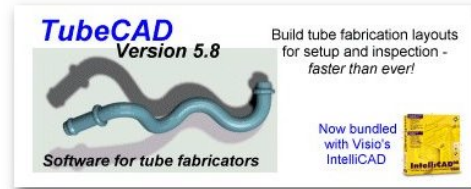


Software for Creating Tube Layouts



Complete Tube Layout in LESS THAN 30 Minutes!

TubeCAD 5.8 Q6.3 is a complete package that can build and plot your full-scale layouts to any Windows plotter – really *FAST*.

How quickly can your CAD department draw a tube fabrication layout? Does a complete layout of a 15 bend tube drawn in AutoCAD or CADKEY take five or more hours to build? TubeCAD can create the same layout in 30 minutes or less without errors. In just 4 easy steps and here's how:

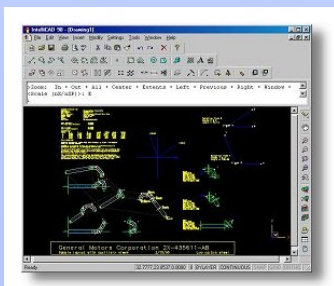
Step 1 (10 Minutes):
Build your layout in TubeCAD



Step 2 (15 Seconds):
After the layout is complete in TubeCAD, transfer the drawing to the bundled IntelliCAD by simply typing **ICAD** on the TubeCAD command line. No complicated steps are required.

Step 3 (5 Minutes):
Plot your layout at full scale for use as a setup inspection layout.

Step 4 (30 seconds):
Choose a drawing name, save your layout to an AutoCAD DWG file (you can choose AutoCAD r14, r13, r12...) (or further modify your layout by adding notes, borders, dimensioning).



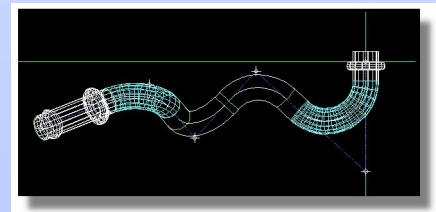
That's a ten-fold speed improvement with an increase in data integrity. **In fact, we invite you to allow us to test the speed of TubeCAD with one of your tube parts.** The layout TubeCAD draw for you will contain at least multiple centerline views of the tube with an OD outline or a 3-D ODMESH, true bend views, and chart.

Tube Layout Automation

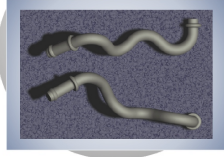
Ever since we released TubeCAD in 1985 (then through Cone & Cone) TubeCAD's driving philosophy has been automation of the layout process. General CAD Packages provide basic drawing tools for all types of engineers with powerful editing and modification features. But, by their very nature, they cannot provide extreme automation for very specific processes like tube fabrication and tube layout production unless someone takes the time to write page after page of code that explains it to them. In other words, AutoCAD CADKEY and other general CAD packages have little intrinsic knowledge of a tube shape. This is where TubeCAD takes over. It knows only tube shapes, and it knows them very well.

Centerline Tube Views

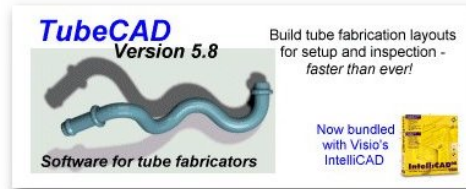
For example, how quickly can a CAD operator draw a 10 bend tube centerline as specified in your customer's print, and have a multiple view tube displayed on the screen complete with an outer diameter? If the operator is fast, it will probably take an hour in a good CAD program. TubeCAD can create 3 orthographic views with a 3D outer diameter as quickly as you can type in the coordinates (about 5 to 10 minutes).



Advanced Tubular Technologies, Inc.

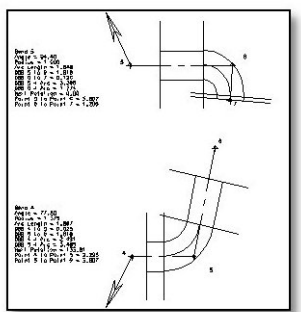


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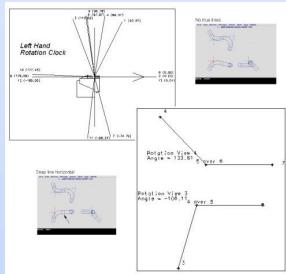


True Bend Views

Another example is True Bend views. How long does it take to draw 10 of them in your CAD package? (It takes a while in AutoCAD.) After the coordinates are entered, TubeCAD draws 10 True Bend views, a total of about 350 CAD entities, in about 1 second. And these true bend views are smart. They know, for example when to flip over so that the preceding leg to the bend is moving above (and not below) the plane of the layout.



Rotation Clock Views



It takes about another second to draw either a complete rotation clock (left or right hand), or rows and columns of individual Rotation views.

BlockUp Labels

Will it take a month or two to get your regular gauge from the gauge builder? Then switch the blockup labels on in any TubeCAD view to make a full-scale layout an instant gauge. Block up labels show the distances from the bottom of each straight down to a base plane.

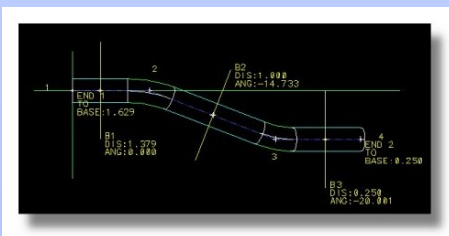
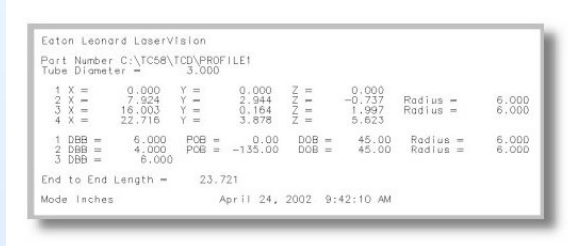


Chart View

Drawing your favorite data chart on the layout is as simple as pointing with the mouse where the upper left corner of the chart should start.

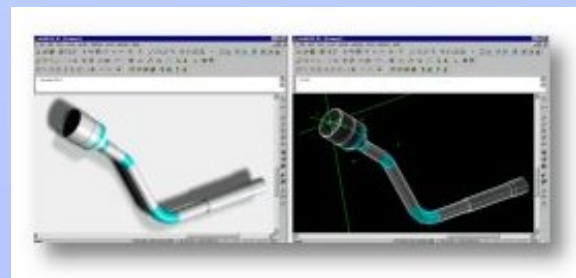


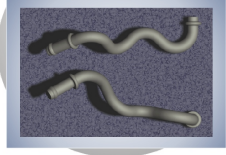
Header Label

To finish the layout, select the location using the mouse for the large header label that shows various data about the layout in large font, like the part number, customer name, etc.

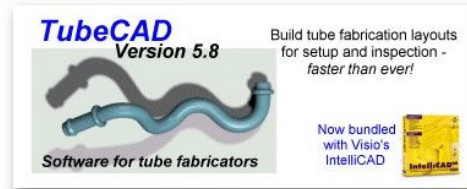
Automatically transfer to IntelliCAD or AutoCAD

Type ICAD to transfer the completed layout to the bundled IntelliCAD, or type ACAD to transfer the layout to any version of AutoCAD. Then plot the drawing.



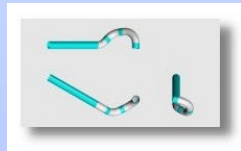
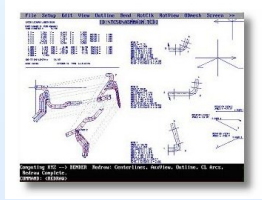


Software for Creating Tube Layouts



Major Features

- Multiple tubes in one layout with simultaneous projection
- Rotate the tube views to any orientation in space, find true views within quickly, position the tube for better inspection and/or bending machine construction
- Three primary orthographic views that drag into position with a mouse
- Project auxiliary views at any angle by dragging with a mouse
- Show tangent points on the centerline
- Calculate bender data from XYZ data
- Calculate XYZ data from bender data
- Search user-entered lists with thousands of entries for fitting and form length adjustments to the first and last straight
- Automatic positioning of layout entities
- Enter fabrication sequence codes
- Enter customer name, part date, part name, tube notes, print reference notes, and other notes
- Unbend bends in any order
- Reports-XYZ, tangent point, bender (compression or draw bending), and others
- Data Charts on the layout – Eaton Leonard LaserVision, Pines, Conrac, others
- Large header label for easy identification of layout
- ODMESH- using 3-D surface entities
- OD Outline – Outline simulation of the OD
- Build Odmesh Forms (Flares, Beads)
- Cylindrical or Non-cylindrical ODMESH
- Left and Right Rotation Clocks
- Separate Rotation Views
- Convert all values to the opposite unit (Millimeter or Inch)
- Arc Length Calculator – Calculate the distance from a bend's tangent point to the bend's intersection point using the bend angle and radius
- Read/Write SupraGauge files (to the disk or to a measuring center on the network)
- Read/Write Eaton Leonard FIF files (for communicating with EL measuring centers and benders)



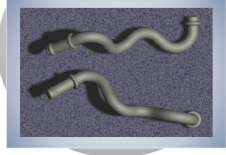
- Extract centerline data from DXF files using the DXF Centerline Extractor
- Dimensioning, borders, notes, layout plotting to printer or plotting using IntelliCAD 2000
- Render a 3-D tube image from any orientation using the bundled IntelliCAD 2000
- Plot full scale layouts using the bundled IntelliCAD 2000
- Build 2-D or 3-D DXF files of the layout (For more information, see the TubeCAD Compatibility page on our website, or download sample DXF files for testing with your CAD program.)
- Build CADL files of the layout (for CADKEY)
- Build EXF files of the layout (for EasyCAD and FastCAD)
- Quickly build Blockup Labels that show nominal blockup distances to a base plane



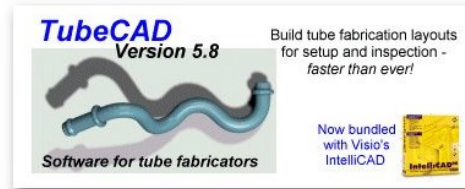
How do customers use TubeCAD?

- To create tube layouts for setup and inspection during fabrication
- To create the base data for drawing tube gauges
- To create the base data for drawing dedicated tube benders and fixtures
- To create 3-D ODMESH surface data for hidden line removal and rendering for publications
- To create 3-D ODMESH data for use in drawing compound bend dies
- To create 3-D ODMESH surface data for use in gas-flow analysis
- To re-orient the tube shape in space for better inspection on measure centers and better construction of tube gauges
- To reverse-engineer tube shapes from bender data to XYZ data
- To unbend tubes when pre-bending is necessary
- To project auxiliary views to show the relationship between multiple tubes around a master tube
- To project auxiliary views to match and orientation in a customer's print
- To create bender data reports for CNC benders





Software for Creating Tube Layouts



How does TubeCAD help tube fabricators?

Tube layouts provide all the necessary information for the fabrication (forming, bending, etc.) of tube shapes in one drawing. More than ever, fabricators require complete drawings of the tube shape, and yet, most tube fabricators no longer have the time to spend from 5 hours to several days drawing tube layouts.

TubeCAD shortens the process of a building complete layouts for complex tube shapes to *30 minutes or less* with built-in integration with IntelliCAD 98 and AutoCAD.

TUBECAD USERS

(This is a *partial* list of TubeCAD users.)

- ADDISON PRODUCTS CO. (boats)
- Addison Tool Co. (benders/tooling)
- Akron Polymer Products (plastic tubing)
- ARMADA TUBE GROUP (small diameter)
- BABCOCK & WILCOX
- Bundy (small diameter)
- Eaton Leonard (benders/tooling)
- Fabex (small diameter)
- Fayette Tube (small diameter)
- FormRite (Wisconsin, hydraulic)
- FORM RITE (Michigan, small diameter)
- Handy & Harman (small diameter)
- H & H Tooling (tooling)
- ITT AUTOMOTIVE (small diameter)
- Jack Heckman Tube Co. (super-heaters)
- Krueger International (furniture)
- Lomar (dedicated power benders)
- Mariners-Astubco (nuclear super-heaters)
- National Tube Form (3/16" to 6" OD tube fabrications)
- Paftac Tube Services (layout service)
- Stark Manufacturing (benders/small diameter)
- Tools For Bending (tooling)
- Tube Forming & Machine (hand benders)
- TELEDYNE RODNEY METALS
- U.S Navy (ship building)
- Wauseon Machine (dedicated power benders)

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