BEND-TECH

Tekla Design Transfer Software

Revision 4 | English

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English
Original Instructions

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1. Introduction

Bend-Tech Design Transfer software allows the User to seamlessly transfer part design data from Tekla to Bend-Tech. Design Transfer works by extracting data via the Tekla Open API and remodeling solids. Remodeling circumvents limitations of exporting faceted Tekla solid models directly to intermediate formats. The remodeling aspect of Bend-Tech Design Transfer generates high-fidelity geometry, and facilitates fabricator friendly improvements to the transfer workflow.

2. Computer Requirements

The User will need the required supporting software in order to run Bend-Tech Design Transfer.

2.1 Supported Versions

2016i, 2017, 2017i, 2018, 2018i, 2019, 2019i, 2020, and 2021.

2.2 Microsoft

Visual C++ 2015-2019 Redistributable (x64) - this can be downloaded from the Microsoft support site by following this link: https://aka.ms/vs/16/release/vc_redist.x64.exe

3. Installation

The User will be required to install Bend-Tech Design Transfer software before first use. The software should be installed to the computer running Tekla. This will likely not be the Dragon computer.

3.1 Installation Process

On the computer where Tekla is installed, double click on the provided TSEP file. This opens the Tekla Structures Extension Manager. Select the desired Tekla Structures version and click Import. Start Tekla Structures, and the automated installer will set up the application.

3.2 Version Verification

1. Open a Tekla model
2. Click the blue menu icon in the top left corner
3. Next to the forklift icon, click “Extend”
4. In the Extension Manager window, scroll down to Bend-Tech Design Transfer. Click on Bend-Tech Design Transfer. The software version will be displayed in the right-hand side of the interface.

The version is also displayed in the top left corner of the Bend-Tech Design Transfer interface.

3.3 Update Bend-Tech Software

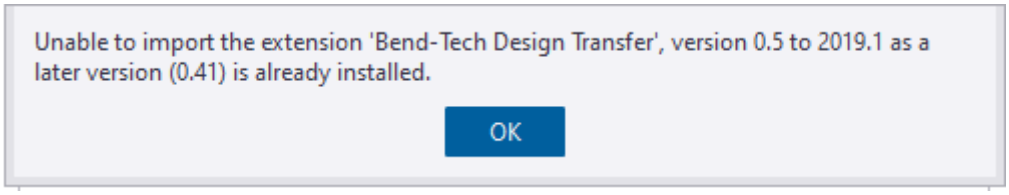
1. Open Dragon CAM
2. At the top of the interface, in the Help dropdown, choose Check License.
3. Close Bend-Tech to update.

4. Installation Troubleshooting

If the version of Tekla to be installed does not appear in the Tekla Structures Extension Manager, ensure the Tekla Structures extension manager is equal to or newer than the current version on the computer. Installing older versions of Tekla Structures can cause this issue.

4.1 Version Error

When attempting to install a TSEP extension with a lower version number you may see the following warning.



4.2 Version Error Procedure

If the software displays a version error warning, proceed with the following steps:

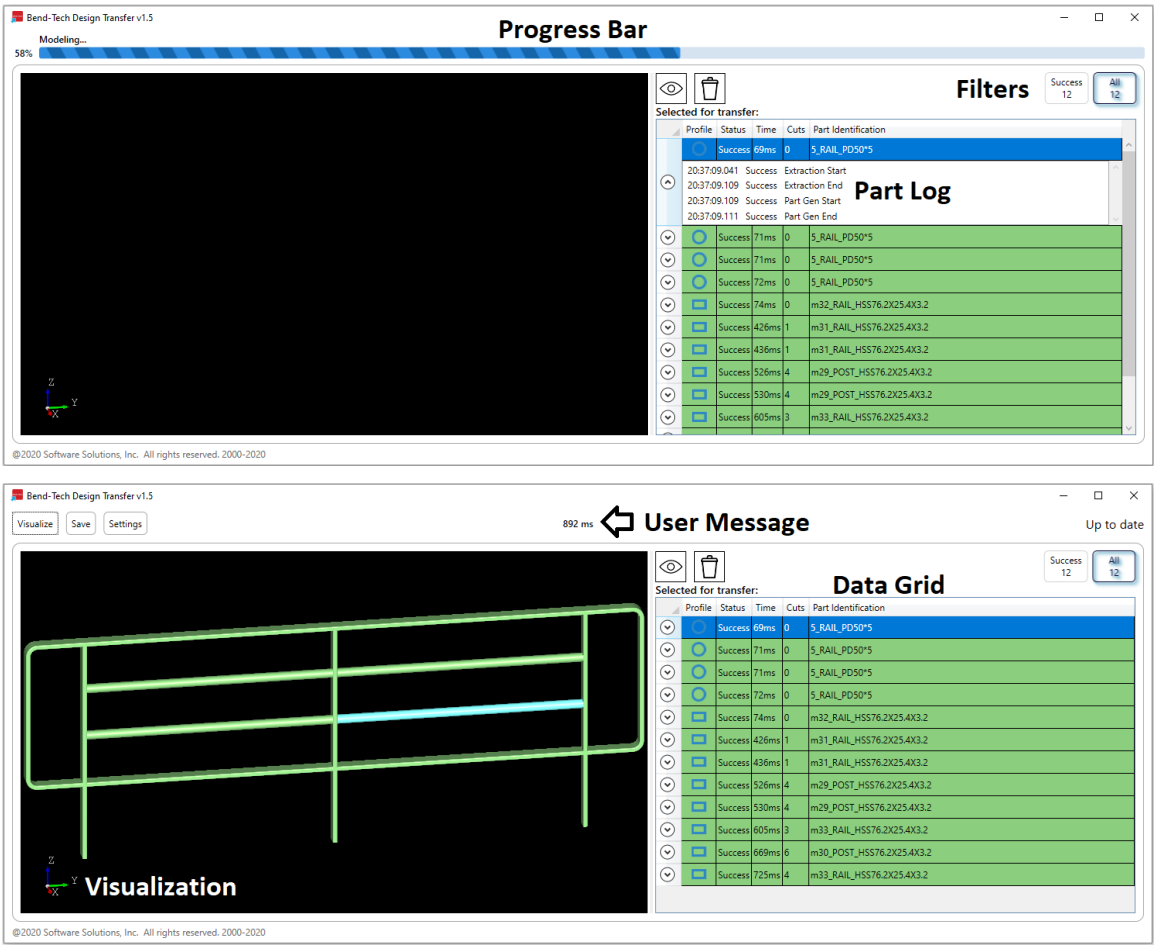
1. In Tekla go to Menu>Extend>Extension Manager>Bend-Tech Design Transfer
2. Highlight Bend-Tech Design Transfer and click Remove.
3. Restart Tekla (Uninstalls)
4. Close Tekla Again
5. Run the roll back TSEP

5. Opening the Application

Locate the plugin in the Applications & Components window on the right hand side of the Tekla Structures user interface. The Bend-Tech Design Transfer application will be listed under the Bend-Tech group header. It can also be located by entering Bend-Tech in the search bar. Double click the icon to launch the application.

If the blue circle icon appears after double-clicking the extension but nothing happens, make sure that Bend-Tech Design Transfer is not open in the background. If it is not running, this is an indicator that the Microsoft Visual C++ 2015-2019 redistributable has not been installed. See section 3.1 Computer Requirements of this document, install the redistributable, and try again.

6. User Interface



6.1 User Message

The User Message displays recent operation performance.

6.2 Progress Bar

Displays the progress percentage of the current operation. When no estimation is available an infinite progress bar is displayed.

6.3 Data Grid

If the user chooses Visualize, the Data Grid will display all parts selected in the Tekla model.

1. Profile Column - Displays an image of the profile
2. Status Column - The Status column displays the part export status
   a. Success: (Green) represents a part ready to Save.
   b. Warning: (Yellow) represents a part that requires user review.
   c. Error: (Red) represents a part that cannot Save or requires user input to Save.
   d. Invalid part: (Gray) represents a part that could not be Save because it is not compatible with the Bend-Tech Dragon machine or Bend-Tech import (I-beam, plate, etc.). *View the part log for details.
3. Part Identification Column - Displays the name that will be associated with the part when transferring to Bend-Tech. The components and ordering of the name can be configured in Settings.
4. Time Column - Displays the time elapsed to model the part
5. Cuts Column - Displays the number of boolean operations on the part including: part cuts, part fuses, planes, polygons, fittings, and bolts. On hover, the tool tip displays the quantity of each type.
6. Fix Column - Displays the type of fix applicable to the failed part. This column is only visible when the ‘Fix’ filter is selected. The ‘Fix’ filter is only displayed when there are fixable parts in the collection.
7. Selection
   a. Ctrl + Left Click a part to add it to the selection.
   b. Ctrl + Shift + Left Click to select all parts between the last and current part.
   c. Combine these techniques to select any combination of parts.

6.4 Filters

- ”All” - All parts selected for transfer by the user.
- ”Fix” - Parts that require user input to Save.
- ”Invalid” - Parts that are incompatible with the Dragon or the transfer process.
- ”Remove” - Parts that failed during the transfer process.
- ”Review” - Parts that require user review to Save.
- ”Success” - Parts that are ready to Save.

6.5 Part Log

Each part in the data grid has an expandable log that contains a time stamped history of notes, warnings, and errors applicable to that part. The Part Log will contain details on why a part is invalid or created a warning/error.

7. Tekla Transfer Process

7.1 Transfer Process

1. Select parts for transfer in Tekla
2. Click Visualize. Selected parts will be listed in the data grid. Parts modeled successfully are shown in green, parts that require attention are shown in yellow or red. Invalid parts are shown in gray.
3. Parts that appear under the ‘Success’ Filter are ready to Save.

Note

Only Bend-Tech Dragon compatible parts can be transferred. Select only the parts required for transfer and limit selection size to reduce modeling time.

4. Warnings appear in yellow in the Data Grid and can be isolated with the ‘Review’ filter. Warning parts require attention from the User to resolve.
    a. Compare the part in the visualization with the Tekla equivalent. Inspect overall shape, end cuts and holes (failed cuts will appear as material that has not been removed).
    b. If the part is valid click the Fix icon, otherwise click the Remove icon.
    c. If the fix icon is clicked the part will be converted to status ‘Success’ and is ready to Save.
5. Fixable parts can be isolated with the ‘Fix’ filter.
6. Parts that fall under the ‘Remove’ filter have failed and will not Save.
7. Parts that fall under the ‘Invalid’ filter are incompatible with the Dragon or the transfer process and will not Save.

7.2 Save Parts

Click Save. The software will save all parts under the ‘Success’ filter as an .enc file.

Note

The .enc file is only compatible with Bend-Tech software.

8. Settings

The User can apply Settings after again clicking Visualize, or clicking Save. Settings allows the User to customize the interface, as well as how the software processes parts.

8.1 Settings Definitions

Directory Set
The directory where the .enc file will be saved.

Directory Open
Opens a Windows File Explorer window to the set directory.

Open Directory on Save
Opens a Windows File Explorer window automatically after Save is complete.

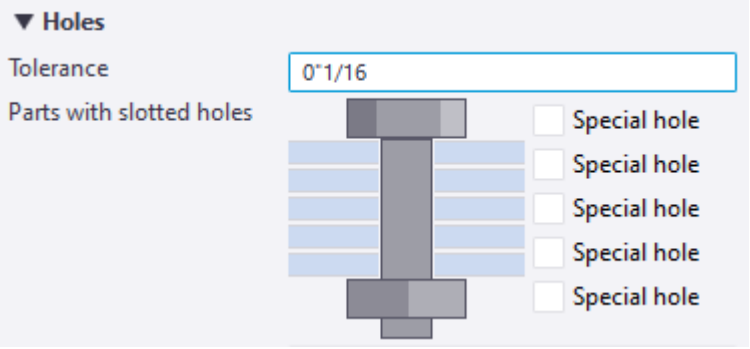
Write As Compound
All parts are transferred in a single .enc file. Relative positioning of parts is preserved. Compound files will always have the text "_compound" appended to the file name.

Write As Individual
One part is transferred per .enc file. If multiple parts with the same name are saved then a "qty" tag is appended to the name for uniqueness.

Units Metric
User facing numeric length values will be displayed in millimeters. Applies to the fix user interface and invalid profile log values.

Units Imperial
User facing numeric length values will be displayed in inches. Applies to the fix user interface and invalid profile log values.

Apply Bolt Tolerance
Increases tolerance around the bolt by the value listed in the Tekla bolt settings window.



Discard Cut Remnants
After a cut is performed, discards material that has been completely separated from the part. If left unchecked, the terminal material will be left. This Setting applies to all parts so running the part in isolation is suggested.

Weep Hole Fix
Increases the length of bolts that end near flush with the material.

Numbering Enabled
Enables Tekla Perform Numbering macro. Numbering ensures that part marks are up to date and that part names are accurate. If the part mark component is not included in the naming configuration, this setting can be disabled.

Dragon Compatible Profile
Enables check on material profile thickness, diameter, height, and width against known machine limitations. Profiles that exceed the limits of the Dragon machine are marked Invalid and will not be exported. Review the part log to see which profile constraint was violated and what the violating value was. Dragon Compatible Profile is meant to prevent the user from wasting time exporting and nesting materials that are not manufacturable with a Dragon. Uncheck to export regardless of profile constraints.

Polygon Cut Extension
Enable this setting to avoid coplanar faces between polygon cuts and channel/angle/rectangle material. This is achieved by modifying the cutting object by extending that coplanar face outward a measurably insignificant distance. This extension allows OCC to distinguish between coplanar faces. Disable to prevent any modification of polygon cutting objects or if unexpected behavior is occurring, disabling may result in invalid parts.

Prompt Before Numbering
Disables automatic numbering and alerts the User before numbering to prevent unwanted change. If numbering is not desired see “Numbering Enabled.”

Transparency Slider
Adjusting transparency may help the User visualize cuts more clearly. Moving the slider to the left will make parts more opaque, moving the slider to the right will make the parts more transparent. Transparency Slider prevents the user from making the part invisible.

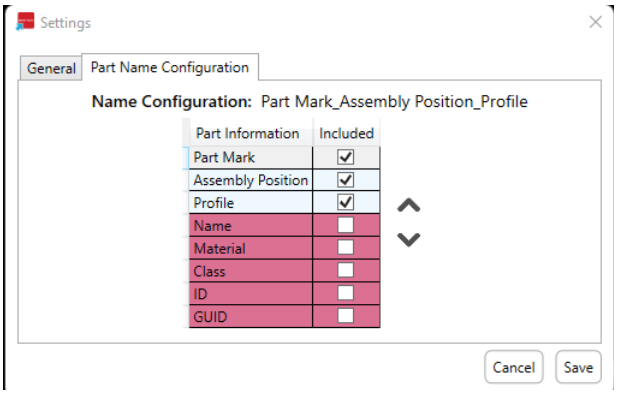
Success Color
The display color of parts with transfer status Success in the Visualizer.

Warning Color
The display color of parts with transfer status Warning in the Visualizer.

Selected Color
The display color of parts that are selected in the data grid in the Visualizer.

Background Color
The background color of the Visualizer.

Name Configuration
Allows The User to select and reorder from a list of name components extracted from Tekla.



- **Part Mark**: The numbering series of the part is determined by the prefix and start number of the selected parts, and applied via the Tekla Perform Numbering macro.
- **Assembly Position**: For parts it shows the assembly position number of the assembly that contains the part.
- **Profile**: The Profile entry under the General drop down in the part properties panel.
- **Name**: The Name entry under the General drop down in the part properties panel.
- **Material**: The Material entry under the General drop down in the part properties panel.
- **Class**: The Class entry under the General drop down in the part properties panel.
- **ID**: The part identification number.
- **GUID**: A globally unique identifier for the part.

To reorder a component in the Name Configuration grid, select the component in the grid and use the arrows on the right hand side to move it up or down. Reordering will update the name configuration display.

Note

If there exists a Tekla data component that is not available in Bend-Tech Design Transfer software, please contact support@bend-tech.com and Bend-Tech can investigate adding the component.

9. Cut Failure

The most common point of failure for boolean operations (cutting) is when two shapes contain an overlapping face or edge. Bend-Tech Design Transfer uses Open Cascade Technologies to perform boolean operations, and failures in these scenarios are not uncommon. If a cutting failure is encountered, try modifying the cutting shape to avoid the overlapping faces or edges.

10. Reporting Issues

To report any Bend-Tech Design Transfer software issues, send an email to support@bend-tech.com.

For a quick resolution provide the following:

A. The log text of the part(s) in question.

B. A full screen screenshot of the Bend-Tech Design Transfer window with the parts in question selected.

C. Provide the model .db1 file. This file is used to recreate and test the issue internally and will not be used or redistributed for any other purpose. Intermediate formats like IFC are not sufficient in most cases.

D. If an output .enc file is needed to keep the Dragon machine running, please specify and a file can be provided before a patch is publicly available. This requires a db1 file.

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