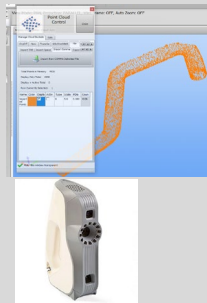


4 - VTube now has **better error feedback when measuring Bend Profiles**. If an error occurs, then VTube-LASER will now display the log and post the detailed errors and steps for the user to take next.

5 - **For the Point Cloud Arm type**, where a point cloud is scanned during a measure process, **VTube-LASER no longer performs automatic "Zoom All" in the view port**. It is better to let the user refresh and zoom all if that is the intended action. Otherwise, the viewport stays still until the user presses F3, or the Zoom All buttons.

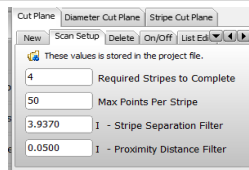
927 7/1/2022 18:33 Point Cloud Control Import Updates

- 1 - Now VTube can import Tab, Space, or Comma delimited point cloud files from scanners like Creaform GoSCAN 3D or Artec.
- 2 - Import surface IJK vectors for use with the new Space Objects command (to be released with version 4 of VTube-LASER).
- 3 - Automatically split points into multiple buckets based on the Maximum Points per Bucket value in Scanner Setup.
- 4 - Now use the Point Cloud Scan Setup proximity filter to control how dense the point cloud is at import.
- 5 - The Point Cloud Control user interface was enhanced to include more icons in buttons, and better spacing in button and grid components.



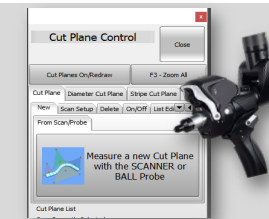
925 7/1/2022 15:39 CUT PLANE SCANNER SETUP USER INTERFACE

- We fixed the way the Scanner Setup values are entered and edited in the Cut Plane control.
- The minimum LASER separation distance was reduced from 10 mm down to 1 mm.
- A new Project icon and note at the top of the Scanner Setup menu explains that these values are stored in the project file.



924 6/30/2022 19:12 CUSTOMER RELEASE - The Ball Probe is NO LONGER Required For Measuring Cut Planes

- 1- **CUT PLANE SCANNING ALLOWED:** Because **Cut Planes can now be scanned in using the laser scanner**, it is not longer necessary to have the ball probe installed when using VTube-LASER. (Previous versions required that the ball probe be used.)
- 2- **REWRITE OF POINT CLOUD SCANNING:** The **Point Cloud scanning control has been redeveloped** to allow for many more points than previous versions of VTube-LASER. Using two types of points - "Displayed" and "Displayed Active", VTube can display over 100,000 points easily.
- 3- **NEW LASERVISION LEGACY REPORT**
We've included a Tube Inspection - LaserVision report template for VTube-LASER. To allow for this template, VTube has several new report tokens to allow these variables: EndADiameter, EndBDiameter, EndA_Tol1, EndB_Tol2, BenderNumber, BenderName, and AlignmentStyle.



VTube REPORT LaserVision Inspection				
Report Date: 6/30/2022 4:10:00 PM				
Linear Unit: Millimeters				
Qualification Style: Yungwong Manual				
Part: Handle Bar Test				
Comments: 1 - 8.800% B2D 2022/06/30 16:29:17				
Bender: 1 - BMT CNC Bender				
Alignment Method: Best Fit Alignment 3				
Mean End-End: 824.55 SD: -0.06				
End	Length	Angle	End Offset	
A	-0.48	0.2	0.17	
B	0.20	0.0	0.15	



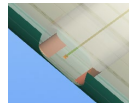
4 - **VTube-STEP Now Imports DEFAULT TOLERANCE with LASERVISION PRT IMPORTS**

VTube-STEP now imports LaserVision PRT files (single file or batch mode) and automatically sets the default tolerance for each project file based on the incoming data.

5 - **UPDATE TO SMI CORRECTION PROTOCOL**
We made enhancements to the SMI TXT Corrections protocol so that it uses the RECALL part name during a AUTO SEND.



6 - **VTube-STEP RECTANGULAR COLLECTION IMPORT ENHANCED**
The rectangular import was enhanced so that multiple patches of corners could be collected in a single straight. This allows for rectangular through-hole import in VTube-STEP.



7 - **MORE KREON INITIALIZATION MESSAGES ARE ADDED**
More messages are shown in the Kreon Connection log when connecting to the Kreon server. This helps diagnose issues with connections to the Kreon driver.



778 5/2/2022 13:22 CUSTOMER RELEASE - VTube-STEP Tubecal Import Enhancements

This update impacts users that import legacy TubeCalc files. (TubeCalc is a program that we retired several years ago.)

1 - **PART NAME and PART NUMBER**
The TubeCalc **Part Name** and **Part Number** values are now correctly imported to VTube-STEP.

2 - **Tube Elongation % Conversion**
VTube-STEP now automatically converts the TubeCalc "Elongation Per Degree" to the VTube-STEP "Tube Elongation %" value during import. (Note this does not automatically recalculate the Cut Length.)

Other

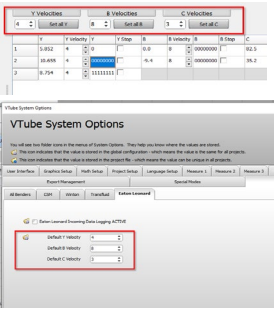
1 - **Path Manager Index Error**
The Path Manager no longer throws a random index error when it displays.

Part Setup			
Main	Notes List		
1	Variable Name	Value	
2	Part Number	3984998	
3	Part Name	STEVENS	
4	Comment 1		
5	Comment 2		
6	Customer		
7	Supplier		
8	Revision		
36	A-End Solid Model Offset	0.000	inches
37	B-End Solid Model Offset	0.000	inches
38	Tube Elongation %	3.44	%
39	Fixed Springback	0.00	deg
40	Proportional Springback	0.00	%
41	Proportional Springback	0.00	%

773 4/29/2022 18:58 CUSTOMER RELEASE - VTube-LASER Eaton Leonard Data Window Enhancements

This update impacts users that connect to and correct legacy Eaton Leonard benders using VTube-LASER. These are the enhancements:

- 1 - VTube-LASER now stores default YBC velocity values that can be changed by the user.
- 2 - The YBC velocity values in the EL data window can be reset to the default by users with a series of new controls at the top of the YBC grid.
- 3 - This version fixes a problem where C bend values and C velocity values could not be input in this grid. Now they can be input there.
- 4 - The default velocity values can be preset inside System Options/Options/Bender/EL tab menu as a global configuration setup.

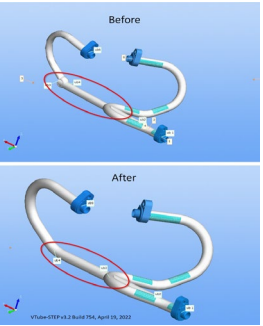


757 4/22/2022 20:21 CUSTOMER RELEASE - VTube-STEP Supervision Improvements Enhancements

This is update handles incoming SV data with straights that are negative or too short. If a length is found that is less than zero during import, then VTube-STEP will allow the user to choose if the value should be made non-zero.

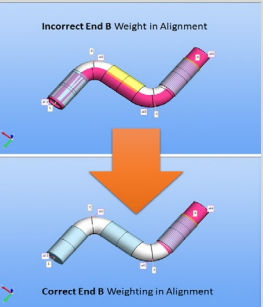
754 4/19/2022 19:00 CUSTOMER RELEASE - VTube-STEP Unbending Enhancement

Unbending parts with large bend angle values could cause deformations. This issue was fixed in this release.



750 4/14/2022 14:51 CUSTOMER RELEASE - Alignment Fix

- 1 - **ALIGNMENT FIX** - We fixed an alignment issue where raw End B points were allowed to incorrectly influence the alignment. This has been repaired in this version.
- 2 - **PATH MANAGER FIX** - The Path Manager search feature would not find and select the resulting found paths in the list. This has been repaired in this version.



744 4/13/2022 10:39 CUSTOMER RELEASE - KREON Connect Changes

- 1 - A bug in the Kreon scanner idle algorithm was repaired so that the scanner comes out of idle mode when the user moves the arm.
- 2 - The Kreon timer for the scanner idle mode was reduced to 10 seconds. After 10 seconds, the scanner will enter idle mode and turn the scanner off to keep it cool.



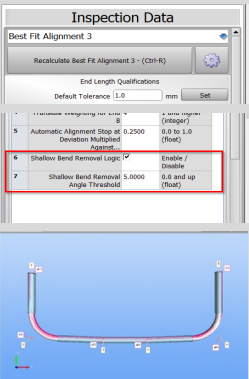
714 3/31/2022 14:25 CUSTOMER RELEASE

BEST FIT ALIGNMENT for SHALLOW BENDS

- 1 - This build has an important **new shallow bend handling logic** for all Best Fit alignments.
- 2 - The new shallow bend logic **removes shallow bends from influencing best fit alignment translations**. The effect is significantly improved alignments based on giving larger bend angles emphasis in the alignment.
- 3 - The feature can be turned ON or OFF in the Alignment Setup menu for Best Fit. **(The default setting is ON.)**
- 4 - The feature allows you to define what a shallow bend is in degrees. **(The default shallow bend is less than 5 degrees.)**

OTHER CHANGES

- A random shutdown bomb issue was resolved in VTube.
- A significant memory leak was repaired for **Straight from Torus** collection calculations in VTube-STEP. (If you build tubes from models with bend on bend geometry, then this update is important for you.)
- VTube-LASER now saves changes to the global configuration file when exiting the Measuring Device menu.
- Minor changes were made to the Kreon Connect window for additional utility - like a new "Show Scanner Matrix" button.



699 3/14/2022 20:50 CUSTOMER RELEASE - IMPROVEMENTS for the KREON CONNECTION

This build has several fixes and updates to the connection logic for the Kreon arm.

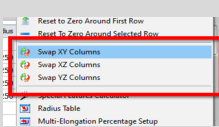
- 1 - The laser standby mode is enhanced so that it works better.
- 2 - The standby mode is now activated after 30 seconds of no motion (rather than 10 seconds).
- 3 - The commas in the DRO are replaced with spaces for better appearance with floating point numbers that use commas rather than decimals.
- 4 - The VTube-LASER window becomes invisible when the Kreon Connect window to make its use easier. (On single-screen systems, the VTL screen could try to come to the top - which made the Kreon windows disappear.)
- 5 - The Video Setup window is now always brought to the top when loaded.
- 6 - The Kreon Connect window will no longer close unless the Kreon Positioning window is also closed.



697 3/7/2022 14:36 CUSTOMER RELEASE - NEW XYZ COLUMN SWAP

We added XYZ grid new popup menu commands to allow users to swap any two columns in an XYZ grid in VTube-STEP and VTube-LASER.

This allows for alignment of XYZ data when model imports do not agree with the axis data in prints.



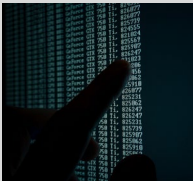
696 3/7/2022 10:00 CUSTOMER RELEASE - INTERNAL FIXES for KREON CONNECTION

This build has several important fixes and updates to the connection logic for the Kreon arm.



695 3/1/2022 14:02 CUSTOMER RELEASE - INTERNAL FIXES

- 1 - We implemented advanced tools to search for and fixed memory leaks. Several memory leaks were repaired.
- 2 - We enhanced the Kreon connection in multiple places. For example, we improved the Kreon Connect window with new features to aid in Keon scanner positioning tasks.
- 3 - We improved VTube shutdown process. VTube-LASER and VTube-STEP now close faster.



694 2/24/2022 11:49 CUSTOMER RELEASE - SOCO-M BENDER CORRECTION

SOCO-M BENDER CORRECTION FILE OUTPUT FIX
We removed some data elements in VTube-LASER exported SOCO-M files that would stop SOCO Mitsubishi file imports.

The SOCO-M can now import these files without manual modification.



693 2/23/2022 18:40 CUSTOMER RELEASE - KREON SCAN ARM SUPPORT

NEW - KREON LASER STANDBY MODE

We added the Kreon laser standby mode to turn the laser off in a standby when it is not being used for more than 10 seconds. This mode will keep the scanner from overheating and will protect it from automatic shutdown.



692 2/15/2022 15:43 CUSTOMER RELEASE - KREON SCAN ARM SUPPORT

NEW SUPPORT for KREON SCAN ARMS

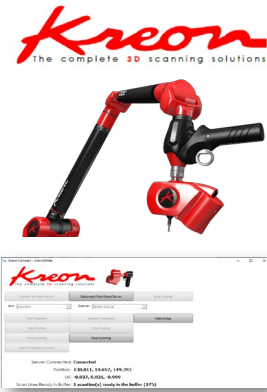
With the help of Kreon technicians, we integrated Kreon scan arms into VTube-LASER with this build. You can scan or probe with these Kreon arms in VTube-LASER.

The arm model that we used for testing is a 3.5 meter Kreon ACE arm with a Solano Blue scanner. Our tests show that this arm and scanner are very capable - not only with good accuracy, but also when scanning highly-reflective parts.

After the initial Kreon driver setup, the connection to this scanner is simple and reliable - by pressing the green LED in the VTube-LASER toolbar.

NEW KREON CONNECT - ARM UTILITIES WINDOW

We've also added the new Kreon Connect - Arm Utilities window that allows you to control the Kreon server connection, enter the scanner Video Settings window, and align scanners to the arm using the Kreon Positioning window.



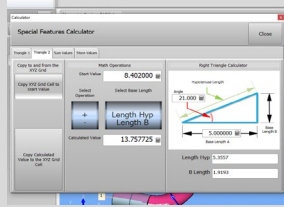
Triangle 1 calculator was already in VTube's Special Feature Calculator. It uses a *corner angle* and *hypotenuse* of a right triangle to calculate the two base lengths.

We added a new **Triangle 2** calculator that calculates the *hypotenuse* and *opposite base* of a right triangle given a corner angle and an adjacent base.

These calculators are useful for finding the centerline of prints that build up the centerline from angles rather than X,Y coordinates.

Adding Triangle 2 adds flexibility for older prints that don't even show the hypotenuse length.

HOW TO LOAD: To start this calculator, right click on one of the XYZ grids in VTube, and choose the Special Features Calculator from the popup menu. Click on either the Triangle 1 or Triangle 2 tabs.



1 - We enhanced the FARO arm connection process to help remove the FARO RPC (Remote Procedural Call) Server busy errors - while allowing for more consistent first-time connections.

- New global config file values in the [Measuring Device] section control if the FARO connect server is connected to twice every time it connects, and if so, the delay between disconnect and reconnect.

- This helps VTube to connect to the FARO driver the first time without having to reconnect manually.

- If the feature is turned off, then VTube-LASER connects to the FARO arm exactly like it did in previous versions (with a single connection).



2 - We enhanced the scanning sound so that it no longer pops every 2.5 seconds.

- Now the default sound continues to scan smoothly when you are scanning for up to 25 seconds before looping to start the sound again.

- A new Sound Loop Timer interval value is included in a new [Sound] section in the global config file. This allows control for how long VTube will allow a sound to play before looping. The new default is 25000 ms (25 seconds).

- A new Scanning Sound Base Filename variable is also added in the same section. It allows you to specify the sound wav file that you want to use for scanning.

3 - Fixed toolbar UI repaint issues in VTube-STEP and VTube-LASER.

1 - New Tangent Deviation Report Style in Tube Data Storage
A new style of output for tangent deviations was requested and added. The new style puts all tangent deviations for a each part in one row. This works best with statistical programs like Minitab.

TANGENT Deviations in Single Row Format											
2-T1	3-HP	2-T2	2-T1	2-HP	2-T2	2-T1	3-HP	3-T2	4-T1	4	
0.6	0.5	0.5	0.5	0.5	0.5	0.3	0.2	0.1	0.1	0	

2 - New Inline Bend Profile Error Reporting

If you measure Bend Profiles inline with the straights then VTube will now report if a bend profile did not measure well enough after you measure the straight that follows the bend just measured. The error window does not stop measuring - it just allows you to backup and remeasure the straight before the bend profile, the bend profile and the straight following the bend profile.

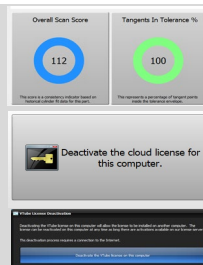
1 - ARC GAUGE DRAWING FIX

The **ARC GAUGES** could show ellipses (dots) when the scores and percentages were 1000 or greater. This has been resolved so that high scores now show the numeric value without the ellipses.

2 - NEW LICENSE DEACTIVATION TOOL

We provide a limited number of computer license activations per customer. Once that limit is reached, then no additional computer installations can be activated.

To overcome this limit, you can now deactivate a license on any computer using a new button in the System Options / License menu. Then you will be allowed to activate a license on a new computer.

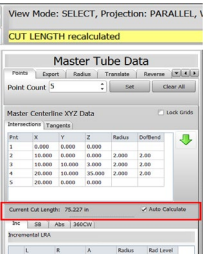


Our team received feedback that it would be helpful if the static Cut Length in the Part Setup menu could be updated automatically when the XYZ centerline coordinates were entered.

So, we added the new Auto Calculate feature in both VTube-STEP and VTube-LASER MASTER XYZ grids so that you can always know that the Cut Length is synchronized with the XYZ data.

This is how it works:

- 1 - With the Auto Calculate switch on, the Cut Length is recalculated whenever a number in the grid changes.
- 2 - When you turn Auto Calculate on the first time it also calculates the Cut Length immediately.
- 3 - VTube now also report the current Cut Length at the bottom of the MASTER XYZ grids.
- 4 - When the Cut Length is recalculated, VTube reports the event in the yellow status header at the top of viewport.



We discovered that IJK vectors calculated were the opposite direction for RS5 than they are for the RS6 and AS1 scanners. This software build has enhanced logic that automatically recognizes and adjusts for this difference based on the scanner being used.

The IJK vector is used to calculate the DCP (Diameter Cut Plane), which trims laser points from the tails of the laser line to allow VTube-LASER to focus only on the tube diameter. If the IJK vector is the opposite of what it should be, then the DCP laser line length could be half of what it should be. This could make calculating cylinders harder for VTube-LASER than is necessary.

For customers that use the DCP with HEXAGON scan arms, we strongly recommend that you upgrade to this software build.



The MES File Handling for 180-Degree Bends is Fixed.

The MES file format is used to make corrections to the WAFIOS and HERBER benders now allows output that can include bend angles equal to or greater than 180-degrees using the VTube-LASER SPLIT BEND logic.

Split bends allow for 180-degree bends to be measured and corrected at the bender that receives MES files.

The HERBER Bender Protocol Logo Was Changed.

The bender logo for HERBER now shows the MES+SOL words in the protocol name.

The MES File Header Language is Now Configurable.

The MES file output HEADER is now stored in the language file so that it can be changed to any language.



A new CLOUD ARM allows for importing point clouds and measuring of tubes from point clouds. This allows for hand held scanners to be used with VTube-LASER.

The WAFIOS MES+SOL protocol is added. This protocol can send SOL for new data and MES for correction data to WAFIOS benders.

- The protocol is available in the Benderlink setup grid as a new protocol.

- The protocol is used inside Bender Setup in VTube-LASER.

- Sending new data to the bender in SETUP BENDER creates a SOL file for new bender setups.

- Sending CORRECTION data in the BENDER CORRECTION section builds a MES correction data file.

DIAMETER CUT PLANE LOGIC UPDATE for HEXAGON Scan Arms

- We fixed a subtle bug in the DCP (Diameter Cut Plane) logic for connection to HEXAGON scan arms. If you use DCP and HEXAGON arms with RS6 or AS1 scanners, then this update is especially important for you. It will ensure that the DCP does not cut away too much laser length.

FARO CONNECTION IMPROVEMENT

- We fixed a problem that required FARO users to double connect to the get feedback from the FARO arm. The new logic ensures that the FARO will connect the first time you click on the LED if the FARO arm is present.

63810/16/2021 14:55CUSTOMER RELEASE - NEW EMBEDDED PDF REPORT DRIVERPART 1 of 2

NEW EMBEDDED PDF REPORT DRIVER

VTube (both STEP and LASER) now uses a new embedded PDF creator that exports reports to PDF files without using external PDF drivers.

- The new feature is found inside the Report window in a tab called "Export to PDF".
- The PDF files can be created with a PDF setup dialog that allows for advanced PDF creation settings if you enable that option.
- The PDF files can be automatically displayed in a PDF viewer after creation if you enable that option.
- The report PDF feature can use the Path Manager to select the path for the PDF output if you want it to.
- If you do not use the Path Manager, then VTube will automatically configure the Save As dialog with the current project folder used to save the project file.
- VTube will also suggest the current project file name with "PDF" as the filename extension.

63810/16/2021 14:55CUSTOMER RELEASE - NEW PDF REPORT AUTO SAVEPART 2 of 2

NEW PDF REPORT AUTO SAVE

VTube can now also be configured to auto save a parallel PDF report project file when VTube project files are saved.

- The auto save feature is configured in System Options in a new tab menu named "PDF".
- Inside the PDF menu there are four options. They include a switch to turn the option on or off, the report template name to use for creating the report, a "show PDF setup dialog" option, and an "open after create" option. The options are global - which means they apply to all projects.
- The auto save feature is OFF by default to avoid confusing operators that don't expect it.

63610/14/2021 19:59CUSTOMER RELEASE - SMI BENDER CORRECTIONS ADDED

1 - Added SMI Bender Corrections: Since there are now customers that want to correct SMI benders, we added full SMI bender corrections in VTube-LASER Bender Setup in this build.

2 - VTube-LASER Communications Windows Are Improved: Rather than showing a generic bender control images in the bender communications windows, we've changed the images to show the specific bender protocol image when bender communications occur in both the **SEND** and **RECALL** windows.

3 - VTube-STEP Communications Windows Are Improved: Rather than showing a generic bender control images in the bender communications windows, we've changed the images to show the specific bender protocol image when bender communications occur in the **SEND** windows.

63210/7/2021 22:15CUSTOMER RELEASE - SPEED and MEMORY IMPROVEMENTS

- 1 - The VTube-STEP speed for handling the import of adjacent bends from a Collected Feature was increased significantly. A 10 minute calculation in previous versions now requires only 8 seconds.
- 2 - A slight speed improvement in import speed is also present in other geometry like cylinders.
- 3 - A VTube-LASER bug in the calculation of the Scan Score on the first straight was fixed.
- 4 - The VTube-LASER Cylinder Fit History list is now limited to 1000 straights of data to save memory. (This list is used to generate the Scan Score. 1000 straights is enough data to give an accurate scan score.)
- 5 - A VTube-LASER looping sound issue would occur sometimes after measuring straight one if the end scan filer filter was also on. We believe that this has been fixed.
- 6 - To conserve on memory usage, the Tube Data Storage database length is now limited by default to 150 rows of data. When Tube Data Storage exceeds 150 rows, then VTube-LASER automatically creates a backup of the current project file with the Tube Data Storage, then trims the Tube Data Storage to 5 rows. This feature can be turned on or off. The threshold for when the trim occurs can be increased or decreased by changing the values in the global parameters configuration file.

63110/5/2021 0:00CUSTOMER RELEASE - Spheres from Tactile Measurement

- 1 - We enhanced the logic and fixed a bug for calculating spheres from ball probed points.

63010/4/2021 20:14CUSTOMER RELEASE - SEVERAL NEW FEATURES - INCLUDING FARO QUANTUM MAX COMPATIBILITY - PART 1 of 2

- 1 - VTube-LASER is now compatible with FARO driver 6.9.12 that is required for the FARO MAX systems.
- 2 - VTube-LASER now has a Rad Level column in the Master LRA grid. This is important for use in benders that require bend levels in communications.
- 3 - VTube-LASER Bender Setup now has a Material Spec field for the sending a new part to BendPro controls.
- 4 - VTube-LASER now includes the Material Spec in all Supravision files.
- 5 - VTube now inputs and outputs radius levels to and from Supravision file CLRA data.
- 6 - The sphere calculation routine was enhanced so that it can use a filer filter to remove filer points.
- 7 - The sphere calculation routine can now use ball probe measured points.
- 8 - The rows in the Path Manager can be color coded.
- 9 - The rows in the Path Manager can be multi-selected.
- 10 - VTube-LASER has added programmable scanning interval timer values for FARO and HEXAGON arms. This allows for adjustment to scanning speeds for computers with differing performance capabilities. These new values are in the global configuration file in the MEASURING DEVICE section. These are especially important for the new FARO drivers - which are faster than older FARO drivers.

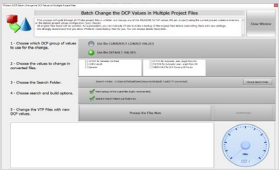
63010/4/2021 20:14

CUSTOMER RELEASE - SEVERAL NEW FEATURES - PART 2 of 2

11 - The BATCH CHANGE commands were redesigned to allow you to search and change all files in all sub-folders to inside the selected folder.

12 - Now the BATCH CHANGE can make backups of the original files as they are being changed.

13 - Because they can make backups, the BATCH CHANGE commands no longer use a separate output folder when converting files.



6159/31/2021 16:33

CUSTOMER RELEASE - MAJOR NEW FEATURES For END SCANNING and OOR Calculation

1 - NEW - MEASURE END CUT ANGLES

VTube-LASER now measures and report the angle of the cut on the end of a tube.

2 - NEW - END TRIM PROFILE FLIER FILTERS

We added the End Scan Filter Filters to the End Trim Profile method. This ensures that the end scans are consistently finding the end walls.

The end scan reports include pass/fail information based on the filer filter.

Operators can turn the end scan filer filters on or off in Measure Setup, then click on the End Trim Profile Log to instantly recalculate the new end metrics with or without the filer filters.

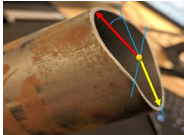
3 - NEW - Real-time Out-of-Round Calculator

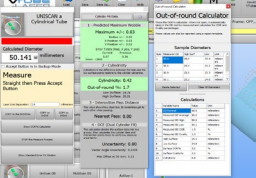
The new real-time OOR calculator uses multiple scans around any single cylinder straight to calculate OOR%, Ovality%, and Cylindricity using the entire cylinder.

4 - Debug: Bugs were fixed in the original VTube-LASER End Trim Profile logic.

End B

Total Points Scanned: 2435
Filer Filter ON - Required Points Per Cloud: 5
End B Offset 1: 2.20
End B Offset 2: 2.13
End B Offset 3: 4.63
End B Offset 4: 2.29
End B End Trim Total Span: 8.89
End B End Trim Angle: 19.2022 deg from perp to axis





6088/25/2021 17:23

CUSTOMER RELEASE - CONFIGURATION RESTORE FIX

1 - VTube CONFIGURATION RESTORE FIX

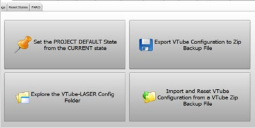
The CONFIGURATION RESTORE feature now properly loads all data from the backup file in the System Option window.

2 - PROJECT SETUP TAB MENU is REORGANIZED

The VTube Project Setup tab menu has been reorganized to make it easier and more logical to use.

3 - BETTER HANDLING OF ZERO LENGTH STRAIGHTS DURING IMPORT and MODEL REDRAW

During the parametric build from the Collect Control data, VTube-STEP now allows for a tube model OD redraw of straights that are exactly zero length in straight.



6068/21/2021 16:27

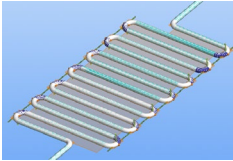
CUSTOMER RELEASE - Build 606 - PART 1 of 2

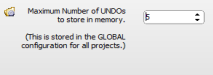
1 - SIGNIFICANT MEMORY USE REDUCTION IN PARAMETRIC REBUILDS

VTube-STEP memory usage for Autobuild has always been very efficient - but rebuilding from manually collected features would require much more memory. For parts with a lot of split bends (like 20 x 180-degree bends in a serpentine part), this could cause VTube to run out of memory during rebuilding the centerline. This new version has carefully rewritten algorithms that use model memory much more efficiently during parametric building of parts from collected features.

2 - NEW CONFIGURE the MAX UNDO COUNT

VTube now allows users to configure the number of UNDOs VTube stores in memory in your installation. This can be used to reduce memory use required by VTube especially for very large VTube projects that can store huge amounts of data for every change. This new value is configured in the System Options, Project Level Lists tab menu.





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CUSTOMER RELEASE - Build 606 - PART 2 of 2

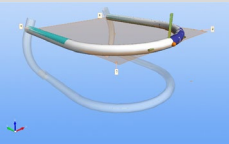
3 - SPLIT BEND MODEL DRAWING IMPROVEMENTS

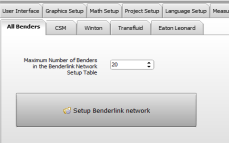
The VTube-STEP Split Bend models are now deleted automatically during the parametric rebuild of the centerline from collected features. This removes unnecessary duplicate split bend models from the interface - saving time and memory.

4 - USER INTERFACE IMPROVEMENTS

- Change 1: When the Collection Control floating window becomes the active form, then VTube-STEP now automatically switches the main VTube menu to Collected Features with the collection list. This allows users to see both the Collection Control floating window and the list of collected features at the same time instantly.

- Change 2: All System Option tab menus that refer to bender configurations have been moved into a single Benders tab menu with its own tab menus in order to reduce the number tab menus in the main System Options interface.





602 8/19/2021 17:05 CUSTOMER RELEASE - VTUBE-STEP BENDER OUTPUT MENU IMPROVEMENTS

1 - NEW BENDER IMAGES in the BENDER OUTPUT MENU

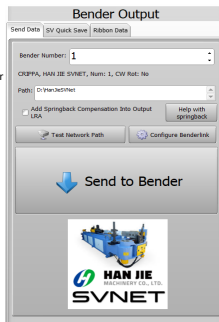
The VTube-STEP Bender Output menu was improved by adding a large picture of the current bender protocol assigned to each bender number. This makes knowing which bender to which the operator is sending sending new data much easier to identify quickly.

2 - NEW "CONFIGURE BENDERLINK" BUTTON in the BENDER OUTPUT MENU

A new button is added which lets users enter the Benderlink configuration grid from the Bender Output menu. This new button can be protected using UAC (user access control) so that only authorized users can enter the Benderlink configuration grid and make changes. (Enable UAC and also the "Control System Options" switch in the System Options UAC menu.)

3 - UPDATED HAN JIE SVNET OUTPUT DATA FORMAT for CORRECT NEW PART TRANSFER

The Han Jie SVNET protocol was improved in VTube-STEP to include master LRA data in the data transmission that Han Jie requires to establish the nominal data in their control for new parts.

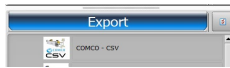


600 8/18/2021 17:19 CUSTOMER RELEASE - CRIPPA SVNET ADDED to VTUBE-STEP

1 - CRIPPA SVNET output is now allowed from the Bender Output menu in VTube-STEP.



599 8/13/2021 11:09 CUSTOMER RELEASE - NEW COMCO CSV EXPORT from VTUBE-STEP
1 - NEW COMCO EXPORT: VTube-STEP can now export COMCO CSV files. The export process requires two steps. First, import a CSV template file, then merge and export a new CSV file.



596 8/12/2021 14:45 CUSTOMER RELEASE - RARE UNISCAN MEASURE ERROR HANDLING ISSUE FIXED

1 - RARE UNISCAN BUG FIXED: Under a rare circumstance a UniScan measure error would cause VTube-LASER to move back one step too far for a remeasure. The bug would usually only occur when an operator measured the wrong straight. This bug has been fixed.

2 - MAXIMUM BENDER COUNT LOAD: The Maximum Bender count value in System Options/Global Lists was stored to the global config file, but never recalled when VTube was loading. This bug has been fixed.



594 8/6/2021 23:17 CUSTOMER RELEASE - UAC (USER ACCESS MODE) FIXES AND IMPROVEMENTS

1 - VTube no longer has conflicts between UAC modes, so the warning check in the previous build is removed.
2 - VTube no longer displays the Password window when an operator requests a tube measure from the simplified Operator Screen.
3 - VTube now automatically disables the STRAIGHT COUNT spin edit in the Setup for Tube Measure window when UAC is active and the mode is "operator" and that screen is also protected from change. For "technician" mode, the spin edit enables.

Note: These changes only impact customers that use UAC (User Access Control) in VTube.

593 8/6/2021 0:00 CUSTOMER RELEASE - UAC SETTINGS CONFLICT WARNING DIALOG

1 - VTube now checks for potential conflicts in the low level UAC setup and then warns technicians to correct them before continuing in System Options.
Note: This change only impacts customers that use UAC (User Access Control) in VTube.



592 8/4/2021 12:32 CUSTOMER RELEASE - UI IMPROVEMENTS

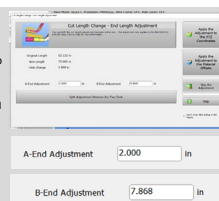
1 - VTube now redraws the top tool bar properly when changing between VTube-LASER and VTube-STEP.
2 - We changed the CUT LENGTH CHANGE - END LENGTH ADJUST terminology to the easier "END LENGTH SHIFT TOOL" and it is part of the CUT LENGTH AUTOMATION logic.



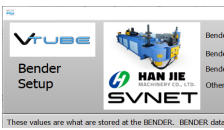
591 7/30/2021 15:18 CUSTOMER RELEASE - NEW CUT LENGTH CHANGE - END LENGTH ADJUSTMENT DIALOG

1 - NEW DIALOG: The new Cut Length Change - End Length Adjustment dialog will display when the Cut Length in the Part Setup menu is edited manually. It then allows you to shift the cut length change to either end or split it between ends.
2 - NEW GLOBAL SWITCH FOR CUT LENGTH CHANGE - END LENGTH ADJUST: The new dialog can be turned off globally for all projects if you don't want to use it. Check the "Don't show this dialog again" checkbox in the new window if you don't want to use this new length adjustment feature. Turn it back on at any time by going to the Special Modes tab in System Options and enabling that option.

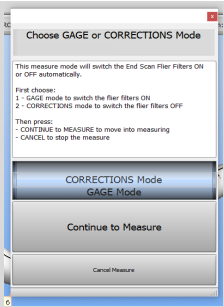
3 - FIXED ABS LRA BUG: We fixed a minor bug in the Absolute LRA menu where the LRA data was not recalculated when the Cut Length was changed manually.



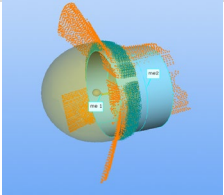
582 7/28/2021 18:25 **CUSTOMER RELEASE - Han Jie SVNET Protocol Released**
1 - The Han Jie SVNET protocol is now fully tested and working in VTube-LASER and officially released in this build.



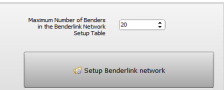
578 7/28/2021 10:55 **Customer Release - Added New Measure Mode Requested By an Automotive Exhaust Supplier**
1 - **NEW:** VTube-LASER now includes a special **Gage or Corrections Mode Selection dialog** that was added at the request of a customer. The dialog asks operators that are running in the user access controlled "Technician" mode if they intend to measure the part in GAGE mode or in BENDER CORRECTIONS mode. Choosing GAGE mode will switch the End Scan Filter Filters ON. Choosing BENDER CORRECTIONS mode will switch the end Scan Filter Filters OFF. A checkbox in the new **Special Modes tab menu** in System Options can be used to turned the feature ON or OFF.
2 - **UPDATE UI:** Spinner wheel for source tube added to automatic sphere calculation along centerline.
3 - **UPDATE UI:** Rearranged the tab menus and buttons to make deleting point clouds easier.
4 - **UPDATE INTERNAL LOGIC:** The ScreenID dialog that is used to change a window screen was improved internally.



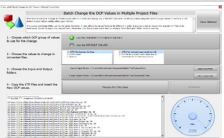
573 7/20/2021 19:01 **Customer Release - New Improved Automatic Norma Ball Flare UI and Calculations**
1 - VTube-LASER was redesigned so that measuring and calculating Norma ball flare qualifications are much easier with than previous versions using the laser scanner arm. This version includes an improved user interface with more options for automatically building the best sphere from surface points along a centerline.



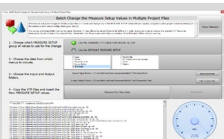
572 7/20/2021 12:19 **Customer Release - INCREASED DEFAULT BENDER COUNT**
1 - **Default Bender Count Increased:** The default max benders count is increased to 20 in order to make upgrading easier for the customers that have more than 10 benders configured for communication in VTube-LASER setup.



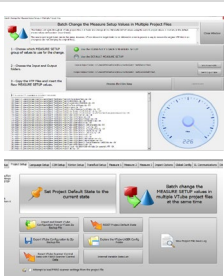
571 7/17/2021 11:32 **Customer Release - BATCH FILE CHANGE for DCP (DIAMETER CUT PLANE) VALUES IN THOUSANDS OF PROJECT FILES**
1 - **NEW BATCH FILE CHANGE FEATURE Can Change the DCP Values in Multiple Project Files:** This requested feature is an important addition to VTube-LASER for customers with hundreds or thousands of part files that need to have any of the 6 different DCP values changed in all of the project files at the same time. This new batch feature is found in the Project Setup tab menu of the Systems Options window.



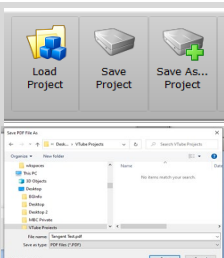
569 7/16/2021 16:58 **Customer Release - BATCH CHANGE for MEASURE SETUP IMPROVED WITH MORE CHOICES**
1 - **IMPROVED Batch Change Measure Setup:** Batch Change is modified so that operators have more choices for which section of data to change. Each individual Measure Setup TAB MENU can be selected or deselected. The new menu sections are Laser, Tactile, Separation Filter, Accept Button, Ends, Bend Profile, NTA, Planar, and Display. So, it is now possible, for example, to change all the ENDS menu values in batch files without touching the values from other Measure Setup menus.
2 - **FIX for Bend Change Measure Setup:** There were some values outside of Measure Setup User Interface that Batch Change could change. This has been fixed. If you use Batch Change, we strongly recommend that you upgrade to this version - and do not use the previous build.
3 - **END TRIM PROFILE CHANGE:** The End Trim Profile setup an data is now stored in the VTube project files.


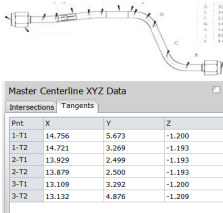
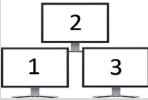
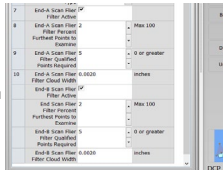
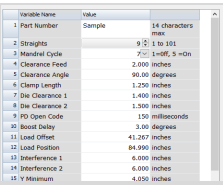

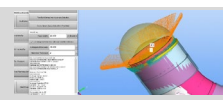
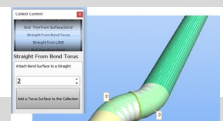
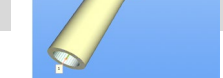


565 7/15/2021 19:54 **Customer Release - BATCH FILE CHANGE for MEASURE SETUP VALUES IN THOUSANDS OF PROJECT FILES**
1 - **NEW BATCH FILE CHANGE FEATURE Can Change the Measure Setup Values in Multiple Project Files:** This requested feature is an important addition to VTube-LASER for customers with hundreds or thousands of part files that need to have any of the 90 different MEASURE SETUP values changed in all of the project files at the same time. This new batch feature is found in the Project Setup tab menu of the Systems Options window.
2 - **REDESIGN of the Project Default Save Feature in System Options:** This redesigned feature asks for confirmation before overwriting the current default setup with the current setup in memory. It also now automatically backs up the entire configuration folder to a zipped backup file in the Public Documents/VTube folder before overwriting the configuration file with the new default setup.
3 - **FIXED - VTube-LASER Operator Screen:** The operator screen was added for customers that need to control which users can edit setups in VTube-LASER. The screen was not always allowing operators to measure a tube without a password. This has been fixed.



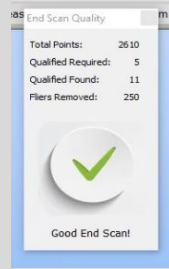
563 7/14/2021 17:14 **Customer Release - CHANGES to SUGGESTED FILENAME DURING PROJECT "SAVE AS"**
1 - **PART NUMBER for SAVE AS FILENAME CHANGE:** VTube was changed so that the Part Number is now always inserted in the FILE SAVE AS dialog when performing a project "save as" in VTube-STEP and VTube-LASER. (Note: This new logic does not apply to the "Save" button - which uses the existing project filename unless the filename is empty.)
2 - **PDF REPORT FILENAMES SUGGESTION CHANGE:** The VTube report templates are now changed so that the TITLE of the HTML reports is always set to the the Part Number. This allows VTube to suggest the Part Number as the PDF filename when printing to PDF files. (Note 1: There is a 31-character length limitation for the PDF filenames when printing to PDF reports.) (Note 2: This change does not automatically apply to custom report templates. Ask for help from ATT technicians for how to add this to your custom templates if you want to use it.)



561	7/12/2021 15:38	Customer Release - NUMALLIANCE PART FILE IMPORT and SUPRAVISION FILE EXPORT CHANGES 1 - NEW NUMALLIANCE PART IMPORT: A customer requested that we add NUMALLIANCE PART file IMPORT into VTube so that they could quickly build SOLIDWORKS parts for their catalog from the NUMALLIANCE PART file. This bypasses the extra steps necessary to use the NUMALLIANCE CSV export. This new import feature is now part of VTube-STEP in the IMPORT section. The data imported is: Diameter, XYZ centerline, and Bend Radii. 2 - SUPRAVISION EXPORT FORMAT CHANGE: Another brand of tube measuring software requires that the Supravisoin COMMENT data be placed before the LINEAR UNIT parameter inside the Supravisoin file format during import, or it cannot import the centerline XYZ data from the Supravisoin file properly. (Note: This special ordering of data is not required according to the official Supravisoin specification. However, we decided to solve the problem in the other system's import logic for our customers anyway.)																													
558	7/9/2021 14:21	Customer Release - XYZ Tab Menu Display Change 1 - VTube now starts with the Intersection point tab menu by default rather than the Tangent point tab menu in VTube-STEP and VTube-LASER. 2 - The user interface skin component was updated to the latest version.																													
555	7/2/2021 15:01	Customer Release - Tangent Point Entry Grid 1 - Fixed the "Continue Edit" function so that it puts the mouse pointer inside the grid to continue editing.																													
554	7/2/2021 12:57	Customer Release - User Interface Adjustments 1 - The verbage for Tangent Point Reverse Calc options was changed in the confirmation dialog to make the process more clear.																													
551	7/1/2021 16:10	Customer Release - NEW TANGENT POINT ENTRY GRID 1 - A new Tangent Point entry grid for the master data is added for both VTube-STEP and VTube-LASER. This feature allows users to enter data from prints that only have tangent point locations along the tube centerline. 2 - An experimental fix for the Question / Confirmation dialog locations on multiple-screen systems is added to parts of VTube for testing. 3 - We fixed a Diameter Cut Plane warning that was displaying when the DCP was not active. 4 - The Laser Line Separation value edit box in tube measure control now disables (grays out) if the automatic laser separation method is active. 5 - The yellow header bar now shows a message indicating when an operator has changed the laser separation value during measurement.	 <table border="1"> <thead> <tr> <th>Int</th> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr><td>1-T1</td><td>14.796</td><td>5.673</td><td>-1.200</td></tr> <tr><td>1-T2</td><td>14.721</td><td>3.269</td><td>-1.193</td></tr> <tr><td>2-T1</td><td>13.929</td><td>2.499</td><td>-1.193</td></tr> <tr><td>2-T2</td><td>13.879</td><td>2.500</td><td>-1.193</td></tr> <tr><td>3-T1</td><td>13.109</td><td>3.292</td><td>-1.200</td></tr> <tr><td>3-T2</td><td>13.132</td><td>4.876</td><td>-1.209</td></tr> </tbody> </table>	Int	X	Y	Z	1-T1	14.796	5.673	-1.200	1-T2	14.721	3.269	-1.193	2-T1	13.929	2.499	-1.193	2-T2	13.879	2.500	-1.193	3-T1	13.109	3.292	-1.200	3-T2	13.132	4.876	-1.209
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3-T1	13.109	3.292	-1.200																												
3-T2	13.132	4.876	-1.209																												
543	6/25/2021 13:44	Customer Release - VTube-STEP Monitor Location 1 - VTube-STEP now correctly stores the last monitor the main screen was using and correctly restores to it when loading. 2 - Other minor changes - like the Screen ID floating control window now displays in the middle of the parent form rather than on the far left side of the screen.																													
542	6/22/2021 17:41	Customer Release - End Scan Flier Filter Improvements 1 - VTube-LASER now has separate measure setup controls for the End Scan Flier Filter for either end scan. 2 - VTube-STEP now updates the LRA grids immediately after an STEP model import. 3 - If the separation proximity filter for the end scans are set higher than the End Scan Flier Filter cloud window distance, then VTube will ask you to consider adjusting that proximity value to match the filter distance. 4 - A VTube-LASER re-measure logic issue was resolved for when measuring the first cylinder in a tube in UNISCAN mode.																													
537	6/18/2021 12:25	Customer Release - Extended Eaton Leonard Data 1 - This version now imports the entire EL extended set up from Supravisoin files for use in the Bender Setup menu in VTube-LASER. This allows for the entire EL setup to be transferred to VTube-LASER.																													
534	6/15/2021 16:25	Customer Release - ITALIAN USER INTERFACE ADDED 1 - A new user interface Italian language file is added to VTube-STEP and VTube-LASER. 2 - Some renaming of the End Scan Flier Filter parameters makes the features more clear to users. (See the End Scan tab menu in the Measure Setup menu.) 3 - Automatic check and control of the end scan proximity point distance makes sure that End Scan Flier Filters actually work properly. The check warns and allows the end user to adjust the proximity distance if appropriate.																													
532	6/11/2021 13:00	Customer Release - Sphere Calculation 1 - VTube-LASER has an improved sphere from scan calculation engine. It can now find the correct sphere in the scan data more consistently. 2 - VTube-LASER has an updated project file format that stores new automatic sphere-building parameters using the anticipated diameter.																													
530	6/10/2021 17:45	Customer Release - Zero Length Straight Bends Calculation Improved 1 - The VTube-STEP math logic for calculating zero-length straights with adjacent bends was significantly improved to overcome discovered problems with some models. 2 - A user interface repaint issue was fixed.																													
529	6/9/2021 12:52	Customer Release - Measuring Guide Viewport 1 - Make the Measuring Guide Viewport model always show with a wireframe. This was requested customers. It shows the tangent locations.																													
528	6/9/2021 11:55	Customer Release - End Scan Flier Filter 1 - We made the new "End Scan Flier Filter" DISABLED by default so that existing customers only enable the feature after they understand it.																													

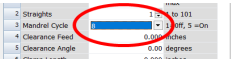
527 6/9/2021 7:54 Customer Release - New End Scan Flier Filter

- 1 - VTube-LASER now has an "End Scan Flier Filter" in measure setup that will automatically remove fliers on end scans based on groups of points on the end. This new feature will ensure that the end scans on highly-reflective end walls do not use fliers that are longer than the end wall.
- 2 - Besides adding the End Scan Flier Filter, the algorithm for finding the furthest End Scan point was improved significantly.
- 2 - The Switch Screen feature is changed so that now you can choose which screen to move the window to.
- 3 - We fixed the radius level selection component in both STEP and LASER in the Radius Sync tab menus.
- 4 - The Path Manager window now responds to the Enter key in the list. Select the path, then press Enter on the keyboard to open a windows open or save dialog.
- 5 - The Datum grid now resizes properly.
- 6 - We changed the SMI Export to use dots for decimals always.



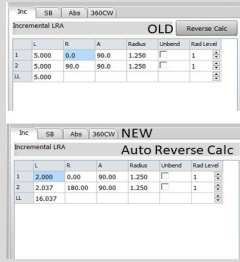
516 5/5/2021 16:12 Customer Release - EL Extended Setup Data Change

- 1 - The VTube-LASER Eaton Leonard legacy extended data setup now allows entry of mandrel cycle values from 1 to 8. (Previous versions would only allow 1 or 5).
- 2 - The Newport News Report is modified to include new values in the report.



513 5/3/2021 19:54 Customer Release - New Auto Reverse Calc

- 1 - The Reverse Calc in VTube was redesigned so that the XYZ coordinates are now recalculated in real-time. As soon as the user changes an LRA value, the XYZ grid is automatically recalculated.
- 2 - The Reverse Calc buttons are removed in LRA grids that can be edited because they are now redundant.
- 3 - The LRA Absolute grids have a new Cut Length entry box since the table Length values are dependent on a starting cut length. This cut length value is the same value as the cut length in Part Setup.
- 4 - Enter a new LRA value, press enter, the press F2 to see the immediate change in the viewport. Or you can just keep changing the new LRA values without slowing down.
- 5 - If you make a mistake and want to go back to the previous state of the LRA grid, just press the Undo button in the toolbar.
- 6 - Fractional and formula entries in the LRA grids are now solved immediately.
- 7 - The math engine was enhanced so that this version of VTube better handles rotation and bend angles that are initially zero during set up.
- 8 - Cells in the LRA grids that cannot be edited are now shaded grey. This gives a clear visual cue to the user.
- 9 - The LL (last length) cell in the Absolute grid now calculates in real time. The user no longer needs to manually recalculate the value from a pop-up menu.
- 10 - The VTube installation now builds each new updated executable in a new unique folder in the Program Files (x86) folder. This will allow for rolling back to previous versions if you encounter problems



More specific folder installations now keep older versions installed.

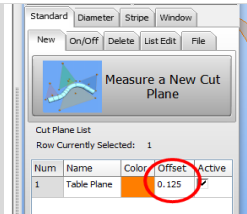
- VTube
- VTube-STEP_v3.0
- VTube-STEP_v3.0_b506

497 4/20/2021 13:15 Hold for Next Customer Release - Minor Change

- 1 - We made a minor change to the graphics engine in VTube according to new instructions from the graphics engine developer. We believe that this is a minor change that should have little impact on performance.

495 4/29/2021 16:16 Customer Release - ADJUSTABLE BENDER COUNT and CUT PLANE IMPROVEMENT

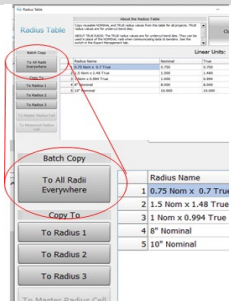
- 1 - NEW ADJUSTABLE BENDER COUNT: VTube now allows for the Benderlink setup list to grow or shrink the number of benders available to VTube-STEP and VTube-LASER. The default list size was 100 but is now reduced to 10. This saves global configuration load and save time - which will accumulate long-term time savings for operators. The new SPINNER CONTROL is added to the new System Options /Global Lists tab menu to control the Benderlink list size.
- 2 - NEW BENDERLINK SETUP BUTTON: A new "Setup Benderlink network" button is added to the new System Options/Global Lists menu. The button was initially in the System Options/Measure 2 menu alone. This new location will be easier to remember since it is more logical.
- 3 - IMPROVED DEFAULT CUT PLANE OFFSET: When an operator creates a Cut Plane, the new default for the Cut Plane OFFSET value is now increased to 0.125 inches (3.175 mm). The old default (0.039 inches or 1 mm) - was too close to the table surface for most applications.
- 4 - NEW VERTICAL SCROLL BAR in INSPECTION MENU: A new vertical scroll bar in the Inspection menu allows for customers with low-resolution screen computers to see the inspection results by scrolling down. In previous versions, that part of the screen was hidden from these users.

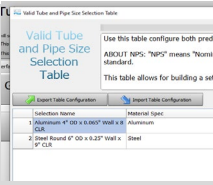

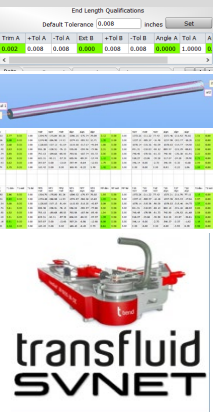

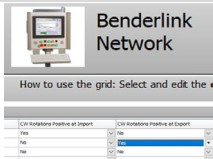
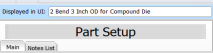



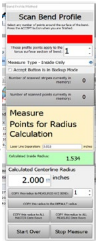
New Cut Plane offset default value of 0.125" or 3.175 mm

491 4/20/2021 22:08 Customer Release - Complete RADIUS TABLE Redesign

- 1 - The RADIUS TABLE was redesigned so that the user can copy a radius to every radius field in VTube-STEP or VTube-LASER with one button press. We call this a "batch copy." It is designed to speed up new project entry.
- 2 - Double-click on any radius cell in Part Setup to display the Radius Table. Double-click on any radius cell in the MASTER or MEASURED Tube XYZ grids to display the Radius Table.
- 3 - The Radius Table is now only configured in the System Options GLOBAL LISTS menu.
- 4 - The Radius Table window no longer contains the configuration spinner wheel for sending NOMINAL or TRUE radii values during communications. This configuration function in this menu was confusing, so it was moved to the System Options EXPORT LISTS tab menu.
- 5 - A new SEARCH feature was added at the bottom of the Radius Table grid.
- 6 - The Valid Tube and Pipe Selection table can use the Radius Table to set up RADIUS sizes. Click on any NPSCLR or CLR cell, and a new Import from Radius Table buttons appears.
- 7 - The Radius Table can now export and import table configurations so that the values can easily be copied to other computers.
- 8 - VTube now allows for fraction values to be entered in the Radius Table for nominal and true sizes.
- 9 - VTube now allows for fraction values to be entered to be converted to values in the Valid Tube and Pipe Size Selection Table.
- 10 - User interface fixes were made.



487	4/19/2021 17:48	<p>Customer Release - Valid Tube and Pipe Size Selection Table Export and Import</p> <ol style="list-style-type: none"> 1 - VTube now allows for VTPSS table configuration import and output for sending configurations in one VTube computer to other VTube computers. 2 - The VTube-STEP and VTube-LASER transformation rotation angle direction was reversed so that positive rotations use the right hand-rule (positive counter clockwise). This makes the transformation consistent with other rotation directions in VTube. 3 - A VTube-LASER bug was discovered and fixed for alignment for tubes with one straight. 4 - A VTube-LASER bug was discovered and fixed in the configuration of 321 PLP Alignment. 5 - The user interface logic was updated so that window skins are now updated properly when they are first loaded. 	
480	4/12/2021 12:55	<p>Customer Release - NPS (Nominal Pipe Size) System and Valid Tube and Pipe Size Selection Table</p> <ol style="list-style-type: none"> 1 - A new Valid Tube And Pipe Size Selection (VTPSS) system is added to this revision. This development was driven by a shipbuilder. That industry often uses pipe sizes governed by the ASME B36.10M standard - which are different than tube sizes. 2 - Tube sizes can cause confusion in a shop that uses NPS - so the goal in this revision is to allow VTube to handle NPS (nominal pipe size) values along with standard tube sizes. 3 - The new feature includes a System Options window with a grid/table that allows for configuration of valid pipe sizes and the actual nominal OD, centerline radii, DoFBend, Wall thickness, Inner Diameter, Material Spec, and a text selection name that identifies the unique combination of all of the values for a bending setup. 4 - The new feature includes NPS, NPSCLR, and NPSDoFBend fields at the bottom of the Part Setup menu in both LASER and STEP modes. 5 - When an operator clicks on one of the NPS fields, the VTPSS window displays and requires the operator to choose a valid selection for the current project. 6 - If the operator double clicks on the DIAMETER field, then the VTPSS window will display. 7 - A new global checkbox option in the System Options/User Interface is added that allows for the required use of the VTPSS window for NPS values. This value can be unchecked to allow operators to manually enter NPS sizes in the Part Setup menu. 8 - New report tokens allow for display of new values in reports: NPS, NPSCLR, NPSDoFBend, DoFBend1, DoFBend2, DoFBend3, and 	
463	3/31/2021 0:00	<p>Customer Release - VTube-STEP Command Server Enhancements</p> <ol style="list-style-type: none"> 1 - VTube-STEP can now be run minimized with the "/minimized" parameter in the command line. If this parameter is found in the command line, then VTube-STEP will minimize after the command server starts. 2 - The VTube-STEP server minimize command now puts the VTube-STEP icon in the task bar rather than above the task bar. 	
456	3/30/2021 15:36	<p>Customer Release - Several Changes</p> <ol style="list-style-type: none"> 1 - END LENGTH CALC LOGIC: An error in the logic for calculation and display of the end trim length values for a single straight tube (with no bends) was fixed. 2 - DELETING FEATURES: VTube-STEP constructed features were deleted when collected objects were deleted and vice versa. This has been fixed. 3 - NEW PRESS ENTER TO DISPLAY REPORTS: The report template grid now accepts the Enter key for showing a report. Select the report template, then press Enter, and the report will display. 4 - UI EDIT FIX IN CUT PLANE: The user-interface edit boxes and checkboxes in the Cut Plane Control grid menus would sometimes not accept user changes. This has been fixed. 5 - NEW CALCULATOR LOGIC IN CUT PLANE: Embedded calculator logic for floating-point values inside the Cut Plane control was added. 6 - MORE CUT PLANE FIXES: Some Cut Plane floating point values were being treated as linear when they are factors. This has been fixed. 7 - COLOR CODING FIXES FOR EXPORT: The color coding in the Tube Data Storage exports was not correct in the Tangent Point or the End Length reports. It is now correct. 8 - ROTATE AROUND FIX: The Rotate Around Axis process in the Transform Control can now rotate around any of the three types of tubes: Master, Measured, and Measured Aligned - not just the Master. 9 - NEW TRANSFLUID COMMUNICATIONS: The Transfluid SVNET protocol was added to VTube-STEP and VTube-LASER. 	
434	2/3/2021 17:35	<p>Customer Release - Enhanced HEXAGON RDS Diagnostics</p> <ol style="list-style-type: none"> 1 - VTube-LASER now gives much more detailed messages in the HEXAGON RDS diagnostics window during connection and disconnection from HEXAGON arms. 2 - Improvements were made VTube for saving data to very large VTube project files. 	
431	1/27/2021 13:12	<p>Customer Release - Benderlink Rotation Direction Enhancement</p> <ol style="list-style-type: none"> 1 - VTube-LASER now controls the "clockwise rotate positive" Yes/No values for each bender with import and export separately. This is because some benders automatically additive invert (multiply by -1) the rotation values only when they import from VTube-LASER but not export to VTube-LASER. The two switches for each benderlink setup are in the Benderlink Setup grid. The two columns are now labelled "CW Rotations Positive at Import" and "CW Rotations Positive at Export". 	
428	1/21/2021 7:38	<p>Customer Release - Display in UI Bar Change</p> <ol style="list-style-type: none"> 1 - VTube now updates the user interface part number in the blue "Displayed in UI" bar when importing STEP and IGES files. 	
427	1/21/2021 7:31	<p>Customer Release - Obsolete License Registration Removed</p> <ol style="list-style-type: none"> 1 - The old License registration tab menu in System Options is removed. Since we changed to the new online registration server, it is no longer used. 	
424	1/20/2021 22:37	<p>Customer Release - VTube-STEP IMPORT Changes</p> <ol style="list-style-type: none"> 1 - VTube-STEP includes a new fix that allows Supravision import to handle Supravision files with only LRA data and no centerline XYZ coordinates. 2 - VTube-STEP can now import the Feed-Plane-Bend Nominal data from COMCO CSV files created by COMCO benders. 3 - VTube-STEP can also now import the Feed-Plane-Bend Nominal+Adjustment data from COMCO CSV files created by COMCO benders. 	

411	1/11/2021 22:08	<p>Customer Release - Scan Bend Profile Control Window Redesigned</p> <ol style="list-style-type: none"> 1 - VTube-LASER Scan Bend Profile control window now shows the calculated inside radius that is the datum and foundation for the calculated centerline radius. 2 - The Scan Bend Profile control window now allows users to edit the calculated centerline radius value then press new buttons to copy it to the MASTER XYZ data, the MEASURED XYZ data, the DEFAULT Radius, or individual Measured XYZ radii. 3 - VTube-LASER now has the new "array_radiusqualification_clr" token that allows bend profile measurement centerline radius values in the reports. 4 - VTube-LASER now has the added the token "array_radiusqualification_insiderradius" to allow for displaying the inside radius in reports. 	
404	1/8/2021 8:36	<p>Customer Release - VTube-LASER Leapfrog Enhancement</p> <ol style="list-style-type: none"> 1 - VTube-LASER can now transform all current straight scan data inside a leapfrog move. This allows very long straights to be scanned at both ends with a leapfrog move in the middle. Longer straights tend to bow slightly over distance, so you can use VTube MultiScan to scan either end of long straights to straighten the bowing with a leapfrog in between the two MultiScans. 2 - The Cylinder Fit window now displays automatically during the Diameter measure. 3 - The Viewport display location is now automatically reset to a visible screen if its current screen becomes unavailable. 4 - Floating window display issues in MultiScan Diameter measure were fixed. 	
398	12/21/2020 21:21	<p>Customer Release - HEXAGON SCAN SPEED INCREASE</p> <ol style="list-style-type: none"> 1 - VTube-LASER now has increased the speed of HEXAGON scanning by over 10 times faster when compared with previous versions. High-powered computers can take advantage of this increased scan speed capability. 	
395	12/19/2020 16:00	<p>Customer Release - UTE Select SVNet</p> <ol style="list-style-type: none"> 1 - VTube-LASER has a new UTE Select SVNet protocol for the Bender Data Setup window. 	
394	12/11/2020 15:23	<p>Customer Release - Norma Ball Flare Measurement Prototype</p> <ol style="list-style-type: none"> 1 - VTube-LASER now has an algorithm for automatic selection of the best surface points along the centerline path of the tube for a measured sphere. This makes reproducibility better between users because VTube now takes the guesswork out of selecting surface points for creating the best sphere. 2 - VTube-LASER now shows progress when calculating the selection of points for the best fit for a sphere flare like a Norma ball flare. 3 - VTube-LASER now calculates the out-of-round% of the sphere. This shows the ORR% of Norma ball flares. 4 - VTube-LASER now stores Space Object data in the VTube-LASER project files. This allows sphere creation set up values to be stored per project. This is a foundation for the coming Space Objects feature in VTube-LASER. (Space objects will be prismatic objects that can be measured and inspected.) 	
384	12/7/2020 17:32	<p>Customer Release - Han Jie SVNET Change</p> <ol style="list-style-type: none"> 1 - VTube-LASER and VTube-STEP now include the LRA adjustments and errors even in new parts being transferred to the Han Jie bender control. The values are set to zero since the CLRA represents new data. This data is used by the Han Jie logic to clear the offset values in the Han Jie YBC page. 	
382	12/4/2020 20:58	<p>Customer Release - Mfg Changes</p> <ol style="list-style-type: none"> 1 - VTube-LASER Han Jie Mfg SVNET is changed so that when sending NEW part data, spaces in part numbers are converted to underscores. 2 - VTube-LASER Bender Setup now disables the RECALL button with the Schwarze-Robitec SVNET protocol. 3 - VTube-LASER now has a Diameter Cut Plane warning for when the DCP laser length value is too small for good scanning. 4 - A new DCP threshold value controls when the laser line is too short relative to the OD. The threshold value is compared to the [DCP laser length / OD]. The default threshold is 0.499 and lower. 	
373	11/25/2020 13:10	<p>Customer Release - VTube-STEP New Import Collection Type "Circle Surface For Straight"</p> <ol style="list-style-type: none"> 1 - A new collection type is added called "Circle Surface for Straight". This new collection type allows for import and calculation of a straight that has only a single circular surface with a zero straight length. 2 - This Circle Surface collection type will be especially useful for using the surface ring on the end wall of tubes to calculate the centerline of the straight. 3 - The Collection Control was modified with the new collection type. For example, the spinner wheel includes the new collection type at the bottom of the wheel. 4 - The new type allows you to select any number of surfaces per straight - but it currently only uses the last surface selected per straight to calculate the straight vector. We have left the multiple selection mode in place for possible future expansion of the mathematics functionality. 	
370	11/24/2020 10:09	<p>Customer Release - FARO Scanning Fix</p> <ol style="list-style-type: none"> 1 - We resolved a FARO driver connection issue that would sometimes lock VTube during FARO scanning. 	
367	11/23/2020 11:51	<p>Customer Release - Numalliance CSV Export, Non Roman Text Improvements</p> <ol style="list-style-type: none"> 1 - NUMALLIANCE EXPORT ENHANCEMENT: Numalliance controls require a filename extension of ".csv" and require that the extension characters be lowercase. We changed VTube so that exported Numalliance files always have a filename extension of lowercase ".csv". 2 - LANGUAGE ENHANCEMENT: VTube can now import STEP and IGES files that are in file paths that use non Roman alphabet characters like "D:\路径". 3 - LANGUAGE ENHANCEMENT: The VTube Path Manager can now display and open Windows explorer with paths using non Roman text characters in the path names like "D:\路径". 4 - LANGUAGE ENHANCEMENT: VTube can now store any non Roman text in the global configuration file. Previous builds of VTube-LASER and VTube-STEP replaced non Roman text with question marks - like "??". 	

363	11/20/2020 15:27	<p>Customer Release - Improved Project File Save Error Handling and Logging</p> <p>1 - VTube has improved project file save error handling that will now stop the project file build if there is a file save failure with build of a temp project file copy to final project file copy.</p> <p>2 - VTube has improved project file save logs that include the Part Number in the logs to help determine if a file is improperly overwritten.</p>
361	11/20/2020 11:50	<p>Customer Release - FlexIO Bender Data Import</p> <p>1 - VTube-STEP can now import FlexIO data files.</p> <p>2 - A FlexIO DAT button was added to the Import section of VTube-STEP.</p> <p>3 - A sample "FlexIO Sample.dat" file is added to the project demo file folder for testing.</p>
357	11/19/2020 21:43	<p>Customer Release - Configuration Backup Export and Import</p> <p>1 - The Configuration Backup EXPORT and IMPORT feature has been streamlined. (It is found in Project Setup in the System Options menu.)</p> <p>2 - Fix: VTube can now reverse calc a single straight tube without changing the orientation of the straight in space. This is important for when straights are designed and measured in specific orientations in space relative to a tube assembly.</p>
349	11/17/2020 17:38	<p>Customer Release - FARO Driver Speed Improvements</p> <p>1 - The VTube-LASER connection to the FARO driver has been redeveloped to increase the speed of the button press events.</p> <p>2 - MultiScan mode for FARO has faster scanning again.</p> <p>3 - MultiScan once again uses the legacy scanning sound for all arms. (UniScan still uses the newer sound.)</p>
341	11/11/2020 19:04	<p>Customer Release - Automatic Copy of Changed Default Tolerance to Every Tube Straight</p> <p>1 - VTube has a new dialog that displays after the operator changes the default tolerance in the PART SETUP menu.</p> <p>2 - It allows operators to copy the changed default to every straight in the current tube shape immediately after the default tolerance is edited.</p> <p>3 - The new logic is active in VTube-STEP when it is running as part of a VTube-LASER license. This allows for an import of a model then an immediate copy of the default tangent tolerance into all the VTube-LASER tangent/midpoint values for every tube straight.</p>
339	11/10/2020 16:06	<p>Customer Release - Size Depth Calculation Window</p> <p>1 - The new Size Depth Calculation window allows operators to measure the size and depth of end forms along the centerline of a straight. It is ideal for finding the depth of an expanded or reduced end from the end of the tube.</p> <p>2 - The Size Depth Calculation feature is found in the Calc tab menu inside the Point Cloud control window.</p>
332	11/4/2020 18:33	<p>Customer Release - Report Quick Export</p> <p>1 - Print Report Export is renamed "Quick Export".</p> <p>2 - For better organization, the Quick Export feature now saves all report files to sub folders named using the part number.</p> <p>3 - In addition to the Print + Quick Export button, a new "Quick Export" button is added that allows operators to create a date-time stamped report without also printing a report.</p> <p>4 - A path label below the Quick Export buttons shows the path where the report files are stored.</p> <p>5 - The Quick Export feature would sometimes delete the backup HTML files. This has been repaired.</p> <p>6 - Print window report refresh issues are repaired.</p> <p>7 - Print window now no longer automatically closes.</p>
327	10/30/2020 21:15	<p>Customer Release</p> <p>1 - User interface changes were made including spelling fixes and more logical naming of tabs - like "Bend Setup" was changed to "Split Bend" in VTube.</p> <p>2 - The BLM Master report template was modified per the suggestions of the BLM technicians.</p>
326	10/30/2020 15:49	<p>Customer Release - Tube Data Storage Database Size Management</p> <p>1 - A new feature called "Tube Data Storage Backup Autotrim" was added to overcome memory issues with very large databases.</p> <p>2 - VTube can now detect and warn users of very large project databases that exceed the maximum safe size of 42 Megabytes.</p> <p>3 - Users can choose to allow VTube to backup the current project file and then autotrim or clear Tube Data Storage in memory in order to store older data and then free memory to shrink the project file size to safer levels.</p> <p>4 - The backup files are named with the Part Number, then the date-time text and then "_TubeDataStorageList_Backup_Autotrim" added at the end.</p> <p>5 - An example backup autotrim filename is: Part123456_20201030_19_29_02_TubeDataStorageList_Backup_Autotrim.VTP</p>
322	10/28/2020 15:03	<p>Customer Release - End Trim Profile (Prototype)</p> <p>1 - We added buttons that allow the operator to copy the measured End Trim Profile centroid to the measured tube data.</p>
316	10/22/2020 17:10	<p>Customer Release - End Trim Profile Changes (Prototype)</p> <p>1 - Experimental End Trim Profile measure process changes: It can now handle up to 8 clouds per end scan.</p> <p>2 - Cosmetic improvements to the ETP control window: It now shows measure x of y like "1 of 8" when measuring.</p> <p>3 - ETP measures didn't take data into VTube in the previous build. This has been fixed.</p>
313	10/21/2020 22:55	<p>Customer Release - Han Jie SVNET Changes</p> <p>1 - The Han Jie SVNET protocol was changed to comply with this requirement: The protocol requires a part number without internal spaces in the number. All VTube part numbers with spaces are converted so that the spaces become underscores before sending data to the Han Jie control.</p> <p>2 - The Han Jie SVNET protocol was changed to comply with this requirement: The protocol requires that the only array data allowed in the transfer is the CLRA data.</p>

311	10/21/2020 15:15	Customer Release
1 - Now VTube will allow operators to transform the tube by rotating it by any angle around any of the three axes. This allows operators to easily reorient the tube coordinates into any helpful orientation before exporting to CAD or reports. 2 - Now VTube will automatically notify the user and switch the current tube to display ON in the assembly if it was set OFF. This will help avoid operator confusion in the interface. 3 - Additional improvements were made to the positioning of what we refer to as the Question pop-up window. 4 - The Han Jie SVNET protocol was adjusted for better communication with the Han Jie bender control distributed by SMT Industries.		

305	10/19/2020 13:49	Customer Release
1 - The Report Window width was changed from 1000 wide back to the legacy 800 wide. It looks better. 2 - A prototype "Include End Trim Profile" checkbox was accidentally included in the last build release. It is now removed until the feature is complete and ready for release.		

299	10/16/2020 18:58	Customer Release
1 - VTube-STEP and VTube-LASER now has a new "Print + Export Report" button to the Report Window that allows operators to save a permanent set of time-date stamped parallel report files with the current report data to a configured path. This feature can print a report and then automatically export parallel HTML and Excel report files at the same time in order to keep persistent reports on file. Each file has a part number followed by a time-date stamp embedded in its filename. 2 - The "Print + Export Report" feature will always export to a parallel HTML file. When exporting to an Excel file, the feature requires that Microsoft Excel is already installed. The Excel feature creates an xlsx file. If Excel is not installed, then VTube silently skips the Excel xlsx file build. 3 - VTube has a new Report Export Path edit box in the System Option/Reports menu. The path is a persistent value that is used when operators press the "Print + Export Report" button in the Report Window. 4 - The VTube Report window buttons design and placement are changed for a better user experience. The buttons also have new icon images for quicker recognition of their functions. 5 - The Report Templates lists in both VTube-STEP and VTube-LASER no longer allow operators to edit the template names in the list with a simple click selection. This prevents accidental overwriting of the template names in the VTube user interface. A new "Allow Edit of Selected UI Name" button must be pressed before any UI name for the template can be edited. This new button is in a new Names tab		

295	10/15/2020 0:00	Customer Release
1 - We fixed the font size in Collect Window blue spinner user interface component.		

291	10/14/2020 13:05	Customer Release
1 - Changed all RED Button references to ACCEPT button references to make the messages appropriate for multiple types of measuring centers. 2 - Fixed a Bender Setup page bug where the last rotation and bend angle adjustments was retained from longer parts that were trimmed. They are now always cleared to zero after building measured tube data. 3 - A major new End Trim Profile feature is added. This feature will provide flatness values for end trims. This is an initial release that is functioning - but is in a state of fluctuation under development at this point. More features will be added soon.		

269	9/29/2020 18:30	Customer Release
---NEW FEATURE: LASER STRIPE ZONES Added----- 1 - The new Laser Stripe Zones logic was finished. It is an advanced post-processing feature. Laser Stripe Zones post processing allows for restricting laser stripes used to build the measured tube to specific zones of the straight. The feature was designed for a customer that measures highly deformed tube for tube presses that require low variation in part shape in spite of the deformation of the tubes. The goal is to reduce the measurement variation down to less than 1 mm when reverse-engineering a part for a good fit in the press. 2 - The process can use a dual zone width approach that restricts the laser stripes to those inside the two zones that are at each end of the straight and offset from each tangent point. 3 - The process can also use a single zone of laser stripe points that are found in between the two end zones. 4 - The zones are displayed in the model as transparent cylinders. 5 - The zone center points are spheres that are either GREEN or RED to indicate if points were found within the laser stripe zones. If not stripes are found within a dual zone set up, then the zone point is RED. If stripes are found inside the zone, then the point is GREEN. 6 - Since Laser Stripe Zones post processing work using measured tube data to build new refined measured tube data, the feature is placed in a tab menu inside the Measured Tube menu. 7 - When Laser Stripe Zones processing is performed, VTube will always allow you to undo the processing if it makes the alignment worse using Tube Data Storage.		

269	9/29/2020 18:30	Customer Release (CONTINUED)
---NEW FEATURE: Cylinder Fit Data Tracking Improvement In Assemblies----- 1 - Cylinder Fit Data is now tracked separately for each part in the assembly. 2 - This allows you to check and report the diameters, profile, ovality, etc. for each end of a straight stick before bending using the assembly feature. 3 - Create two straight tubes using Assembly in VTube-LASER. Make tube 1 for END A and tube 2 is for END B. 4 - Measure each as a straight tube. The values for each end can then be documented in a report using the Cylinder Fit Data reports.		

249	9/8/2020 22:18	Customer Release 1 - Fixed Assembly Control so that LASER Alignment Tab menu no longer appears in VTube-STEP mode. This menu is only needed in the VTube-LASER window. 2 - Added a new "Copy Master to Aligned" button in the Data Handling Menu. This allows users to copy any of the three tubes into any one of the other two tubes in VTube-LASER. Having this button gives extra flexibility in VTube-LASER for swapping the measured and master tubes in cases where two tubes were imported into STEP for comparison in LASER mode. 3 - Added extra notes in Tube Data Storage to help users know from where the measured data originated. Measures can be from a standard measure, assembly measure, string measure, tube construct measure, and Zones post process measure. 4 - Added Tube Data Storage for Measured Zones Post Process. This allows users to undo Zone processing in the measured data.
245	9/4/2020 23:08	Customer Release 1 - System Options File Setup no allows operators to DISABLE the Path Manager so that it is never used. This is helpful for customers that use one folder to store all part files. 2 - Also, this version has a new Path Manager Default Path value in the same menu If this value is set to a valid path and the Path Manager is disabled, then VTube will always start open and save dialogs for all file operations with that path. 3 - Removed Global default document folder name. It is replaced by Default Path Manager Path value.
236	8/24/2020 15:37	Customer Release 1 - We added option switches with new check boxes in the System Options/File Setup for turning automatic backup files on or off. 2 - The three new switches are for Presave Backup of VTP files, Postsave Backup of VTP files, and Postsave backup of VTube data in a Supravisoin file format. 3 - The switches are stored in the global configuration with values available to all projects files. 4 - The default state for all three switches is OFF. It is intended only for a small number of customers that want the backup capability turned on.
233	8/14/2020 13:39	Customer Release 1 - New - Trim the following Part Setup values during entry: Part Number, Part Name, Customer Supplier, Revision, Material Spec, Author, Organization, Bender Type, Job Number, Work Order 2 - Fixed auto repeat fill button in Measured XYZ data grid. 3 - Added "Additive Invert of XYZ column" for MEASURED data. (It was already available in the MASTER data.) 4 - Removed confirmation of Additive Invert operation for XYZ columns since it is saved in the Undo list anyway.
229	8/9/2020 16:59	Customer Release 1 - Added UAC Section Control: Measured Tube data - controls who changes the Measured Tube data 2 - Added UAC Section Control: Tube Data Storage - controls who enters Tube Data Storage 3 - Added UAC Section Control Inspection Setup switch - Controls who can set the Alignment Type and also set default tolerances 4 - Added UAC Required User ID Enter at Measure switch. (This switch requires that UAC be enabled before it is active.) 5 - Added User ID text insert into Tube Data Storage - both measured and aligned fields 6 - Added Measure Setup "Use Bender Profile Inline" switch to allow setup to always use bend profile inline measures or not. 7 - If inline bend profile measure is OFF in measure setup, then bend profile measurement is now performed manually.
221	8/6/2020 10:59	Customer Release 1 - Make VTP project file save more robust with pre and post save backups. 2 - Automatic pre-save project file backup. The backup filename will append "_presavebackup.VTP" to the filename. 3 - Automatic post-save project file backup. The backup file will append "_postsavebackup.VTP" to the filename. 4 - Automatic post-save backup of project in a Supravisoin (\$\$\$) file. The backup file will append "postsavebackup.\$\$\$" to the filename.
219	8/4/2020 14:54	Public release: Changed switch "automatic reverse of measured data" to OFF by default.
218	8/4/2020 14:53	Changed switch "automatic reverse of measured data" to OFF by default.
217	7/30/2020 17:38	Release to customers - VTube-STEP Assembly Fix
216	7/30/2020 17:37	Fixed Assembly Control window tube list column count mismatch for VTube-STEP.
215	7/28/2020 17:56	Release Build
214	7/28/2020 17:55	VTube-STEP Translation application crash fixed (was calling to VTube-LASER window improperly during translation redraw)
213	7/28/2020 13:06	Merge check in
212	7/28/2020 13:05	Added new Alpine/CSM YBC and XYZ Extended Setup Forms Added Alpine M5 Corrections Protocol to Benderlink Updated CSM M5 Corrections in Benderlink Allow STEP to Send to Bender of CSM and Alpine protocols Allow STEP to Send to Bender of SMI protocols The "Send to Bender" now uses the path to whatever the Benderlink setup is set to.
211	7/27/2020 11:46	Check in merge
210	7/27/2020 11:44	finished making translate float control close
209	7/25/2020 16:02	Merge Check in
208	7/25/2020 16:01	Transform and Translate Compete Added Translate Button in Parametric Menu Added Align in VTS Assembly Control
207	7/25/2020 13:31	Save state before major change to procedure TOrm_translatecontrol.sBitBtn_TranslateToOriginClick Sender: TObject); This is a restore point
206	7/24/2020 18:55	Initial forray into Translate programming. Incomplete - but partially working
205	7/24/2020 16:42	Checkin merge
204	7/24/2020 14:49	Transformation - both true and snap axis complete
203	7/24/2020 11:20	Merge checkin
202	7/24/2020 11:12	CSM M5 - Commas only in floating point
201	7/23/2020 19:54	Added True View Transformation for Assembly Tubes Next: Add new controls in STEP grid for Assembly Next: Snap to axis Assenbly follow
200	7/23/2020 15:11	Merge checkin
199	7/23/2020 15:10	fixed the color set sells in the envelope setup inside Inspection
198	7/21/2020 13:05	Checkin
197	7/20/2020 14:54	Checkin Merge
196	7/20/2020 14:53	Fixed UI update when LASER XYZ changed

195	7/16/2020 15:41	Checkin Merge
194	7/16/2020 15:41	Added report tokens for rectangular variables in part setup. rec_width_1 rec_width_2 rec_fillet_radius rec_wall_thickness rec_alignment_angle
193	7/13/2020 11:59	Merge Checkin - Fixed bug in auto swap end during alignment
192	7/13/2020 11:59	Fixed automatic end swap bug
189	7/10/2020 17:32	Fixed Measure Setup grid updates with sync to assembly issues. Fixed alignment process so that only tubes with Alignment active are actually aligned.
188	7/8/2020 18:14	Checkin Merge and Release build
187	7/8/2020 18:14	Realtime Scan Score Refinement
185	7/7/2020 23:32	Removed Numbers list reference in both STEP and LASER It is still in the database - but there is no reason to pursue this feature now.
183	7/7/2020 16:47	DOCS Assembly Import Completed
182	7/7/2020 15:31	Finished initial coding for DOCS assembly import
181	7/7/2020 12:19	Intermediate Checkin Added DOCSPartAssemblyList.pas
180	7/7/2020 11:23	Beginning Change to DOCSdata for handling assemblies
178	7/6/2020 16:52	Isogen Merge Commit
177	7/6/2020 16:51	Finished HEXAGON Isogen import
176	7/5/2020 16:35	Added FormXYZtableTranslate.pas. Addition is incomplete
174	7/4/2020 22:09	Leapfrog will now transform all measured tubes in the assembly that have the aligned option enabled.
173	7/3/2020 1:32	formmeasurecontrol.pas - line 30974 to 30994 was added to transform the measured aligned transformation during leapfrog. It is not tested yet and needs to be tested. attUCSTransformation_support.pas was enhanced with an overloaded transformation procedure to allow for transformation based on both pointlist and tubexyzlist. MUST TEST transformation logic.
172	6/28/2020 17:30	Caption change in Import of Cognex ASC files
171	6/28/2020 17:24	Changed the point cull to 5 mm proximity for ASC file input into Cloud Control. Turned off Question form position integer report in smart inspect.
170	6/27/2020 22:46	Import ASC point clouds separated by #9 from COGNEX Not fully implemented
169	6/26/2020 16:44	Overwrite prompt was turned on in several Save Dialogs.
168	6/26/2020 16:14	LRA Spinner repaired in LASER
166	6/26/2020 10:01	Fine tuned the display of LRA Deviations in the grids by putting grey cells where editing and color coding is not applicable.
165	6/25/2020 20:01	Refined LRA Deviation Grid and Reporting
164	6/25/2020 16:49	Finished the LRAdev UI. "Bender" data. Added FileIO_VTube_v135.pas. It now includes LRA Deviation Tolerances in main section, assembly section, and tube data storage section.
163	6/25/2020 13:24	Added LRAdevTol list to TubeDataStorage FLRADeviationTolerances: TLRADeviationToleranceList; Initial completion of grid events in util_LRADeviationGrid.pas
162	6/25/2020 11:21	Connected all events for LRAdev grid. Installed all setups.
161	6/24/2020 19:57	Finished up objects for LRA deviation grids. Remarkd out the TubeDataStorage version of LRAdev. No one needs it yet.
160	6/24/2020 17:26	Default Tolerances for LRA edits and buttons connected with events and updates
159	6/24/2020 14:26	Added LRA set default tolerance edit boxes and buttons to Inspection menu.
158	6/23/2020 18:11	Added FLRADeviationToleranceList to Maindatabase
157	6/23/2020 18:05	Added DefaultToleranceLRADeviations property to OptionsMeasure object
156	6/23/2020 17:59	LRADeviationToleranceList.pas added
155	6/23/2020 17:51	Added object LRADeviationTolerance.pas
154	6/22/2020 23:01	Minor modifications to grid unit files for LRA deviations
153	6/22/2020 17:26	Fixed Tan/Mid grid by changing alignment to Client.
152	6/22/2020 13:08	Checking measure control form
151	6/22/2020 11:04	Fixed Tangents in Tolerance Progress feedback for Assembly Alignments
149	6/18/2020 19:25	Fixed the Assembly alignment with Precision Weight control. It works well now.
148	6/18/2020 13:31	Added a unique Cylinder Fit historical list to each assembly tube so that each tube can have its own scoring system. Added Project File Save logging feature to record when a file was saved and if the file save was successful.
146	6/17/2020 18:01	FileIO_VTube_v134.pas added to library
145	6/17/2020 18:01	New FileIO 134 now stores the cylinder fit history for each tube in the project assembly. Copy Tubes in Data Handling now includes Aligned to Measured and Aligned to Master
144	6/17/2020 14:00	Reworked the Alignments so that a single-part alignment will automatically align the rest of the assembly. Compiles: Yes I have assembly align INVISIBLE in this version - but will turn it back on in a future version.
143	6/15/2020 19:16	Compiler Directive to remove Best Fit 4 until fixed. Compiles: Yes.
142	6/15/2020 16:57	Added OverallScanScore Indicator window Compiles: Yes Release: Yes
141	6/15/2020 10:48	Compiles: Yes Changed UI CFS to Scan Score for clarity
140	6/14/2020 17:59	Changed the Inspection Menu back to Lengths on top. Added an End Length caption. Reduced the tab heights from 40 down to fit the text in order save on UI area.
138	6/14/2020 17:16	Moved Length Qualification back to older location - top of Inspection menu
137	6/13/2020 12:46	Removed code from LRADeviationGrid
136	6/13/2020 12:40	Added new captions for Initialize headers of LRAdev grids.
135	6/13/2020 12:05	Added slabel_ResetReportTemplatesHelp caption to explain exactly what "Reset" means in the context of Report Templates.
134	6/13/2020 12:01	Added an image to the Reset Default Report Templates button.
133	6/12/2020 14:50	Debugged and fixed automatic report template reset feature. Was looking in the wrong list. Now it resets the list if the list has zero templates. Also increased the size of the reset button in System Options.
132	6/12/2020 13:20	Merged Reset Template branch
131	6/12/2020 13:19	Added Reset Default Report Templates button in Reports tab in System Options
130	6/12/2020 13:09	Added CountReportTemplatesInConfigSectionReportTemplates: string): integer to check if either report template list is empty. If a report template configuration has zero templates, VTube will automatically reset the list so that it has reports. If it has more than zero, then it will ignore the reset.
129	6/12/2020 12:20	Finished adding LRA deviation report and tolerances
128	6/12/2020 12:18	Started adding LRA deviation report with tolerances
127	6/11/2020 13:24	VTube-STEP MS Export Added

126	6/10/2020 15:45	Added new report tags for reporting Cylinder Fit Scores. Fixed a bug in util_html.pas where a <vtube_val> tag on the left border would not be handled properly. The resulting value was omitted.
125	6/9/2020 14:16	Fixed a tolerance edit bug in inspection. Added sync to TDS after validation of all values in the grid. Discovered by Active Exhaust team.
124	6/8/2020 20:00	Best Fit Alignment 4 - Deeper
123	6/8/2020 16:13	Modified the UI for Inspection Tab Menus. Put the End Length in its own tab menu. Put the arc gauge for tangent % in tolerance in the tangent grid tab
122	6/8/2020 13:59	Added the Cylinder Measured Data Detailed Scores grid and grid pas file
121	6/7/2020 23:55	Fixed a divide by zero when averages for Cylinder Fit Score data are zero.
120	6/7/2020 22:37	Cylinder Fit Score % value calculations are added in support_measurescore.pas. I also added UI circles to show the value.
119	6/6/2020 16:02	Added the StraightListStorageCylinderMeasuredData that stores a list of cylinder fit data for every straight. This object is now part of the maindatabase. It is not stored in tube data storage. It is saved in VTP File v133.
118	6/6/2020 14:56	Added util_measuresetup_displayoptionsGrid.pas Added FileIO_VTube_v133.pas
117	6/6/2020 14:55	Added attOneCylinderMeasuredDataStorageList.pas
116	6/6/2020 14:55	Added Manage Lists TAB menu in System Options. Added "Clear Cylinder Fit History List for this Project" button in the menu. Added Clear Cylinder list to FileIO_133 structure.
115	6/6/2020 14:18	Added initial measure scores UI. Added Circular progress wheel to alignment progress window.
114	6/6/2020 11:07	Added Bend Data Tab in Inspection Data - Incomplete implementation - just starting
113	6/5/2020 22:09	Reorganized Measure Setup Grids. Moved BP variables from Miscellaneous Tab to Bend Profile tab. Removed all references to BP slices and slice angles in the Misc tab. They are not used any more. Renamed the Misc tab to "Display" since everything in that menu is related to what gets displayed during and after measure. Removed checkbox switch for setting datastore.OptionsMeasure.IncludeBendProfileMeasure in Measure Setup. This value can be turned on or off while measuring centerlines, and also can be turned on and off by the inline bend profile switches in Datastore.BendProfileDatabase.PerBendRadiusQualificationDataList[BendIndex].BendProfileMeasureOptions. Added util_bendprofile_measuresetup.pas. Renamed the original util_bendprofile_measuresetup.pas to util_bendprofile_inlinemeasuresetup_grid.pas
112	6/5/2020 13:08	Added DataStore.OptionsMeasure.BendProfileCloseToBendPlaneDistance to control the Bend Profile planar threshold of in plane point selection (in the v5 and v6 BP calc procedures in util_bendprofile.pas.)
111	6/4/2020 21:45	Added and tested unique sounds to different Bend Profile measures
110	6/3/2020 20:31	Added bend profile envelope report html tags <td class="td_xyz"><vtube_val>array_radiusqualification_bendprofile_measured_yes_no</vtube_val></td> <td class="td_xyz"><vtube_val>array_radiusqualification_bendprofile_measured_yes_no</vtube_val></td> <td class="td_xyz"><vtube_val>array_radiusqualification_bendprofile_envelope_tolerance</vtube_val></td> <td class="td_xyz"><vtube_val>array_radiusqualification_bendprofile_envelope_in_out</vtube_val></td>
109	6/3/2020 18:08	Moved checkbox for auto regenerate image for report from the report window to System Options.
108	6/3/2020 15:49	Added a new UNISON SVNET protocol. Adjusted some of the SVNET protocol messages in Bender Setup
107	6/2/2020 19:09	Added YLM SVNET. Added Inline Bend Profile measuring that works. Fixed Benderlink grid for choosing protocols. Bender Setup map cells now show pulldown all the time and no longer require three clicks to change the values. Form Bend Profile Method will make Radius value disappear when inline. When stand-alone, then returns radius.
106	6/2/2020 8:38	Changed order of BP Measure Types - Made Inside Only first
105	5/29/2020 21:33	Added more logic for automeasure BendProfile. It still needs to be perfected.
104	5/28/2020 22:54	Initial Bend Profile Automation During Measure Logic - UNTESTED
103	5/28/2020 19:14	Added new support files. The dropdown combolist now shows in the Accept button setup in Measure Setup
102	5/28/2020 19:05	Added Options measure - Per bend BP setup - Combolist for measure type and Checkbox for enable measure. Added localized YES/NO boolean text. Modified the Inspection grid for BP with the type of measure and whether or not it was measured.
101	5/24/2020 22:53	Added // v3 protection if VTubePersistence.UISkinIndex > SkinsList.Count-1 then VTubePersistence.UISkinIndex := 0; Also added iOS4 and iOS4 Dark skins back to user interface for Blue Origin - John Thompson.
100	5/24/2020 22:11	Fine tuned reverse calc for use with floating control window
99	5/23/2020 22:48	Added BendProfileMeasureOptions to control which bend profiles are measured and how they are measured. Removed many skins from SkinManager to avoid RSLINK failure during compile
98	5/23/2020 10:02	Got rid of formman_bad_changes.pas and dfm
97	5/23/2020 10:00	Much improved Bend Profile measure algorithm v5 a v6
96	5/16/2020 22:15	Changes to Bend Profile grids and popups
95	5/15/2020 0:08	Save merge back to main branch
94	5/15/2020 0:05	FileIO_130 added. It has AcceptButtonType_BendProfile_InsideOnly added to the end of the OptionsMeasure object
93	5/14/2020 22:29	Added Either INSIDE or INSIDE OUTSIDE bend profile measure. Added new Accept button setting for Bend Profile Inner and Inner/Outer.
92	5/9/2020 21:45	New FileIO_VTube_v127 with new OptionsMeasure.DefaultToleranceBendProfileEnvelope included in the project file. I made many other small adjustments - like automatic update of OD nom in Bender Profile Tolerance grid. Added the HAN JIE SVNET protocol.
91	5/6/2020 21:59	Make laser separation box always enabled in Tube Measure Control
90	5/6/2020 13:05	Adjustments to when quadrant points turn on and off. New captions for inspection setup of BP Quadrant points
89	5/5/2020 17:18	Fine tuned the control of quadrant points on/off in the Parametrics menu. Separated the recalc from the redraw of the BP quadrant points because the point locations need to recalculate with every update to the UI in order to ensure that they are usable in the inspection section for BP envelope

88	5/4/2020 17:36	FileIO_VTube_v126.pas added for new BP Quadrant Point variables
87	5/4/2020 17:36	Added BP Quadrant Point Setup grid. Added util_bendprofile_setup_grid.pas to control the grid
86	5/3/2020 16:31	More Setup changes for Bend Profile
85	5/2/2020 23:25	Added new PAS units SWtransfersetup.pas FileI_VTube_v125.pas BendProfileQuadrantPointsGraphicsSetup.pas - which contains the graphics setup for the quadrant points for each of the three models (Master, Measured, Aligned) BendProfileGraphicsSetup.pas - which contains all the setup for the bend profile graphics
84	5/2/2020 23:19	Added quadrant points for MASTER and MEASURED Added FileIO 125 to store new graphics setup for the quadrant points Added FileIO 125 to store the high and low quadrant distance for bend profile
83	4/30/2020 11:55	Added two new files from CADSharp to be included in the program file folder with VTube.exe
82	4/30/2020 11:54	Finishing adding the new SOLIDWORKS transfer to model and drawing. The SW Builder menu is completely updated.
81	4/25/2020 15:58	Version 3 of the XLM file for SWTRANS is complete in this changeset.
80	4/25/2020 0:31	XML Version 3 Changes - Incomplete
79	4/23/2020 23:56	Added logic for cross section point draw in MASTER. Added smartinspect_utilities.pas file for special utilities for Smart Inspect.
78	4/21/2020 16:22	Added attBendProfileCrossSectionPoints object
77	4/21/2020 16:21	Added BendProfileCrossSectionPoints_Measured, BendProfileCrossSectionPoints_Aligned, BendProfileCrossSectionPoints_Master to RadiusQualificationData. Only the _Measured points are saved to FileIO. The other points are calculate in real time.
76	4/21/2020 0:29	In util_bendprofile.pas, removed BendProfile calc version 1 and version 2. Version 3 is the final approach for now. Removed redraw from after reverse calc. VTube no longer asks for Cut Length calc permission after reverse calc. (annoying) VTube now just shows a banner that says that is recalculating the cut length. Added some additional process log messages for util_bendprofile version 3.
75	4/20/2020 13:54	Updated Bend Profile so that it returns a Process Log for every bend profile measured The Inner Radius calculation was changed to the rotate 90 bisection method. Works great. Added Planar tolerance to parameters Added Datastore to parameters so that the units can be logged in the current unit. Added ProcessLog property to RadiusQualification object Store ProcessLog in FileIO_124 for recall later Added FileIO_VTube_v124.pas to version control
74	4/19/2020 0:13	Experimental 3 Point circle logic for Inner Radius. Finding: The logic is too dependent on hyper accurate point placement. Reject implementation.
73	4/17/2020 22:30	Added FileIOv123
72	4/17/2020 22:29	Version 3 of Bend Profile Radius Calculation is not complete. Has diagnostic code for debug
71	4/15/2020 18:33	Added BendProfileEnvelopeTolerance to PerBendRadiusQualification object Started adding Envelope grid for overall qualification grid in Bend Profile Inspection Menu
70	4/14/2020 22:22	Fixed Bend Profile measure in reverse engineer - Fixed PerBendRadiusList count set when generating Bend Profile Data Moved Bend Profile Control windows over to right side of tube measure control window so it is not overlaid Fixed an incorrect suggestion to switch to PROBE mode at Bend Profile measure close. VTL was calling out to FARO when connected to the HEXAGON.
69	4/14/2020 20:57	Temporary use of cross section radius until resolve issues with inner radius calculation
68	4/13/2020 23:48	New Centerline Radius calculation is based on inside radius during bend profile measures But it also now keeps the Cross Section Radius - which is different Also, the PerBendRadiusQualificationList Logic is completely rewritten Added FileIO 122 to store the two new CLR values calculated from bend profile scans. This is in preparation for bend profile qualification
67	4/10/2020 17:48	Added color coded Radius Profile reporting Must still add OOR% and Oval%
66	4/9/2020 17:57	Added Straight Cylinder Profile Data Report
65	4/7/2020 21:48	Added support files
64	4/4/2020 23:51	Added initial tessellation logic for surfaces
63	4/4/2020 16:54	Add support files
62	4/4/2020 16:53	Add support files
61	4/4/2020 16:51	MS Correction Added Fixed VTP filename extension issue
60	3/30/2020 18:44	Finished Two Tori Straight Solve
59	3/23/2020 23:01	New PAS files for space objects
58	3/23/2020 22:57	New Alignment logic - Incomplete
57	3/15/2020 23:31	Initial SpaceObject Logic Added
56	3/5/2020 22:52	Several changes were made for the sound file handling and FARO connect speed
55	3/3/2020 22:45	HEXAGON Isogen Import Support Global Value Limits Support
54	2/28/2020 20:36	Minor changes to options_measure.pas
53	2/26/2020 23:19	Added GTubeData source files
52	2/26/2020 23:17	Merge checkin
51	2/26/2020 22:57	ROMER G-Tube Import Added
50	2/26/2020 13:12	Merge
49	2/25/2020 21:21	New SCHWARZE-ROBITEC SVNET protocol added. Changed all the SAVE dialogs everywhere so that they are the Win 10 version.
48	2/21/2020 18:39	Several sSave dialogs changed to sFileSave for update to the latest file dialog. Also, I added several pas files from source folders to version control.
47	2/16/2020 21:42	Transformation Logic Reworked the Sounds so that they do not interfere with the scanning speed in the FARO
46	1/29/2020 19:43	Changes to Tube Data Storage Exports