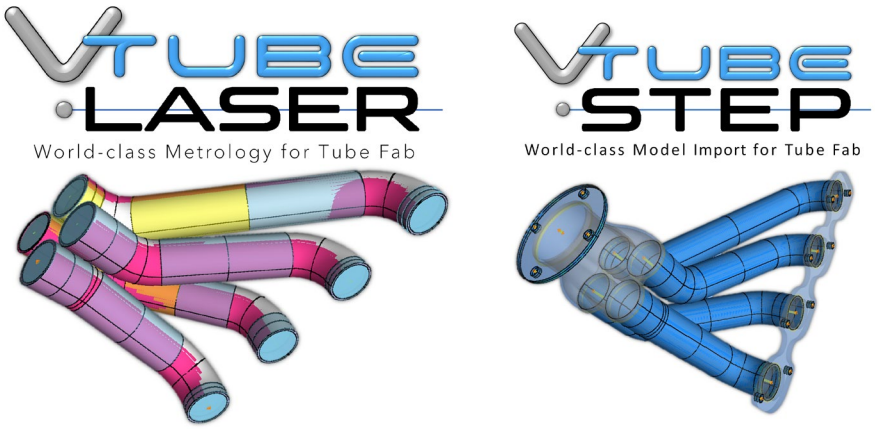
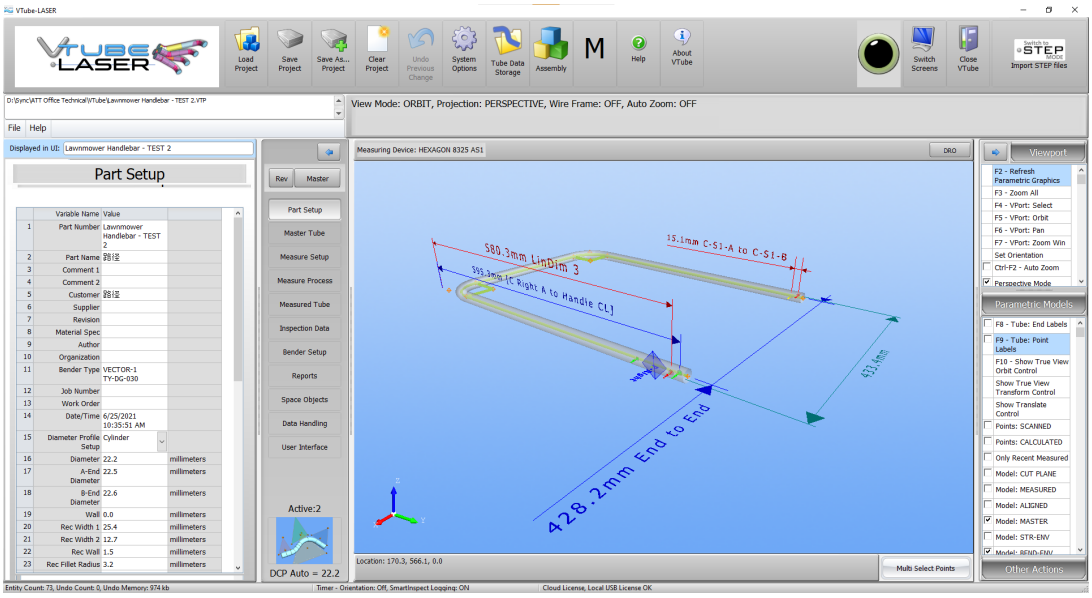


Version 4 Update History



The updates in this document are ordered from newest to oldest.

Version 4 Update History

Version 4.1 – June 1, 2023

This document has been moved to our online help portal:

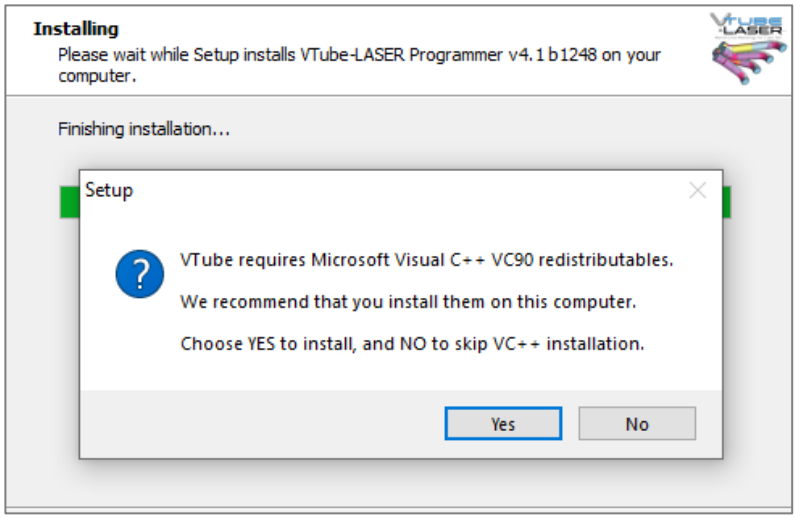
https://advancedtubular.helpsite.com/articles/108208-vtube-update-history

Version 4.1 - Build 1254, May 15, 2023

Smarter Installations – VTube Installations Now Check for the Required Microsoft Visual C++ Redistributables At Installation

Microsoft VC++ support files are required for VTube. They are usually already installed on Windows computers before VTube is installed. However, we've found that some Windows installs don't have them. So now, all license types of VTube installations check for the existence of the proper VC++ support files.

If the files don't exist, then the VTube installation program offers to install them. If this message occurs, we recommend installing them to avoid errors in the next step of registering components of VTube with Windows.



Leaner Installations – We Removed HEXAGON and FARO Drivers in the VTube-LASER Installations to Decrease the Installation File Size

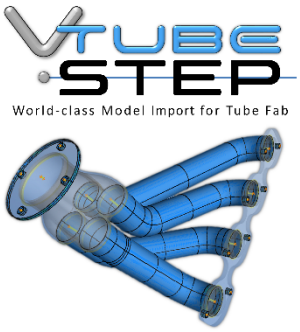
The arm drivers are huge files, making the VTube-LASER installation file much larger. Also, since HEXAGON and FARO regularly upgrade their drivers, we've decided not to include the driver files inside the installation files.

The latest drivers can always be downloaded from our support site, www.advancedtubularsupport.com.

Version 4 Update History

Version 4.1 - Build 1248, May 2, 2023

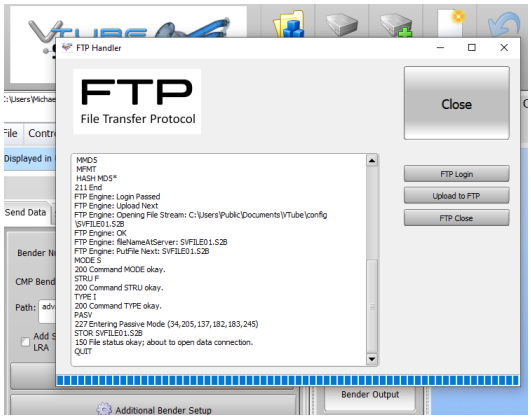
NEW - VTube-STEP Can Now Output the New Supravision Network FTP Protocol



FTP (**File Transfer Protocol**) sends and retrieves files through the Internet to/from FTP servers. FTP is used by non-Windows-based controls to communicate with Windows-based software. We created the "SVNET FTP" protocol to allow VTube to communicate with non-Windows operating systems like Linux, Microware OS-9, VxWorks, and QNX Neutrino.

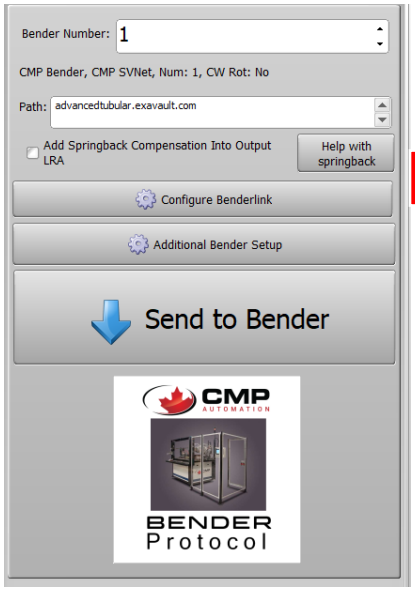
In this build, VTube-STEP can also handle this new SVNET FTP protocol to send new bender data to controls.

So, it is possible to use Supravision Network communications through FTP with any control that will support it with bot h VTube-LASER and VTube-STEP.



An example of Supravision Network FTP communications is CMP Automation:

VTube-STEP and VTube-LASER use SVNET FTP to communicate with CMP bender controls for bender setup and corrections. Now this includes VTube-STEP sending bender setup data.



Version 4.1 - Build 1246, May 1, 2023

FIXED VTube-LASER Programmer License User Interface Start Issue

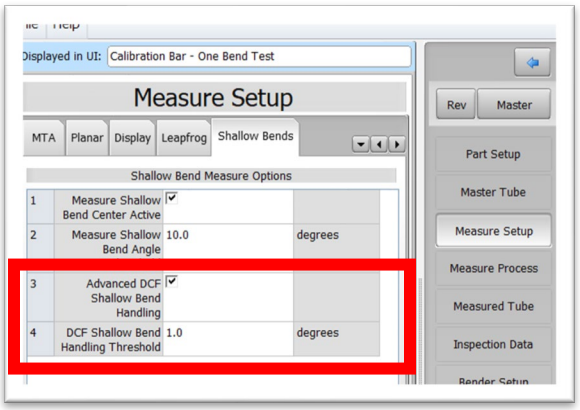
We discovered and fixed a user interface issue that would cause VTube-LASER Programmer 1244 and 1245 to throw repeated errors during VTube-LASER load. This issue had no effect on VTube-LASER and VTube-STEP. It only occurred in VTube-LASER Programmer licenses.

VTube-LASER Programmer is used as an offline setup program for VTube-LASER. It is identical to VTube-LASER - except it does not connect to measuring centers.

Version 4.1 - Build 1245, April 28, 2023

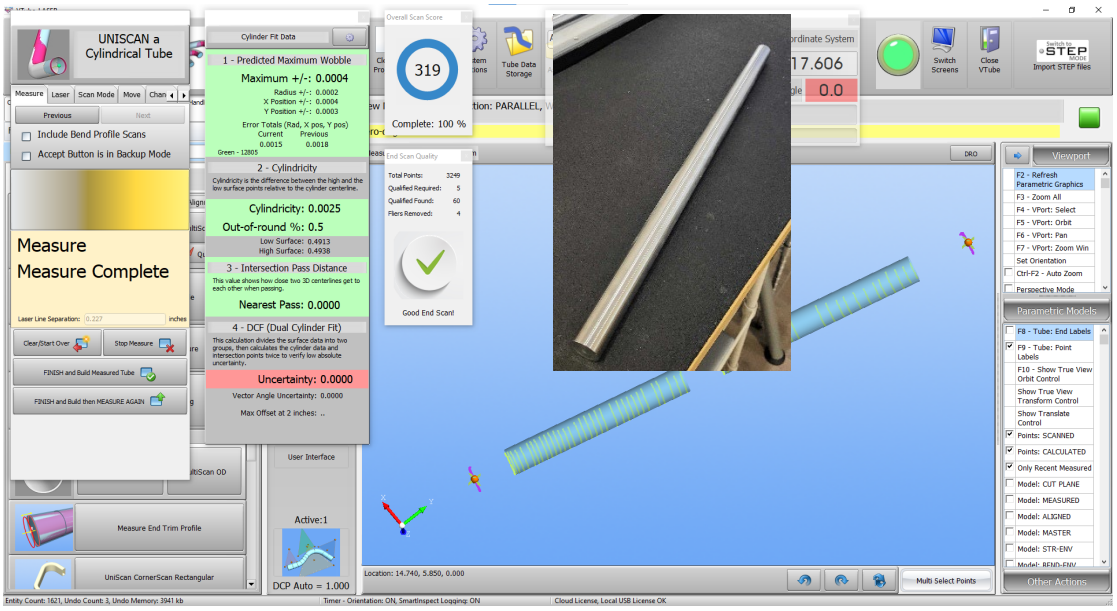
NEW VTube-LASER DCF SHALLOW BEND HANDLING – Better Predict Shallow Bend Intersection Points Through New Advanced Dual Cylinder Fit Calculations

Measuring shallow bends to find a repeatable intersection points is often a challenge for tube inspection.



VTube-LASER now uses the existence of out-of-tolerance DCF intersection errors combined with shallow bend angles to predict when VTube needs an operator to select the intersection point location using the Shallow Bend measure process.

This logic is powerful enough to measure a bend even inside straight cylinders without stopping the measure process. This is an example of measuring a bend inside a straight cylinder:



Because the DCF value is out of tolerance and the bend angle is 0, VTube asked the user to select the intersection point and then move to finish the measure. **This new feature is switched ON by default.**

Version 4 Update History

Version 4.1 - Build 1244, April 27, 2023

NEW VTUBE-LASER QUALIFICATION PASS/FAIL FEATURE - Allows Users to Select Qualification Attributes that Are Used to Show a Single PASS/FAIL Result in the User Interface and Reports

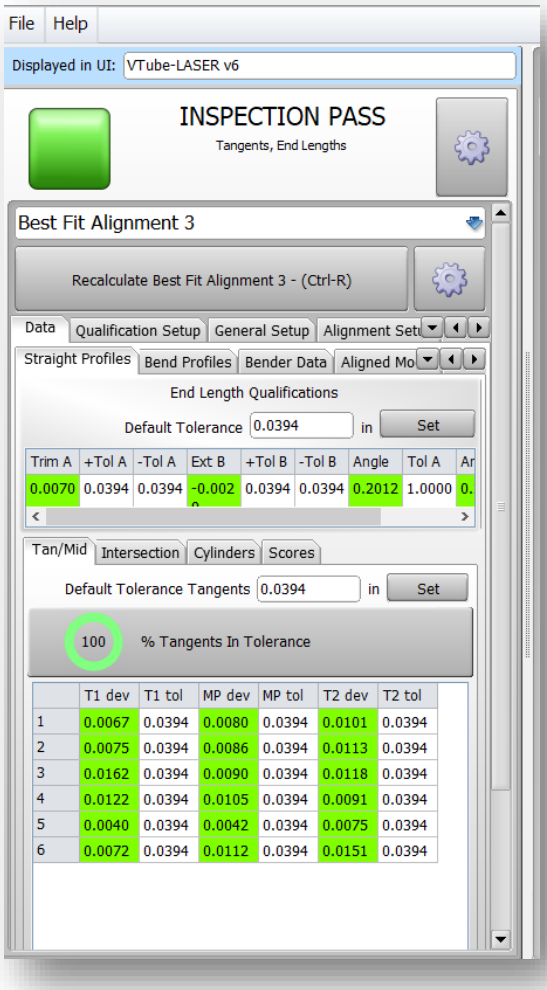
Many customers prefer a clear single PASS/FAIL notification in the user interface for part qualification. The challenge is that each project may need to qualify a part based on unique and different qualification attributes from other projects. This new feature handles this need efficiently.

VTube-LASER allows users to choose qualification attributes to use to a PASS or FAIL a part during inspection.

The effect is that now large GREEN/RED colored squares are displayed in three places in the user interface. The first is the Inspection Data menu. The second is on the top of the viewport. The third is inside the turbo operator screen (if you use that screen).

With these new pass/fail indicators, users will now quickly know at a glance if the part passes qualification.

Also, the overall PASS/FAIL flag can also be included in all reports with new HTML tokens.

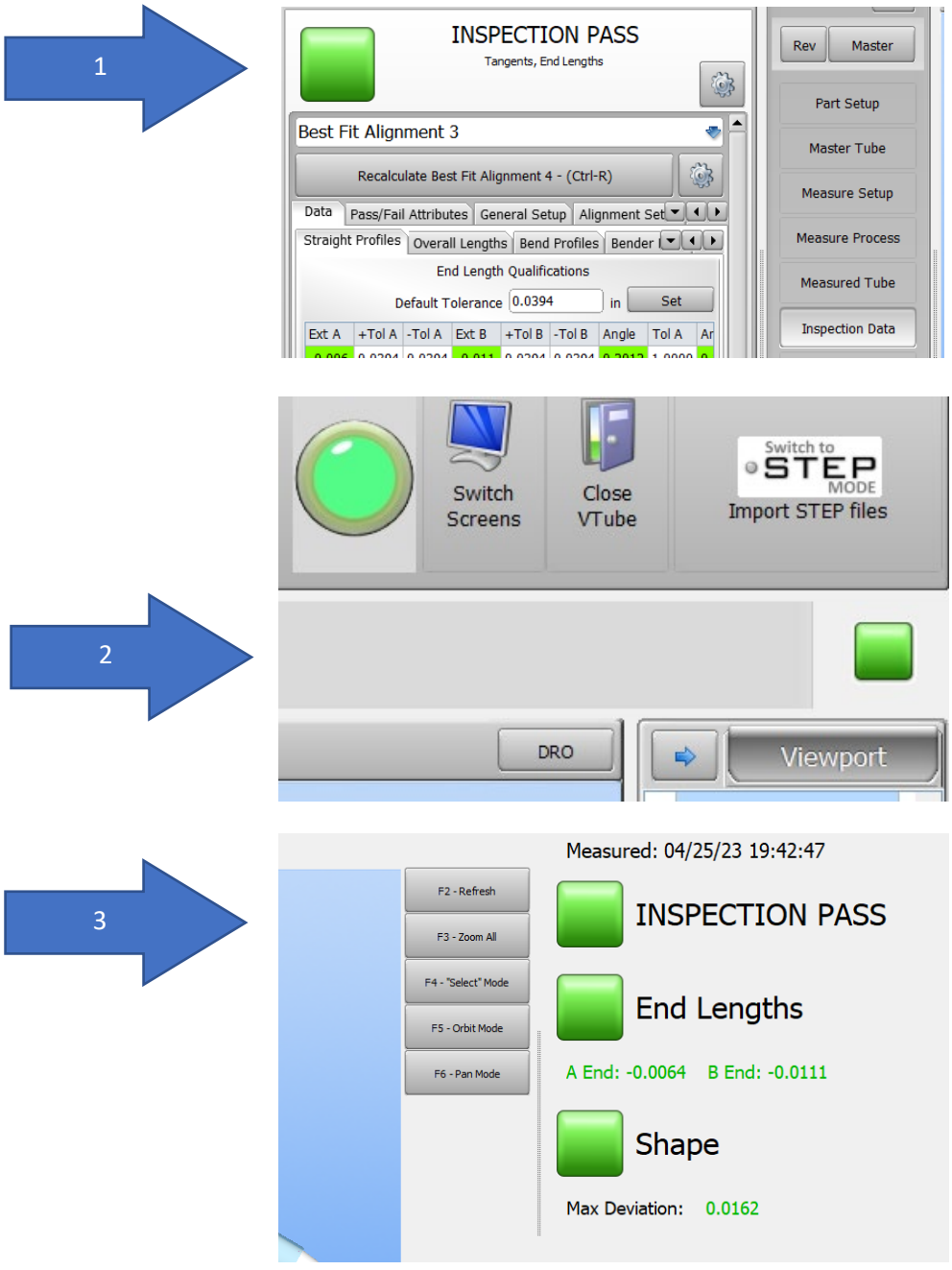


Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-LASER QUALIFICATION PASS/FAIL - User Interface Icons for PASS

These are the three new PASS/FAIL icons in the user interface.

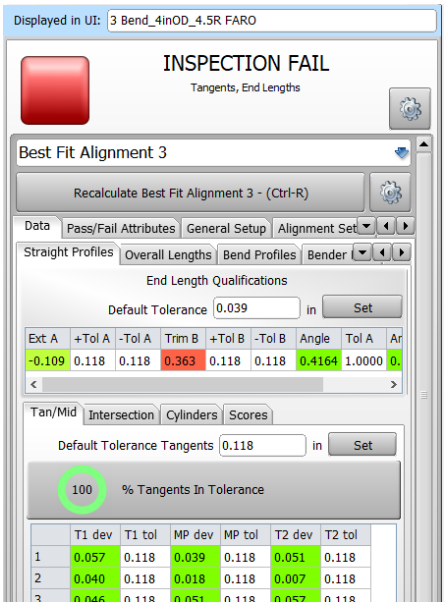
The first one is at the top of the Inspection Data menu. The second is on top of the viewport. The third is in the Operator screen.

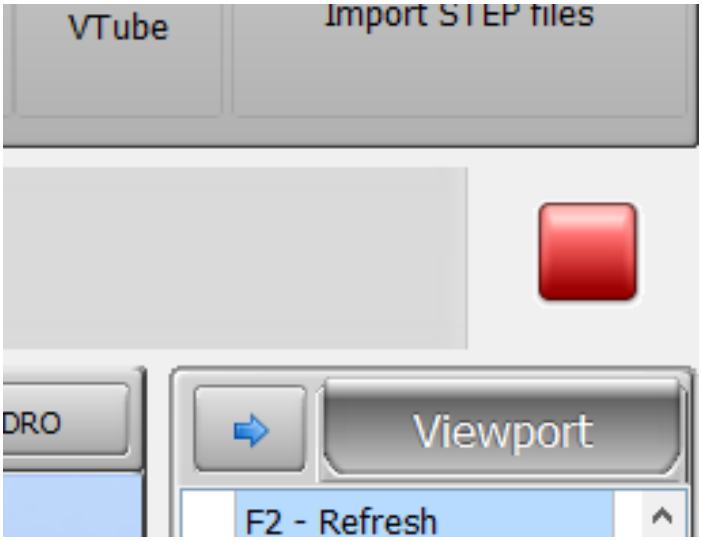


Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-LASER QUALIFICATION PASS/FAIL - User Interface Icon for FAIL

When any qualification metric is failed, then VTube-LASER changes the squares to RED like this:





Version 4.1 - Build 1244, April 27, 2023 - Continued

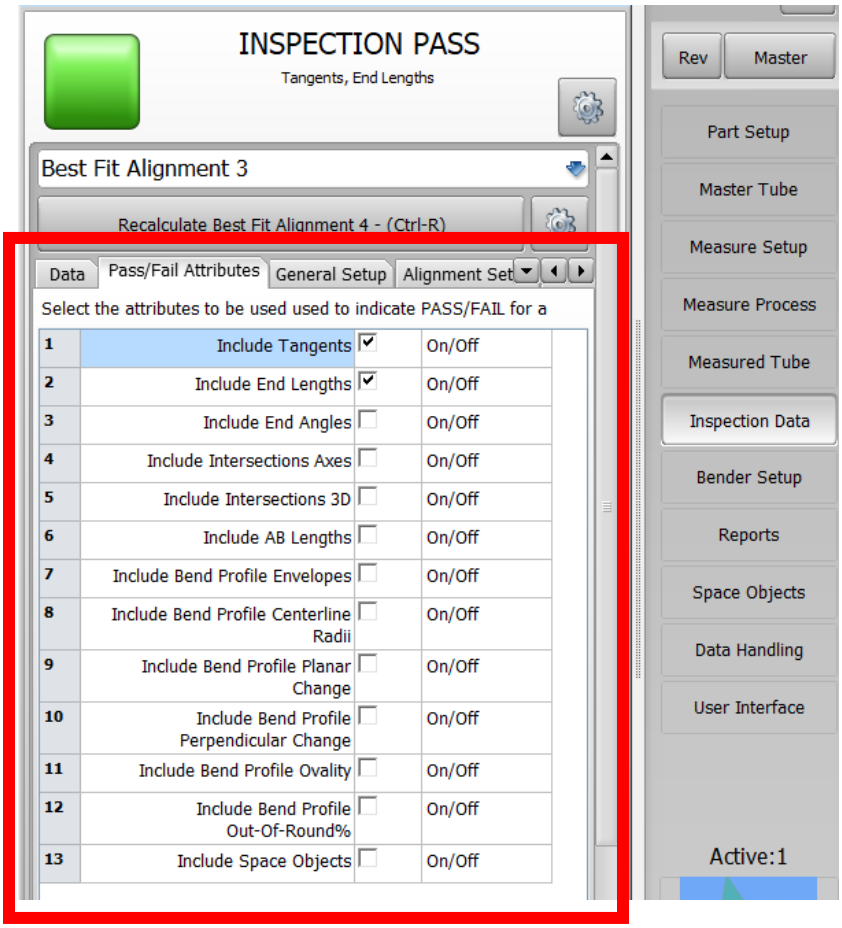
VTUBE-LASER QUALIFICATION PASS/FAIL - Attribute Setup

The setup for the Qualification Pass/Fail display in the new **Pass/Fail Attributes** tab menu inside the **Inspection Data** menu.

Select the attributes that you want to use to qualify each project.

As you switch on or off attributes, the Pass/Fail icon may change color between green and red in realtime to reflect the new qualification state for all the attibutes selected.

The states for these switches are stored in the project file and will be remembered when the project is loaded into VTube-LASER in the future.



Version 4.1 - Build 1244, April 27, 2023 - Continued

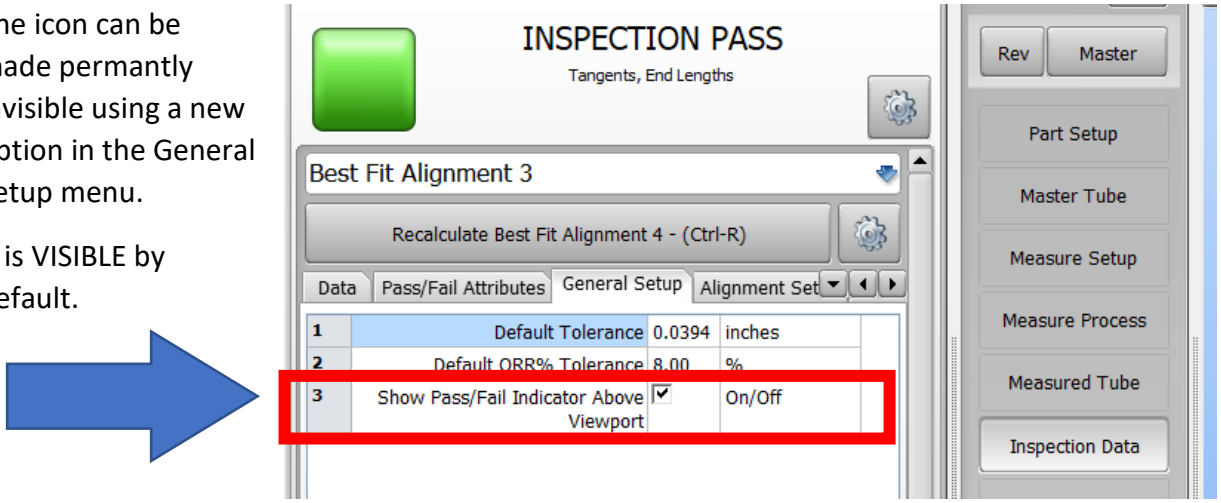
VTUBE-LASER QUALIFICATION PASS/FAIL – Controlling the Icon Display Setup

By default, if there are some attributes selected, then this icon will appear.

If there are are no attributes switched ON in the setup menu, then this square will disappear.

The icon can be made permantly invisible using a new option in the General Setup menu.

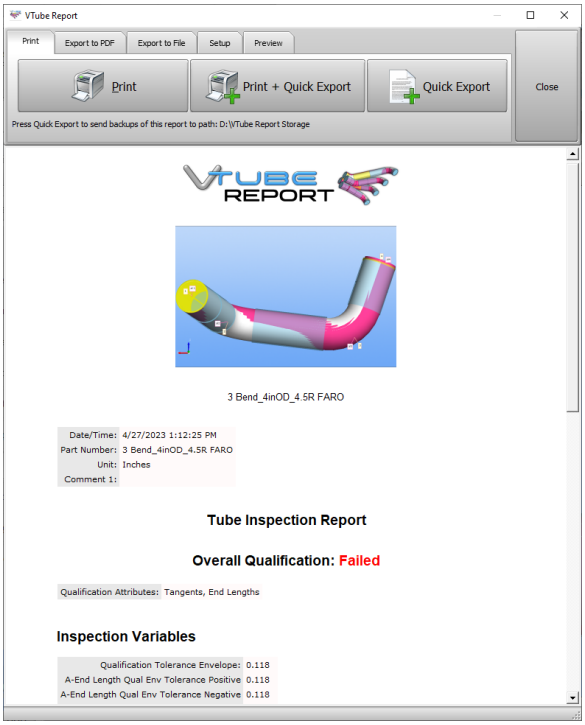
It is VISIBLE by default.



Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-LASER QUALIFICATION PASS/FAIL - Reports

The Qualification Pass/Fail can also be reported using a new HTML token inside the report. The Tube Inspection Report template in this new installation now prints like this:



Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-LASER QUALIFICATION PASS/FAIL - Reports - Continued

There are two new HTML tokens for reports.

1 - The Result token shows Passed or Failed.

<vtube_val>PassFail_QualifierAttributes_Result</vtube_val>

2 - The Setup token shows all the attributes used to qualify the part.

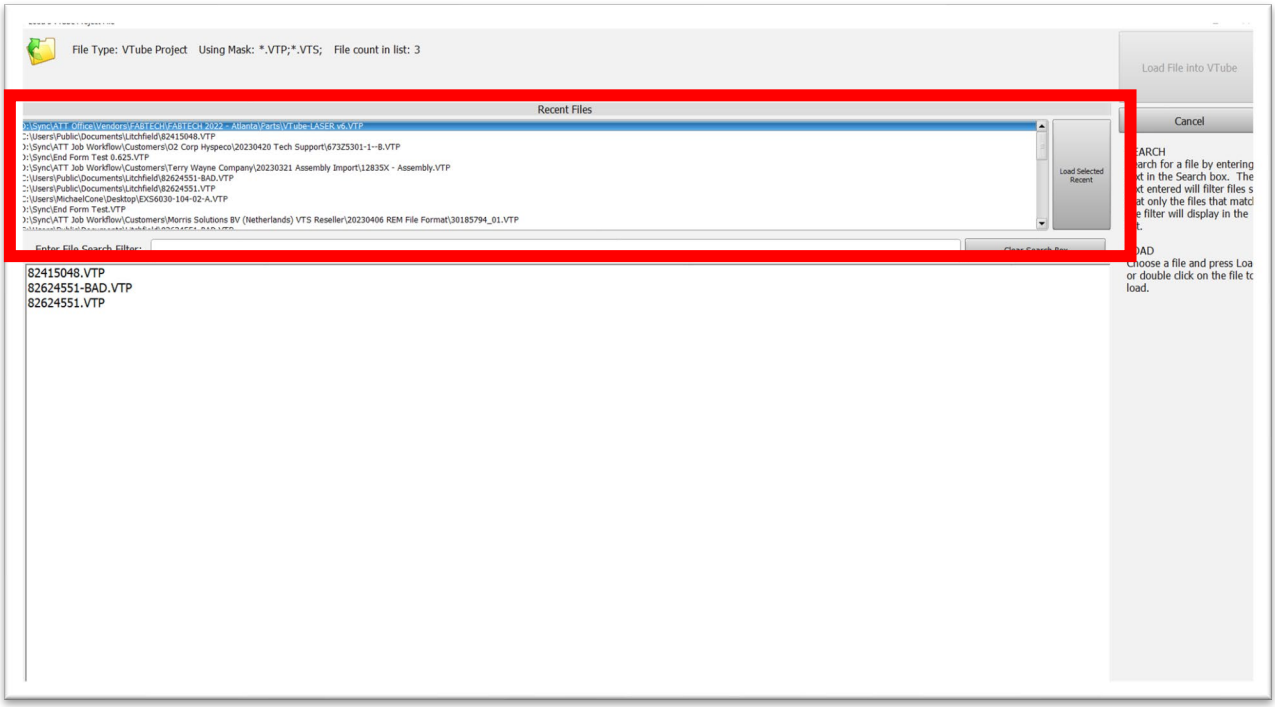
<vtube_val>PassFail_QualifierAttributes_Setup</vtube_val>

Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-LASER NEW RECENT FILE LIST Is Added to Turbo Operator Screen Project File Quick Load Window

Customers asked is to add a Recent Files list to the Turbo Operator Screen project load menu. We display it at the top when users are loading a project file type.

Either double click on any recent file, or press the button on the right of the list to load the recent project file.



Version 4.1 - Build 1244, April 27, 2023 - Continued

VTUBE-STEP and VTUBE-LASER - FIXED REPORT Engine PDF Builder Issues

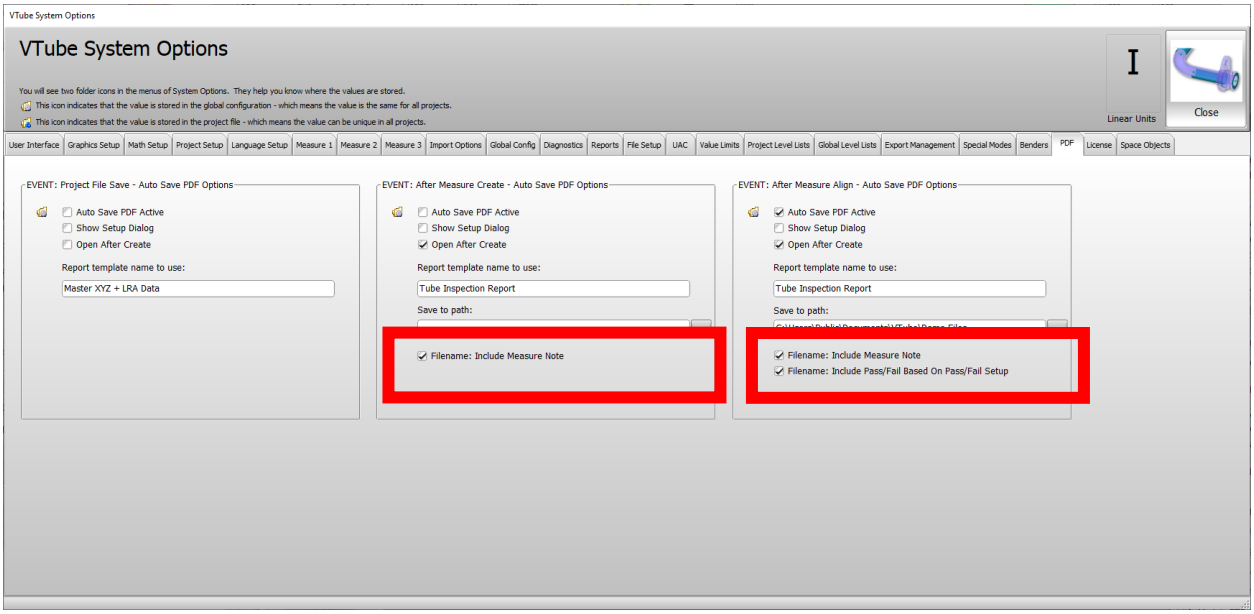
Issues related to improper font scaling, text placement, and text clipping of PDF reports are fixed in this version.

If your PDF reports appear like we show on the right, then install and test this new build of VTube-STEP or VTube-LASER.

Version 4.1 - Build 1244, April 27, 2023 - Continued

NEW VTUBE-LASER PDF AutoSave File Naming Options in System Options Menu

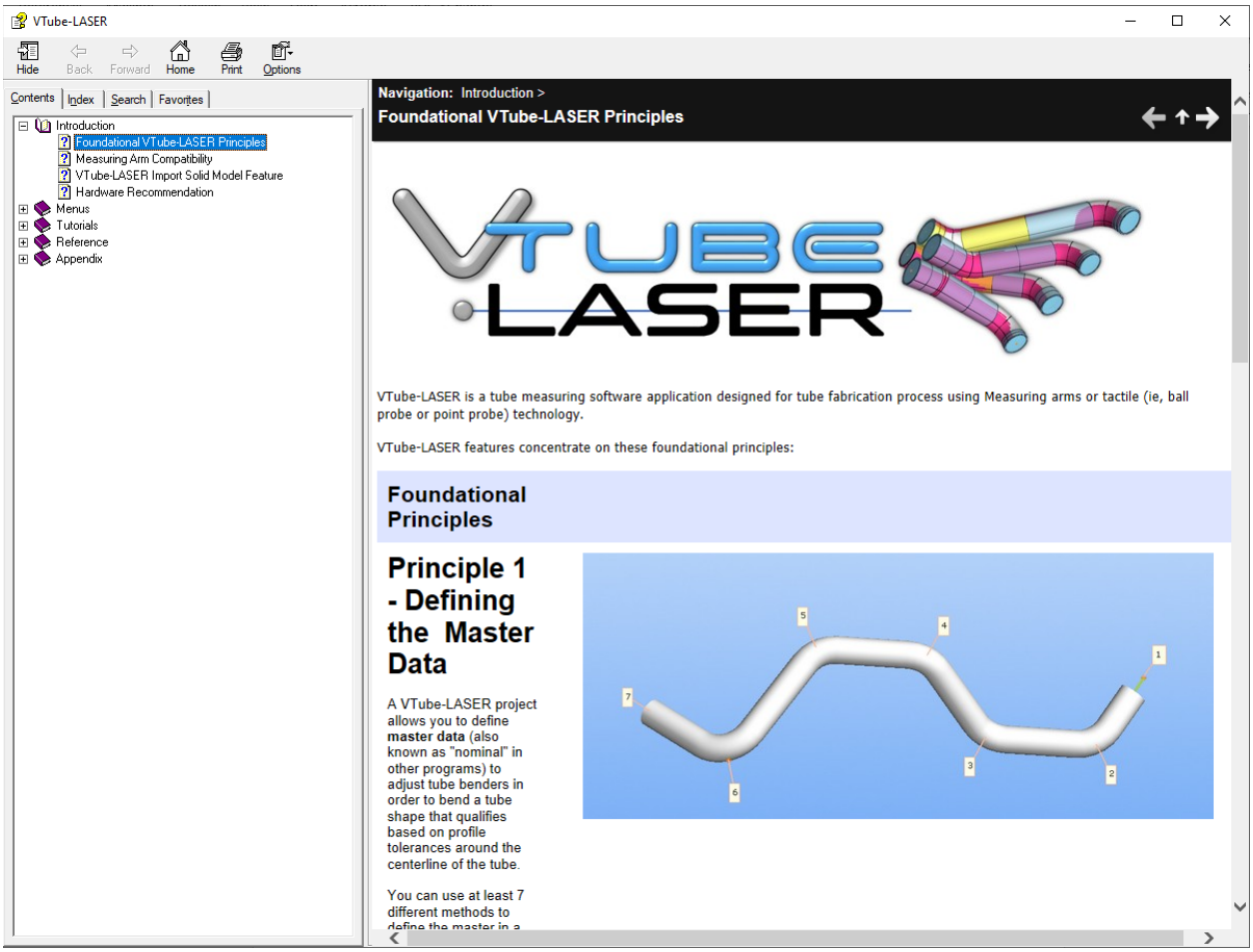
We've added new PDF autosave options that allow administrators to add new values to the automatically-saved files. The main new value is "PASS" or "FAIL" based on the new Qualificaton Pass/Fail feature setup.



Version 4.1 - Build 1244, April 27, 2023 - Continued

NEW VTUBE-STEP and VTUBE-LASER Help Files

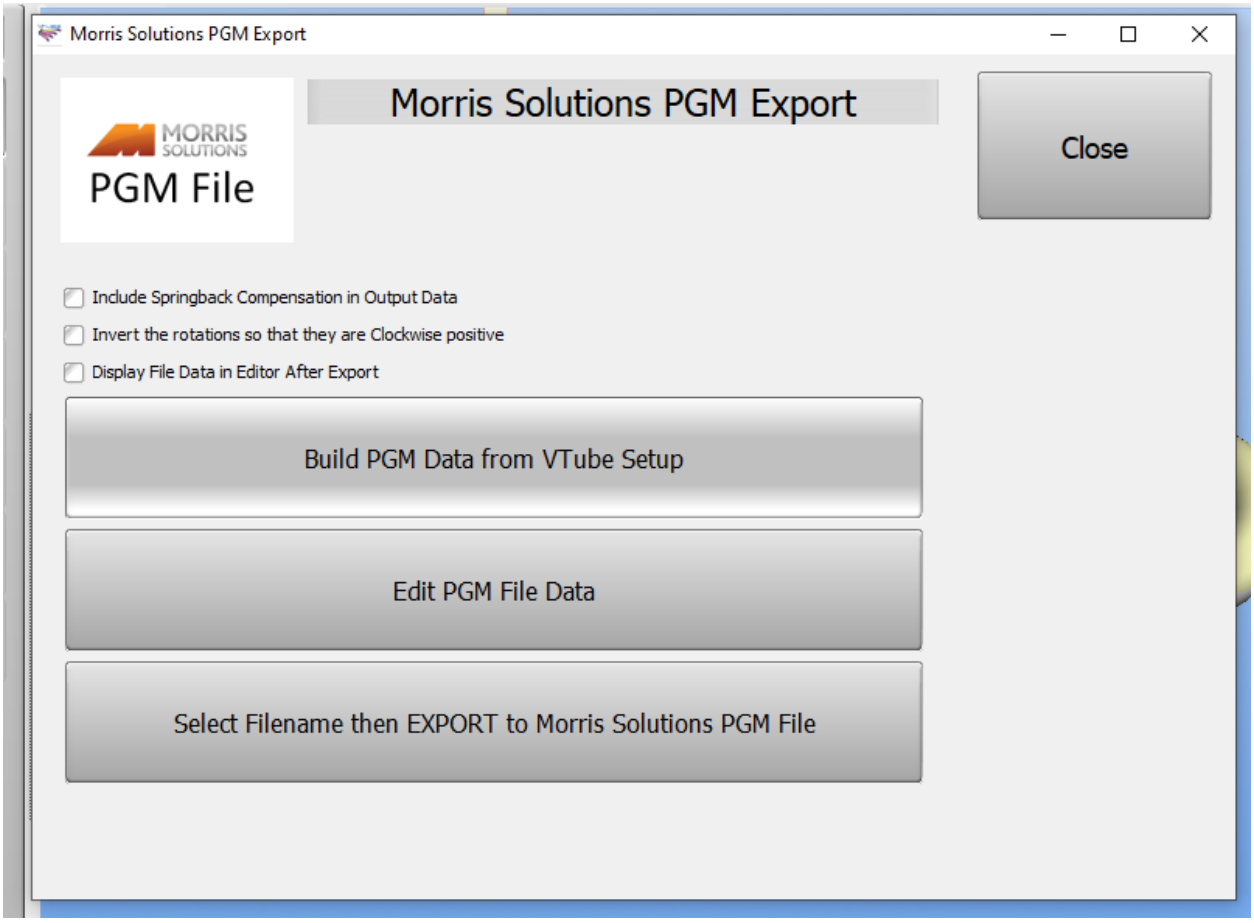
The VTube-STEP and VTube-LASER help files have been updated to show the new user interface and logos.



Version 4.1 - Build 1244, April 27, 2023 - Continued

NEW Enhancements to the Morris Solutions PGM Bender Output

The Morris Solutions team asked us to make more modifications to the PGM file data structure. That change has been completed in this build.

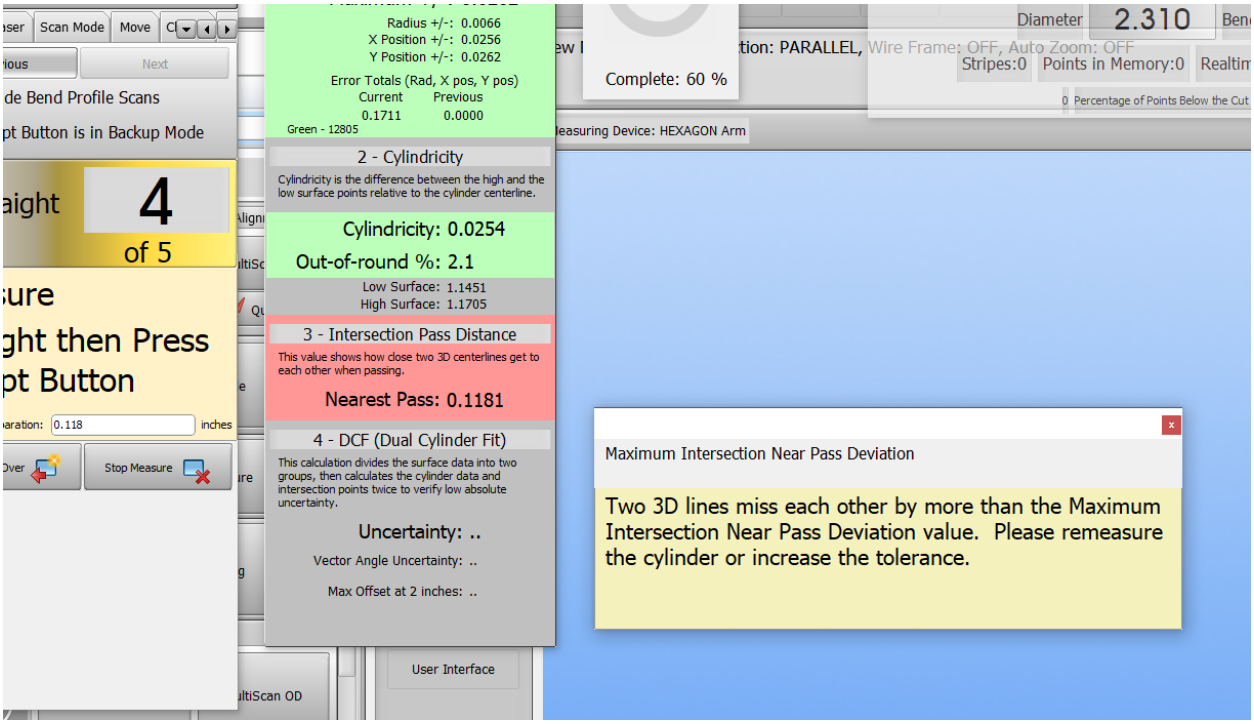


Version 4.1 - Build 1238, April 11, 2023

Intersection Calculation Warnings Are Now Properly Handled During Measuring When Shallow Bend Logic is Enabled

In recent previous versions with the new Shallow Bend logic process turned on, it was possible that the measure logic would bypass the intersection calculation warning which could allow the logic to move into Shallow Bend processing – which is not the correct action to take when an intersection error occurs.

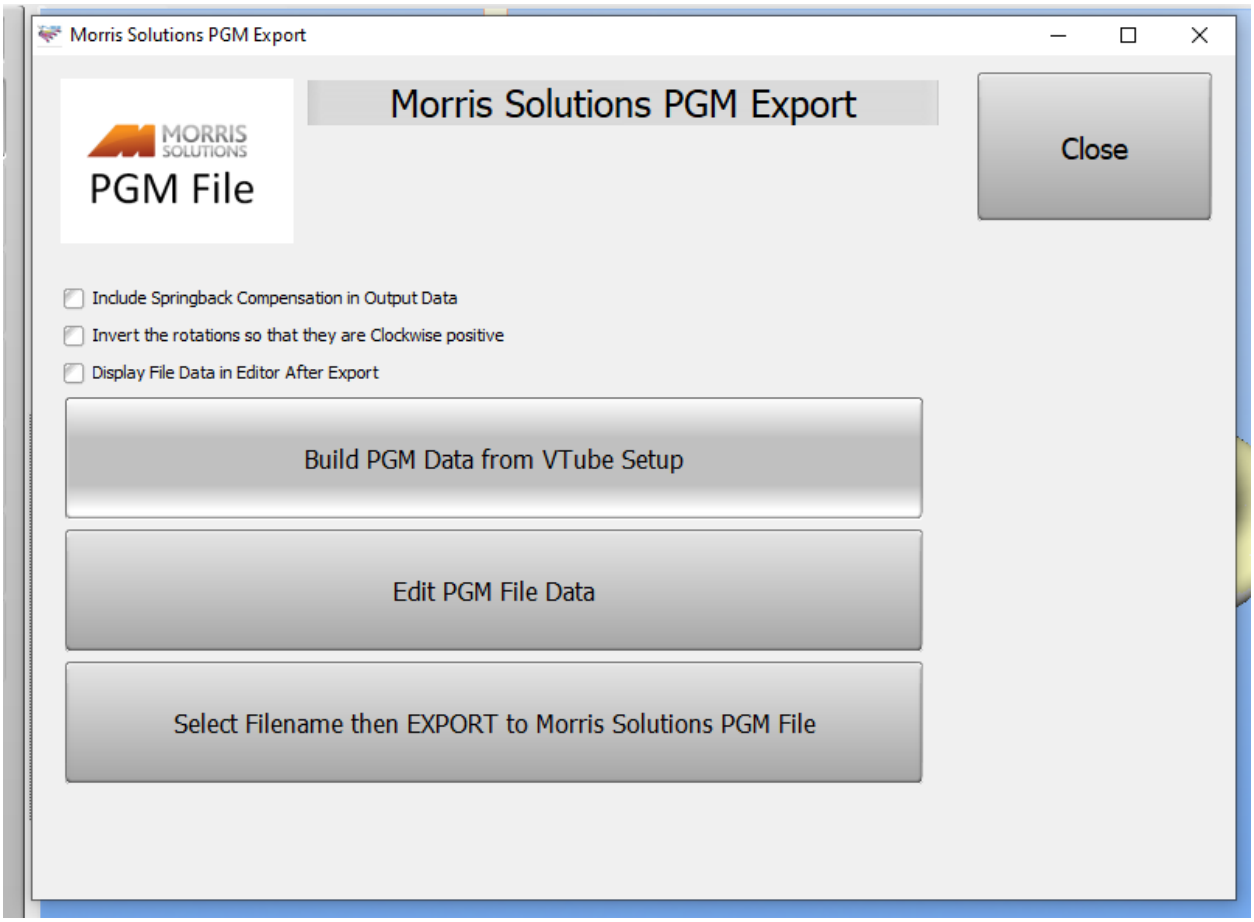
This has been fixed in this version. VTube will stop the process before starting the Shallow Bend process and display the correct warning on the screen. The warning will probably look like this:



Version 4.1 - Build 1236, April 6, 2023

Enhancements to the Morris Solutions PGM Bender Output

VTube-STEP can now edit and output all values in the Morris PGM file. The Morris Solutions PGM Export menu now has two new buttons that allow for better control of the data before it is saved to the PGM file.



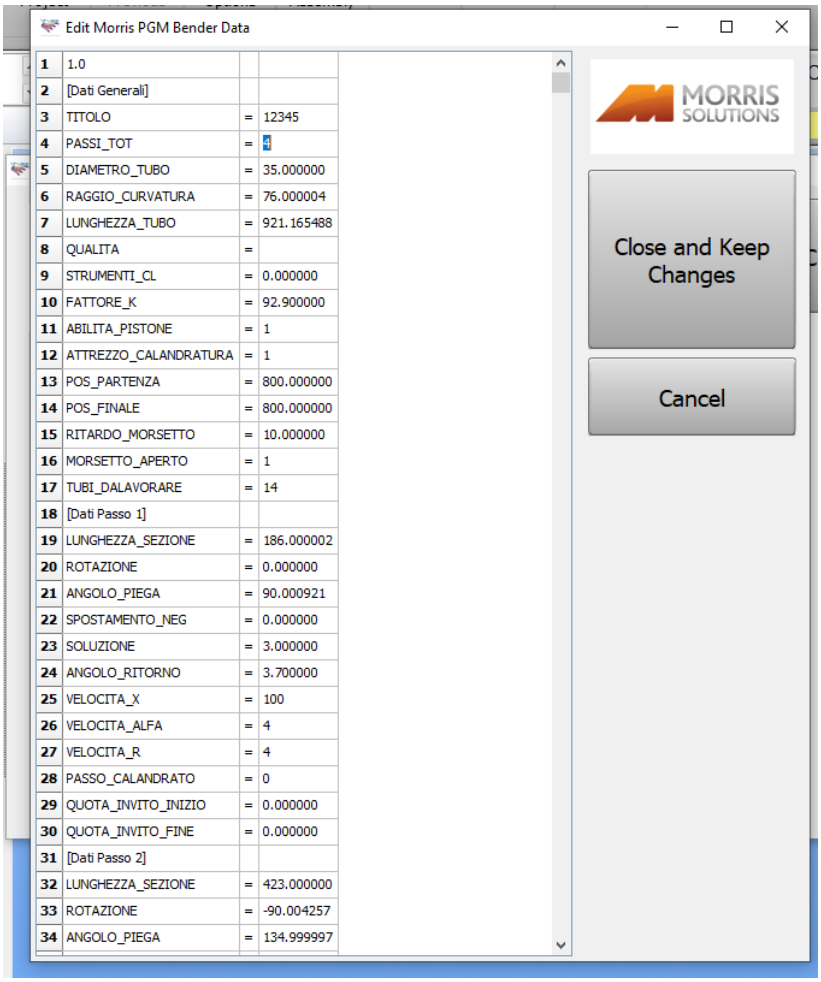
- The new **Build PGM Data** button allows users to build an initial setup from new data. It is necessary to press this button at least one time when entering this window.

- The new **Edit PGM File Data** button allows users to edit all the variables inside a PGM file – even VTube does not directly control them.

Version 4.1 - Build 1236, April 6, 2023 - Continued

The New Edit PGM File Data Window

This new window is loaded when the user presses the **Edit PGM File Data** button. It shows all the values inside a PGM file – even the values that VTube does not calculate.



1	1.0		
2	[Dati Generali]		
3	TITOLO	=	12345
4	PASSI_TOT	=	4
5	DIAMETRO_TUBO	=	35.000000
6	RAGGIO_CURVATURA	=	76.000004
7	LUNGHEZZA_TUBO	=	921.165488
8	QUALITA	=	
9	STRUMENTI_CL	=	0.000000
10	FATTORE_K	=	92.900000
11	ABILITA_PISTONE	=	1
12	ATTREZZO_CALANDRATURA	=	1
13	POS_PARTENZA	=	800.000000
14	POS_FINALE	=	800.000000
15	RITARDO_MORSETTO	=	10.000000
16	MORSETTO_APERTO	=	1
17	TUBI_DALAVORARE	=	14
18	[Dati Passo 1]		
19	LUNGHEZZA_SEZIONE	=	186.000002
20	ROTAZIONE	=	0.000000
21	ANGOLO_PIEGA	=	90.000921
22	SPOSTAMENTO_NEG	=	0.000000
23	SOLUZIONE	=	3.000000
24	ANGOLO_RITORNO	=	3.700000
25	VELOCITA_X	=	100
26	VELOCITA_ALFA	=	4
27	VELOCITA_R	=	4
28	PASSO_CALANDRATO	=	0
29	QUOTA_INVITO_INIZIO	=	0.000000
30	QUOTA_INVITO_FINE	=	0.000000
31	[Dati Passo 2]		
32	LUNGHEZZA_SEZIONE	=	423.000000
33	ROTAZIONE	=	-90.004257
34	ANGOLO_PIEGA	=	134.999997

VTube inserts data that it knows about in this data structure – like the Length (LUNGHEZZA_SEZIONE), Rotation (ROTAZIONE), and Bend Angle (ANGOLO_PIEGA).

All of the values in the fourth column can edited – however, only the values that are preceded by equal signs will be used by the Morris control.

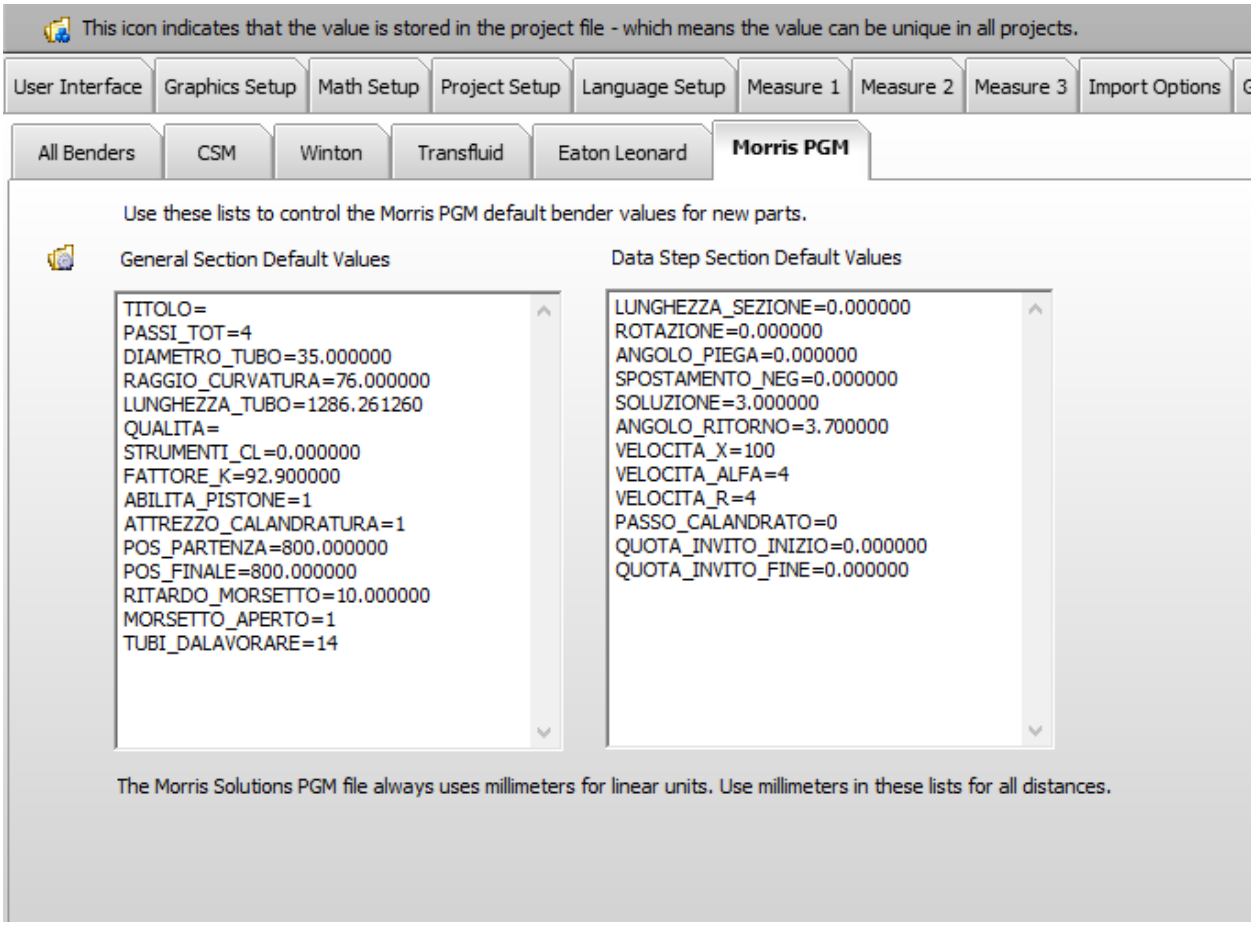
All linear data in the Morris PGM file uses **millimeters** – so be sure to only use that unit when adjusting distances in this grid.

If you have questions about the meaning of the value names in this grid, then please contact Morris Solutions. We can often give a translation – but only the Morris team can explain the precise effect of each value on the bender motion. For example, we know that the value names that have “Calandratura” or “Calandrato” refer to “Calendering” – which means they are used to control roll forming. But only the Morris team can explain how to use these values in roll forming.

Version 4.1 - Build 1236, April 6, 2023 - Continued

Configuring DEFAULT Morris PGM Data – In System Options

For data that VTube does not calculate, VTube will insert default values that are entered in the System Options / Benders menu in one of two edit lists. The list on the left contains the defulat values used in the General section of PGM files. The list on the right contains default values used for each Data Step section. (Data Step sections are like bend rows.) There is always one Data Step section per bend, so these values are used for every bend in the intitial PGM file.

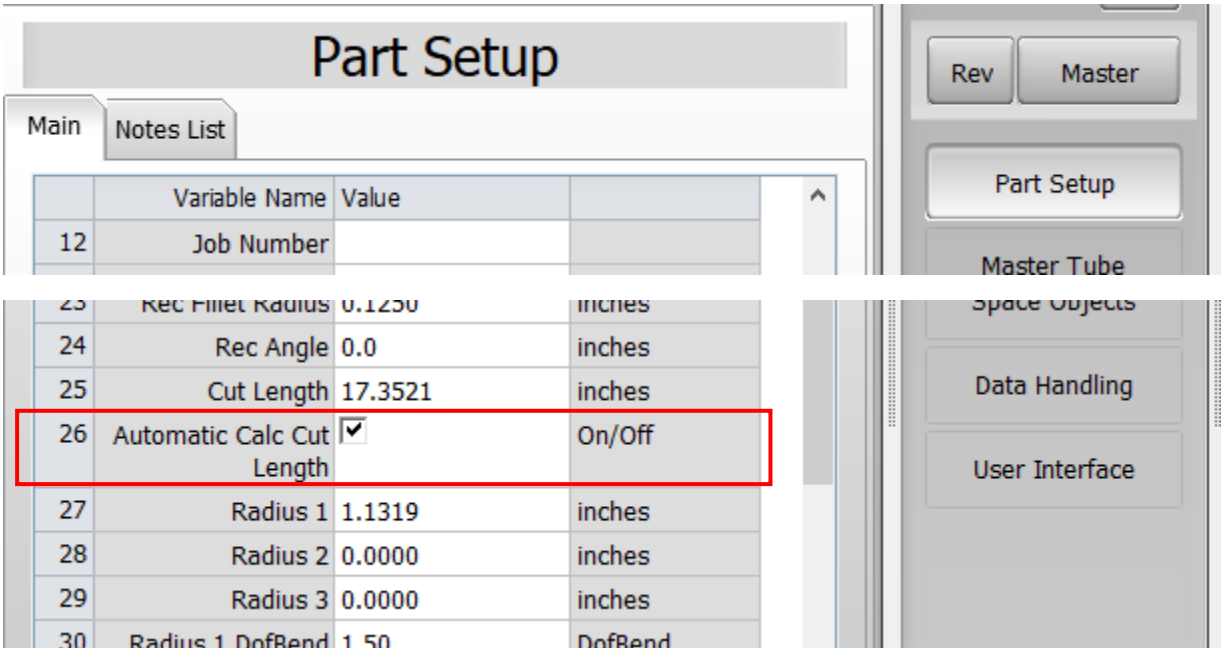


The text in both of these editors is stored in global configuration files that will always reload the values into VTube every time it is started. Any changes you make to the text in these editors will be saved when you exit System Options.

Version 4.1 - Build 1235, April 4, 2023

New Automatic Calculation of Cut Length Option in Part Setup

Some customers prefer that the Cut Length in Part Setup is always synchronized with the combination of the **master tube shape data**, the **springback values**, and the **tube elongation % value**. So, we added a new checkbox switch called **"Automatic Calc Cut Length"** just below the Cut Length value in the Part Setup that allows for 100% synchronization.



- The new switch state is stored in the project files, so VTube will recall the last setting you used in each project here every time you load a part.

- The new switch is in both VTube-STEP and VTube-LASER Part Setup.

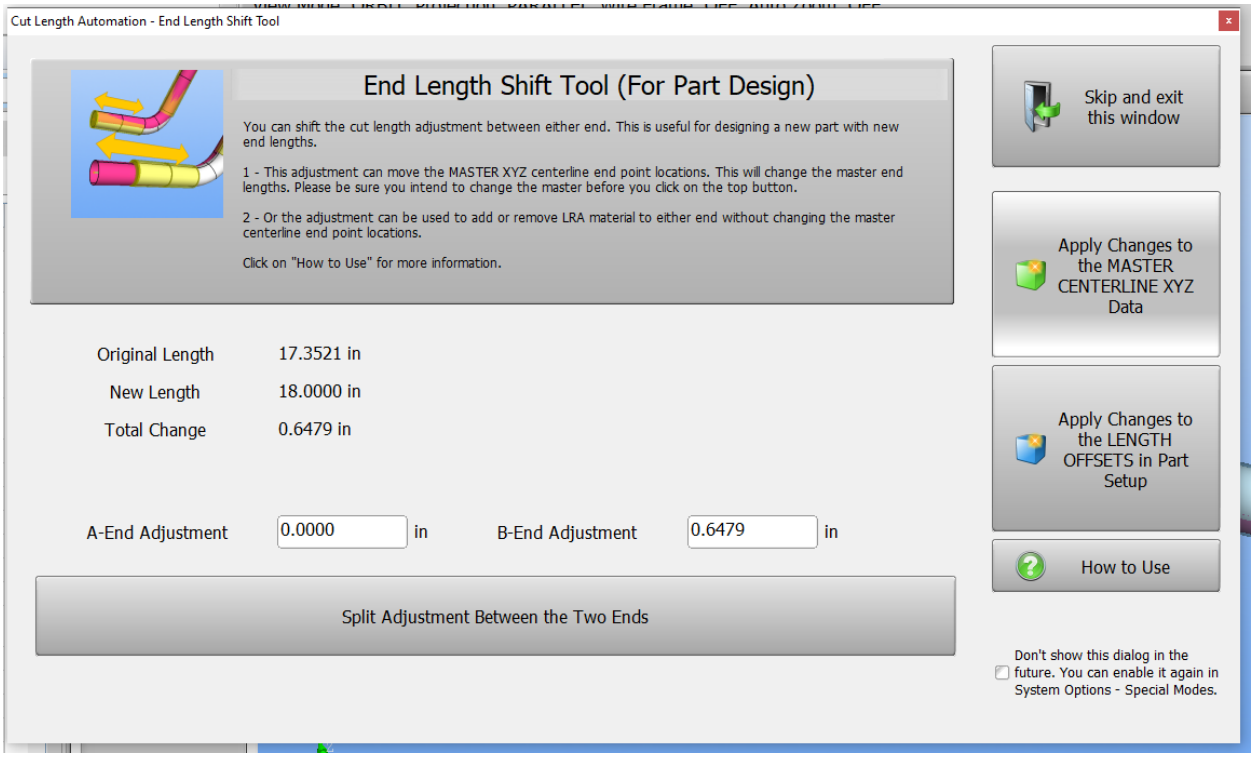
- If you prefer to manually control the Cut Length value, then you can leave this option off (the starting default state).

- You can use System Options Project Setup to make this switch on or off by default when you clear the project.

Version 4.1 - Build 1235, April 4, 2023 - Continued

Reorganized End Length Shift Tool Window (Advanced Topic)

We decided to improve the clarity of the End Shift Tool window that can display after a user manually changes the Cut Length in Part Setup. If this feature is enabled, then after a user enters a Cut Length change and presses enter, this window displays:

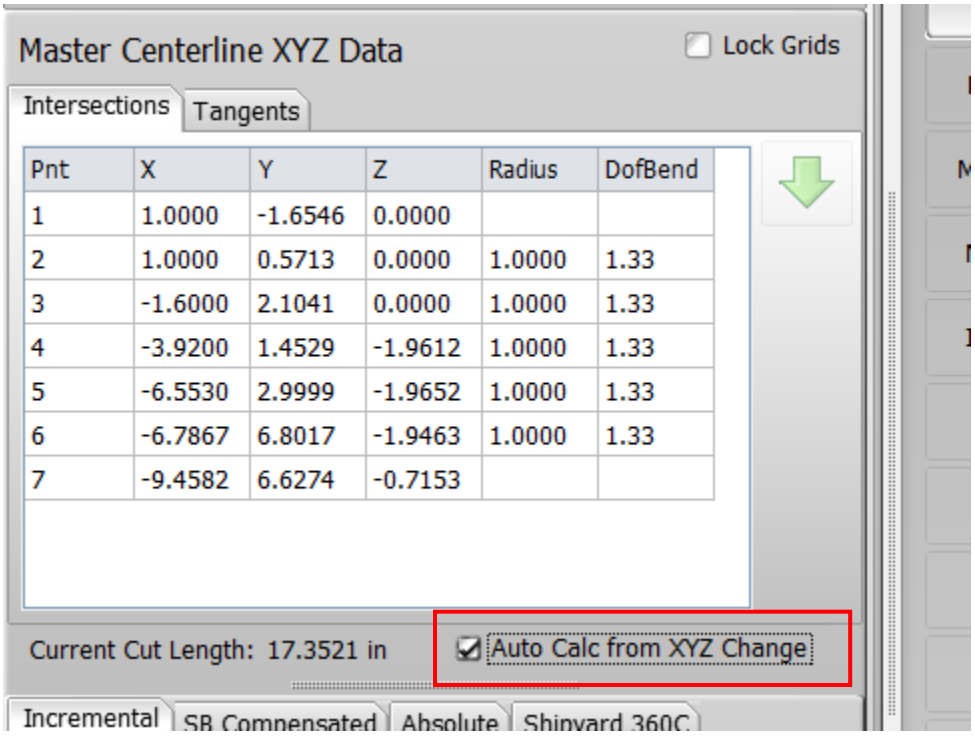


- We moved the **Skip and exit** button to the top right corner to make closing the window more consistent with the other windows in VTube.
- We added "**For Part Design**" in the title to help users know that this is not something used for when master XYZ data is established and should not be changed.
- We rewrote the quick help text at the top of the window to make the purpose of the window more clear.
- We rewrote the detailed "How to Use" text behind that button to make it less confusing.
- We added help to the "Don't show again" checkbox text so that users can know how to show this window in the future if they want it again.

Version 4.1 - Build 1235, April 4, 2023 - Continued

Relabled the XYZ Cut Length Text in the Master Tube Menus for Clarity

The Cut Length "Auto Calc" switch in the Master XYZ Data menu was relabled to make how it works more clear. When this switch is true, it only recalculates the Cut Length with changes are made to the data in the XYZ grid. So, we changed it to "**Auto Calc from XYZ Change**" to make this clear.



This switch does not have the same effect as the new auto calc switch in Part Setup.

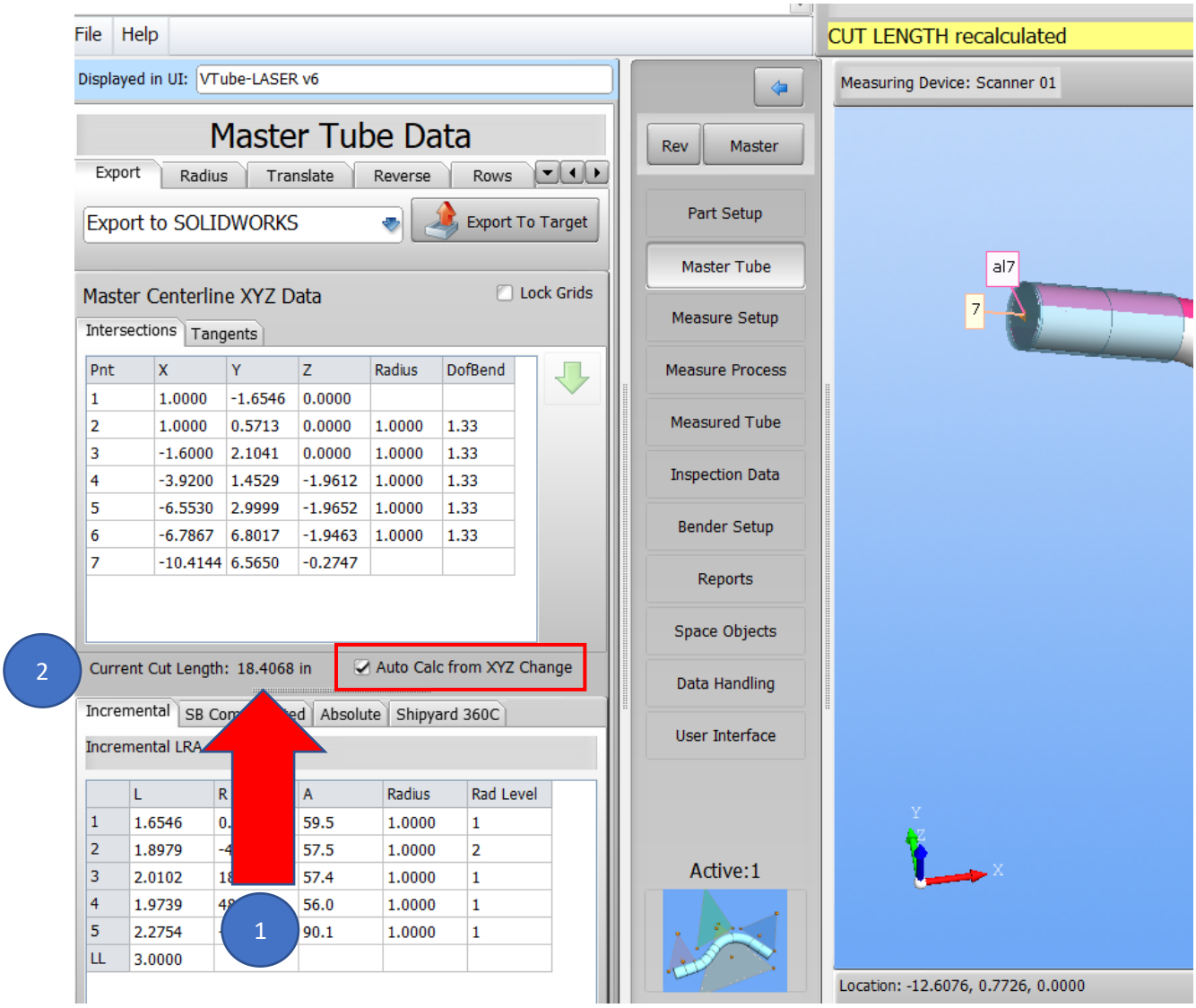
- The Part Setup switch (the **Automatic Calc Cut Length**) will always recalculate the Cut Length if *anything* changes that can impact the Cut Length, including the springback and tube elongation percentage.

- However, the switch in the Master XYZ menus (shown above) will only cause VTube to recalculate the Cut Length *if it senses that the XYZ data has changed*.

Version 4.1 - Build 1235, April 4, 2023 - Continued

Recalculate Cut Length For Reverse Calculations From LRA to XYZ and "Auto Calc from XYZ Change" is Active

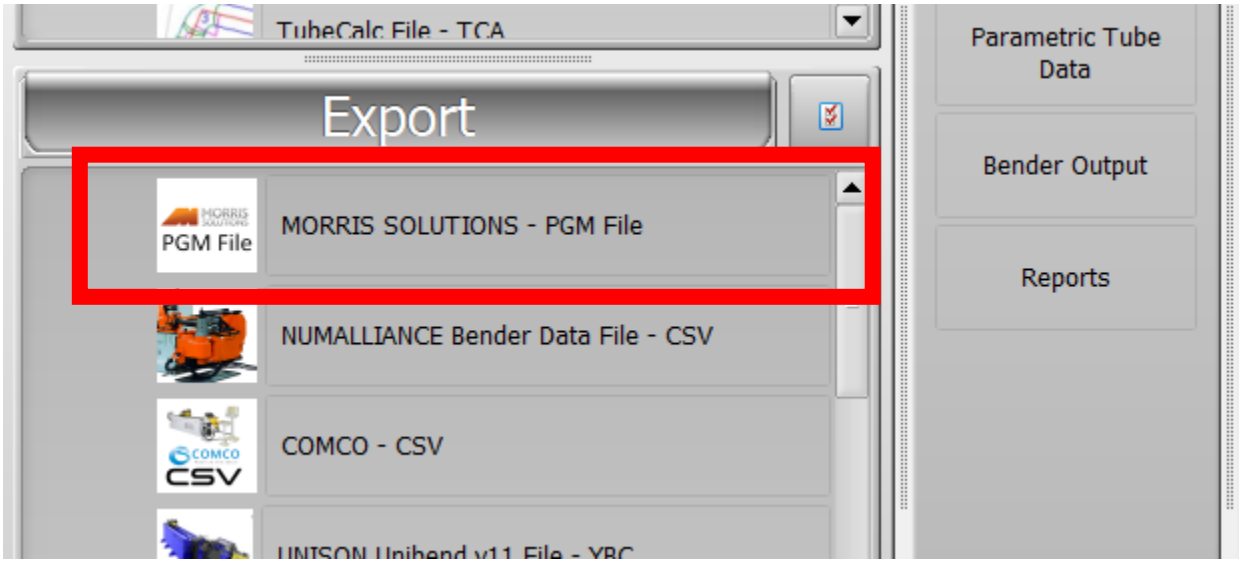
From this version on, if the Auto Calc from XYZ Change is active, then any manual edit in the **LRA bender data grid** will also cause the Cut Length to be recalculated automatically. This is necessary because any LRA grid value change also *always* changes the XYZ centerline point locations.

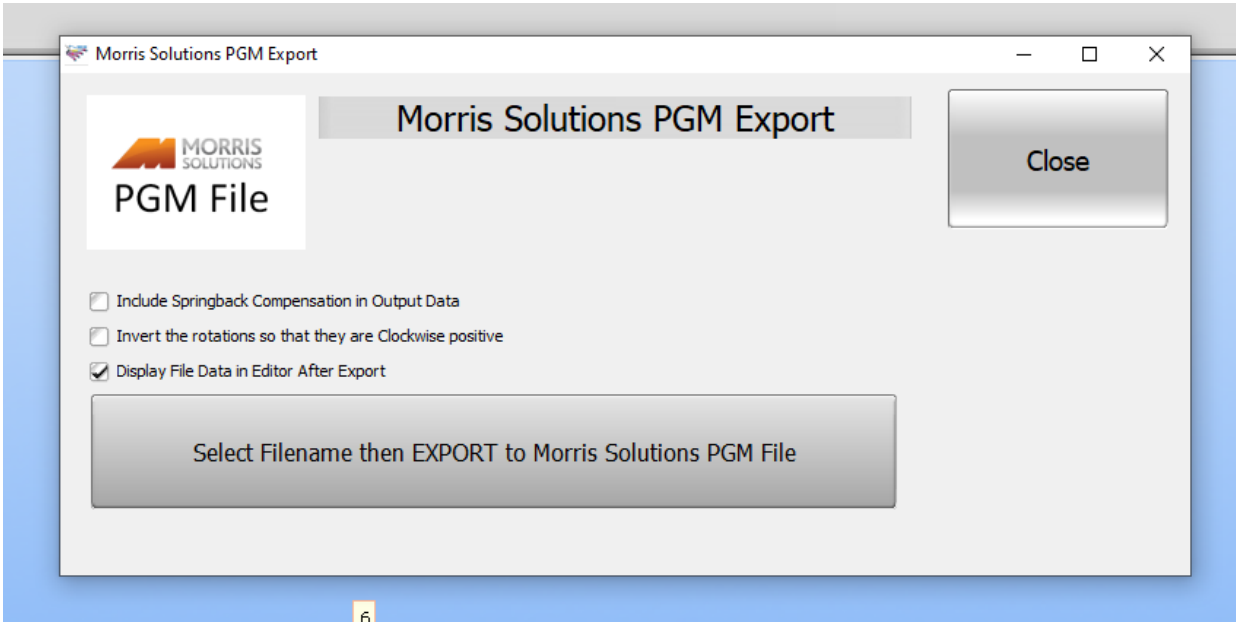


Version 4.1 - Build 1233, April 3, 2023

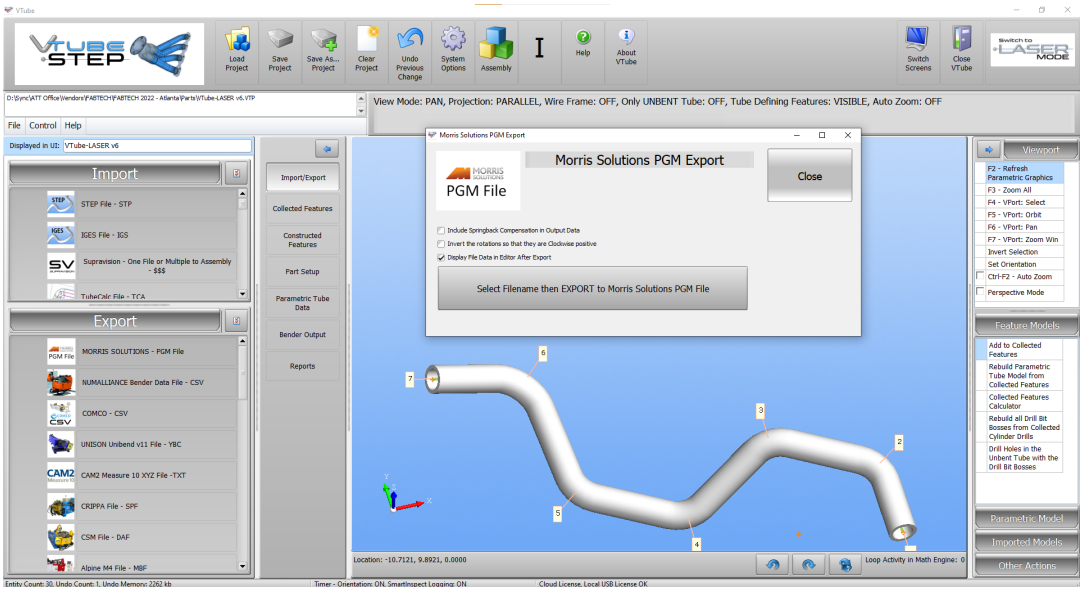
Morris Solutions PGM File Output in VTube-STEP

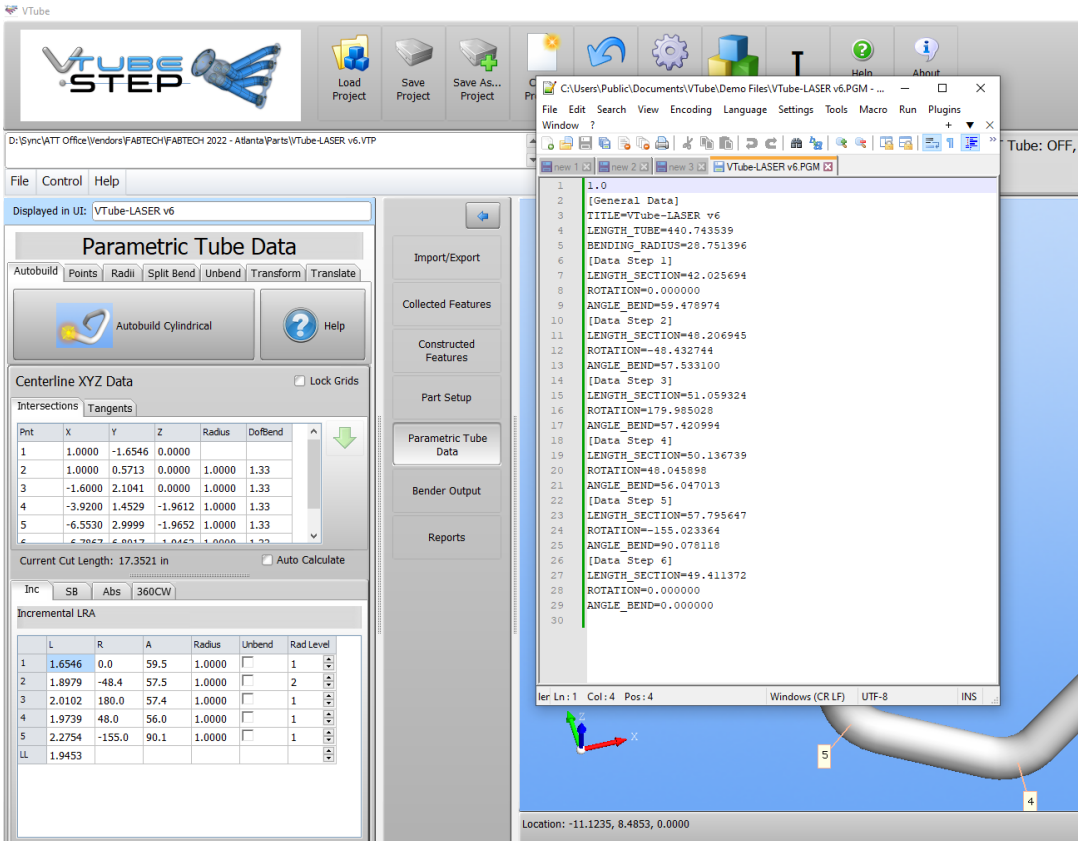
VTube now supports outputting new data to Morris Solutions ' bender files.





Version 4.1 - Build 1233, April 3, 2023 - Continued

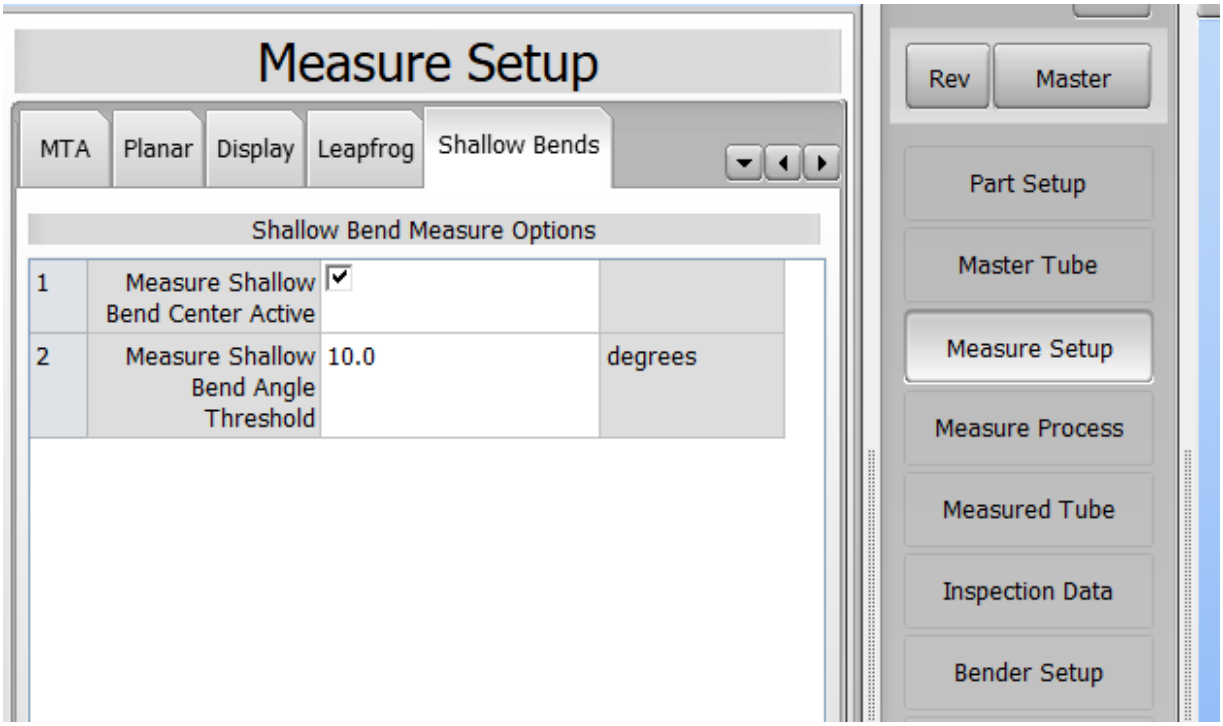




Version 4.1 - Build 1230, March 29, 2023

Improved Shallow Bend Logic During Cylinder Fit Errors

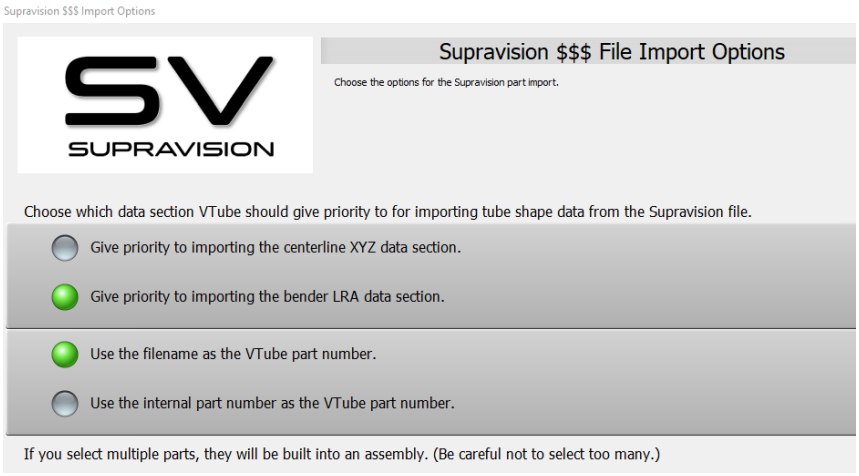
This fix is important if you ever use VTube-LASER with Shallow Bend logic switched ON in Measure Setup/Shallow Bend.



A customer that uses shallow bend logic regularly discovered that VTube-LASER incorrectly tests for shallow bends even when preceding cylinder fit errors occurred during the measure process. This could start shallow bend measurements when it should have been skipped due to cylinder errors having already occurred. We fixed this problem in this build.

Version 4.1 - Build 1221, March 22, 2023

Added Import Logic to Fix Incorrect Imported Supravision Data



A customer alerted us to the possibility of Eaton Leonard bender controls that could create Supravision files with a mismatch between the XYZ point count and the LRA bend count. This could cause import problems in VTube-STEP.

For example, the XYZ data could have 13 points, and the LRA data only has 4 bends. This is not a standard data correlation. The XYZ point count should always equal **BENDS + 2**, and the LRA bend count should equal **POINTS - 2**.

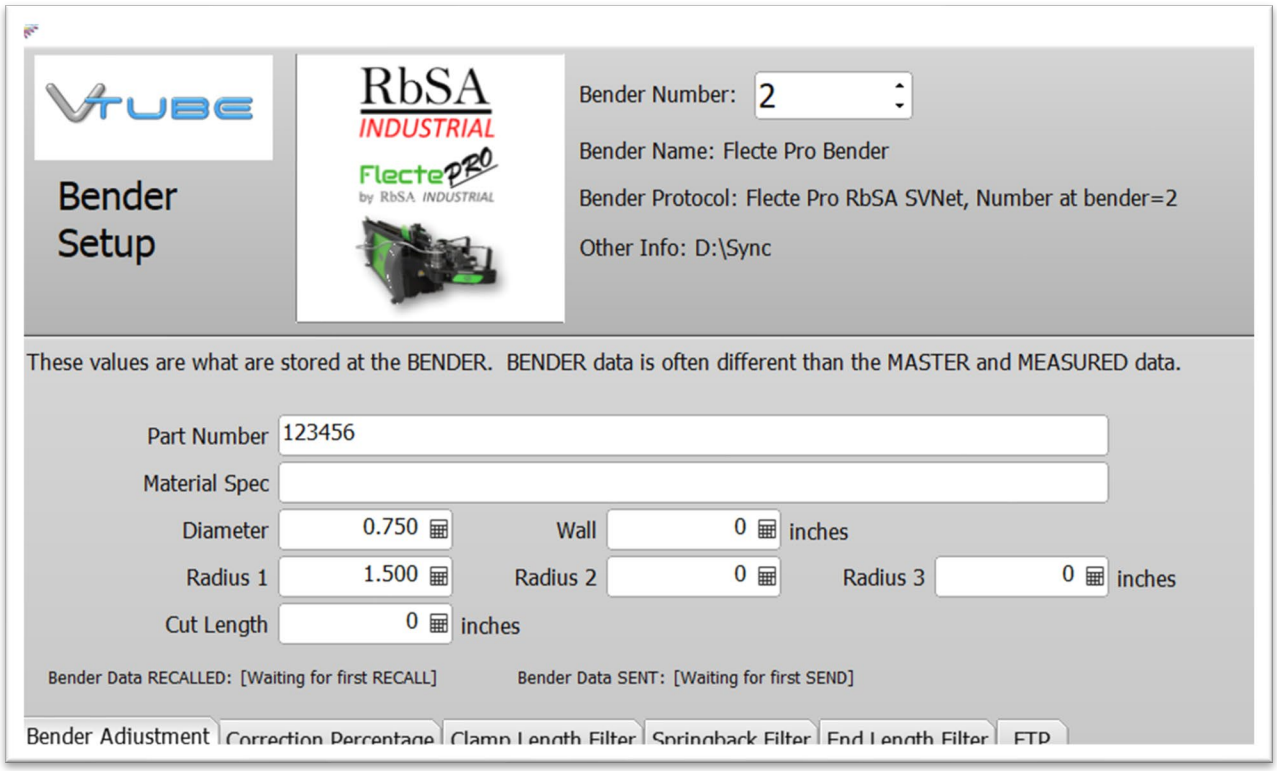
When the XYZ point count was greater than BENDS + 2, and a reverse calc from LRA to XYZ was made, VTube-STEP would create several extra points along a line that formed 0-degree bend straights – making a tube shape that is not correct.

VTube-STEP now checks for this possibility during import. As of this build, it will always reset the XYZ point count to BENDS + 2 when importing the LRA data from Surpravision files.

Version 4.1 - Build 1216, March 14, 2023

Changed the RbSA Industrial Flecte Pro Communications Badge for BendPro

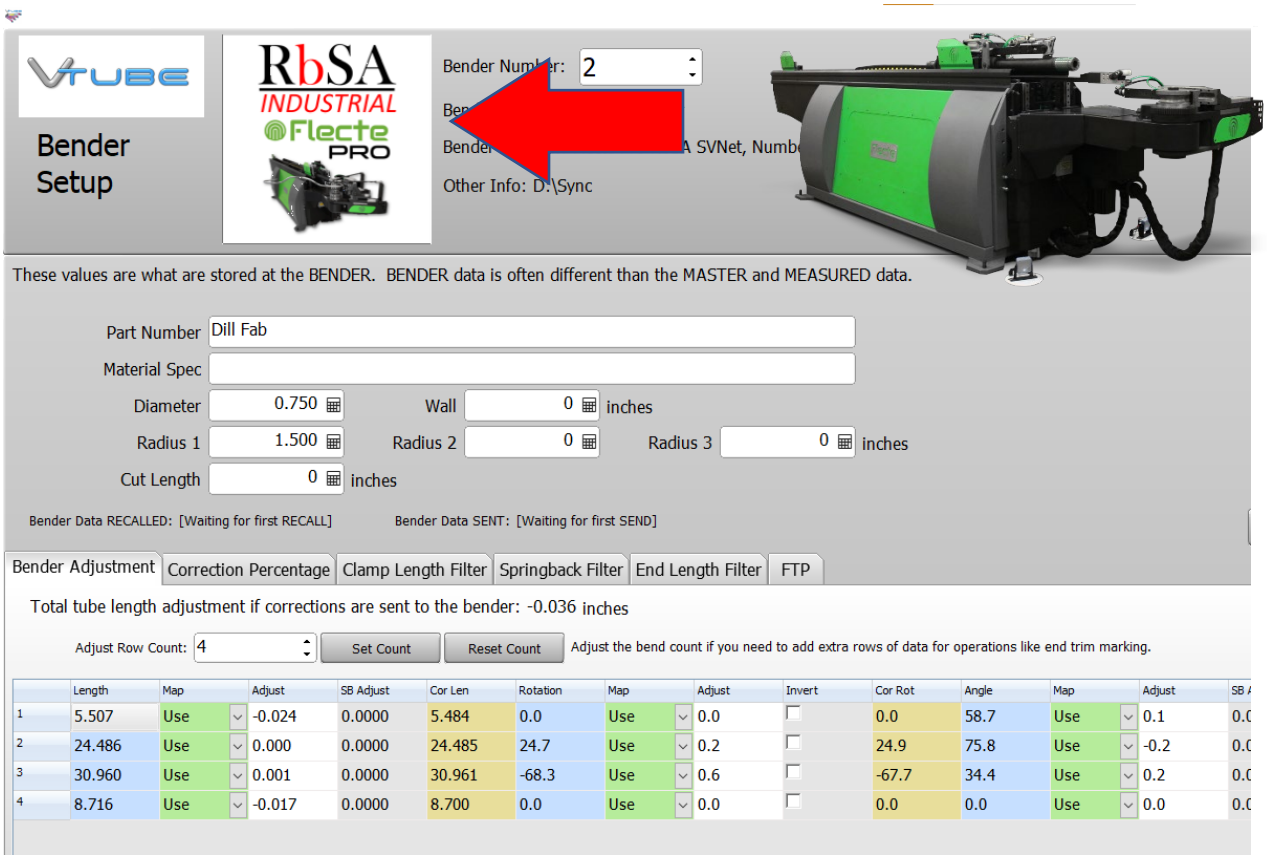
We changed the graphics in this badge to use the exact logo setup used by RbSA for Flecte Pro.



Version 4.1 - Build 1214, March 14, 2023

New RbSA Industrial Flecte Pro Communications Badge for BendPro

RbSA Industrial (Sweetwater, TN) now offers Flecte benders with CurrentTech's BendPro control. We added the new protocol to VTube-LASER for customers that connect to this new bender.

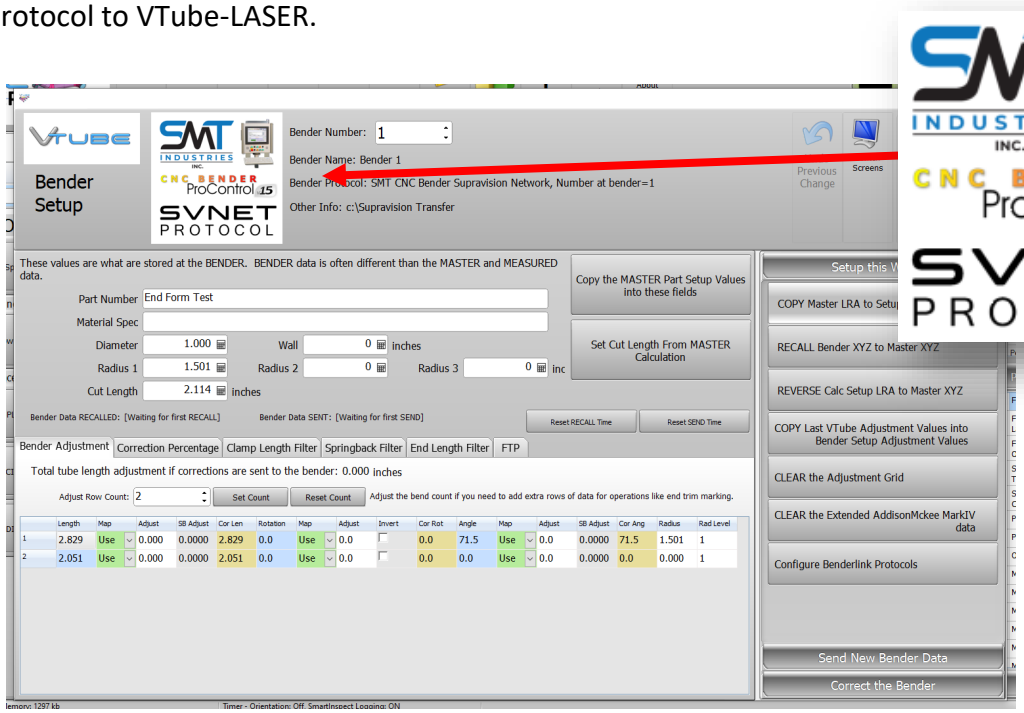


	Length	Map	Adjust	SB Adjust	Cor Len	Rotation	Map	Adjust	Invert	Cor Rot	Angle	Map	Adjust
1	5.507	Use	-0.024	0.0000	5.484	0.0	Use	0.0		0.0	58.7	Use	0.1
2	24.486	Use	0.000	0.0000	24.485	24.7	Use	0.2		24.9	75.8	Use	-0.2
3	30.960	Use	0.001	0.0000	30.961	-68.3	Use	0.6		-67.7	34.4	Use	0.2
4	8.716	Use	-0.017	0.0000	8.700	0.0	Use	0.0		0.0	0.0	Use	0.0

Version 4.1 - Build 1211, March 10, 2023

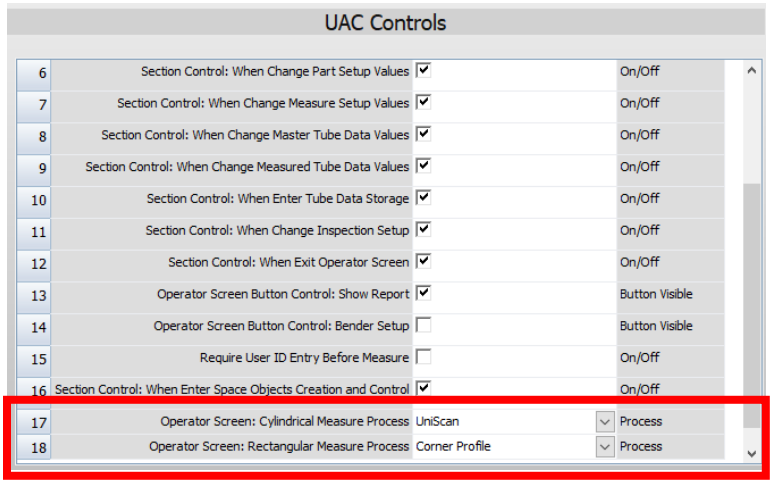
New SMT Industries Communications Badge for CNC Bender ProControl

We added the SMT Industries CNC Bender ProControl SVNET protocol to VTube-LASER.



New UAC Options for the Turbo Operator Screen to Automatically Start Different Kinds of Scanning

The operator screen would only start UniScan measure process for all projects. Now VTube-LASER can start **UniScan** or **MultiScan** for cylindrical tubes, and **Corner Profile** or **UniScan CornerScan** for rectangular tubes. The setup for these options is in UAC Controls in System Options.

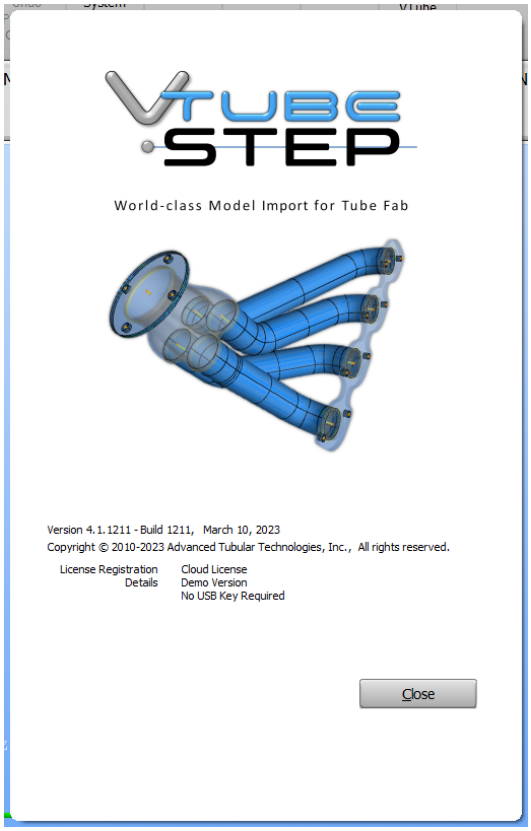


VTube-LASER examines the **Diameter Profile Setup** in the Part Setup menu to dermine if the part is cylindrical or rectangular.

The VTube-STEP Demo License for Sales Partners No Longer Requires a USB Key (dongle) to Run

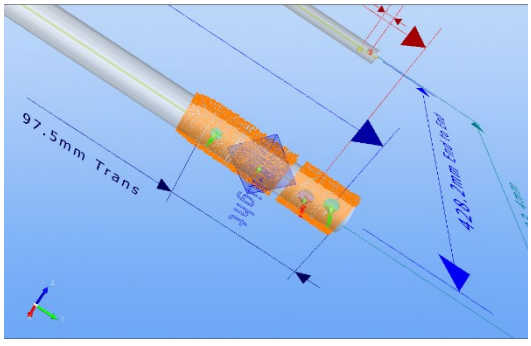
The VTube-STEP demo license is now controlled entirely by connection to our Internet license server. If you are a sales partner with one of these licenses, you will no longer need to use the USB key to run VTube-STEP.

USB Key



UAC Control for Space Objects

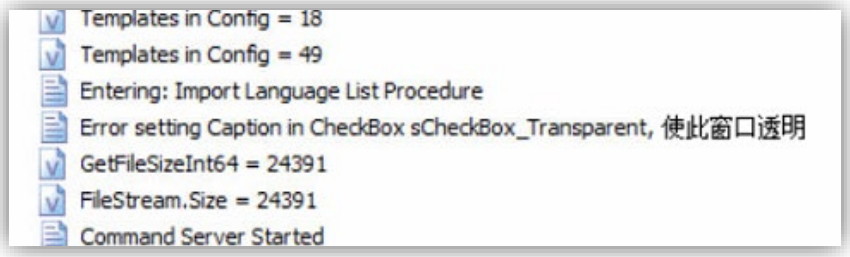
Who accesses Space Objects can now be controlled by the UAC (User Access Control) setup. Space Objects are general prismatic objects and dimensions.



Version 4 - Build 1202, February 10, 2023

Added Asian Language Loading Error Protection

With the help of a Chinese distributor, we found and fixed an application error common on some Chinese-language computers.

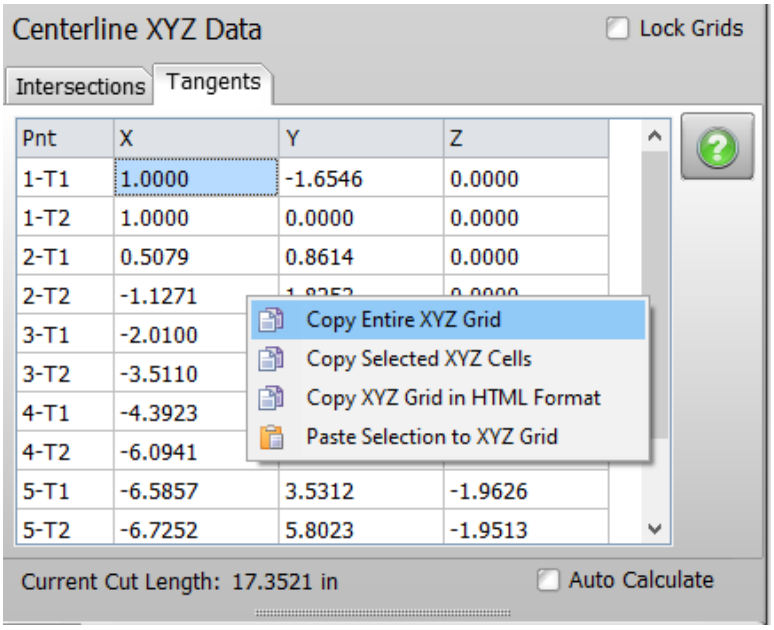


In previous versions, VTube would not gracefully handle language loading errors. Now it does. When a language loading error occurs, VTube will quietly report the error in the Smart Inspect console logging system included with every VTube-STEP and VTube-LASER.

A New Popup Menu Was Added To The Tangents Grids In VTube-STEP and VTube-LASER

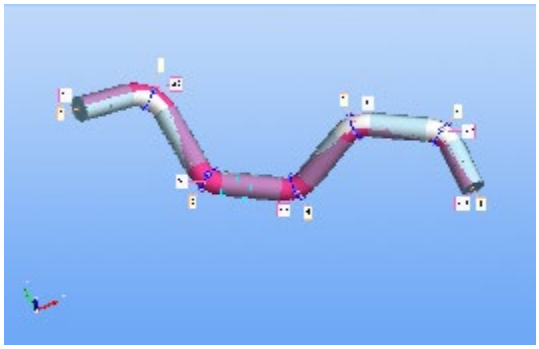
The new popup menus allow users to quickly copy and paste the entire Tangent point grids.

For example, use these commands to quickly copy the grids to Excel or Word.



Version 4 - Build 1196, February 7, 2023

New Part Image Sent in the CMP Protocol During Data Transfer

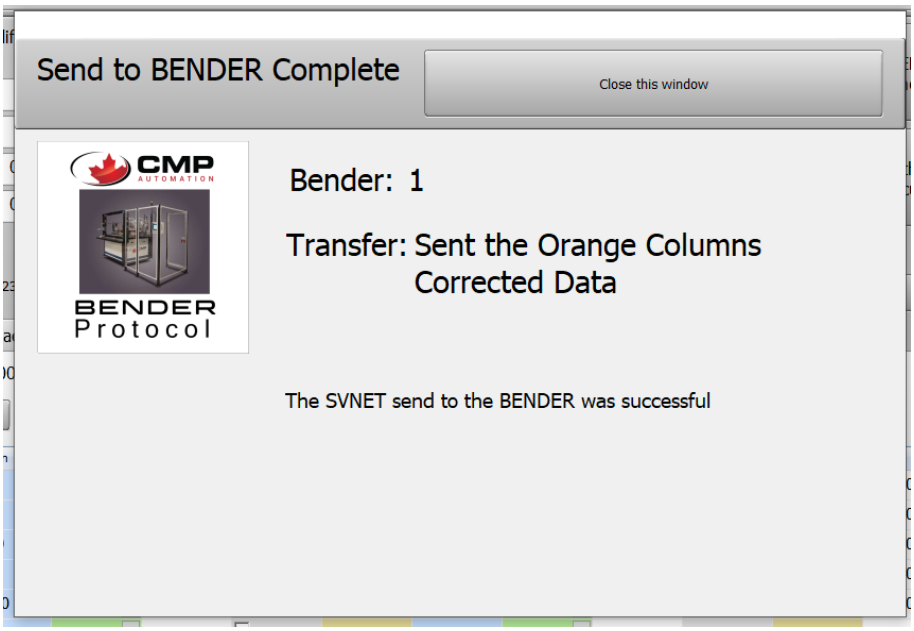


The CMP Automation bender controls now display an image of the part generated by VTube-LASER. The image is sent to the CMP FTP server inside the control for use by the control's user interface.

The image filename is SVFILENN.PNG, where "NN" is the bender number.

Improved Messages for Bender Communications

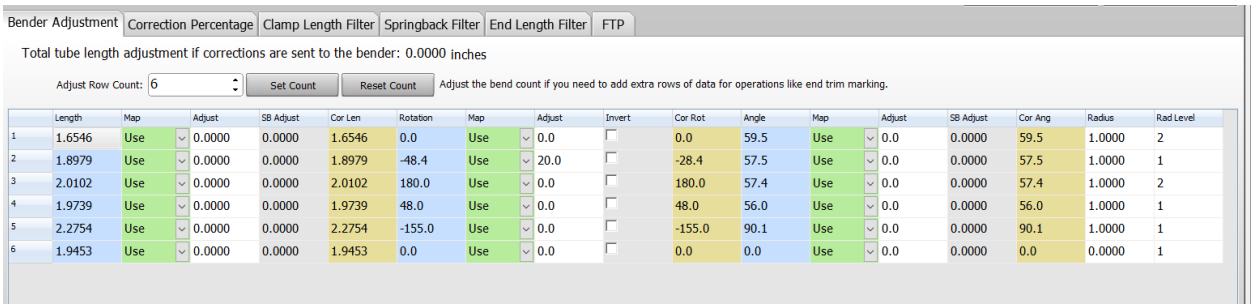
The messages for sending data to the bender have been refined to be clearer. They would read, for example, "Transfer: Send Adjusted." Now they show a new message:



Version 4 - Build 1196, February 7, 2023 - Continued

Improved Grid Headers in Bender Setup

The orange columns have been relabeled to see “Cor Length”, “Cor Rotation”, and “Cor Angle.” We did this to make the purpose of the orange columns more clear. They contain corrected data.



	Length	Map	Adjust	SB Adjust	Cor Len	Rotation	Map	Adjust	Invert	Cor Rot	Angle	Map	Adjust	SB Adjust	Cor Ang	Radius	Rad Level
1	1.6546	Use	0.0000	0.0000	1.6546	0.0	Use	0.0		0.0	59.5	Use	0.0	0.0000	59.5	1.0000	2
2	1.8979	Use	0.0000	0.0000	1.8979	-48.4	Use	20.0		-28.4	57.5	Use	0.0	0.0000	57.5	1.0000	1
3	2.0102	Use	0.0000	0.0000	2.0102	180.0	Use	0.0		180.0	57.4	Use	0.0	0.0000	57.4	1.0000	2
4	1.9739	Use	0.0000	0.0000	1.9739	48.0	Use	0.0		48.0	56.0	Use	0.0	0.0000	56.0	1.0000	1
5	2.2754	Use	0.0000	0.0000	2.2754	-155.0	Use	0.0		-155.0	90.1	Use	0.0	0.0000	90.1	1.0000	1
6	1.9453	Use	0.0000	0.0000	1.9453	0.0	Use	0.0		0.0	0.0	Use	0.0	0.0000	0.0	0.0000	1

We Added New “EV Code Signing” for VTube Programs

All VTube programs now have **Extended Validated Code Signing** certification.

EV Code Signing certificates help customers know that the VTube programs are authentic and that Advanced Tubular Technologies, Inc. is still an active business. This certification will allow Windows to bypass warnings when you run our programs.

EV Code Signing applicants undergo rigorous vetting from certificate authorities. The process also requires that we have in our possession a required hardware device called an eToken that must be used to sign files.

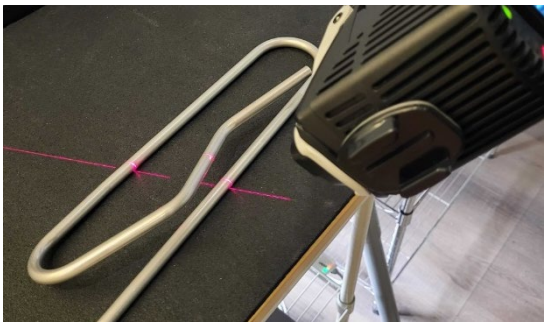
Version 4 - Build 1191, February 6, 2023

New Controls Allow for DCP (Diameter Cut Plane) When Scanning Point Clouds

In previous versions, the DCP was only used when in the tube measuring process. It was always ignored when scanning point clouds.

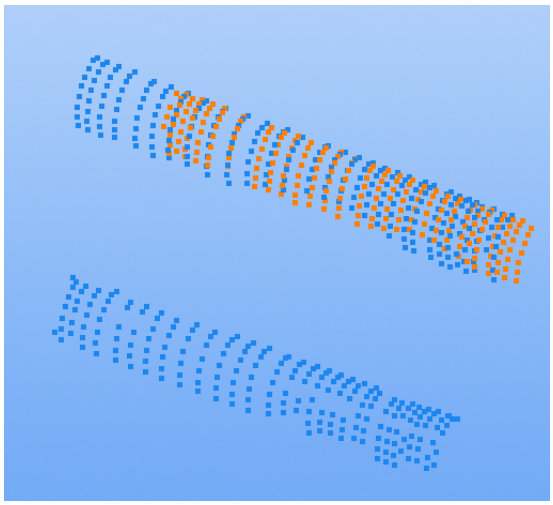
In this build, DCP can now be turned on for Point Cloud scanning.

About DCP: DCP allows users to remove the other nearby surfaces when scanning a part with multiple close straights. The DCP will cut the tails of the laser off internally. The laser points that are not discarded are from the surface nearest the scanner. For example, the DCP can be set to 0.375” to keep only the middle 3/8” of the laser as shown on this part.



The viewport example on the right shows that the tube straight on the table is ignored.

The image shows blue points for when DCP is ignored and orange points for when the DCP is active. (The scanning technique for both scans was the same.)

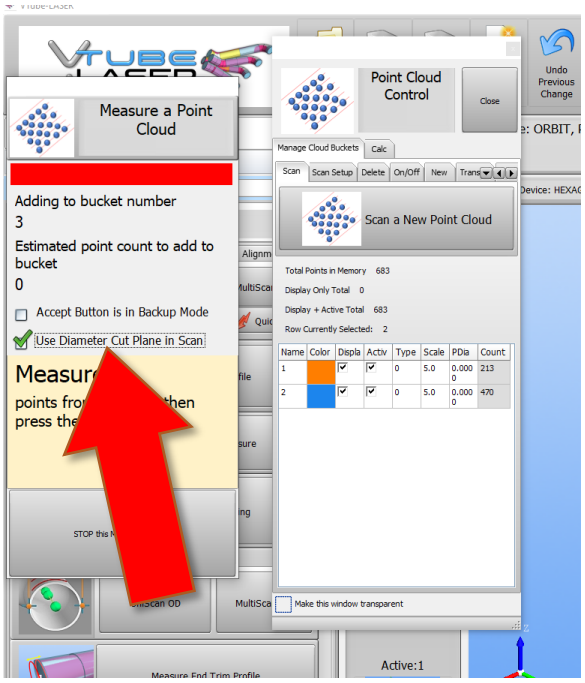


Version 4 - Build 1191, February 6, 2023 - Continued

There are two places where the new Point Cloud DCP control value can be turned on or off.

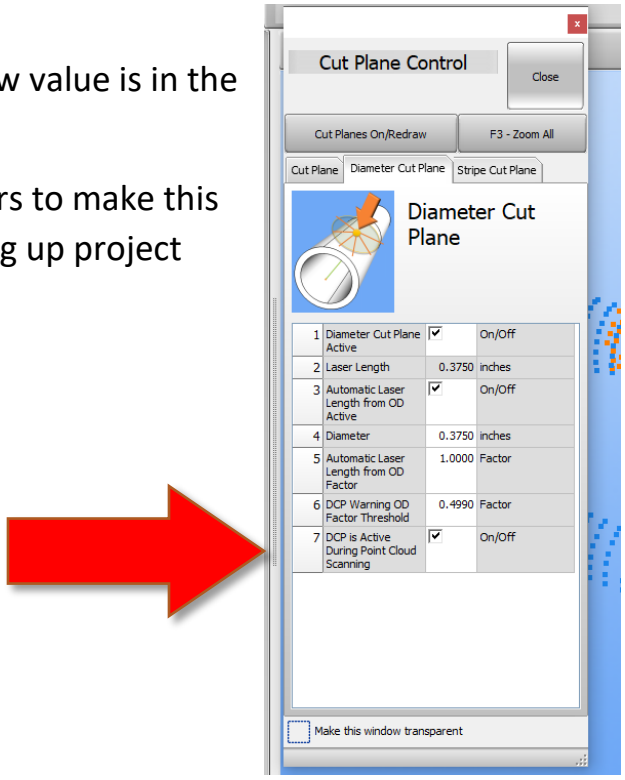
The first place is in the **Measure a Point Cloud** window.

This checkbox location allows the user to use or ignore the DCP filter in real-time.



The second place to control this new value is in the **Cut Plane Control DCP** menu.

Including the value here allows users to make this value active or inactive when setting up project defaults.



Version 4 - Build 1191, February 6, 2023 - Continued

We removed diagnostic messages from UniScan errors when measuring.

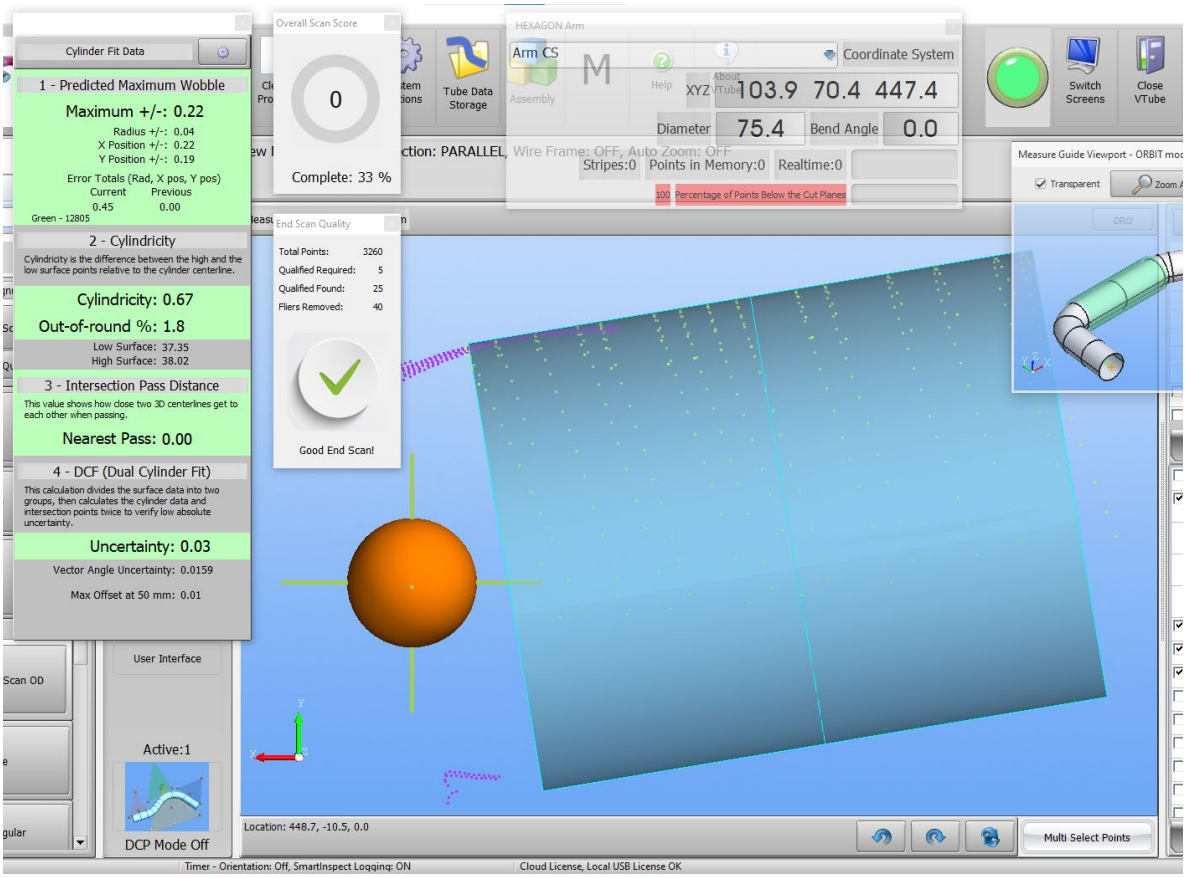
Version 4 - Build 1186, February 3, 2023

Fixed a Rare Looping Error for "End A + Straight 1" Measure for the End-Scan Flier Filter

A rare looping error could occur when measuring the first straight with the **End-Scan Flier filter active**. The result was that VTube-LASER would then try to calculate the first straight multiple times very quickly.

The number of loops were always equal to the number of stripes in memory. So, for example, 25 stripes in memory would produce 25 looping cylinder centerline calculations very quickly.

We tracked and removed this error. This error never occurred when the flier filter was not active, and never affected the last straight or end B.

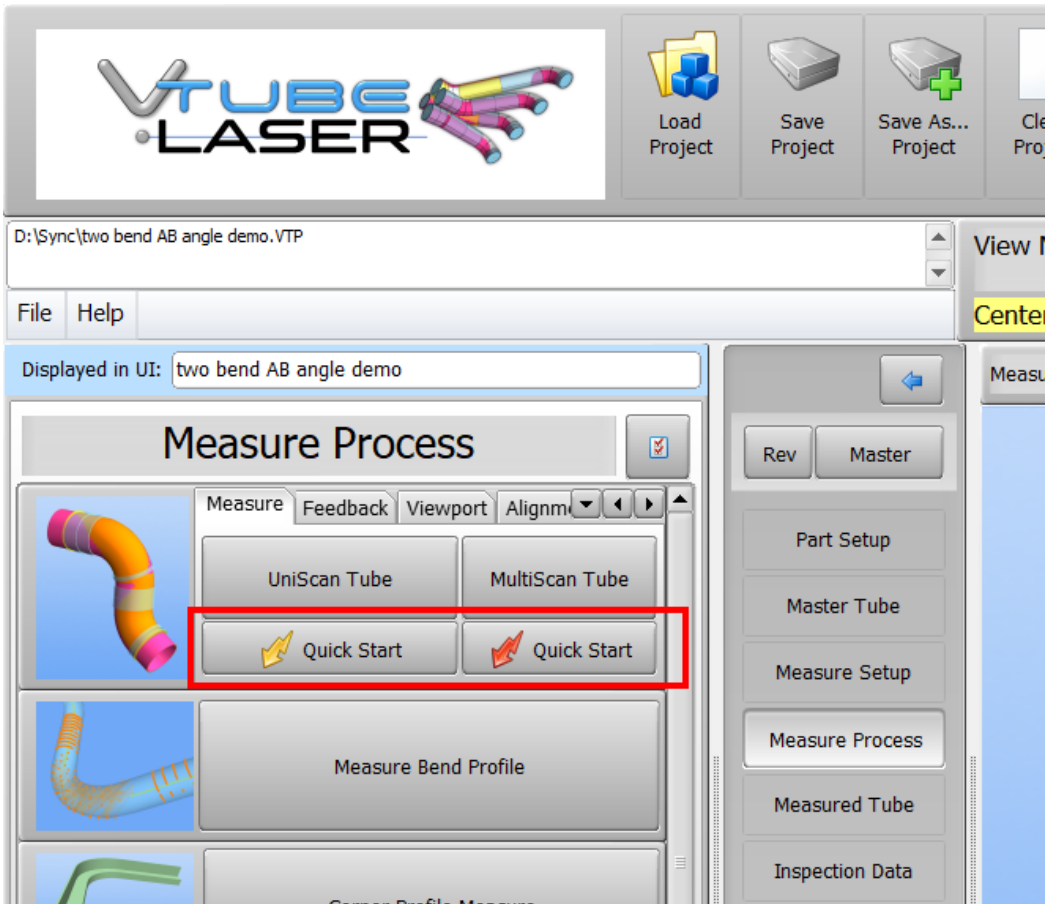


Version 4 - Build 1183, February 1, 2023

New Quick Start Buttons Added for UniScan and MultiScan

These new buttons skip the initial setup screen for tube measuring. Using these buttons assumes that the project has already been setup for the proper straight count.

If the part is new and the straight count is zero, then VTube will automatically change the straight count to the MASTER count before measuring.

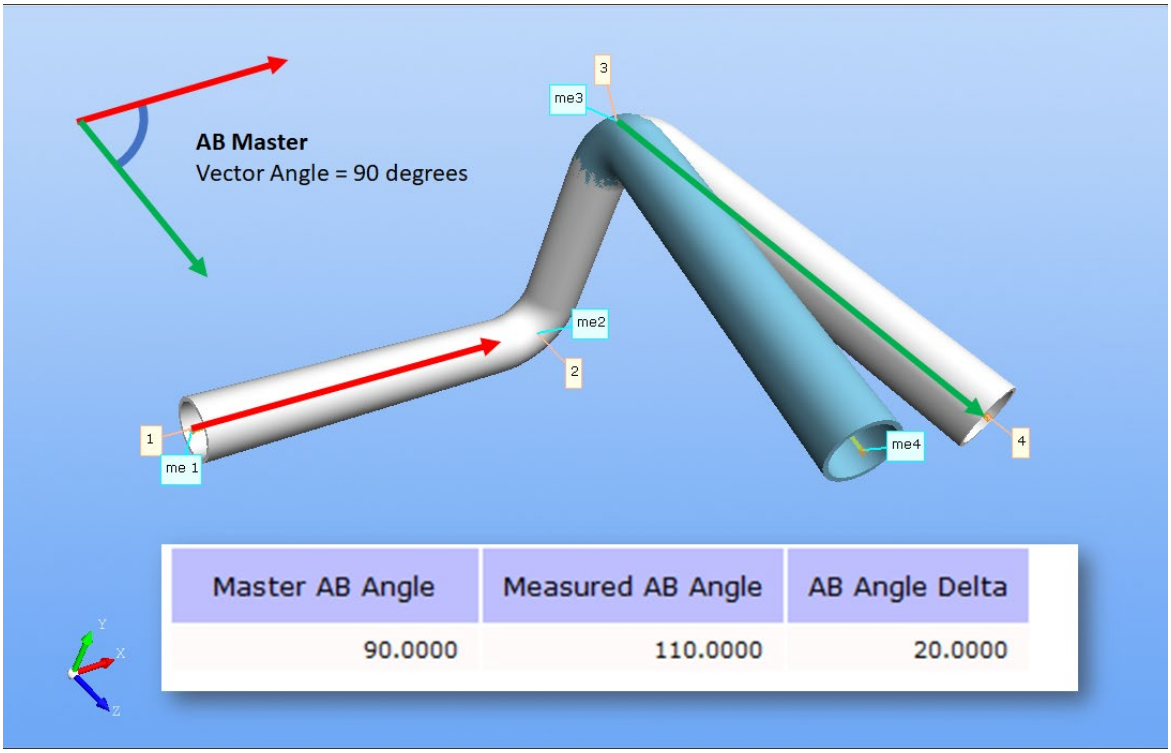


Version 4 - Build 1181, January 31, 2023

New Report Tokens added for End Vector Angle Qualifications

New report token **ab-anglemaster**

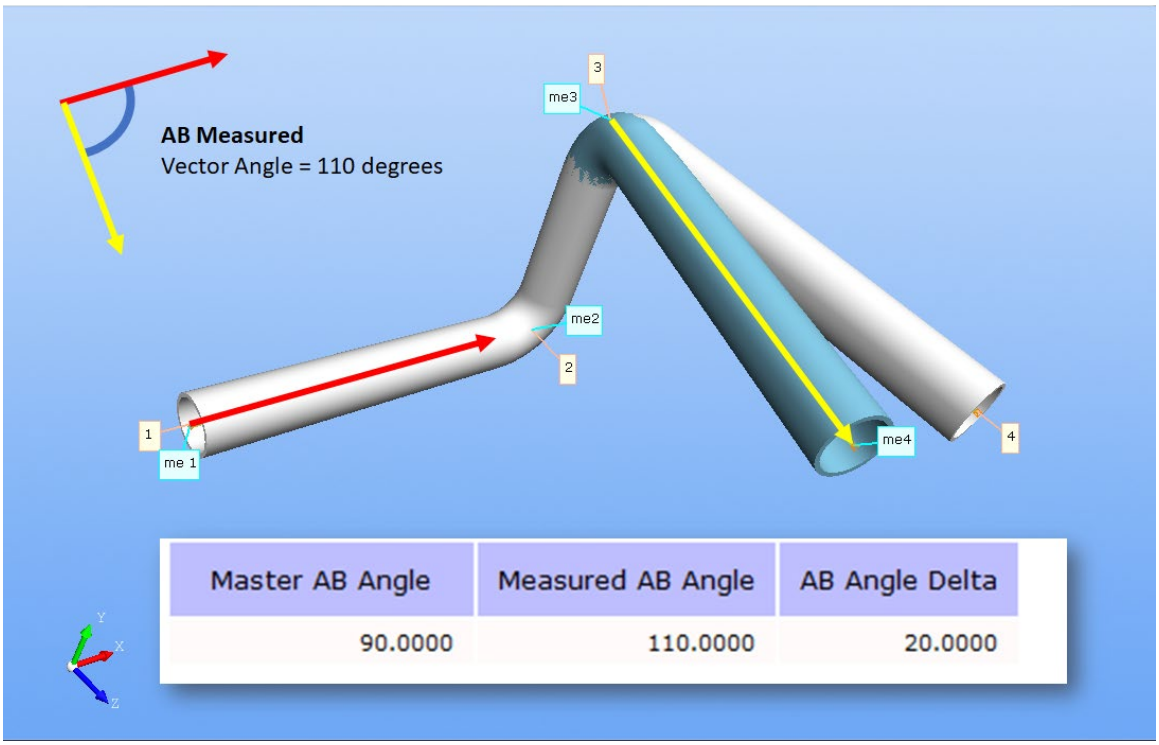
This report token shows the value for **ab-master**. This value is the angle between the two end vectors in the master (nominal) tube shape.



CONTINUED - Version 4 - Build 1181, January 31, 2023

New report token **ab-anglemeasured**

This report token shows the value for **ab-anglemeasured**. This value is the angle between the two end vectors in the measured tube shape.



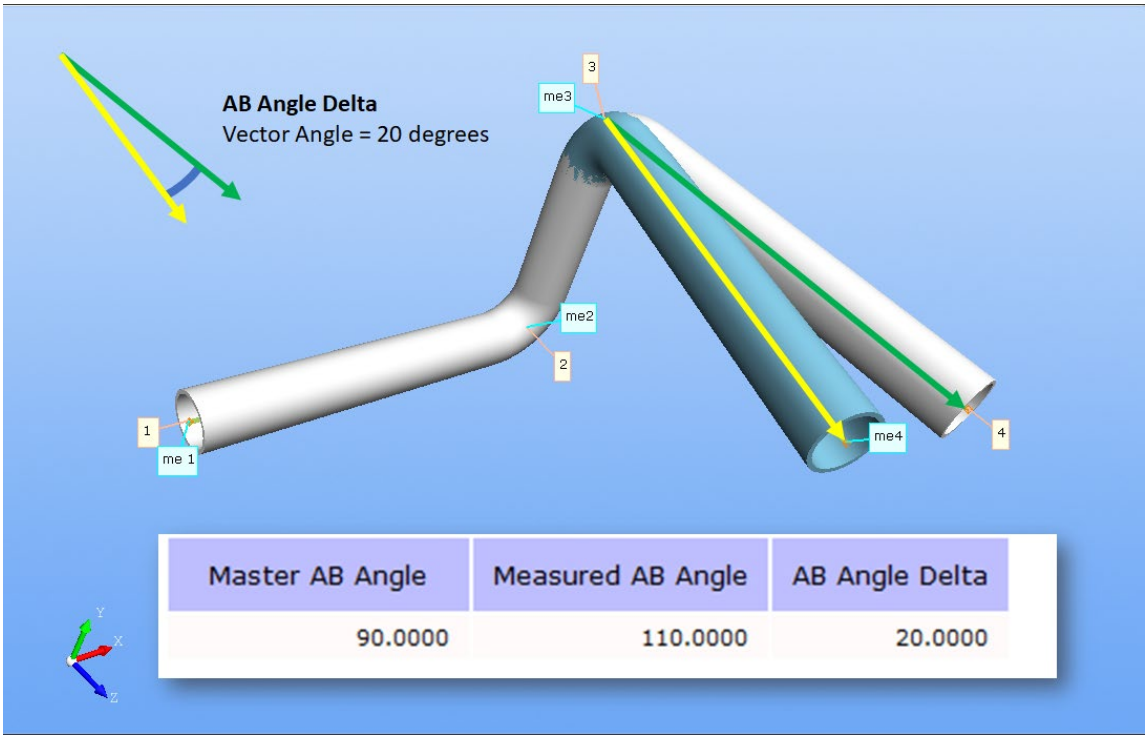
New report token **ab-anglemeasuredaligned**

This report token shows the value for **ab-anglemeasuredaligned**. This value is the angle between the two end vectors in the measured aligned tube shape.

CONTINUED - Version 4 - Build 1181, January 31, 2023

New report token **ab-angledelta1**

This report token shows the value for **ab-anglemeasured** minus the **ab-anglemaster**.



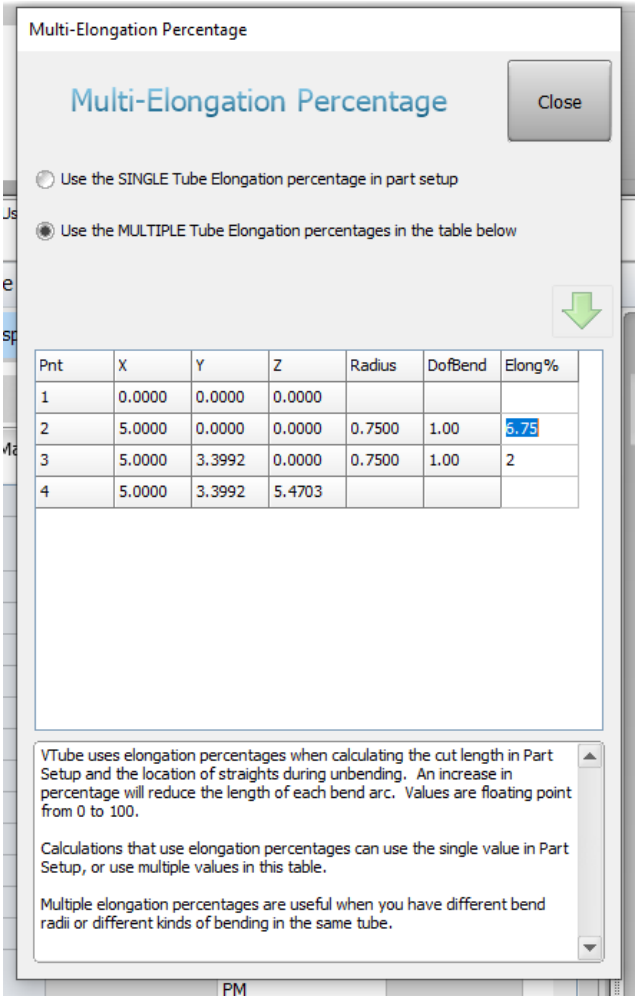
New report token **ab-angledelta2**

This report token shows the value for **ab-anglemeasuredaligned** minus the **ab-anglemaster**.

CONTINUED - Version 4 - Build 1181, January 31, 2023

Fix for Mult-Elongation Percentage Grid

The Multi-Elongation Percentage grid is fixed so that alongation percentage data can once again be entered in the Elong column cells.



CONTINUED - Version 4 - Build 1181, January 31, 2023

Fix for Report Template Import During the Installation Process

The previous logic could fail and cause all the report templates to be lost during installation of a new version of VTube. This has been fixed.

New Configuraiton Automatic BACKUP at Install

The installation programs will now automatically and silently backup the entire VTube configuration folder in systems that already have VTube installed - before the update process starts.

This allows users to recover previous configurations if something goes wrong during the installation.

The default location for VTube configurations is:

C:\Users\Public\Documents\VTube\config

The backup folders will always be created in the same VTube folder with a date-time stamped filename clearly marked as a backup folder. An example backup folder is:

C:\Users\Public\Documents\VTube\config_backup_20230131_145130

The files in this folder can be used by Advanced Tubular technicians to recover your configuration if needed. Contact support@advancedtubular.com if you need assistance.

Version 4 - Build 1169, January 30, 2023

Adjustment to AutoBuild PDF Report Events

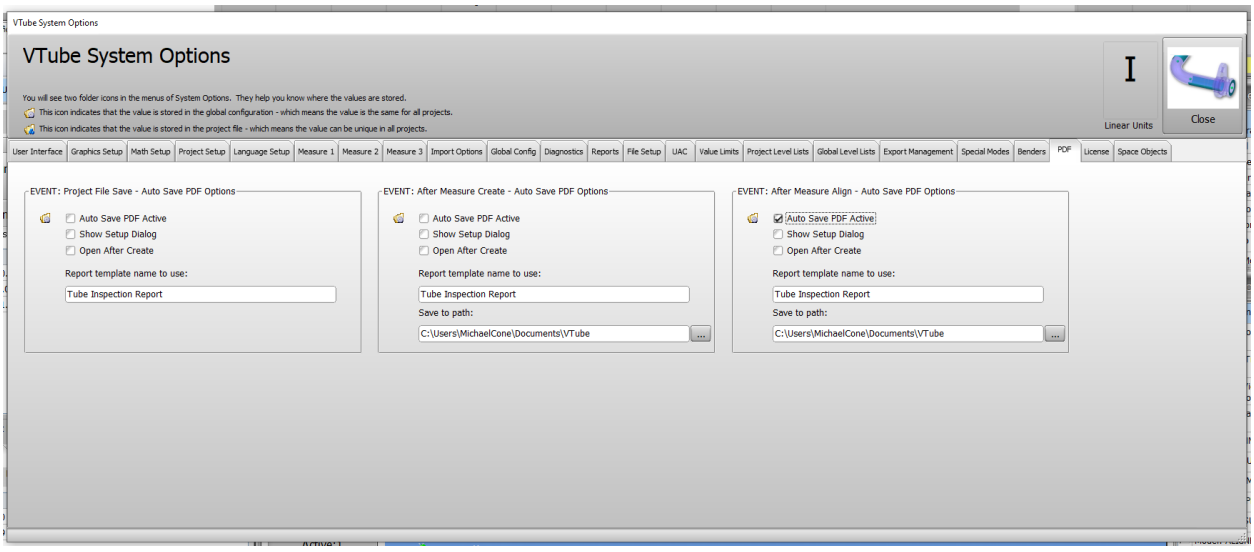
A change to the filename structure was made.

It will now contain a structure like this:

“MeasuredAlignedEvent_20230126_23_34_28_part12345678_John Smith.pdf”.

- The change for this build is to insert the part number in the filename – like **part12345678**. If the part number value is empty then the insert is skipped. If the part number has invalid filename characters, those characters will be changed to underscores.

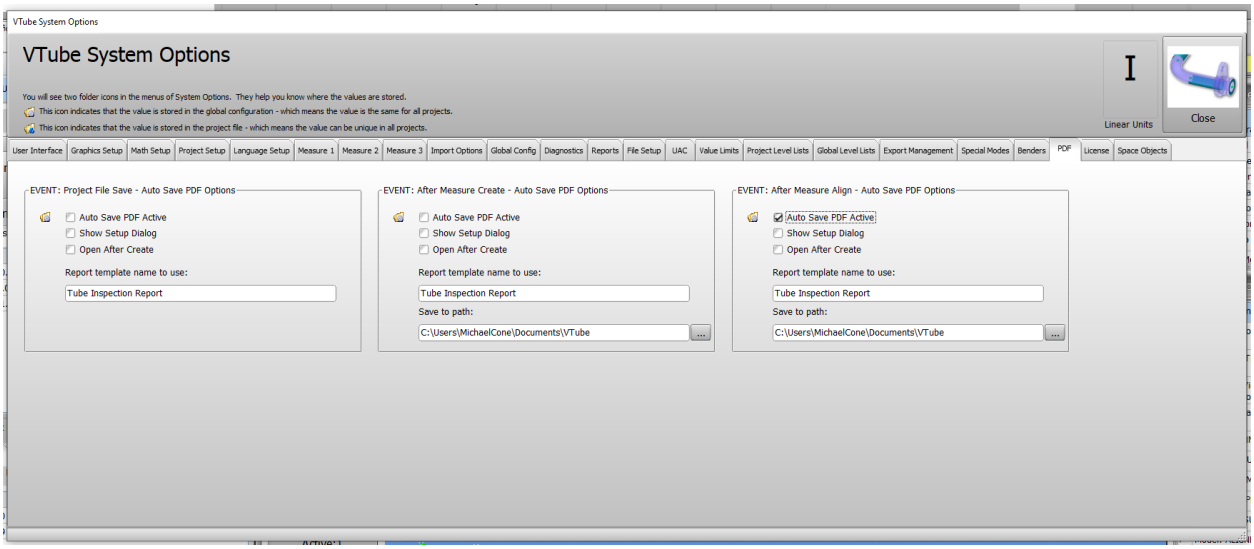
- The “**John Smith**” part of the name is extracted from the Measured Note field before a measure occurs. If the Measured Note value is empty then the insert is skipped. If the part number has invalid filename characters, those characters will be changed to underscores.



Version 4 - Build 1167, January 27, 2023

New AutoBuild PDF Report Events Added

VTube can now automatically save PDF reports when measured tube data is *created* or *aligned* immediately after a tube measure. The setup for these events is in the PDF tab menu in System Options.



The goal is to allow the metrology department to capture PDF data for every data creation event after a measurement. Therefore, the events can **only occur after a tube measure**. If, for example, the user performs a re-alignment without a remeasure, then these events are ignored.

When the event is triggered, VTube will attempt to save a PDF file to the **Save To Path** folder using the named report template. Therefore, it is important to have an actual path programmed for when these events are switched on. (For saving PDFs after a project file save, VTube always saves the PDF in the same folder as the VTP file. This is why this one event has no Save To Path field.)

The filename will contain a structure like this:
"MeasuredAlignedEvent_20230126_23_34_28_John Smith.pdf". The "John Smith" part of the name is extracted from the Measured Note field before a measure occurs. If the user enters characters that cannot be used in a filename, then VTube will automatically replace those characters with an underscores.

Version 4 - Build 1160, January 25, 2023

More Changes Were Made to the FTP (File Transfer Protocol) Communications for CMP Automation

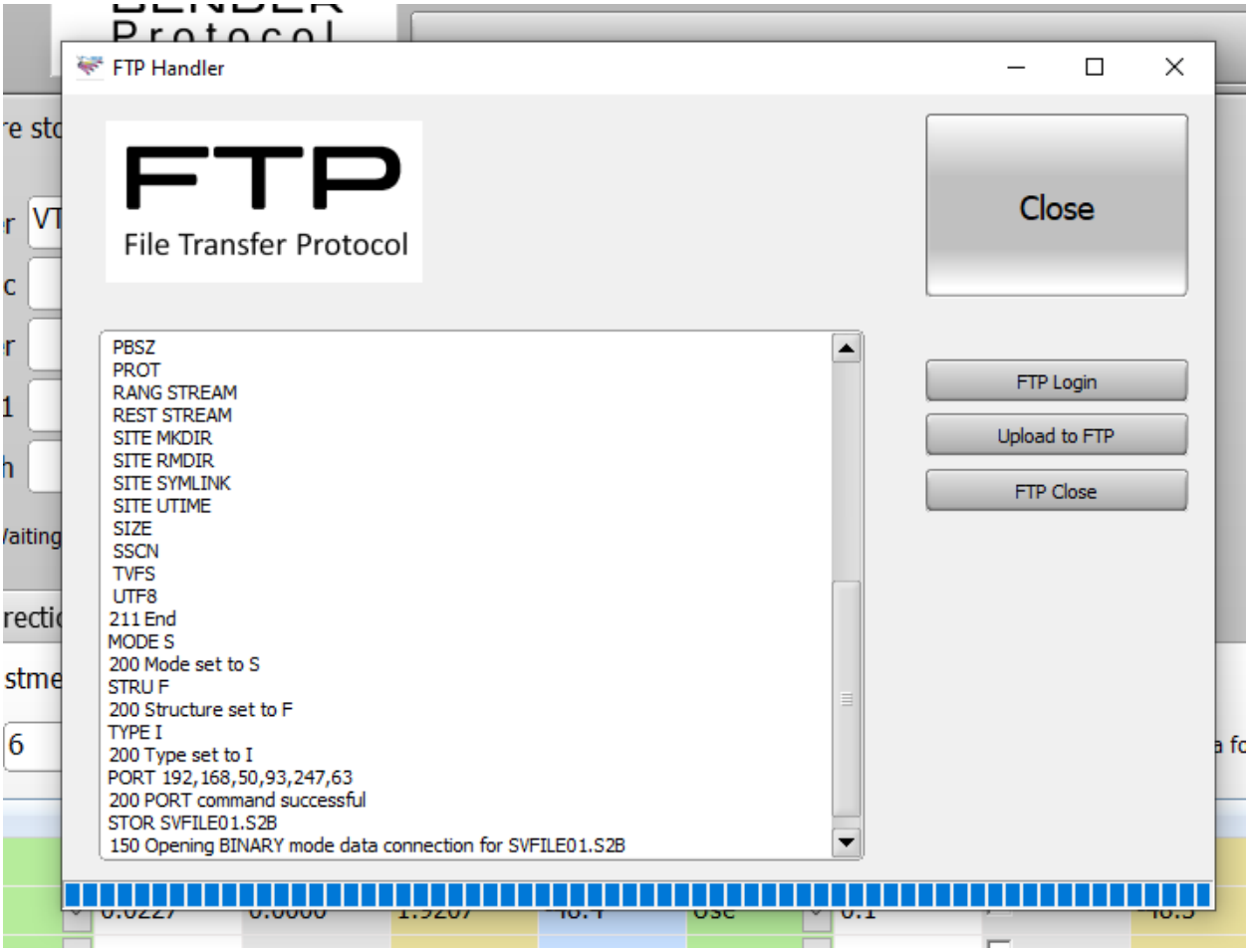
More changes were made to allow the FTP protocol to properly login and communicate with FTP servers in passive mode.

Also, new FTP messages were added to the FTP dialog to help diagnose issues.

Version 4 - Build 1158, January 19, 2023

The FTP (File Transfer Protocol) is Now Passive Mode

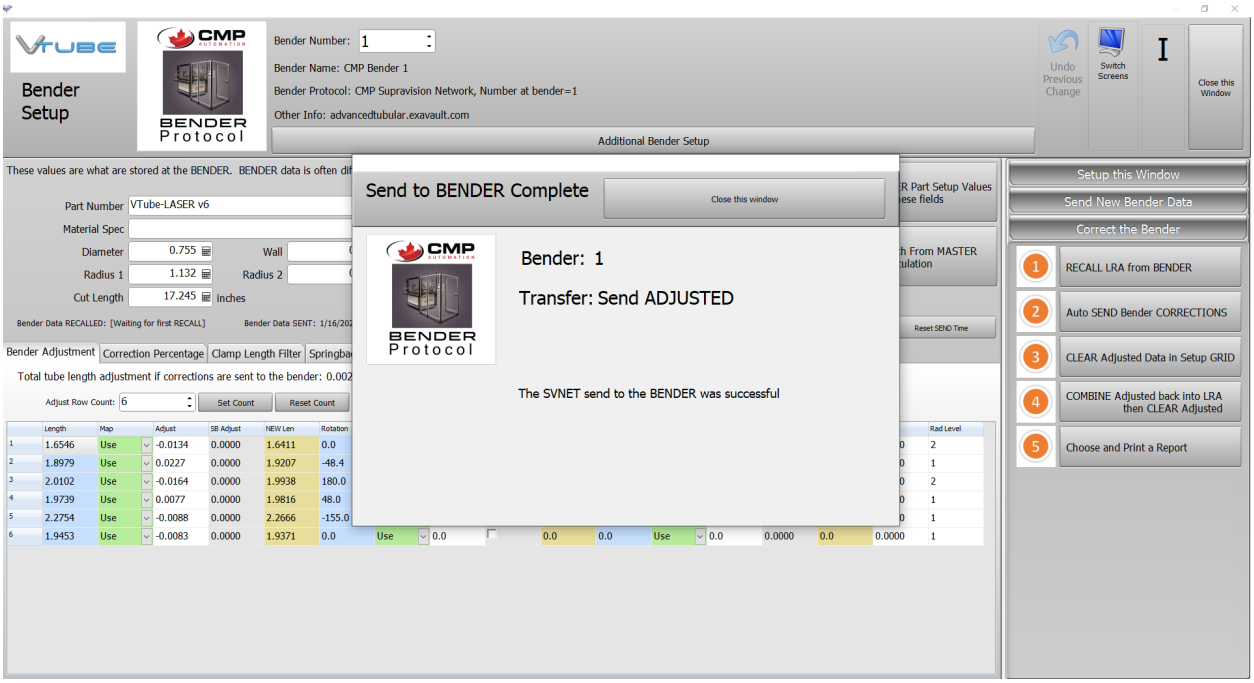
The FTP connection is changed from Active to Passive. Most FTP servers now use passive mode, so VTube-LASER now uses passive mode to make a data channel connection.



Version 4 - Build 1156, January 16, 2023

CMP Automation Bender Protocol Added

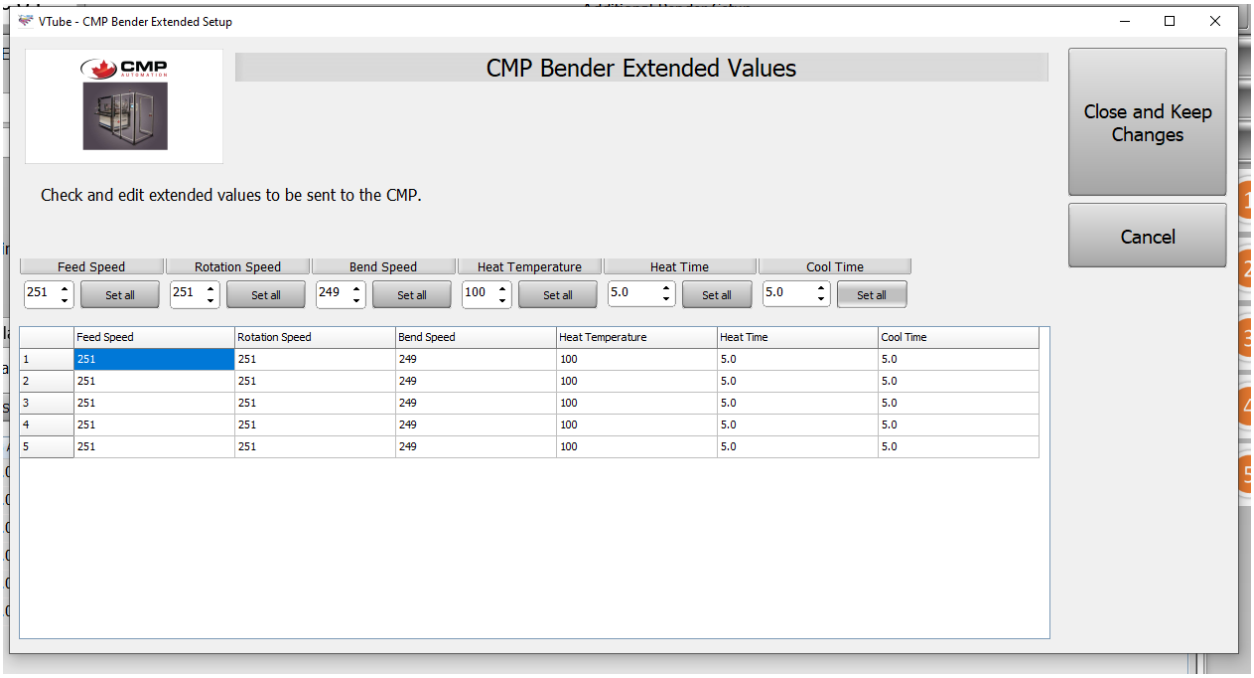
We have added a new CMP Automation protocol that allows for communication with CMP benders that bend plastic tubes.



Version 4 - Build 1156, January 16, 2023 - Continued

The CMP protocol contains custom values stored in the VTube project file and transferred during communications.

Pressing the Additional Bender Setup button in the Bender Setup window will show this CMP Extended Bender data window:



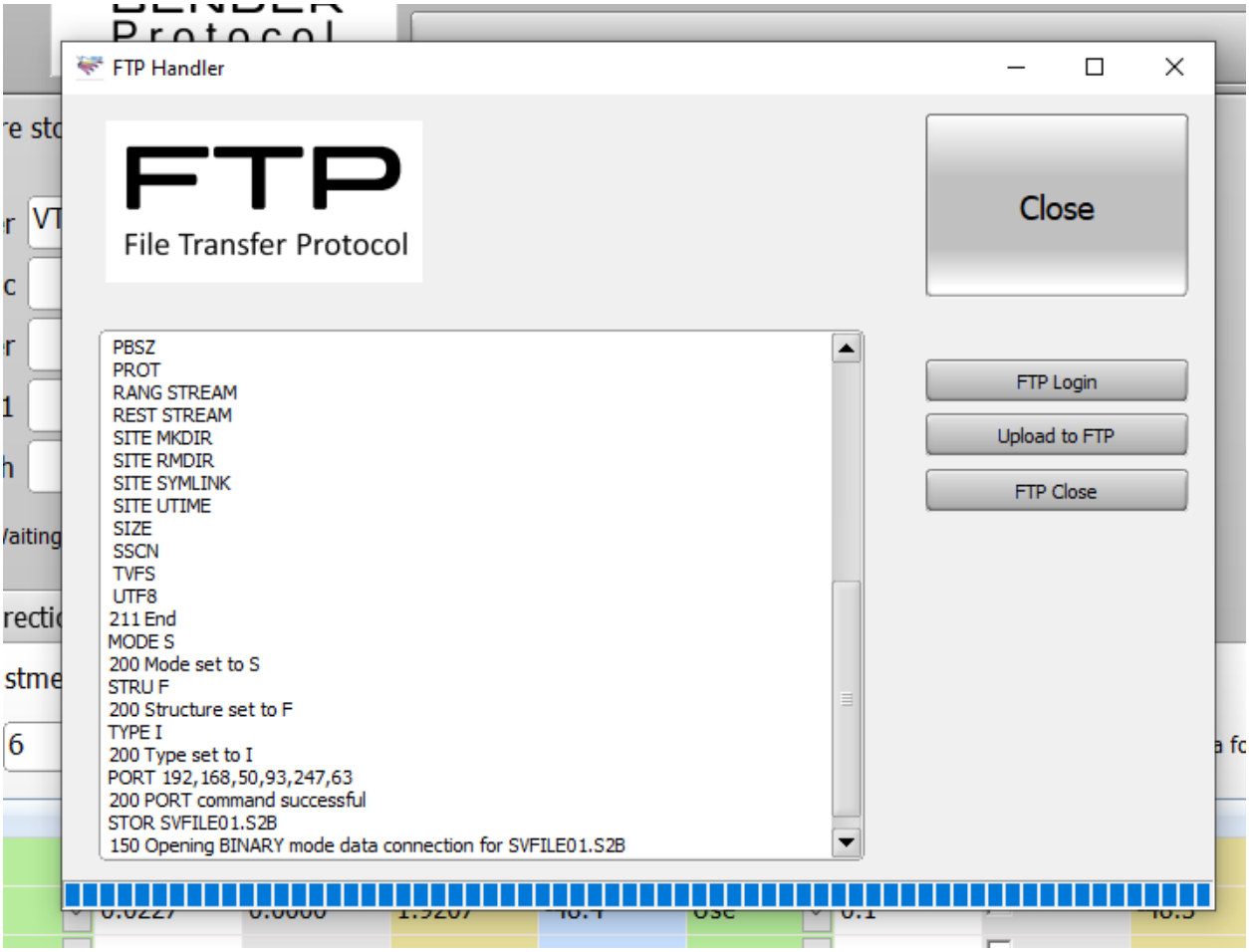
Performing a SEND to the CMP bender will transfer these values to the bender.

Any changes of these values at the CMP bender will overwrite values in VTube during a RECALL.

Version 4 - Build 1156, January 16, 2023 - Continued

New FTP (File Transfer Protocol) Capability for Supravision Network

The Supravision network in VTube-LASER can now use the FTP protocol to send and retrieve files from bender controls that use FTP servers for connection.



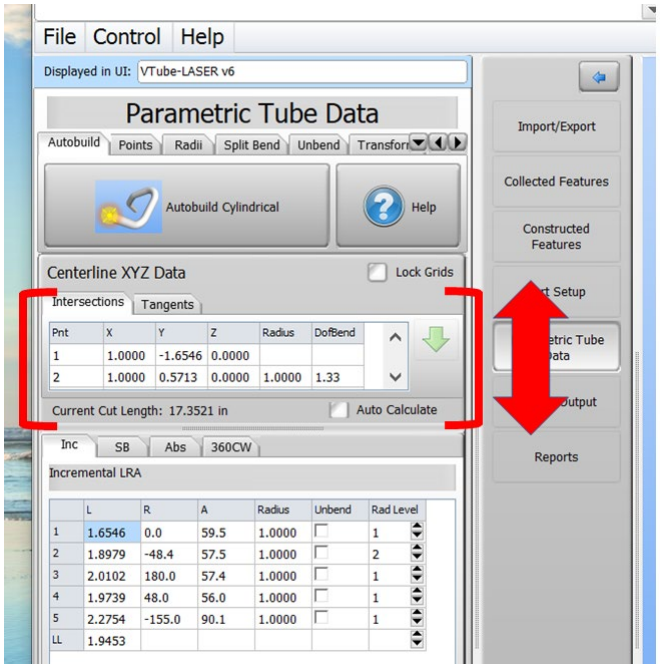
This feature was designed for PLC-based controls that connect to other processes by importing files through FTP – like the CMP Automation benders.

Version 4 - Build 1139, January 12, 2023

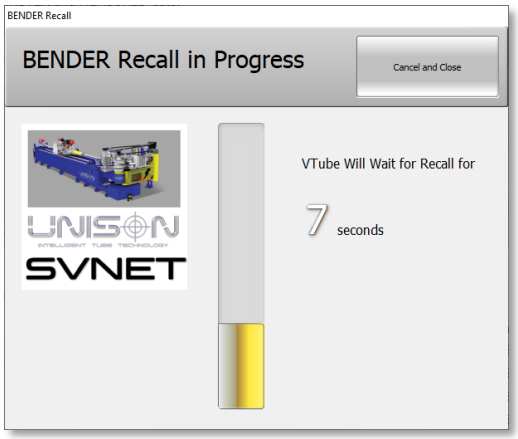
Provision for Constraining Minimum Grid Heights Was Added

It was discovered that, during manual resizing of the user interface, XYZ and LRA grids could shrink to disappear and then cause an endless redraw loop that would lock the user interface until users closed VTube using the Task Manager.

New minimum height constraints were added to be sure that the grids in the STEP Parametric Tube Data, LASER Master Tube Data, and LASER Measured Tube Data menus never disappear when resizing the user interface around them.



Version 4 - Build 1137, January 11, 2023



Fix for Supravision Network RECALL from Bender

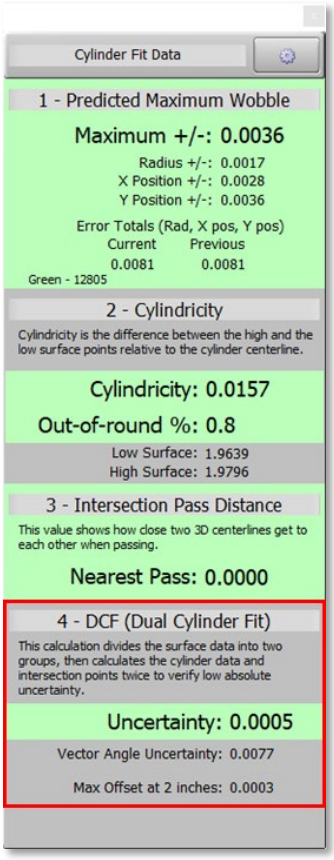
An accidental change was made to the **Supravision Network** protocol that disallowed a RECALL from a bender. **The issue is fixed in this build**.

If you installed the last couple of builds, use the Supravision Network protocol, and found that RECALL is not working, please update to this build to fix the problem.

User Interface Changes

DCF (Dual Cylinder Fit) Uncertainty Values Display

The Dual Cylinder Fit Uncertainty values are changed to automatically change to the current linear unit when the user changes between inches and millimeters.



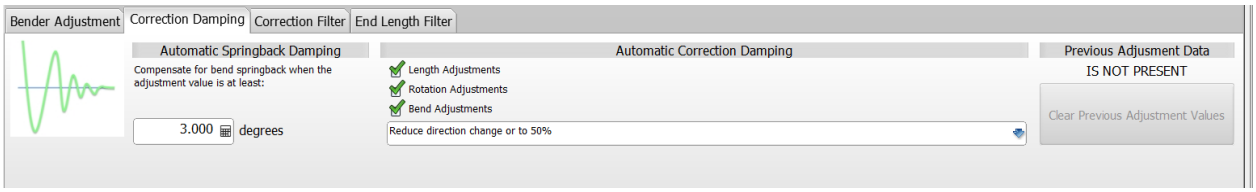
References to Bender Data Damping are removed from VTube-LASER

All references to bender data damping are removed from the interface. For example, the report tokens for damped bender data were removed. Also, there Is no longer any reference to damping in the Bender Setup window. We removed this as a concept from VTube-LASER when the Correction Percentage feature was introduced.

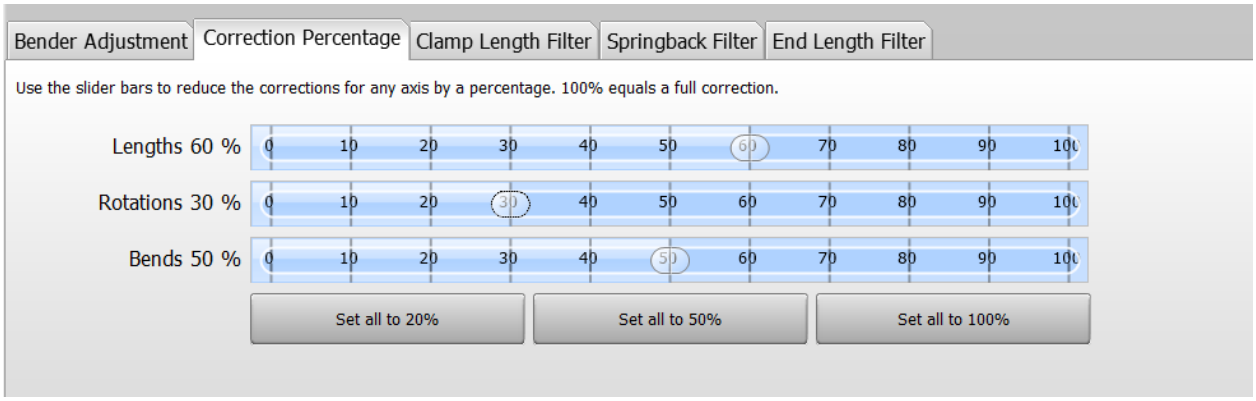
Version 4 - Build 1132, January 6, 2023

A new Bender Setup feature called “Correction Percentage Setup” was added for fine-tuning the reduction of full bender corrections sent to benders.

This is the previous Correction Damping menu in Bender Setup:



The Correction Damping menu was replaced with an easier-to-use and more powerful way to reduce corrections going to the bender. The new feature is called **Correction Percentage setup**. See the blue slider bars in the new menu below.

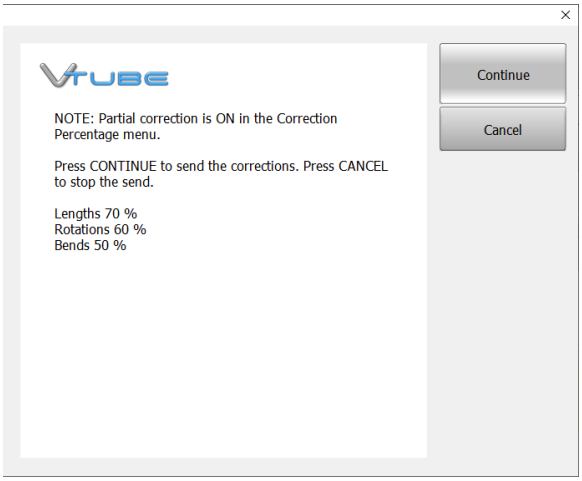


Users can slide handles in 10% increments to reduce corrections by anywhere from 0 to 100 percent of the corrections suggested by VTube.

Each of the bender axes can be controlled independently.

If the sliders are set to zero, then all adjustments are ignored. If the sliders are set to 100, then all the corrections are sent to the bender.

If any slider is set to less than 100%, then VTube will show a dialog noting that a partial correction will be sent to the bender when the user presses the SEND to bender button. The dialog lets the user stop the SEND to adjust the Correction Percentages if appropriate.

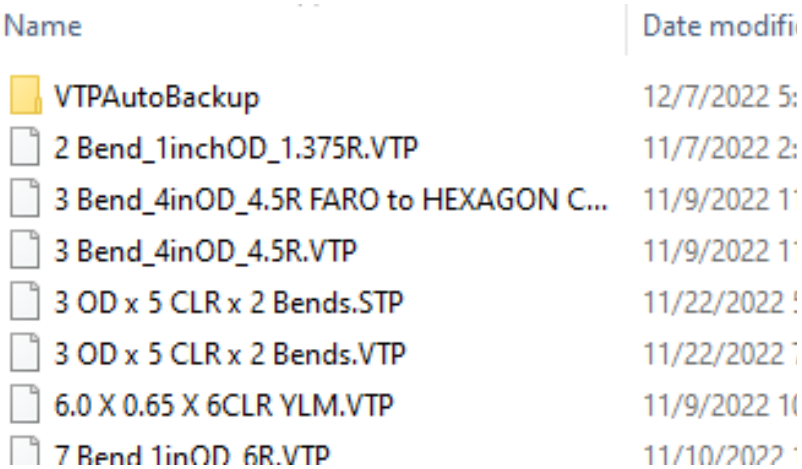


Version 4 - Build 1132, January 6, 2023, continued

All automatic VTube backup project files are now saved in the "VTPAutoBackup" sub-folder of the current VTube project file being saved.

To keep the project file list clean, the VTube backup files will now be stored in a new sub-folder relative to the current VTube project file storage location.

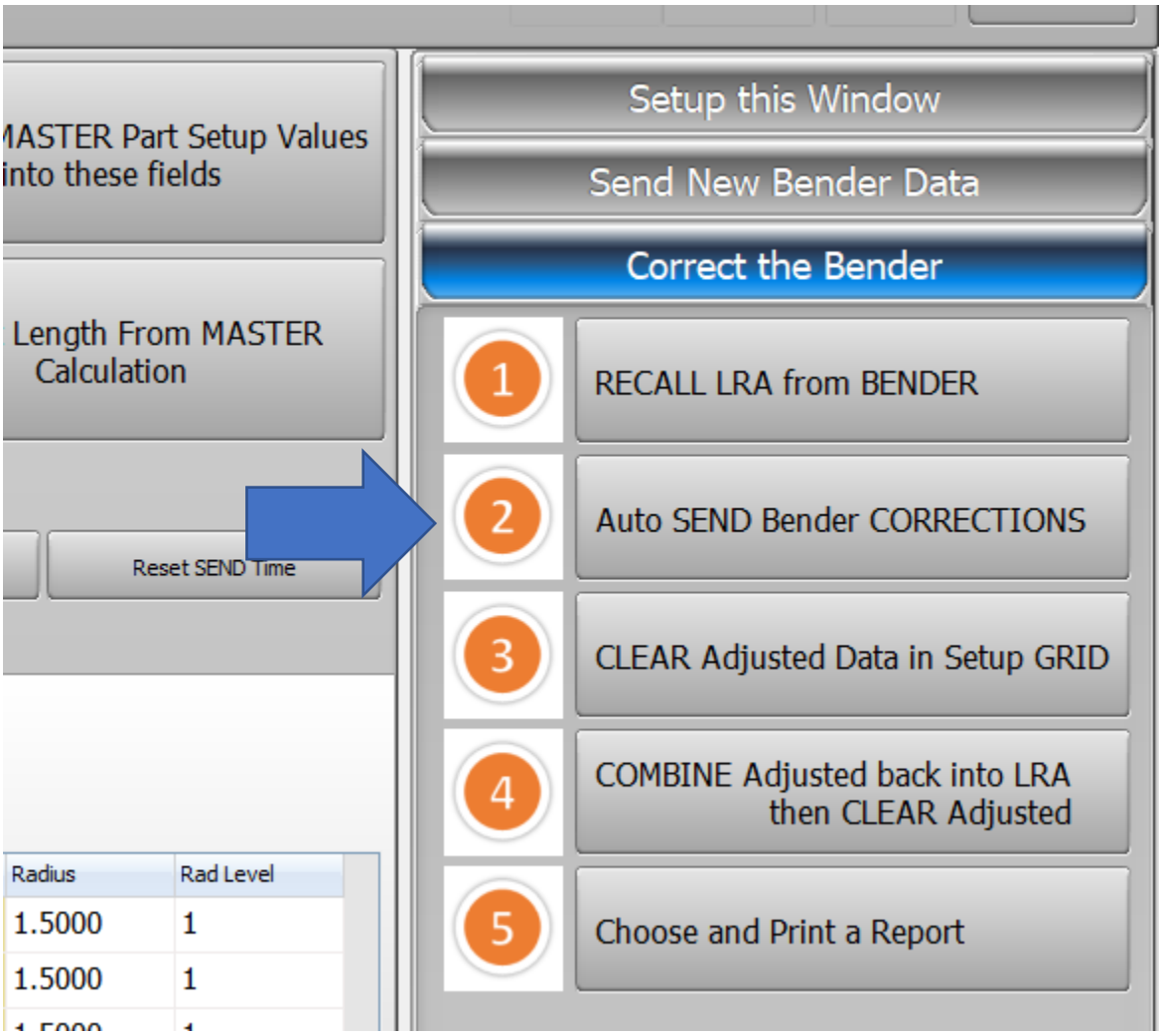
If the VTP backup folder does not exist during auto backup, then VTube-LASER will automatically create the folder. See an example here:



Version 4 - Build 1103, November 15, 2022

Fixed Supravision Network SEND Problem in Build 1101 (Previous Build)

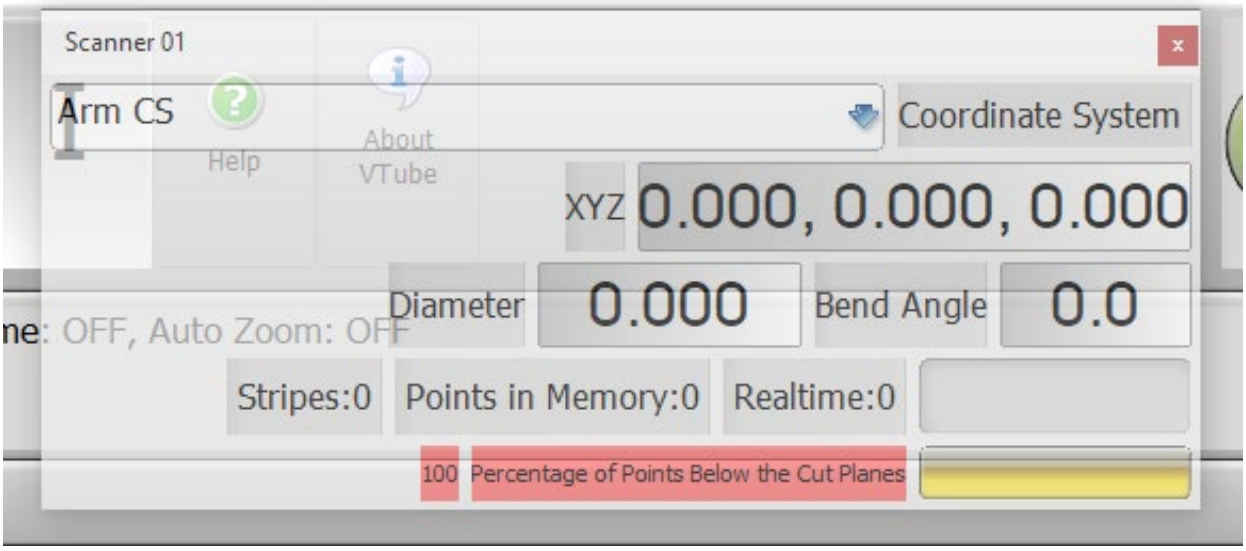
If you are using Supravision Network protocol to communicate with a bender and have installed Build 1101, then update to this build to fix a path issue during Supravision SEND to the bender.

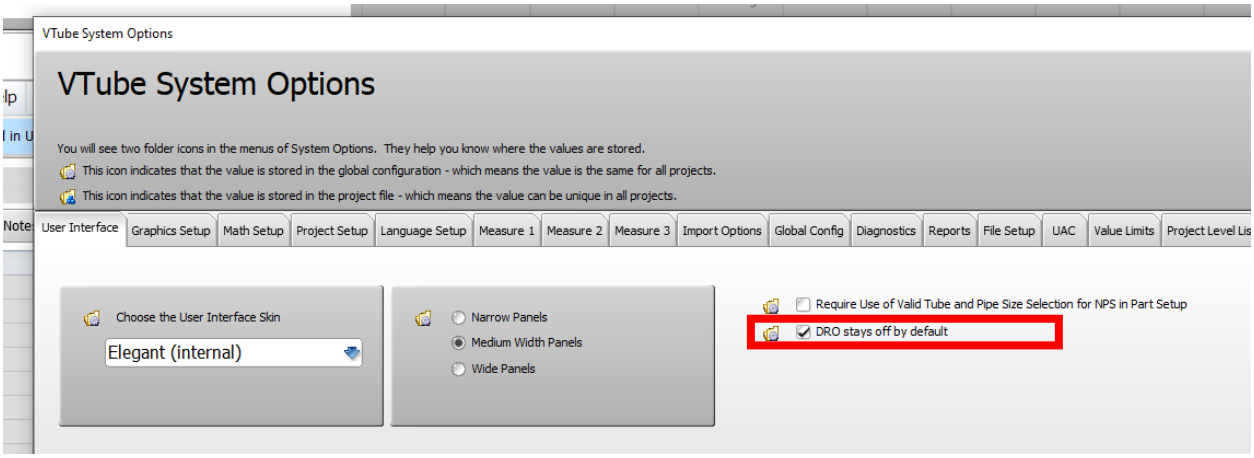


Version 4 - Build 1101, November 8, 2022

New "DRO Stays OFF by Default" Option

This option was requested by customers that don't like to see the DRO (Digital Readout) on the screen. It configures VTube-LASER so that the DRO does not automatically display by default when connecting to an arm. The checkbox option is in the System Options / UI menu. This option is global – which means it applies to all projects.

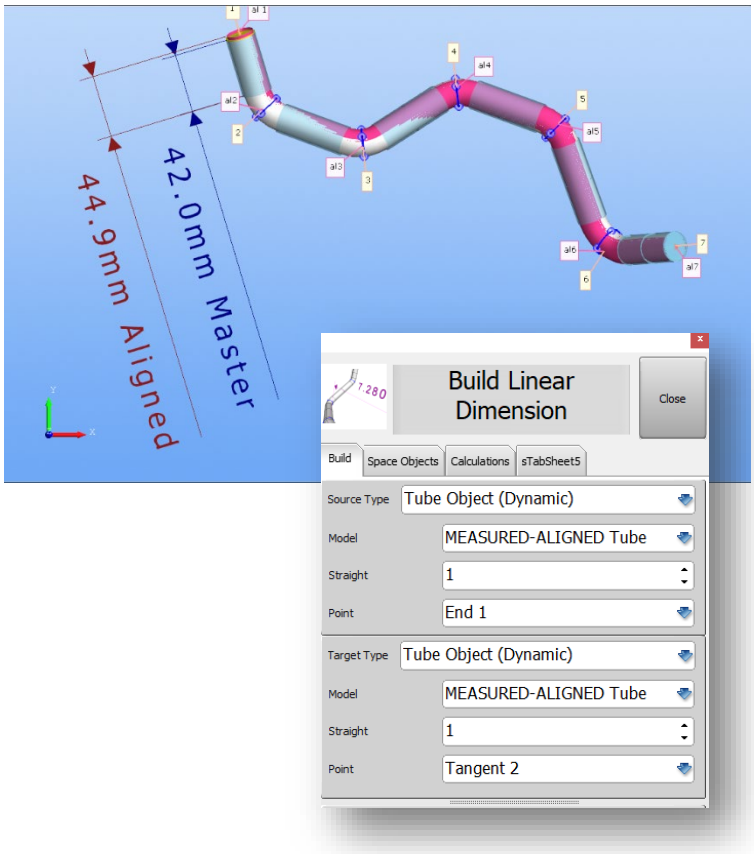




Version 4 - Build 1099, November 8, 2022

Space Object Dynamic Tube Link for Linear Dimension Using the Aligned Tube Fixed

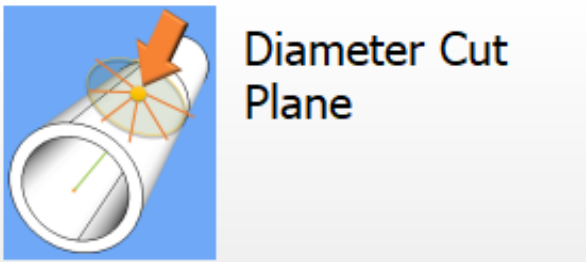
Previous versions of VTube-LASER would use incorrect centerline data when referencing points for linear dimensions from the ALIGNED model. This has been fixed.



The DCP filter (Diameter Cut Plane) is no longer used for generic Point Cloud scanning, even if DCP is set to active.

The DCP filter is now only used for scanning tube shapes during regular tube scanning. It Is no longer used during point cloud scanning because the objective of point cloud scanning is to collect all the data the scanner camera sees.

Note that the regular CUT PLANE is still used when active for point cloud scanning.



Version 4 - Build 1097, November 8, 2022

Shallow Bend Sound Files Added To Installation

New shallow bend sound files are now included with the installation.

Point Count and Straight Mismatch Warning Removed

The point-count-to-straight-count-mismatch dialog is removed when starting the measuring process for when the points count is zero.

This situation will always indicate a reverse-engineering process, so there is no need for the warning dialog to display in that case.

Version 4 - Build 1088, October 24, 2022

PassFail Reports Fixed

The Pass/Fail report sometimes reported a failure when the inspection passed. This was from a logic problem inside the End Lengths check. This has been fixed in this build.

PLP Translation Point Setup:	S1 - End 1
PLP Translation Point Coordinate:	-3.875, 1.500, -2.321
Qualification Pass/Fail	Failed

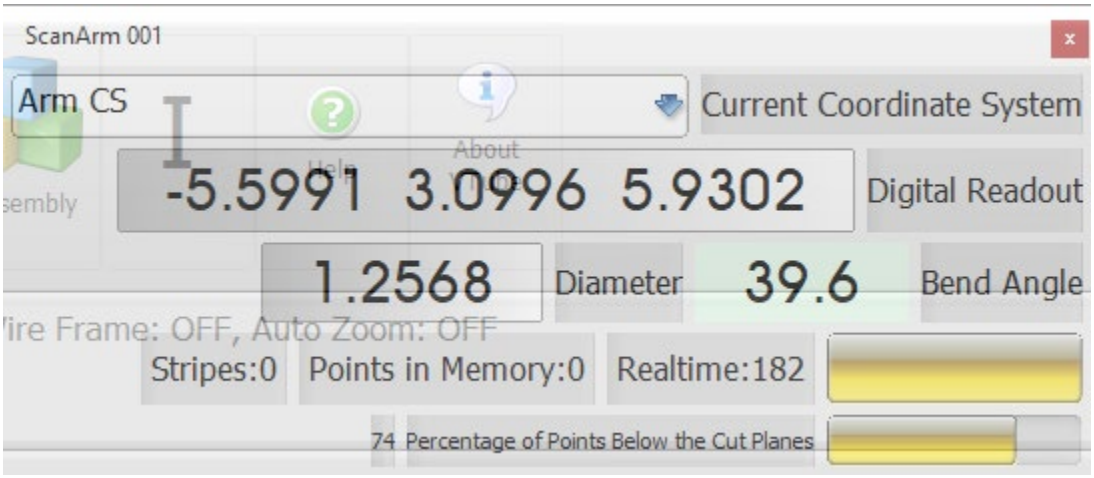
PLP Translation Point Setup:	S1 - End 1
PLP Translation Point Coordinate:	-3.875, 1.500, -2.321
Qualification Pass/Fail	Passed

Version 4 - Build 1086, October 22, 2022

VTube-LASER DRO User Interface Change

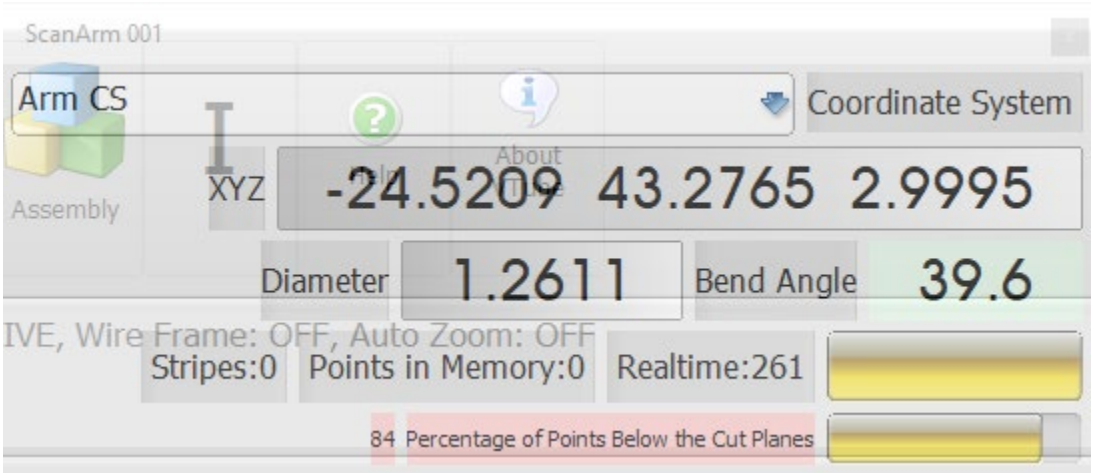
The DRO (Digital Readout) user interface has been adjusted to clear up potential confusion about what label is attached to a value.

This was the user interface design in previous versions:



The problem with this design is that users may think that the diameter is 39.6 (rather than 1.25). We moved the labels to solve this problem.

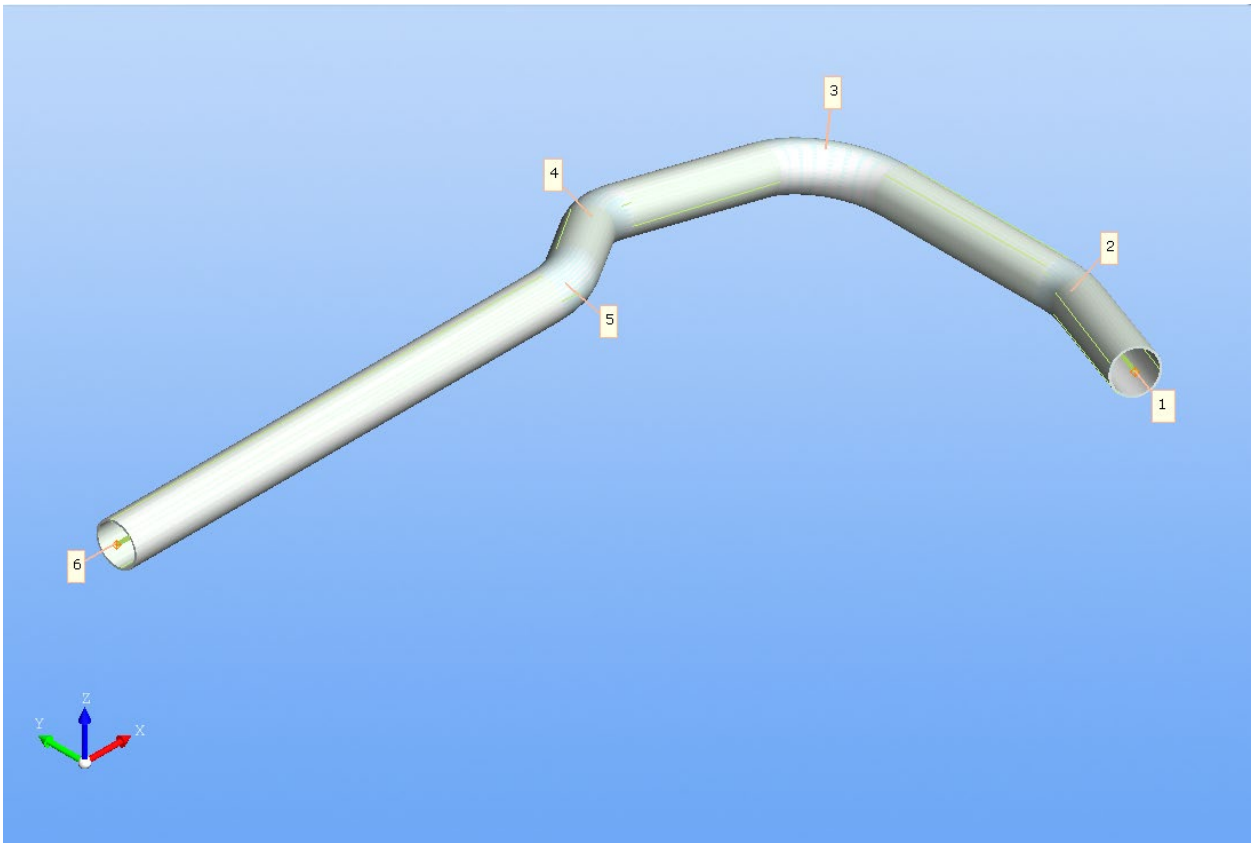
This is the new design:



Version 4 - Build 1083, October 21, 2022

VTube-STEP Import Fix – Surface Type Added to Autobuild Parametrics

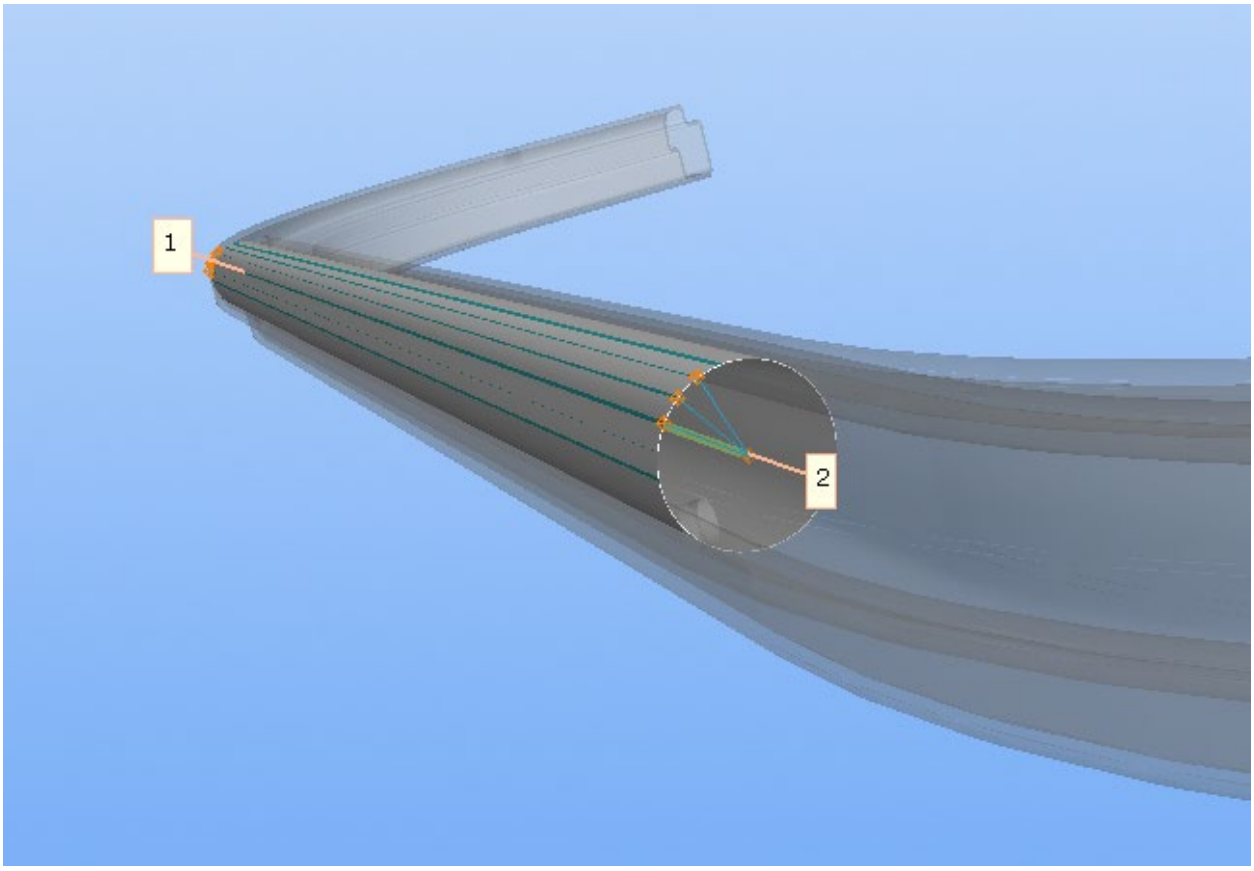
We discovered an issue with handling a specific surface type in VTube-STEP during AutoBuild Parametrics. VTube-STEP was ignoring the surface entity when it should not have. This has been fixed.



Version 4 - Build 1079, October 20, 2022 – Part 2

2 – VTube-STEP Import Was Improved for Surfaces with Low Triangle Count

We improved VTube's ability to import surfaces with very low triangle counts. For example, this straight in this model could not be imported in previous versions – but now it can.



Version 4 - Build 1079, October 20, 2022

1 – New Report Tokens Were Added for Absolute Bender Data

A customer asked us to allow for the absolute bender data format to be output with the MEASURED data in VTube-LASER. We added report tokens that enable this.

New value token: array_length_measured_conrac_drawbend
New value token: array_rotation_measured_conrac
New value token: Array_RotationDirection_Measured
New iterate section token: LRACONRAC_Measured

CONRAC BENDER DATA

Bend No.	Absolute Length	Absolute Rotation	Rotation Direction	Bend Radius	Degree of Bend
1	876.3			38.1	42.7
2	744.3	76.6	Counter CW	38.1	77.5
3	590.1	125.0	Counter CW	38.1	18.5
4	346.3	124.8	CW	38.1	18.2
5	231.6	76.5	CW	38.1	77.6
6	76.4	0.1	CW	38.1	43.1

CONRAC BENDER DATA - Measured

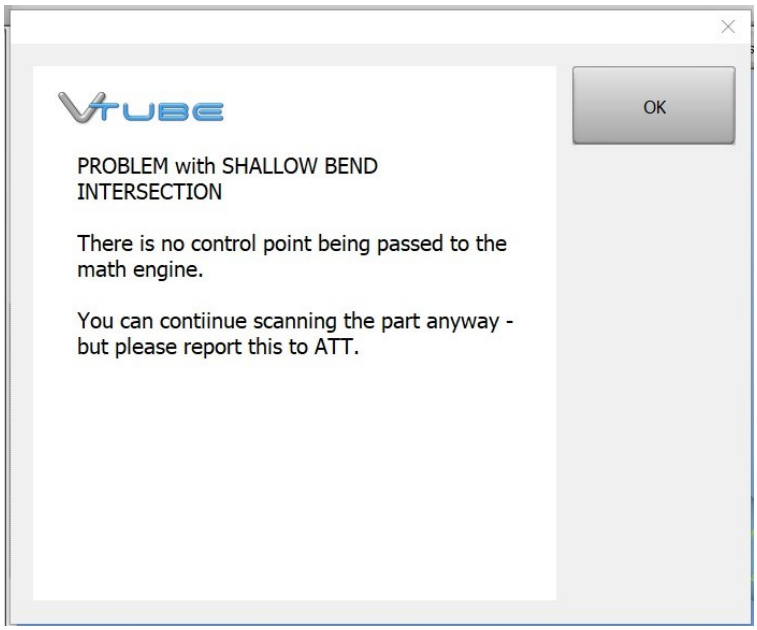
Bend No.	Absolute Length	Absolute Rotation	Rotation Direction	Bend Radius	Degree of Bend
1	876.6			38.1	43.0
2	744.4	76.5	Counter CW	38.1	77.5
3	590.1	125.0	Counter CW	38.1	18.5
4	346.3	124.4	CW	38.1	18.3
5	231.5	76.4	CW	38.1	77.5
6	76.2	359.7	CW	38.1	43.0

Version 4 - Build 1072, October 13, 2022 - Continued

3 – A Shallow Bend Issue Was Fixed

The shallow bend process would allow a trigger scan of *zero* points when the laser was active. This caused the condition you see in the window on the right.

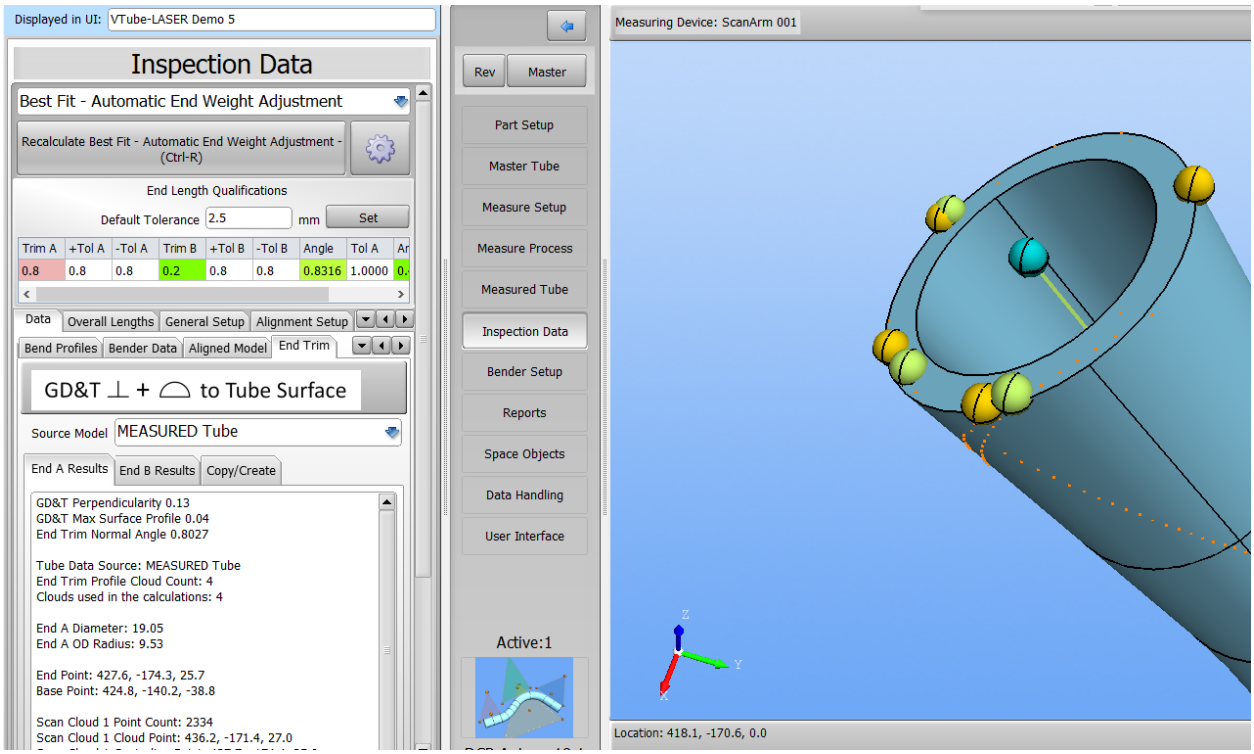
VTube-LASER no longer responds to the trigger pull when no laser data is present in Shallow Bend scanning.



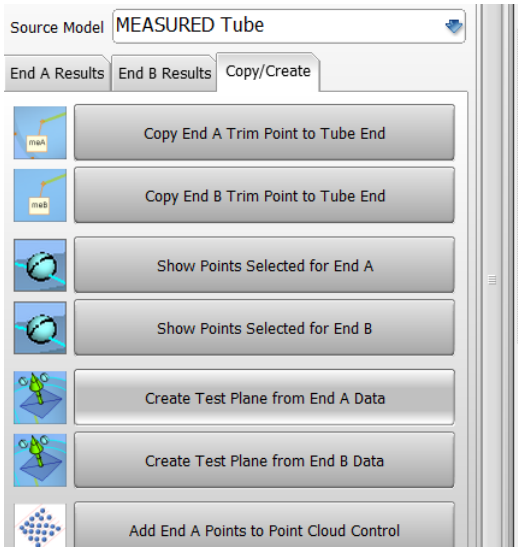
Version 4 - Build 1072, October 13, 2022 - Continued

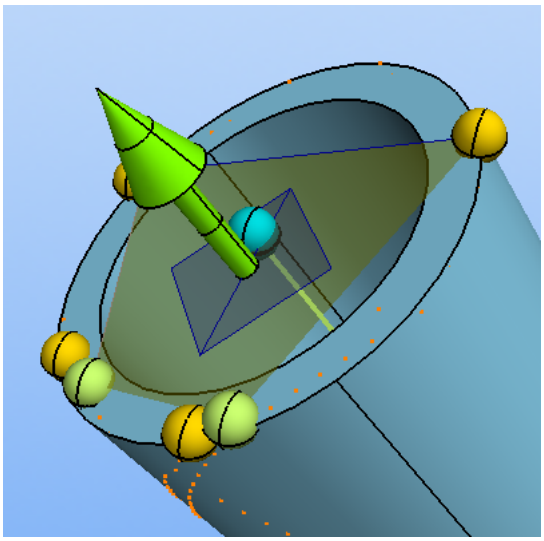
2 – End Trim Profile Calculations Are Now Available Inside the Inspection Menu

This feature was added so users can view the last calculation for End Trim Profiles without starting the ETP measure process. This is in a new **End Trim tab menu** in the Data tab menu.



Visualization Points and planes from the End Trim Profile measurements can also be drawn from tis menu.

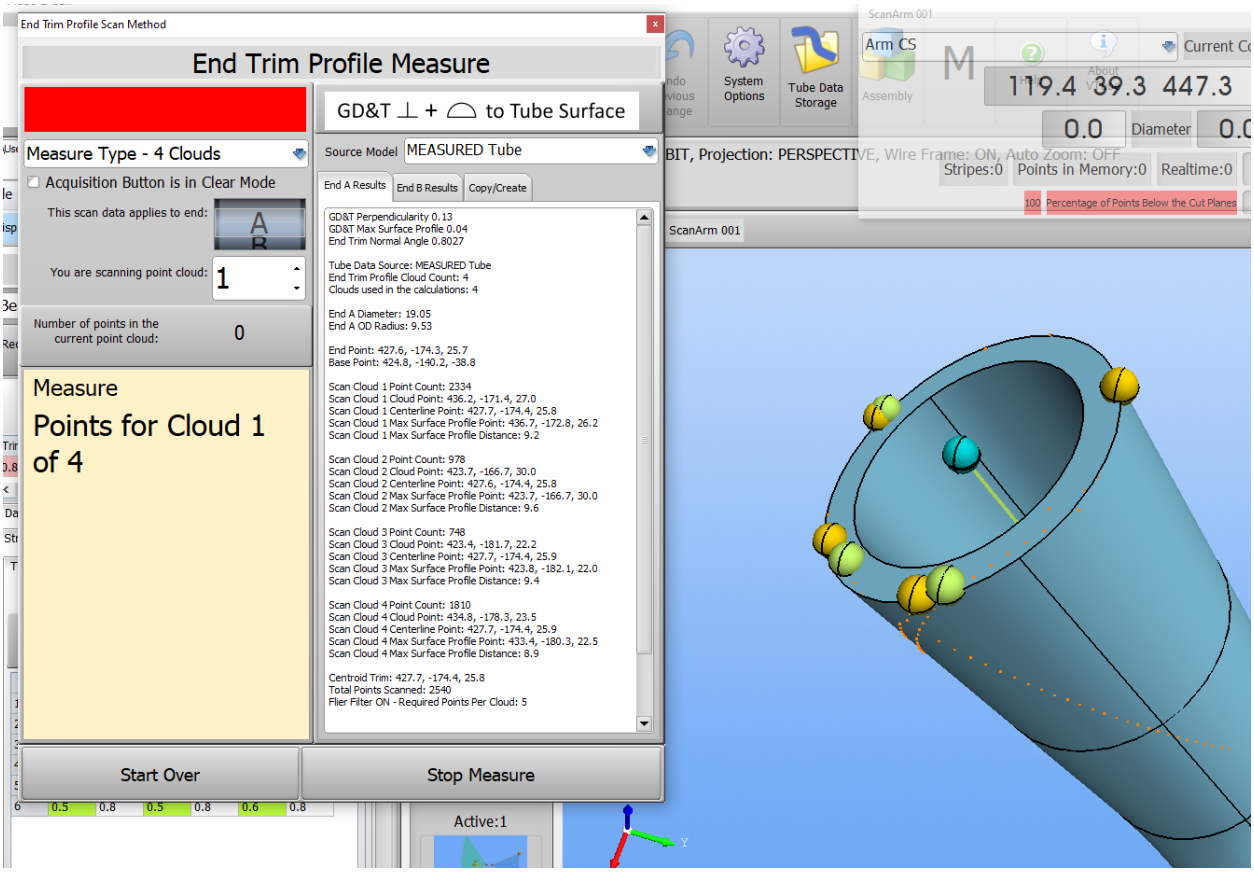




Version 4 - Build 1072, October 13, 2022

1 – End Trim Profile Calculations Now Include GD&T Max Surface Profile Data

In addition to **PERPENDICULARITY**, we added the **MAX SURFACE PROFILE** values to the report for End Trim Profiles. So, now VTube-LASER gives both the perpendicularity and the surface profile to the tube surface as the datum.



- The math engine was refined to allow users to view the selection of the points after the End Trim Profile measures:
    1. The orange points represent the maximum diameter surfaces in the scan.
    2. The green points represent the perpendicularity points selected for the end trims.
    3. The blue-green points represent a visualization of the perpendicularity snapped to the centerline.

Any End Trim cloud can be rescanned anytime without starting over. This allows for quick adjustment of the scans.

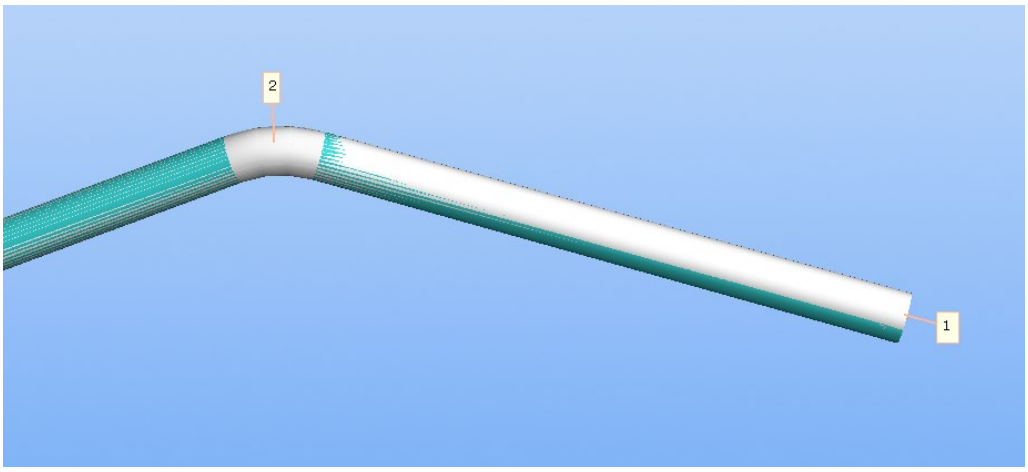
Version 4 - Build 1066, October 11, 2022

VTube-STEP Cylinder Import Logic Accuracy Improvement

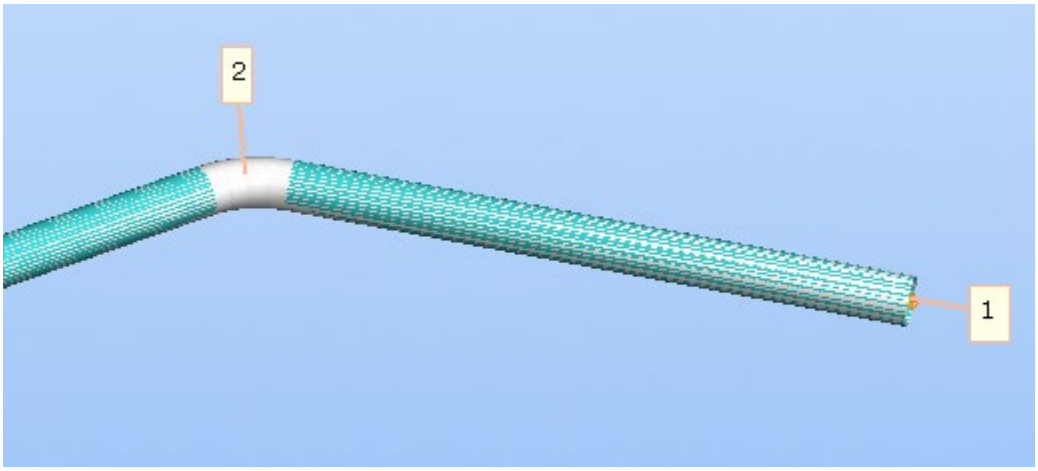
This is an important update for VTube-STEP because it uses new logic to significantly improve the accuracy of cylinder centerline calculations. This new logic especially improves the accuracy of calculations for highly complex tube models.

A good example is the tube shown below. This model has complex curved holes cut into the opposite side of the straight 1 (not shown).

This image is a cylinder fit from the previous version's centerline import result. Note where the white parametric cylinder is placed relative to the imported blue surface.



Compare the cylinder fit above to the new fit in this version below. Users tell us that the cylinder centerline fit is now accurate in these complex models to 0.0001" or 2.54 microns.

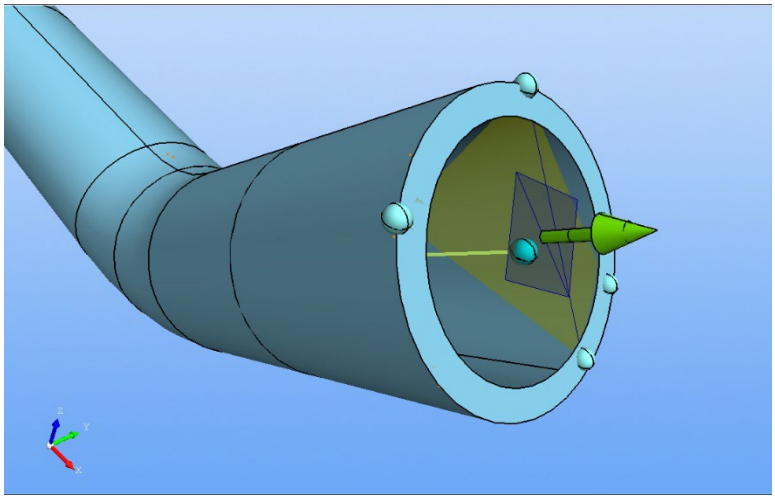


Version 4 - Build 1065, October 11, 2022

1 – More End Trim Profile Enhancements

We added more End Trim Profile enhancements, including a fix to 1064, where the Stop button was still not working correctly. That was fixed.

The enhancements also include further refinements to the endpoint plotting algorithms. If a point is not found during an End Trim Profile measure because the Flier Filter removed it, VTube will no longer attempt to plot the point in the viewport.



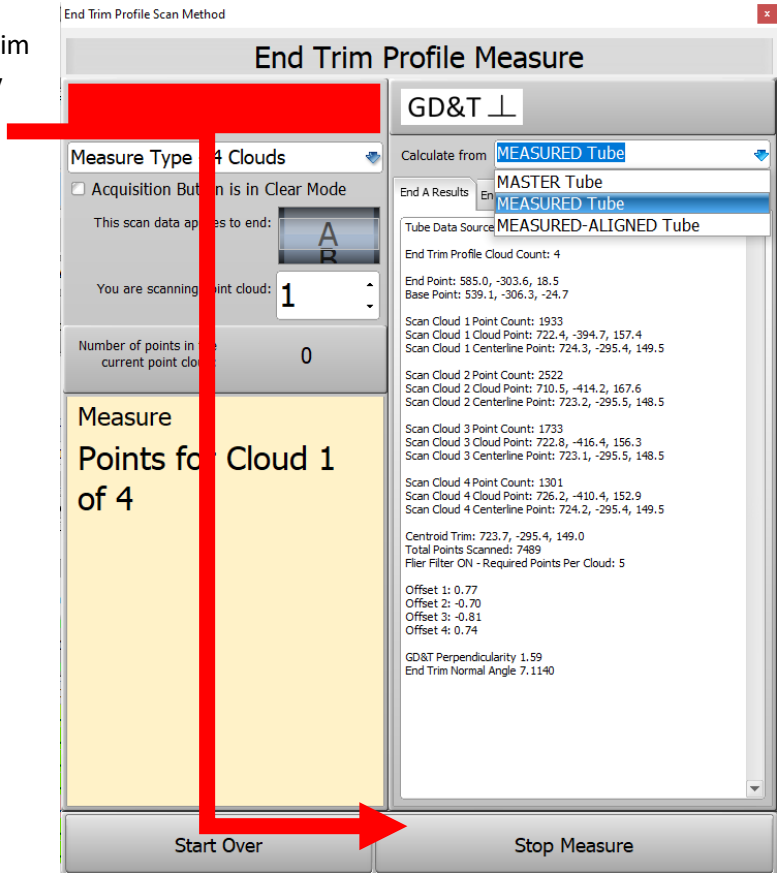
2 – Messages to Toggle Laser to Probe Fixed

We fixed some unnecessary toggle laser messages displayed in VTube-LASER entered UniScan or MultiScan mode.

Version 4 - Build 1064, October 8, 2022

1 –End Trim Profile STOP Measure Button Action Fix

We found and fixed an issue where the End Trim Profile process could not be stopped manually by pressing the **Stop Measure** button.

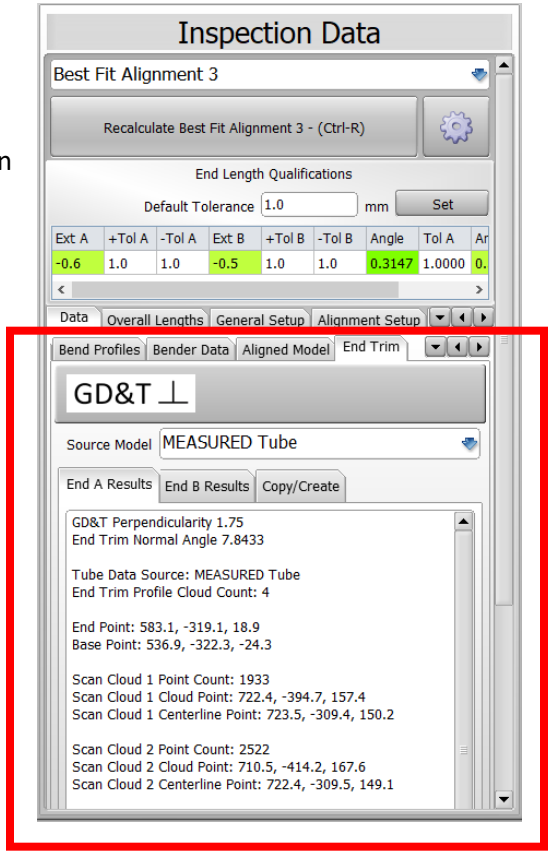


Alternatively, you can also press the red close button will now stop the process

Version 4 - Build 1063, October 7, 2022

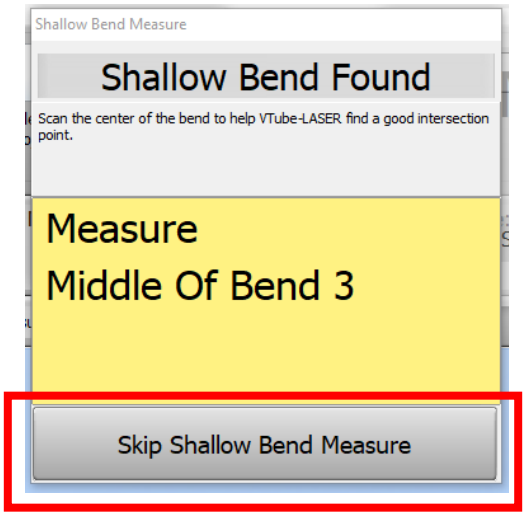
1 – Inspection Data Menu Now Displays End Trim Profile Measurement Values

The End Trim Profile measure values are now always displayed in the Inspection Data menu. This allows users to view the data *without connecting* to an arm to measure the End Trim like was required before this build.



2 – Shallow Bend Measure Window SKIP Button

We added the SKIP button to the bottom of the Shallow Bend measure window. This lets users skip measuring the shallow bend and continue the measure process.



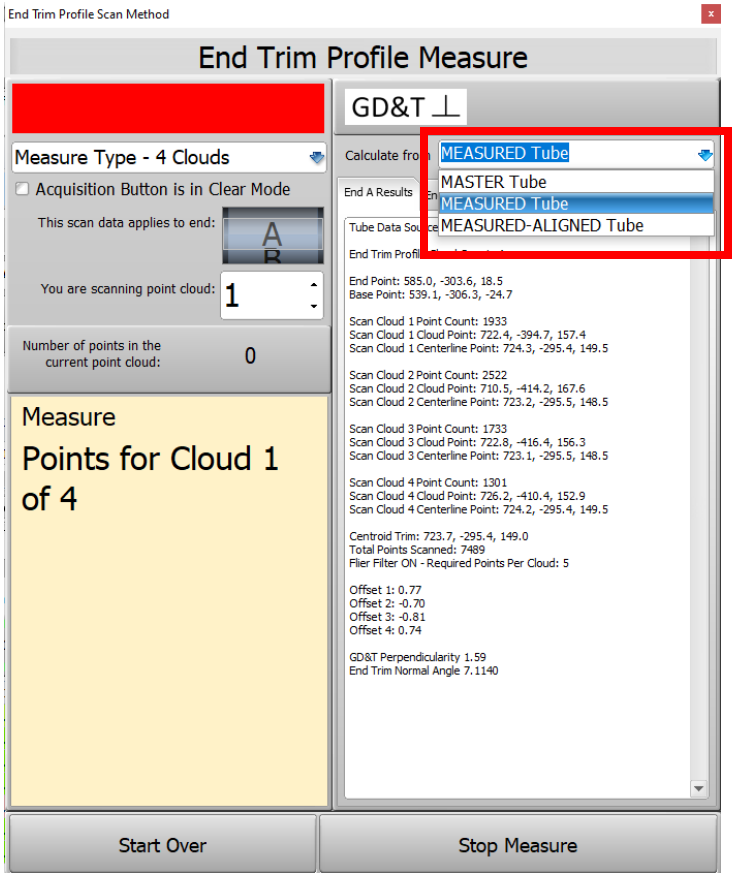
3 – Shallow Bend Measure Logic Fix

The Shallow Bend measure logic will now clear the Shallow Bend window if the parent process that called it is stopped or restarted.

Version 4 - Build 1062, October 7, 2022

1 - End Trim Profile Measure Enhancement

The End Trim Profile measure can now calculate the end trim relative to the Measured, Measured-Aligned, or Master tube. In previous versions, it could only calculate relative to the last Measured tube.



2 – Shallow Bend Measure Logic Fix for MultiScan

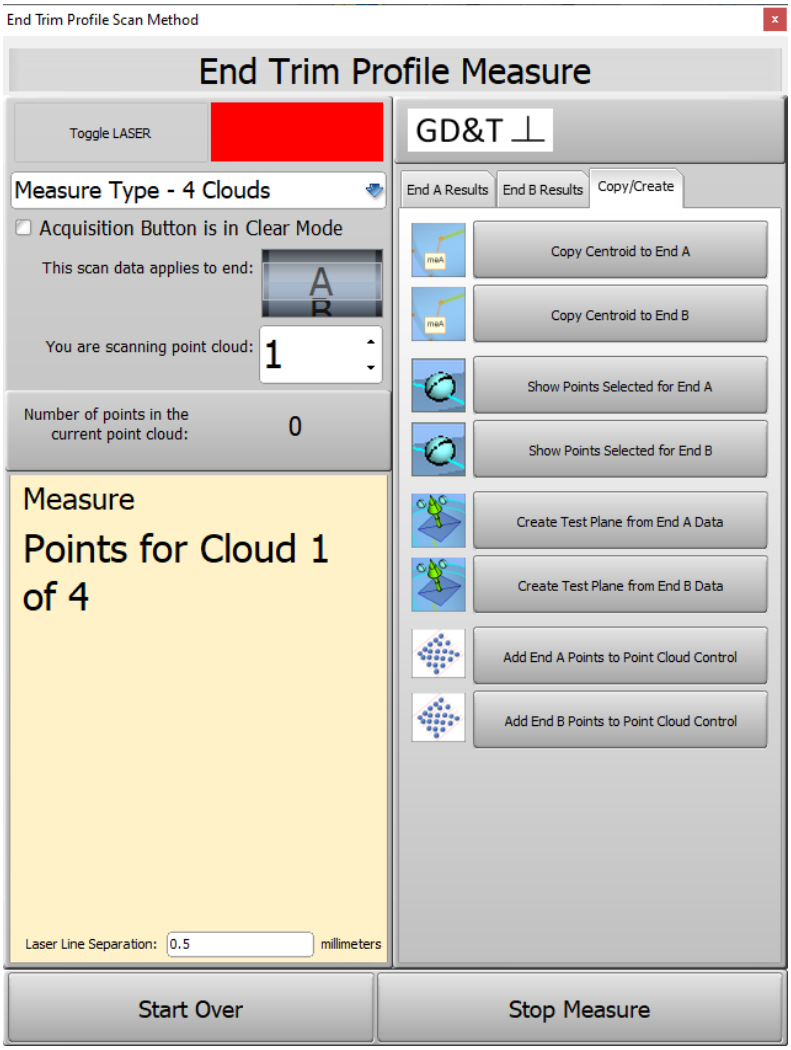
A bug was found when switching from UniScan to MultiScan in the Shallow Bend measure logic. This has been fixed.

Version 4 - Build 1060, October 5, 2022

End Trim Profile Measure Enhancements

The DIAMETER CUT PLANE is no longer used for this measure. The DCP trims the laser tails when active. It is not useful for end scans – so it is ignored even if it is switched on during this measure.

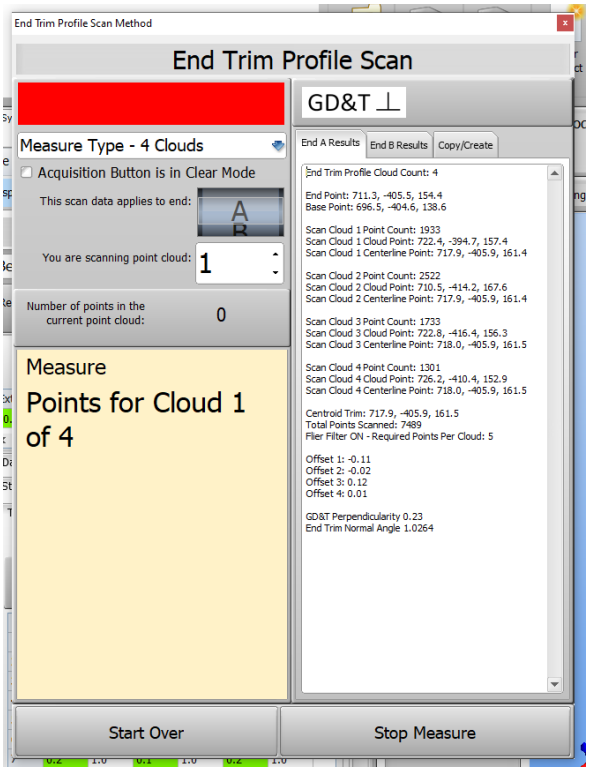
Also, we enhanced the user interface by adding icons next to Copy/Create buttons.

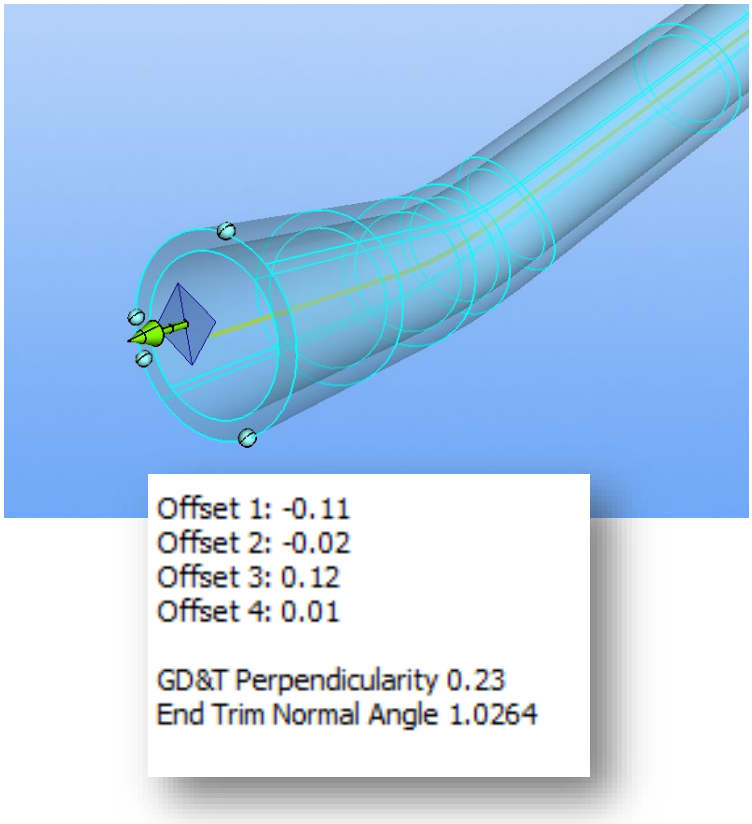


Version 4 - Build 1059, October 4, 2022

Major Enhancement to End Trim Profile Scan Measure Process

VTube-LASER version 4 now has an improved End Trim Profile measure process that easily calculates **GD&T Perpendicularity** using either the ball probe or laser scanner. We enhanced the underlying logic to ensure solid and repeatable results when scanning.





We completely redesigned the measure window interface to give the user a better view of the critical data for end trims. The process can take from 1 to 8 points around the perimeter of the end and use the End Scan Flier filter during scanning to accurately give perpendicularity and planar angle measurements. Plus, the End Trim Profile measure process can now also do the following:

1. It can create **Space Object PLANES** at the ends of the measured tube.
2. It can trim the measured ends to the centroid of all the points – which allows you to find the true center of a miter-cut end.
3. It can show you the points in the viewport VTube-LASER selects as the representative points for calculating the perpendicularity.
4. It can export the points selected to the Point Cloud Control for use in other measurements.

Version 4 - Build 1052, September 30, 2022

Verification Test for Kreon ScanArm

VTube-LASER version 4 was tested and verified with a Kreon ACE arm with a Skyline scanner.

During the tests, we discovered that the IJK vector values were not propagated through the system from the Kreon connection – which could cause problems for Space Object and Cut Plane creation. The issue was resolved in this build, and now the arm works perfectly.

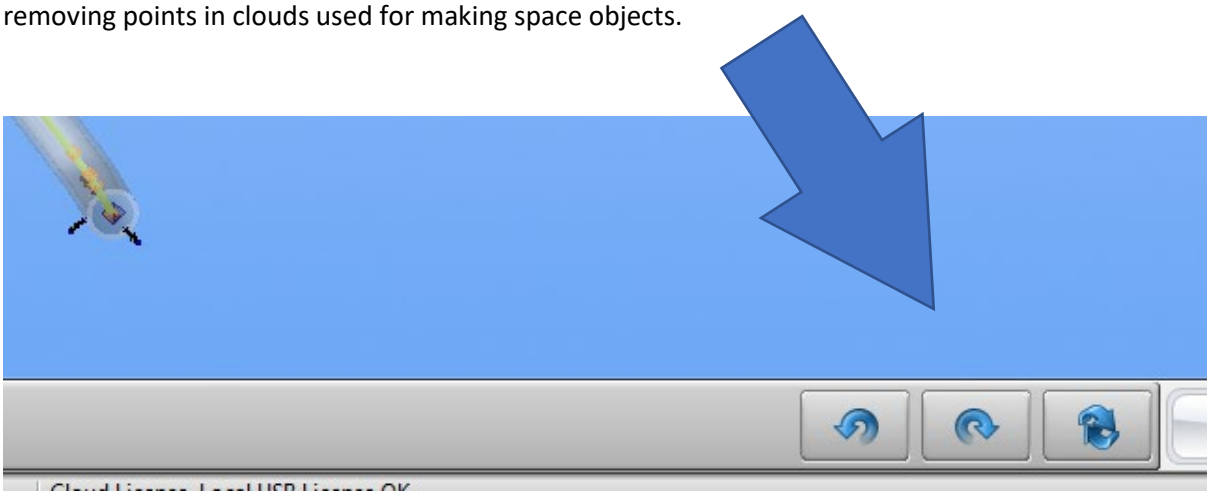
Because of the laser CUT PLANE and LEAPFROG capabilities, users no longer need to use probes on the Kreon ScanArms.

We are happy to report that the user-friendliness of this arm, along with its high scanning quality, make this system an excellent choice.

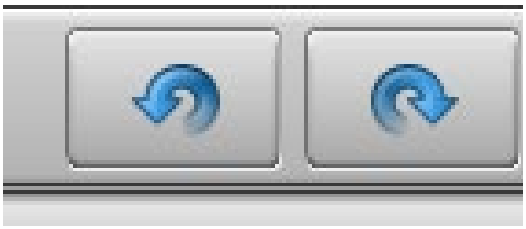
Version 4 - Build 1050, September 29, 2022

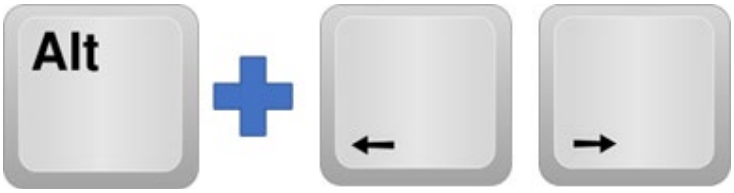
New View Rotation Buttons and Shortcuts Added

The ability to quickly roll the viewport clockwise and counter-clockwise is very helpful for selecting and removing points in clouds used for making space objects.



The **roll left/right** buttons can also be used with **Alt+Left** or **Alt+Right** *keys* for quickly repeating the rotation.

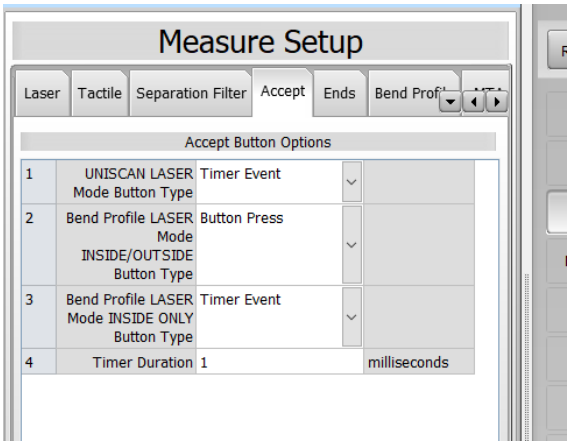




The **two-arrow** button on the far right is the **Orbit Invert** button, which can invert the viewport vector – which allows you to see the tube from the other side.

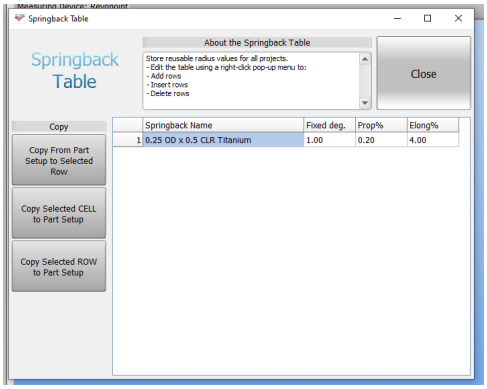
Version 4 - Build 1048, September 28, 2022

Accept Button Timer Issue Fixed – The timer value could be set to 0 milliseconds – which turns OFF the timer entirely. The new minimum timer value is 1 millisecond.

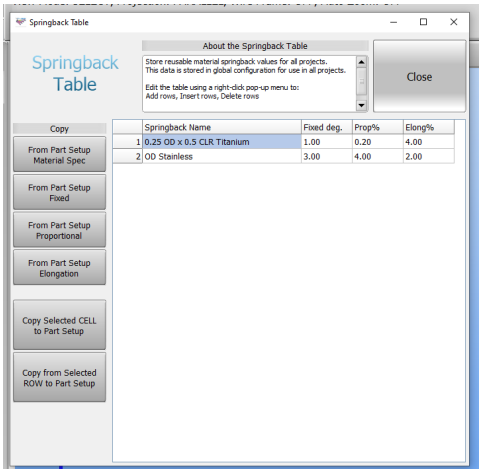


The Springback Table was Improved – The new Springback table allows for better control of incoming data.

This is the original table:

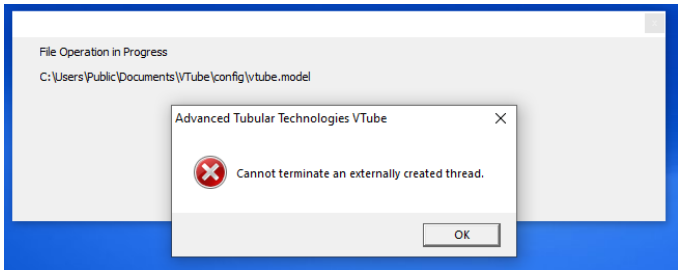


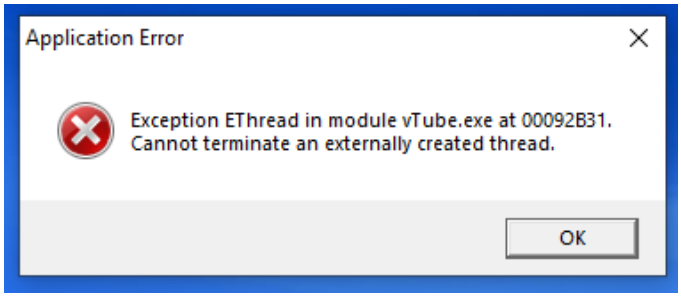
This is the new table:



Version 4 - Build 1047, September 23, 2022

Timer Issue Fixed – A timer issue that would cause error messages at shutdown was fixed in this revision. These are the type of messages that would could display.



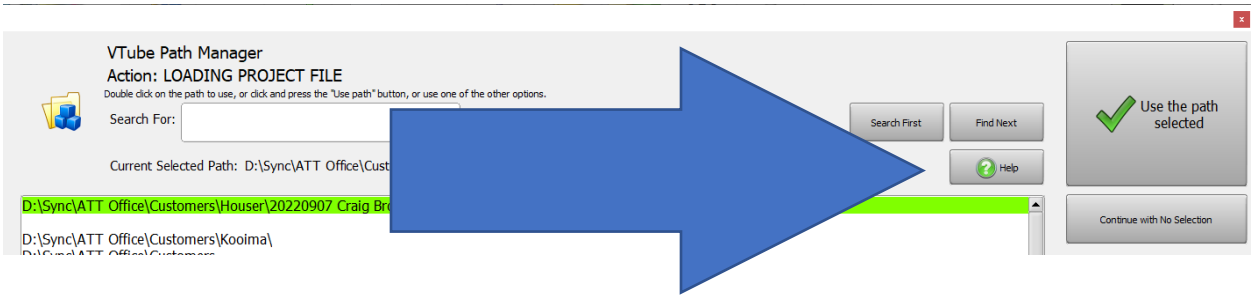


Much Faster Shutdown – A positive side-effect of the change is that both VTube-STEP and VTube-LASER now shut down much faster than previous versions.

Version 4 - Build 1045, September 21, 2022

Path Manager Change: Press the Enter Key – VTube now allows users to select the path in the Path Manager and press the enter key to press the “Use the path selected” button.

Path Manager Change: Video Help – VTube now includes a video help button that loads a video to show how the Path Manager works.

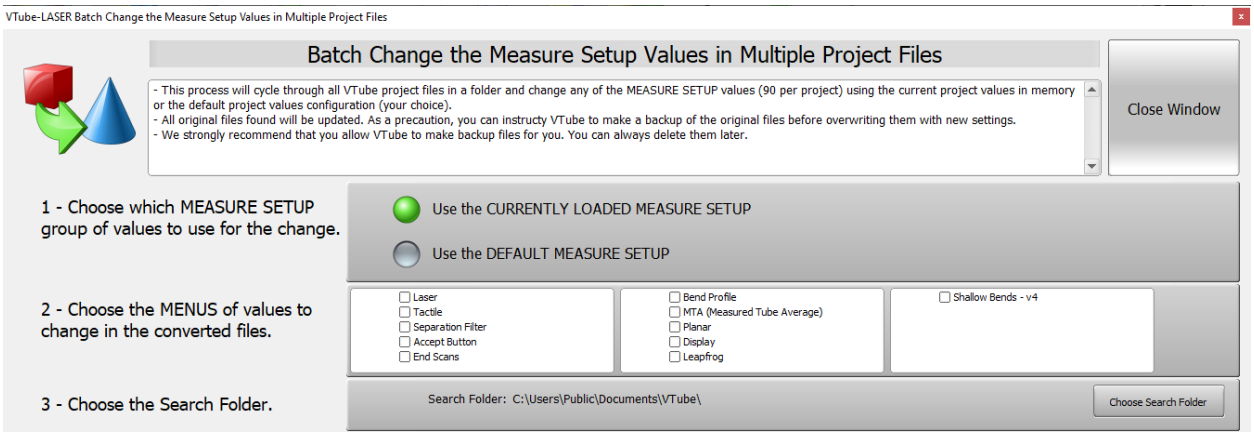


Version 4 - Build 1044, September 20, 2022

- **Revopoint POP 2 OBJ Cloud File Import Added** – We added the capability of importing point clouds from Revopoint POP 2 hand scanners. The new feature is in the Point Cloud Manager, File tab.

Version 4 - Build 1043, September 20, 2022

- **New Measure Setup Batch Change Sections Added** – Version 4 added both Leapfrog and Shallow Bend option sections to the user interface. All the new values are now able to be updated in batch mode in the Batch Change menu in System Options / Project Setup.



- **USB Key (Dongle) Requirement Removed for Demo Versions** – Demo versions of VTube are written for sales team use. These versions check in with the license server through the internet at least once a month. We have removed the USB key requirement for this type of license. Therefore, we will no longer be shipping USB keys to our sales team members.

Version 4 - Initial Release of Version 4 – Build 1040, September 14, 2022

- **VTube-LASER Space Objects** – This is a major addition to VTube that allows for measuring planes and holes in a tube shape and reporting on values calculated between holes, planes, and tube geometry. (See the screen image above.)

- **VTube-LASER Shallow Bend Logic** – This new logic allows VTube-LASER to find the center of shallow bends more accurately. For backward compatibility, this logic is turned off by default but can be turned on at any time. The default shallow bend angle starts at 5 degrees – but can also be adjusted. See Measure Setup/Shallow Bend menu.

- **VTube-LASER Laser Cut Planes and Leapfrog** – This logic allows users to use the laser scanner for all operations. There is no need to use the ball probe to measure cut planes or leapfrog.

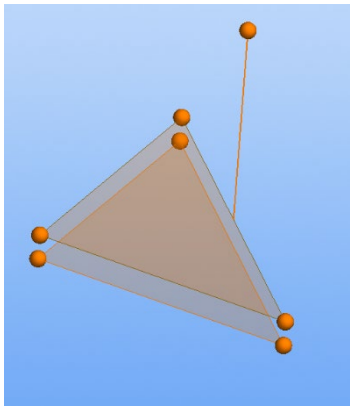
- **VTube-STEP Improved Import Accuracy**– This logic improved the accuracy of model imports significantly. This allows for more accurate centerline placement.

- VTube-LASER has added CSM M3 Bender Corrections

- VTube now automatically keeps up to 50 backups of the global configuration file.

- VTube has many new report tokens added that allow for more reports – like a Laservision report.

- VTube-LASER point cloud handling has changed to allow 100,000s of points rather than the old 20,000 points.



- VTube now draws an offset plane model in Cut Planes when the offset is not equal to zero.

- VTube can create Cut Planes from Plane Space Objects.

- VTube now shows Unicode characters properly in reports. (This allows for Asian language characters in VTube reports.)

- VTube now shows real-time bend angle feedback in the DRO (Digital Readout). As you measure through a part, it will always show the latest bend angle measured.