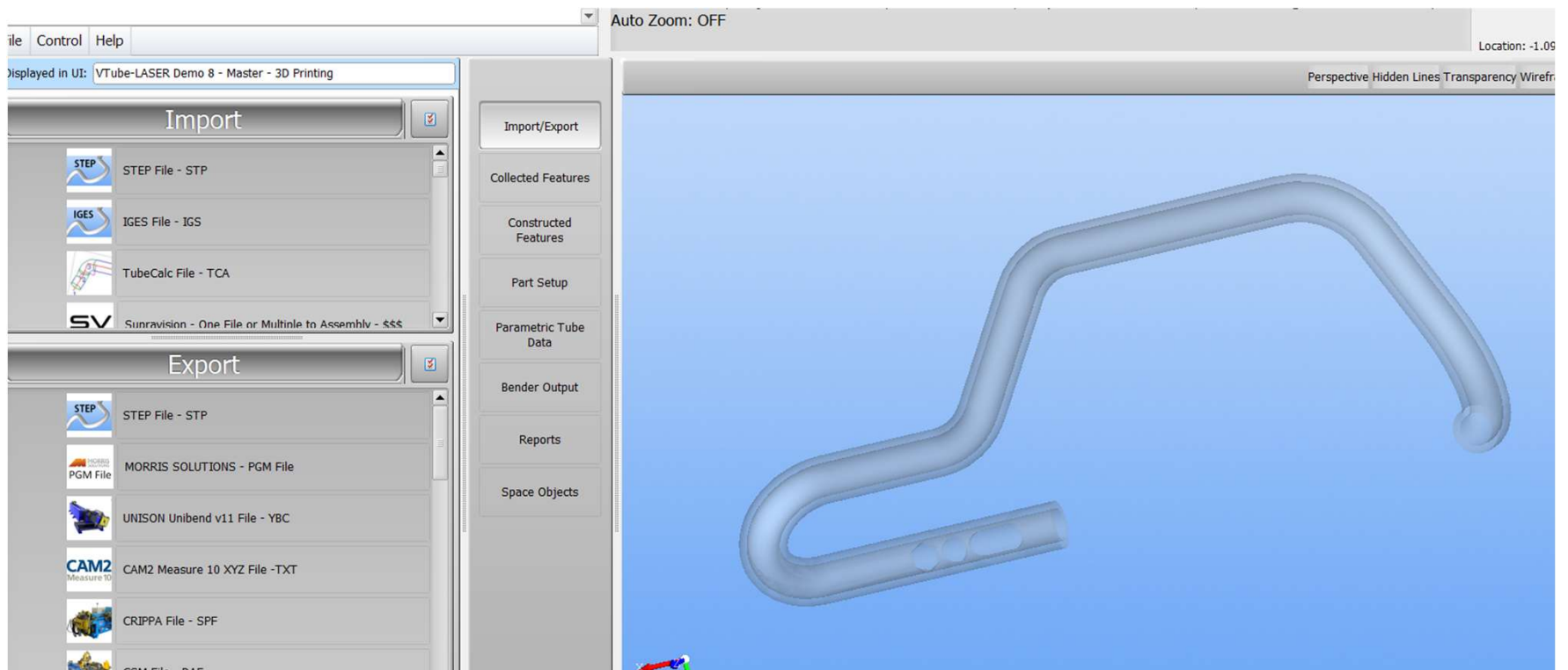




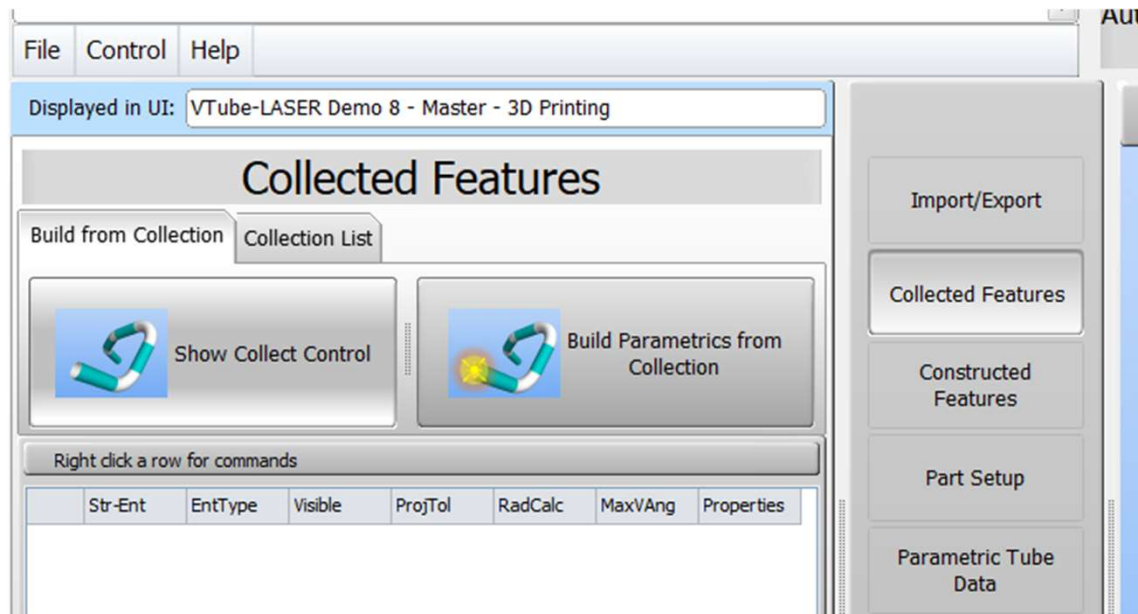
Workflow for VTube-LASER

Importing and Measuring a
Split Bend

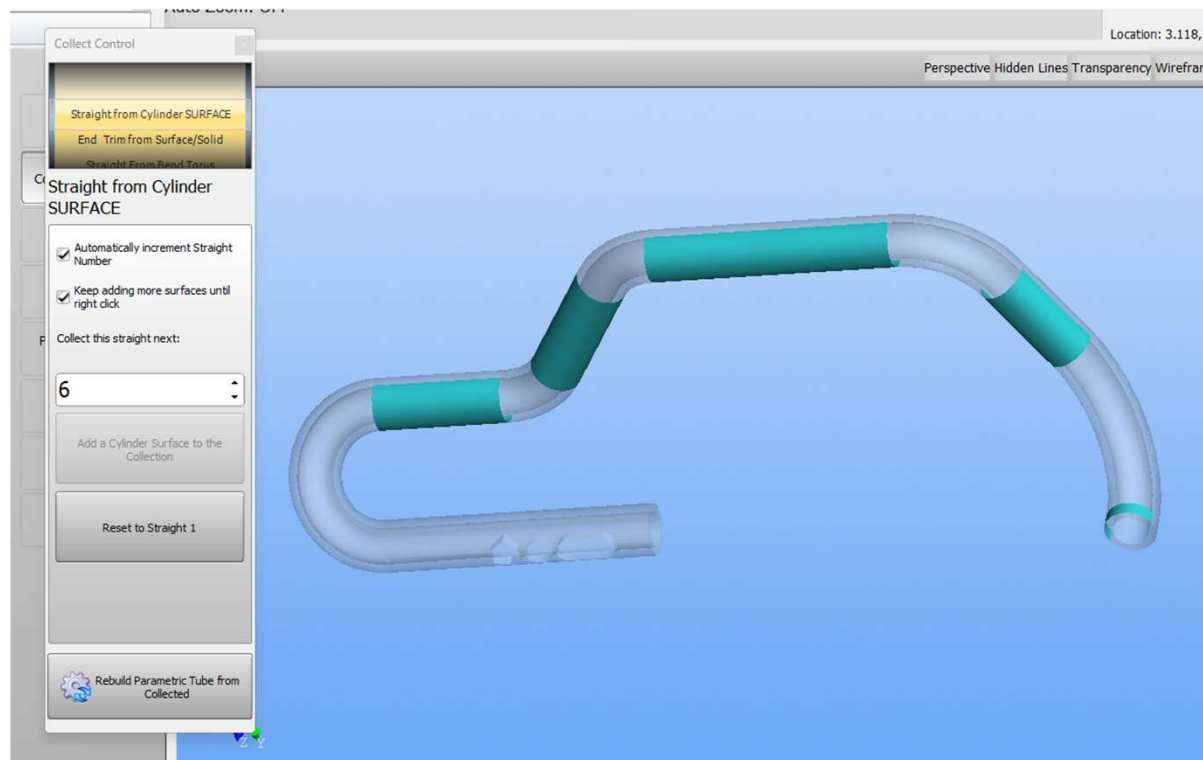
Import your 3D model



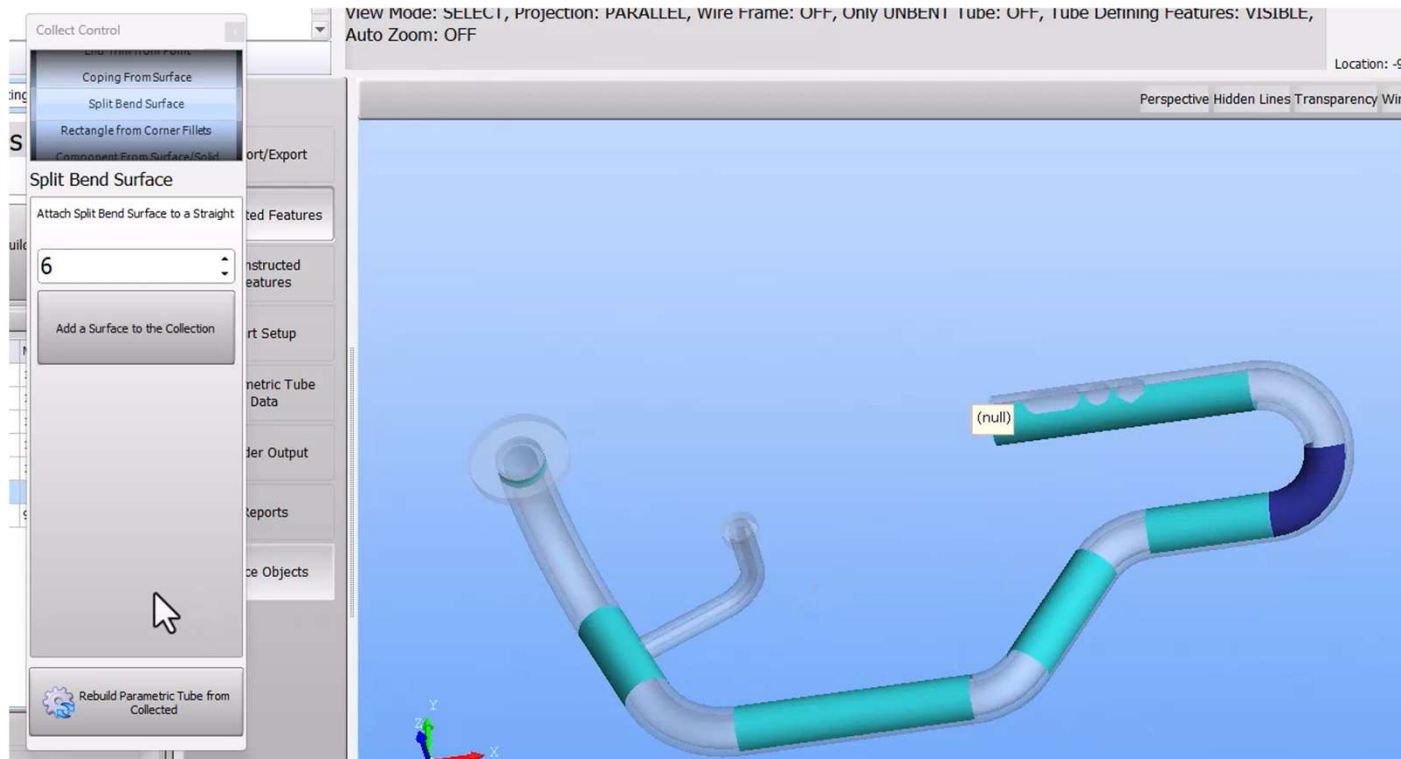
Go to Collected Features > Show Collect Control



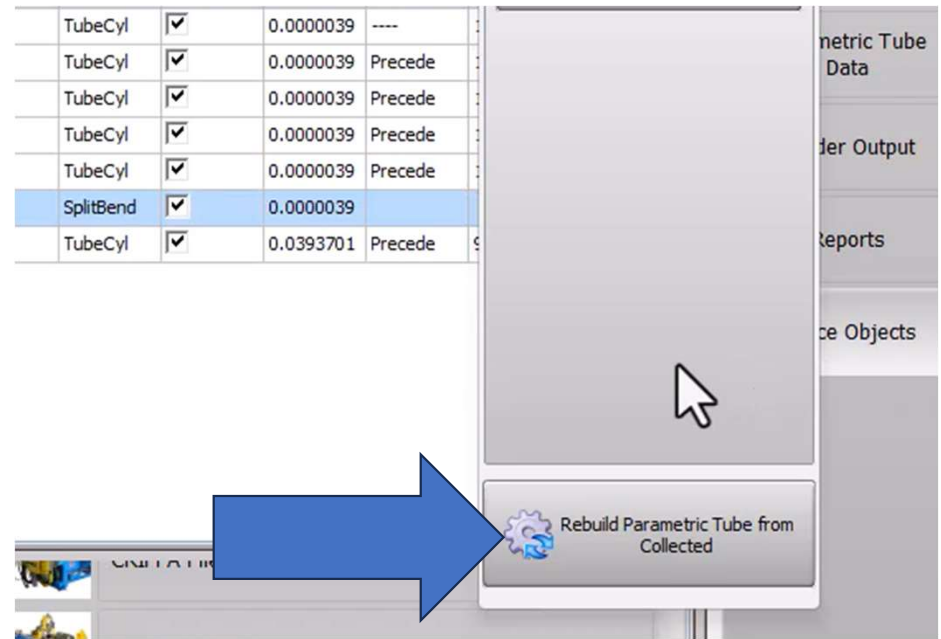
Collect your tube cylinders using “Straight from Cylinder SURFACE” for straights 1-5 and 7



Switch to “Split Bend Surface” for straight 6 and select the split bend



Rebuild Parametric Tube from Collected



VTube will create a 0 length straight in the middle of the bend as straight 6

The screenshot displays the VTube software interface. The main window is titled "Parametric Tube Data" and contains several sections:

- Centerline XYZ Data:** A table with columns for Pnt, X, Y, Z, Radius, and DofBend. It shows two intersection points.
- Current Cut Length:** 22.871 in.
- Incremental LRA:** A table with columns for L, R, A, Radius, Unbend, and Rad Level. It lists seven segments, with the sixth segment highlighted in yellow and a red box around its data.

The "Split Bend Setup" window is open, showing a table of "Straight" segments and their "Setup" configurations:

Straight	Setup
1	No Split
2	No Split
3	No Split
4	No Split
5	No Split
6	Split Bend at Apex
7	No Split

The "Split Bend Help" window is also visible, providing instructions on how to use split bends, particularly in LASER mode.

The background shows a 3D model of a tube with a split bend, with a callout '4' pointing to the apex of the bend.

Switch to VTube-LASER to measure the tube

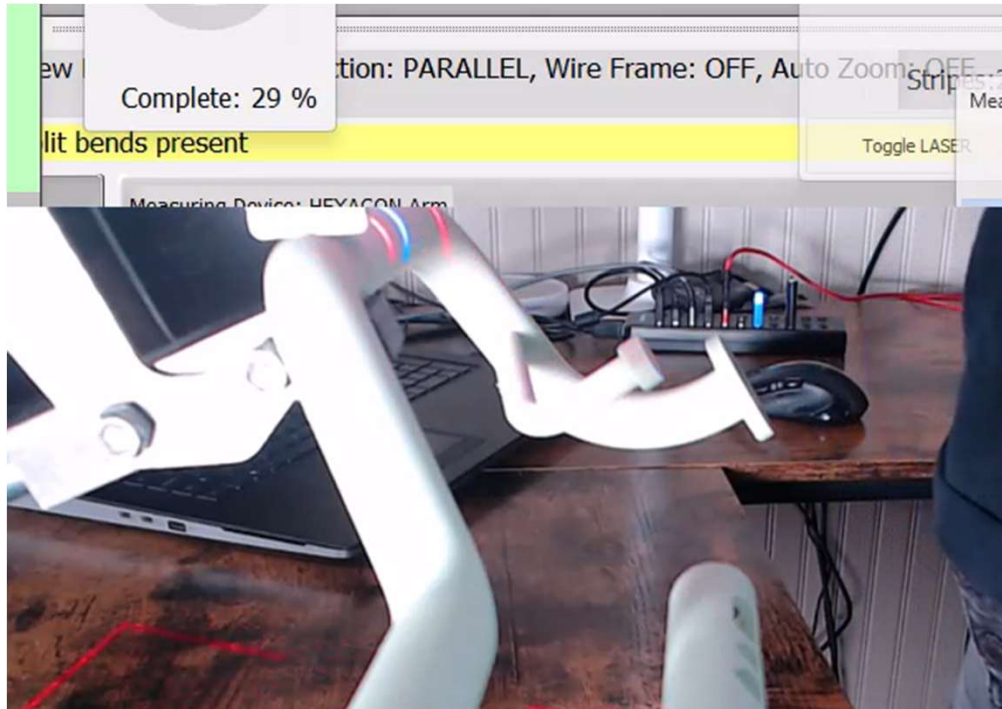


Make sure your DCP is on

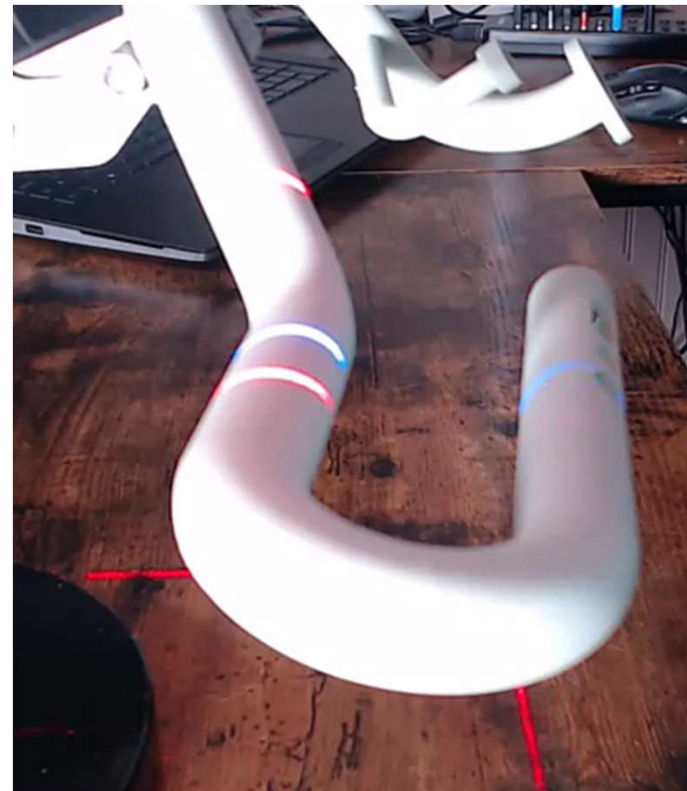


4 AM - Seconds Idle: 1230 Cfg Sav

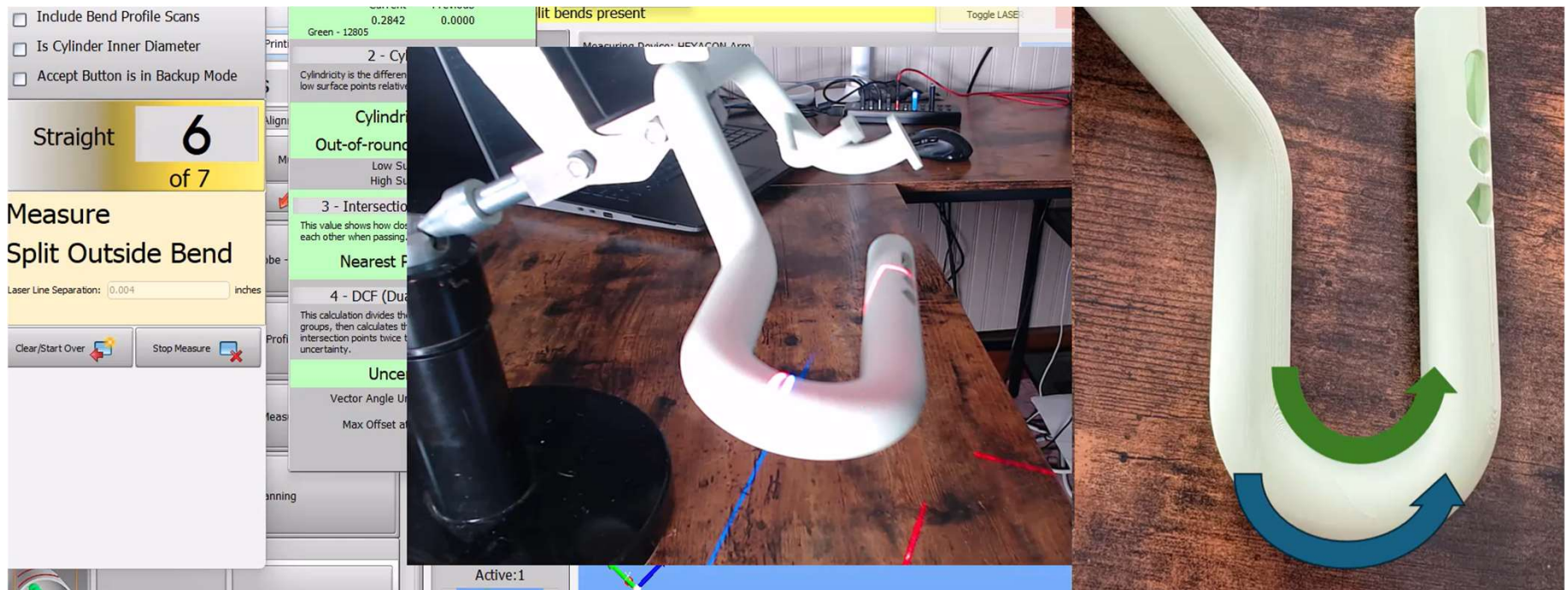
Measure the tube as normal until the split bend



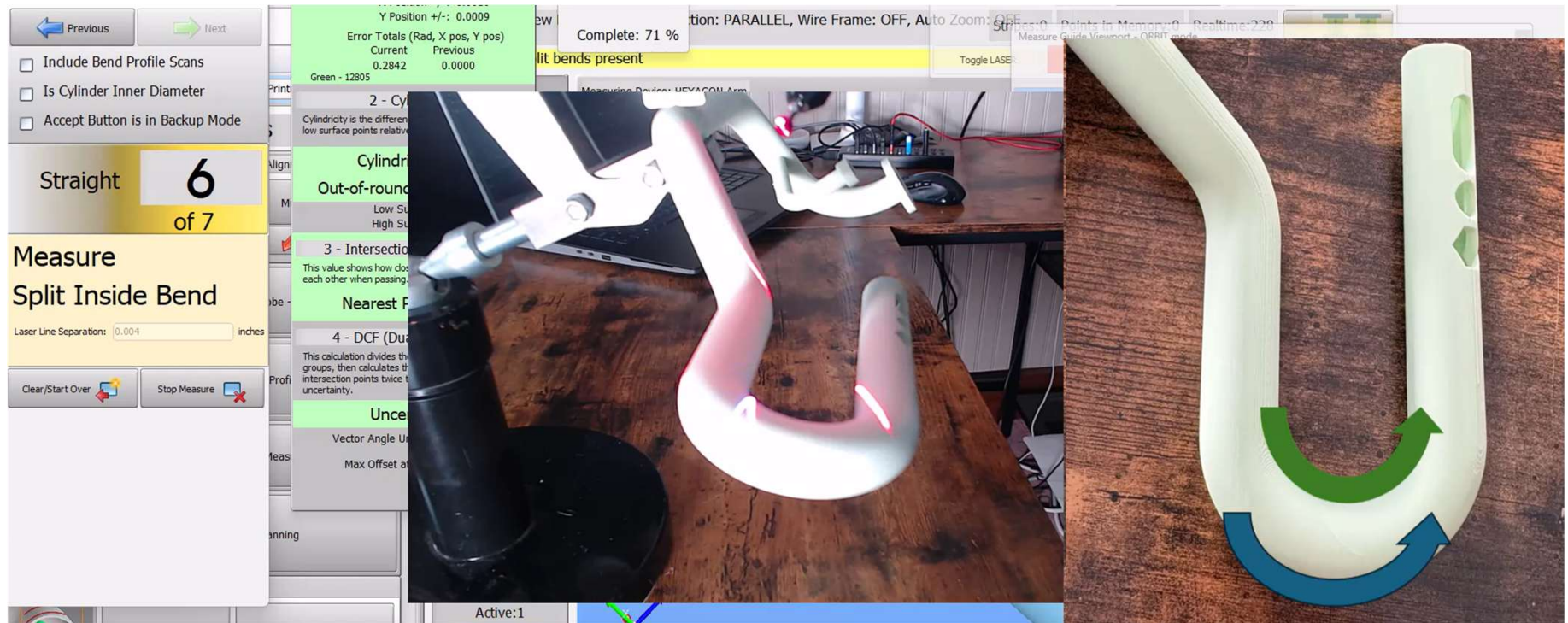
Make sure the laser line is falling on one side of the parallel straights and not both



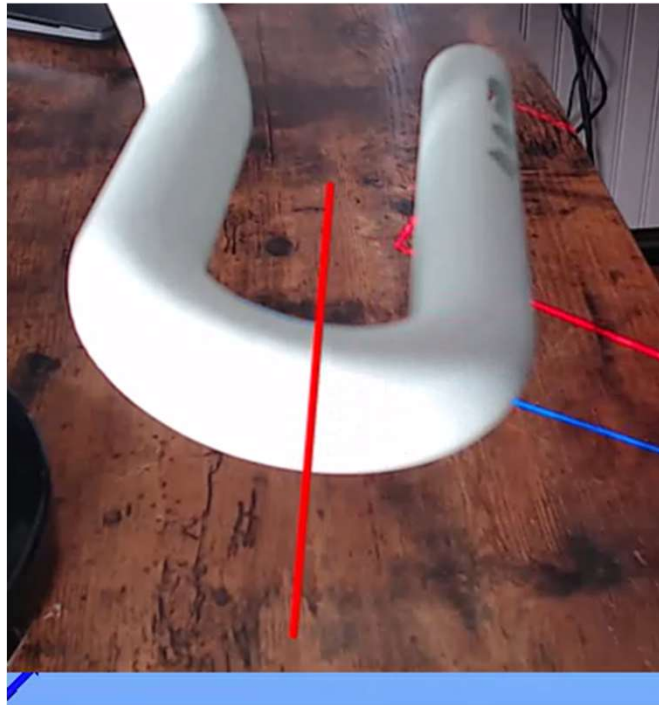
Measure the Outside of the Split bend



Measure the Inside of the Split Bend



Make sure to pass the 90-degree (center) of the split bend when measuring outside/inside



FINISH and Build Measured Tube

The screenshot displays a software interface for measuring a tube. On the left, there are several checkboxes: Include Bend Profile Scans, Is Cylinder Inner Diameter, and Accept Button is in Backup Mode. Below these is a yellow bar with the text "Measure Measure Complete" and a "Laser Line Separation" input field set to 0.097 inches. Two buttons are present: "Clear/Start Over" and "Stop Measure". A blue arrow points to the "FINISH and Build Measured Tube" button, which has a green checkmark icon. Below it is another button: "FINISH and Build then MEASURE AGAIN" with a green up arrow icon.

The right side of the interface shows a 3D model of a tube with measurement points. A data panel on the right displays the following information:

- Green - 12805
- 0.2878 0.0000
- 2 - Cylindricity
- Cylindricity is the difference between the high and the low surface points relative to the cylinder centerline.
- Cylindricity: 0.0031
- Out-of-round %: 0.8
- Low Surface: 0.3721
- High Surface: 0.3752
- 3 - Intersection Pass Distance
- This value shows how close two 3D centerlines get to each other when passing.
- Nearest Pass: 0.0000
- 4 - DCF (Dual Cylinder Fit)
- This calculation divides the surface data into two groups, then calculates the cylinder data and intersection points twice to verify low absolute uncertainty.
- Uncertainty: 0.0000
- Vector Angle Uncertainty: 0.0000
- Max Offset at 2 inches: ..

At the top right, there is a status bar with "Toggle LASER" and "28 Percentage of". The measuring device is identified as "HEXAGON Arm".


The Measured Tube will also have a yellow bar where the Split Bend is

Displayed in UI: VTube-LASER Demo 8 - Master - 3D Printing

Measured Tube Data

Points | Export | Radius | Springback | Averaging | Translate | Reverse | B | < | >

Point Count 8

Measured Centerline XYZ Data: Lock Grids 

Pnt	X	Y	Z	Radius	DofBend
1	26.348	9.955	9.226		
2	24.547	10.439	8.113	1.875	
3	22.026	9.498	11.529	1.500	
4	20.480	4.695	11.791	1.000	1.33
5	21.245	2.571	9.685	1.000	1.33
6	20.187	-0.632	9.827	0.945	1.26
7	22.025	-1.265	9.405	1.003	1.34
8	23.596	3.375	9.198		

Inc 360CW 360CCW

Incremental LRA

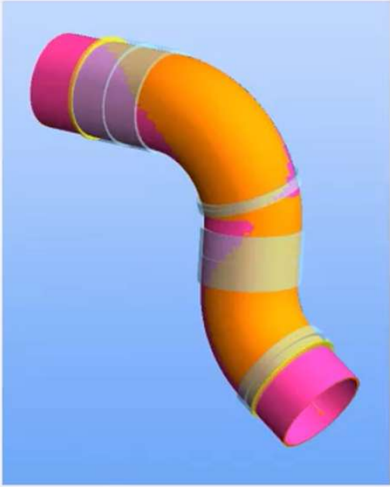
	L	R	A	Radius
1	0.353	0.0	88.3	1.875
2	1.575	-90.2	64.9	1.500
3	3.555	-0.3	57.1	1.000
4	2.001	-179.2	56.9	1.000
5	1.893	-134.9	179.6	0.945

- Part Setup
- Master Tube
- Measure Setup
- Measure Process
- Measured Tube**
- Inspection Data
- Bender Setup
- Reports
- Space Objects
- Data Handling
- User Interface

Active:1

Align measured to master

After-Measure Alignment



Align using this algorithm

Best Fit Alignment 5

Display a report automatically

Show a report after alignment

Choose the report template to use:

Tube Inspection Report

Align measured to master now

Copy measured to master and close this window

Skip the alignment and close window

The image shows a software interface for aligning a measured part to a master. On the left, a 3D model of a curved pipe is shown with several colored bands (yellow, purple, pink) indicating measurement points. The main panel contains settings for the alignment algorithm, a checkbox for automatic report generation, and a dropdown for the report template. On the right, there are three buttons: 'Align measured to master now' (with a mouse cursor icon), 'Copy measured to master and close this window' (with a blue arrow icon), and 'Skip the alignment and close window' (with a green arrow icon).