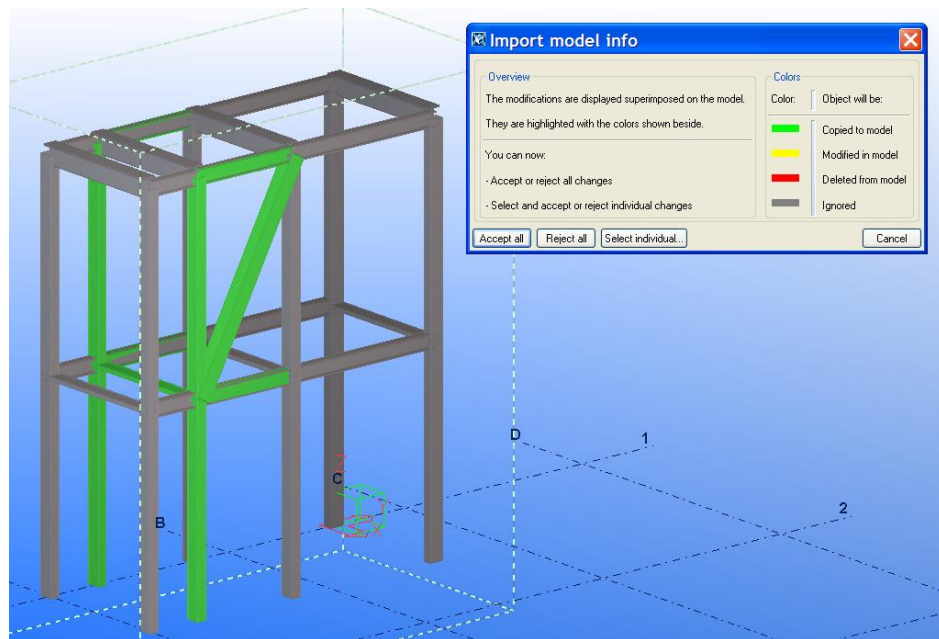
Updating a Tekla Structures Model

It is possible to receive updated models from Risa3D and merge those changes into your current Tekla model. Below are the steps and scope of how that process works.

Step 1: Import first model as defined in previous steps. Choose to save the model for future imports as requested.

Step 2: Import second model that is modified in Risa3D. This model will have its own import model name.

Step 3: A change management dialog box will show up as shown stating what objects are added (green), modified (yellow) or deleted (red). Note that this change management of modified members is of section size, not moved or stretched members coming from Risa3D.



Setting up Mapping Files

Setting up mapping files in Tekla Structures is as simple as editing a 2 column text file suffixed as a *.cnv file. Editing these files is described further in the Tekla Help section of Tekla Structures. Some example cnv files are located in each Tekla environment folder. Here is folder containing several cnv mapping files for the US market.

C:\TeklaStructures\13.1\environments\usimp\profil

The prfexp_* files are section property mapping files while the matexp_* files are material property mapping files.

Risa3D also has the ability to define XML mapping files to use within their CIS/2 Translator. See the Risa3D CIS/2 Translator documentation for more information.