



**VTUBE  
LASER**

Tube measuring software for  
**MicroScribe Arms**



#### IMPORT MODELS

Import solid model data from STEP or IGES files generated by CAD packages to create MASTER data.

#### MEASURE

Measure tube shapes using touch probe technology for comparison against master data or to reverse-engineer from existing parts.

#### QUALIFY

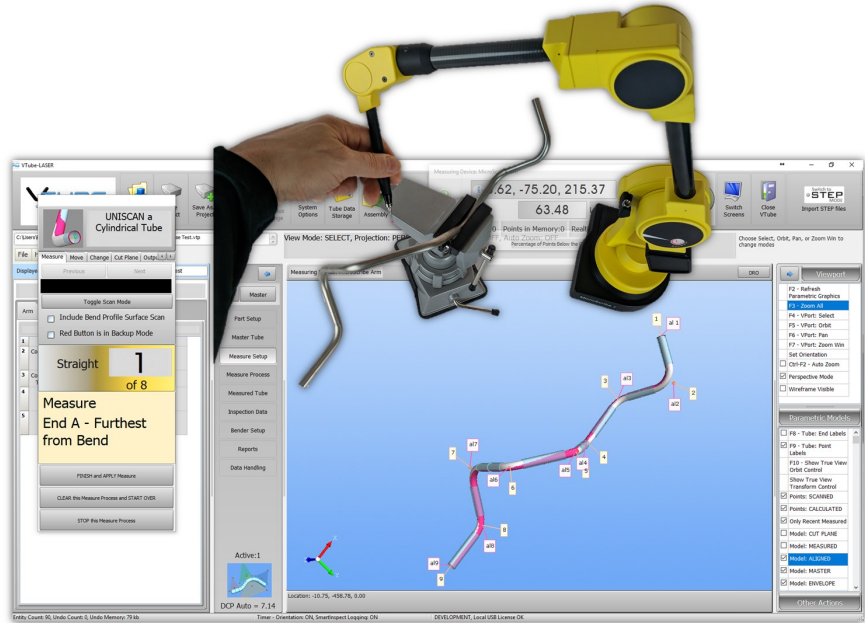
Fully-qualify tube shapes with inspection reports that contain tangent, midpoint, end angle deviations all compared to tolerance. Quickly verify a part shape by viewing the inspection result with shades of green (pass) or red (no pass).

#### DISPLAY MODELS

Display rendered image of measured tube, best-fit tube, and master tubes on the screen at the same time.

#### CORRECT BENDERS

Connect to and correct CNC benders.



This is the software tool designed exclusively for **tube measuring, tube-shape qualification, tube bender correction, and tube-shape reverse engineering** using touch probe technology.

- VTube-LASER connects directly to **MicroScribe Arms** with to measure tube shapes.
- Qualify tube shapes.
- Setup and correct a bender in just a few minutes. Transfer of correction data takes a few seconds.
- Build SolidWorks models of reverse-engineered tubes in seconds.



**ewware**  
**MicroScribe®**



Phone: 248 674-2059  
www.advancedtubular.com



# VTUBE LASER

## Tube measuring software for MicroScribe Arms



### ALL MICROSCRIBE ARMS

VTube-LASER connects to all models of MicroScribe Arms.

### IMPORT SOLID MODELS

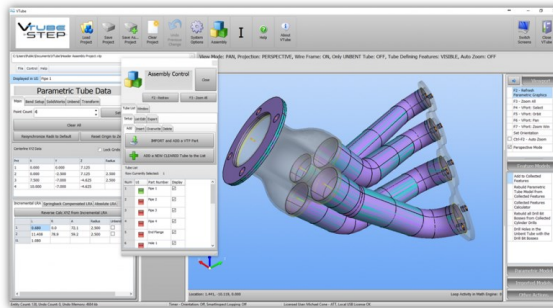
Import from any solid model CAD package using the universal STEP or even IGES format.

### EXTRACT CENTERLINE DATA

Extract centerline data to build MASTER data for inspection. View the results of the extraction in the viewport using transparency.



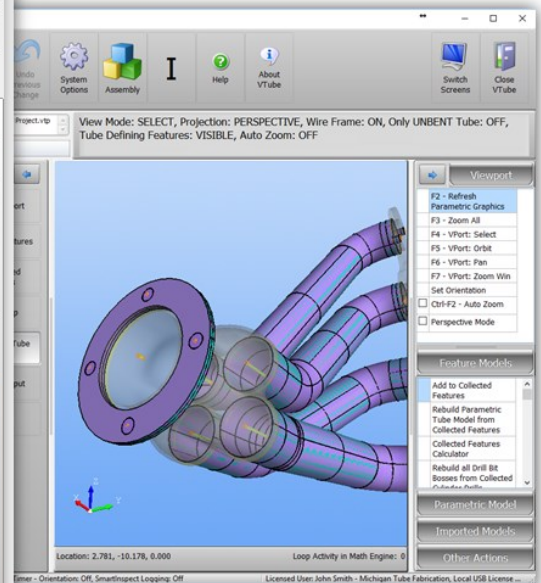
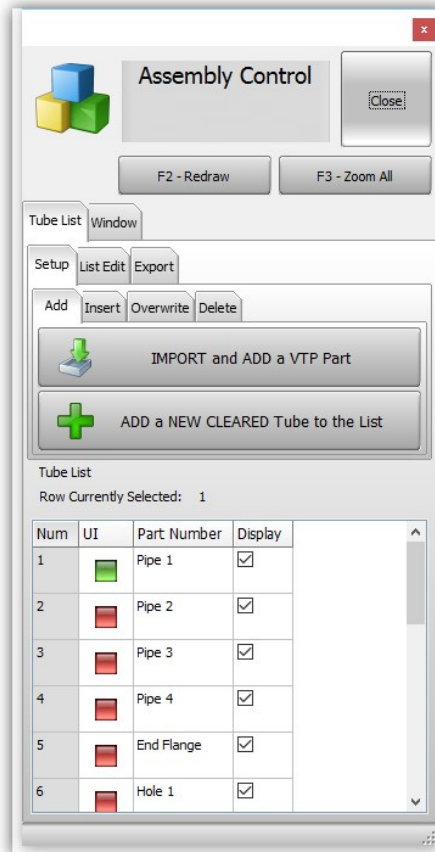
## SOLID Model IMPORT



The product design world is switching to "Model-Based Definition" (MBD), where solid models are used to create and control the nominal MASTER data.

VTube enables MBD by allowing you to import master tube shape data from the universal STEP or IGES files – which means you can import from any solid model package.

Import one tube or entire assemblies into on VTube-LASER project file.



Phone: 248 674-2059  
www.advancedtubular.com



Tube measuring software for  
MicroScribe Arms



# INSPECTION

## VISUALIZE DEVIATIONS

The measured tube is fit on the master tube using sophisticated fit technology, then displayed on the screen for visualization.

## INSPECTION GRID COLOR CODES

**Solid Green:** The deviation is less than  $\frac{1}{2}$  the tolerance.

**Light Green:** The deviation ok, but is greater than  $\frac{1}{2}$  the tolerance.

**Light Red:** The deviation is out of tolerance by less than 2 times the tolerance.

**Solid Red:** The deviation is out of tolerance by greater than 2 times the tolerance.



## Part Qualification

Fully qualify the part using the Inspection Results grid. Color codes give a quick indication of pass/fail for part qualification. Print customizable inspection reports to document the qualification.

### Inspection Data

Main Setup | Envelope | Alignment

Default Tolerance and Recalculate Alignment

Default Tolerance: 0.060 inches Set

Recalculate Best Fit - Automatic End Weight Adjustment

Trim A	+Tol A	-Tol A	Trim B	+Tol B	-Tol B	Angle A
0.031	0.039	0.039	0.012	0.039	0.039	0.66

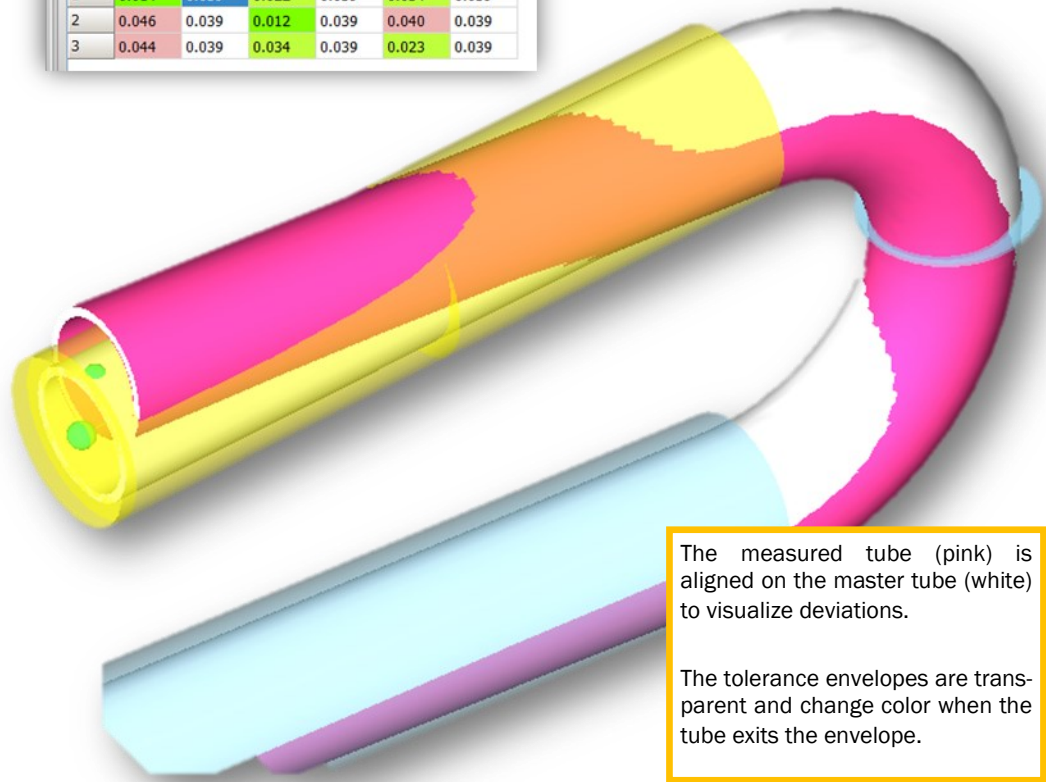
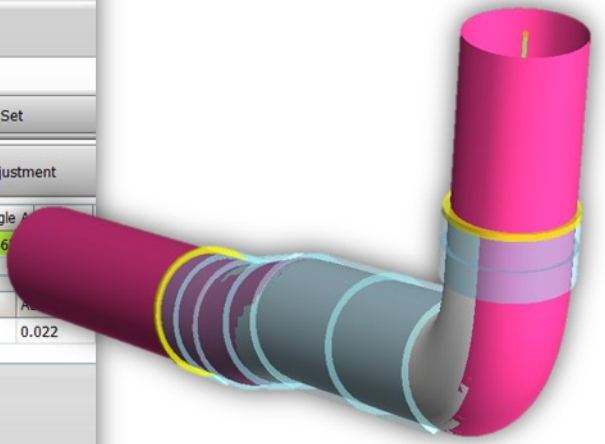
Len Master	Len Meas	Len Short	AB Master	AB Meas	Angle
11.465	11.388	-0.077	9.121	9.143	0.022

Inspection Points

Tangents | Intersection | Aligned Model

Change Grid Setup | Expanded Window

	T1 dev	T1 tol	MP dev	MP tol	T2 dev	T2 tol
1	0.014	0.039	0.022	0.039	0.034	0.039
2	0.046	0.039	0.012	0.039	0.040	0.039
3	0.044	0.039	0.034	0.039	0.023	0.039



The measured tube (pink) is aligned on the master tube (white) to visualize deviations.

The tolerance envelopes are transparent and change color when the tube exits the envelope.



Phone: 248 674-2059  
www.advancedtubular.com



Tube measuring software for  
**MicroScribe Arms**



# BENDERLINK

## Bender Communication

Connect up to 100 benders using the VTube-LASER Benderlink system. Network benders on your shop floor to correct the part shape in a seconds.

### BENDERLINK

We can help you integrate VTube-LASER to benders. We're known as Benderlink specialists.

### LEAPFROG

For tubes that are longer than the arm reach, VTube-LASER uses the LEAPFROG feature using magnetic conical seats we call "targets".

### KNOWLEDGEBASE

We have a comprehensive web-based knowledgebase that is available to all customers for details about our products – including revision details, technical documents, tutorials, and videos.



**Bender Setup**

Bender Number: 1  
Bender Name: CNC Bender Protocol: SVNET

Part Number: 1447141X  
Diameter: 69.900 millimeters  
Wall: 0 millimeters  
Cut Length: 0 millimeters

Automatic Springback Damping: 3.000 degrees  
Automatic Correction Damping:  Length Adjustments,  Rotation Adjustments,  Bend Adjustments  
Previous Adjustment Data: IS NOT PRESENT

	Length	Adjust	SB Adjust	NEW Len	Rotation	Adjust	Invert	NEW Rot	Angle	Adjust	SB Adjust	NEW Ang	Radius
1	15.3	-76.1	0.00	0.0	0.0	0.0	<input type="checkbox"/>	0.0	54.7	-0.3	0.0000	54.6	70.0
2	40.3	-10.8	0.00	34.9	-128.7	-6.3	<input type="checkbox"/>	-131.8	18.7	-1.1	0.0000	18.2	70.0
3	8.7	18.7	0.00	18.0	-55.8	-0.6	<input type="checkbox"/>	-56.1	77.0	-1.2	0.0000	76.4	70.0
4	58.8	-313.5	0.00	0.0									

## VTube-LASER COMMUNICATES with CNC Tube BENDERS

AddisonMcKee

Alpine

AMOB

BLM

Chiyoda

COMCO / KEINS

Crippa

CSM

EL Premier

EL Lightspeed

Herber

Horn Machine Tools

PINES Technology

SMI

SMT industries

SOCO

STAR Benders

Techno

Transfluid

Unison Limited

Winton

YLM



Phone: 248 674-2059  
www.advancedtubular.com



# VTUBE LASER

## Tube measuring software for MicroScribe Arms



### Flexible Reporting

#### TUBE DATA STORAGE

VTube can permanently store every measure in each tube's project file. Tube Data Storage records a permanent date-time stamped image of the data after every measure.

#### DATA for GAGE STUDIES

The Tube Data Storage feature is perfect for collecting data for GR&R studies – because all the data can be transferred to a Microsoft Excel spreadsheet with a button press.

Point	X	Y	Z	Radius
1	-19.445	0.942	20.785	2.000
2	-16.071	1.354	22.385	2.000
3	-13.250	-0.908	23.293	2.000
4	-8.893	-0.354	25.340	2.000
5	-11.231	-1.311	30.785	2.000
6	-8.107	1.298	32.668	2.000
7	-4.858	1.715	34.147	2.000



Design reports with HTML report templates using our sample reports. Add any number of custom report templates to the list for use in different situations.

**VTUBE REPORT** MERCURY PRODUCTS ENGINEERED FABRICATIONS & ASSEMBLIES

Date: 4/1/2011 7:57:50 AM  
 Part Number: 24858  
 Comment 1: Measure short end  
 Comment 2: first  
 Unit: Inches  
 Diameter: 1.712  
 Wall: 0.030  
 Default Radius: 3.750  
 XYZ Points: 3  
 Cut Length: 18.434  
 Calculated Master Length: 18.434  
 Calculated Measured Length: 18.435  
 Calculated Master-Measured Delta: 0.000  
 A-End Offset: 0.000  
 B-End Offset: 0.000  
 Tube Elongation Percentage: 6.5  
 Fixed Springback: 0.0  
 Proportional Springback: 0.0

MASTER XYZ DATA

Point	X	Y	Z	Radius
1	-16.914	2.058	30.097	2.000
2	-15.797	2.778	24.360	2.000
3	-23.927	2.466	14.235	2.000

**VTUBE REPORT** MERCURY PRODUCTS ENGINEERED FABRICATIONS & ASSEMBLIES

Date: 4/1/2011 9:23:32 AM  
 Part Number: Cone  
 Comment 1: Rev 910  
 Comment 2: Cone Hole 144710  
 Unit: Inches  
 Diameter: 0.625  
 Wall: 0.090  
 Default Radius: 1.500  
 XYZ Points: 6  
 Cut Length: 26.907  
 Calculated Master Length: 26.907  
 Calculated Measured Length: 26.910  
 Calculated Master-Measured Delta: 1.108  
 A-End Offset: 0.000  
 B-End Offset: 0.000  
 Tube Elongation Percentage: 6.5  
 Fixed Springback: 0.8  
 Proportional Springback: 1.8

MASTER XYZ DATA

Point	X	Y	Z	Radius
1	0.000	0.000	0.000	1.750
2	7.800	0.000	0.000	2.000
3	4.291	-8.964	0.000	2.000
4	4.374	-11.460	0.000	2.000
5	1.482	-15.090	0.000	2.000
6	1.677	-19.071	0.000	2.000

**VTUBE REPORT** MERCURY PRODUCTS ENGINEERED FABRICATIONS & ASSEMBLIES

Date: 4/4/2011 9:46:13 AM  
 Part: VTube-LASER Test Part - Dense  
 Number: Laser Scan  
 Unit: Inches  
 Diameter: 0.625  
 XYZ Points: 7  
 Cut Length: 23.893

Point	X	Y	Z	Radius
1	-19.445	0.942	20.785	2.000
2	-16.071	1.354	22.385	2.000
3	-13.250	-0.908	23.293	2.000
4	-8.893	-0.354	25.340	2.000
5	-11.231	-1.311	30.785	2.000
6	-8.107	1.298	32.668	2.000
7	-4.858	1.715	34.147	2.000

Bend	Length	Rotation	Angle	Radius
1	2.945		44.2	2.000
2	2.099	179.6	44.4	2.000
3	2.056	91.0	89.2	2.000
4	2.049	-150.5	88.9	2.000
5	2.004	-88.2	29.5	2.000
6	3.068			

```

15
16 <td>
17 <tbody>
18 </tbody>
19
20 <td width="200">
21 
22 </td>
23 </tr>
24
25 </table>
26
27 <br><br>
28
29 <table>
30 <tr>
31 <td class="td_left">
32 <table class="table_specs">
33
34 <tr>
35 <td class="td_spec_name">Date:</td>
36 <td class="td_spec_value">vtube_val<DATE/>vtube_val</td>
37 </tr>
38 </table>
39 </tr>
40
length: 2495 lines: 132 Ln: 23 Col: 1 Sel: 0 Doc: Windows ANSI INS

```



Phone: 248 674-2059  
www.advancedtubular.com

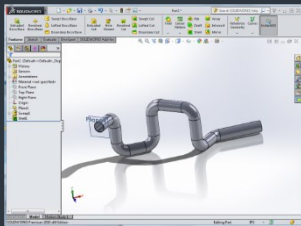


Tube measuring software for  
**MicroScribe** Arms



#### BUILD to SOLIDWORKS

VTube can even build a fully constrained 3DSketch centerline tube with sweep and shell in a few seconds. You can measure a tube, then let VTube draw it for you in SolidWorks.



#### COPY MEASURED to MASTER

Reverse-engineering is simple: Copy MEASURED to MASTER data with the single press of a button in the Data Handling menu.



"Since we are a SolidWorks-based company, it is very beneficial that, with one button click, I can have a fully-defined 3D cad model of the tube that was just measured. This decreases the amount of time it takes to get a hard prototype reverse engineered into CAD for fixture creation. I am very excited to welcome VTube-LASER into our facility and look forward to working with Advanced Tubular in the future."

**Greg Whittle**  
Senior Design Engineer



Phone: 248 674-2059  
[www.advancedtubular.com](http://www.advancedtubular.com)