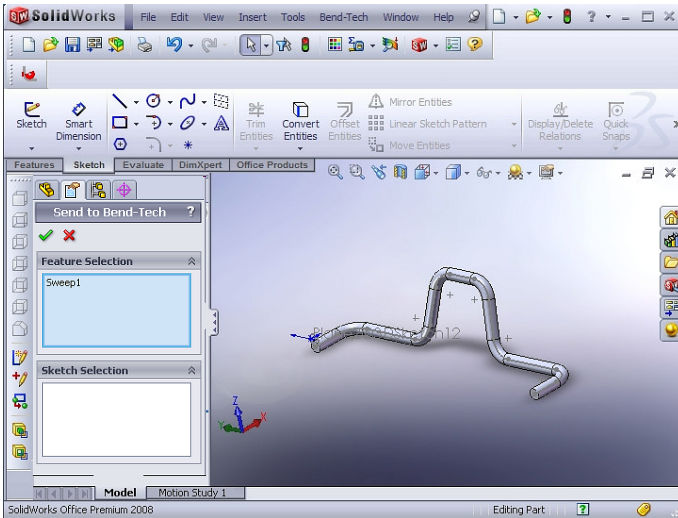




**Design it in SolidWorks™,
Bend it right the first time using Bend-Tech SW.**



What is Bend-Tech SW? Bend-Tech SW is a software application that allows a user to design tubes, pipes and rods in SolidWorks™, then within SolidWorks™ send part geometry directly to Bend-Tech to calculate correct manufacturing instructions.



Which SolidWorks™ features are recognized? Bend-Tech SW will allow you to work with *Sketch Lines, Sweeps & Weldments*.

How does it work? After completing your tube design, select the Bend-Tech icon or pull-down menu within the SolidWorks™ framework and select the green check to send it to Bend-Tech. Within Bend-Tech, select the tooling corresponding to the radii in your part, or allow Bend-Tech to select if for you from a tooling to radius relationship table. In an instant your manufacturing details are available.

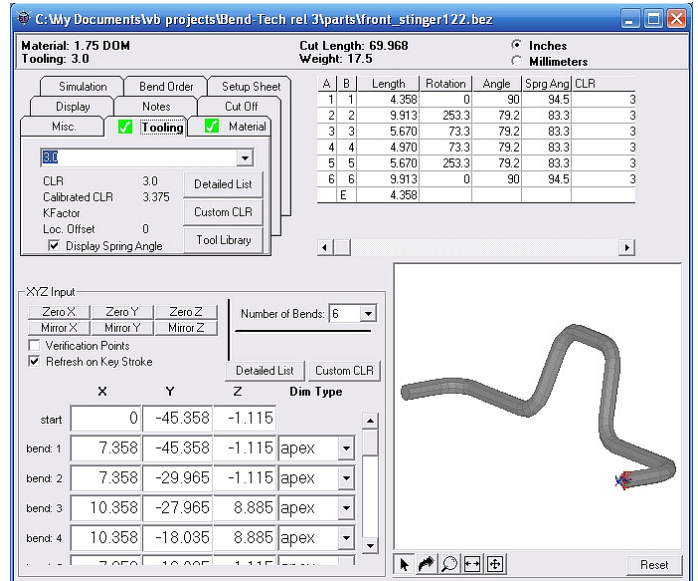
Can elongation be calculated? Absolutely!!! We have a simple testing procedures that you perform with your tooling and material. From this, you will obtain values in your Bend-Tech tooling library to calculate correct bend lengths.

Will Bend-Tech SW calculate spring back? Yes. Bend-Tech SW creates its own internal formulas from a data history file of your materials, tooling and machines. With this Bend-Tech calculates the Spring Back Angles for your job.

Will Bend-Tech SW work with my bender? Yes. Bend-Tech provides proper cut lengths, bend locations, bend angles and rotations for all machines. This includes all **manual**, NC or CNC machines which are rotary draw, rotary compression or center compression benders.

Do I need to design in SolidWorks™ with the correct tooling radius? No. This is a problem for many job shops. Often, part files from their customer's engineers who may not be familiar with the shop's production tooling. To solve this problem, once a part has been sent to Bend-Tech you can change a single radius or the tooling of the entire part with a single mouse click. Bend-Tech will then instantly adjust your part length and bending instructions.

Will Bend-Tech SW provide XYZ or LRA data? Both!!! Bend-Tech SW provides proper centerline apex XYZ values and LRA data (LRA; Length Rotation & Angle; also known as YBC). Bend-Tech have several different charts to choose from and accommodates the variation in structure formats for bend locations and rotations.



What versions of SolidWorks™ does Bend-Tech SW support? As of the date of this document, Bend-Tech SW supports 2007, 2008 & 2009.



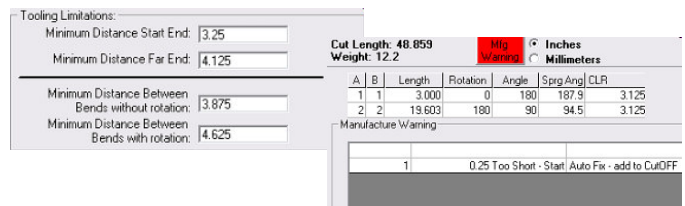
Additional Bend-Tech SW Features .



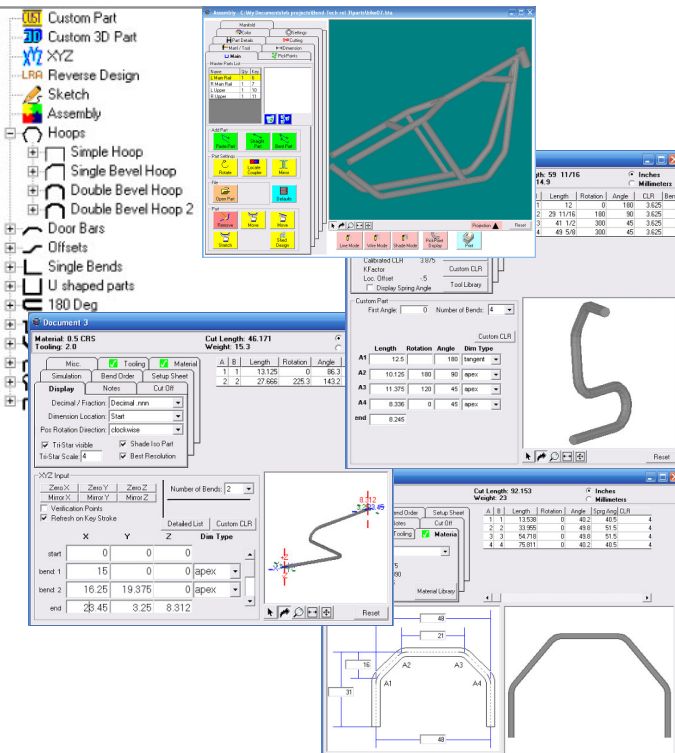
Does Bend-Tech use Millimeters or Inches? Both! Bend-Tech SW will allow you to work with either unit type; and in the XYZ interface, allow you to convert the units.



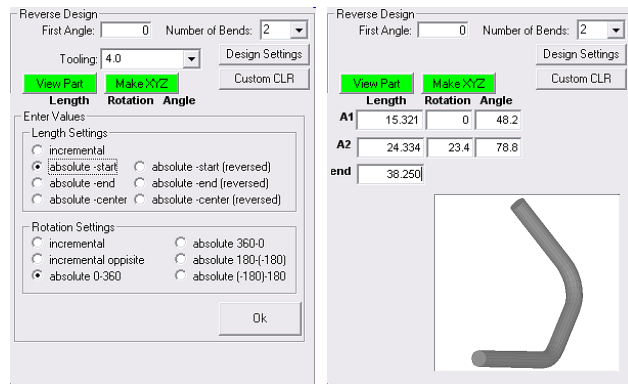
Will Bend-Tech SW perform manufacturability checking? Yes. In its tooling library there are settings for distance needed for the tube and distance between bends. If any of these values are violated, Bend-Tech SW will display a warning until corrected.



Can I create parts directly in Bend-Tech SW? Yes. Bend-Tech SW provides several input methods. These methods include predefined templates, 2D custom part, 3D custom part, XYZ, Sketch, and an assembly method.



Does Bend-Tech SW allow me to use my current Manufacturing documents to create parts? Yes. Bend-Tech SW has a reverse engineering environment setup for just about every instruction format.



Can I use a manual bender and a tape measure to mark bend locations? Yes. One of the many Bend-Tech SW's output formats gives bend locations from one end of the tube. You will be able to hook your tape one time and mark each location. Bend-Tech SW can provide these values in decimal or fractions of an inch as far down as 32nds.

Can I use multiple radii in the same part? Yes. Bend-Tech SW will recognize the different radii, and in, turn apply each bend with the correct tooling.

How accurate is Bend-Tech SW for manufacturing? As accurate as the user is when he measures his test bends. A comment we hear is "the software is dead nuts on". This doesn't yield a numeric value, however, it illustrates our point. Customers with CNC equipment can expect their first part to be accurate within thousandths of an inch, and those using tape measures to locate marks on the tube or stop locations can expect to see accuracy within a 32nd of an inch or 1 millimeter.

How easy is Bend-Tech SW to use? As easy as it gets. We designed Bend-Tech around the idea that our users may not have any experience with CAD and potentially no experience in tube bending. Our customers often tell us they can't believe how easy Bend-Tech is to use.



Additional Bend-Tech SW Features .



Does Bend-Tech SW provide documentation for the shop floor? Yes. Bend-Tech SW's setup sheet consists of 2 pages with the second page optional. The first page is full material, tooling, design and shop instructions with a 3D picture of the part. The second page (on parts with several bends it may become several sheets) is a cartoon strip showing the tube transitioning through the die.

Part Name: front_stinger122
 Rev: Description:
 Material: 1.75 DOM
 Tooling: 2.0
 CLR: 3.0
 Cut CLR: 3.375
 Initials:
 Date: 09/16/2008

To change your notes defaults, select the 'Tools' pull down menu, then select 'Options.'



Shop Instructions:

Cut Length: 69.968
 Weight: 0

A	B	Length	Rotation	Angle	CLR	Bend Length
1	1	4.358	0	90	3	4.551
2	2	18.823	253.3	79.2	3	4.003
3	3	28.496	73.3	79.2	3	4.003
4	4	37.469	73.3	79.2	3	4.003
5	5	47.143	253.3	79.2	3	4.003
6	6	61.059	0	90	3	4.551

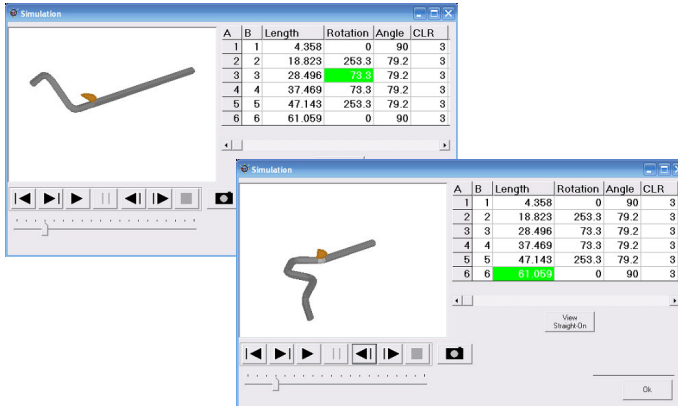
Design Instructions: XYZ

A	X	Y	Z	CLR	Type
1	0	-45.358	-1.115	3	Apex
2	7.358	-45.358	-1.115	3	Apex
3	7.358	-29.965	-1.115	3	Apex
4	10.358	-27.965	8.885	3	Apex
5	10.358	-18.035	8.885	3	Apex
6	7.358	-16.035	-1.115	3	Apex
7	7.358	-0.642	-1.115	3	Apex
8	0	-0.642	-1.115	3	Apex

Part Name: front_stinger122

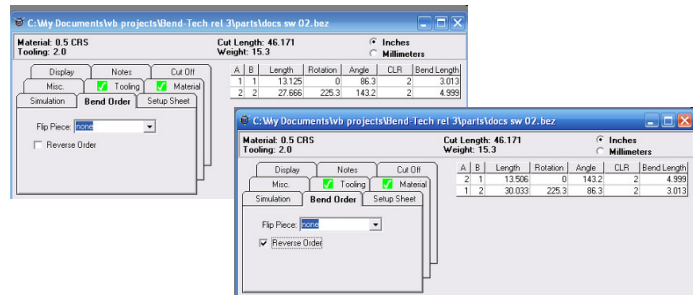
Location	Rotation	Bend
Bend Number: 1 Location: 4.358 Rotation: 0 Bend Angle: 90		
Bend Number: 2 Location: 18.823 Rotation: 253.3 Bend Angle: 79.2		
Bend Number: 3 Location: 29.496 Rotation: 73.3 Bend Angle: 79.2		
Bend Number: 4 Location: 37.469 Rotation: 73.3 Bend Angle: 79.2		
Bend Number: 5 Location: 47.143 Rotation: 253.3 Bend Angle: 79.2		
Bend Number: 6 Location: 61.059 Rotation: 0 Bend Angle: 90		

Does Bend-Tech SW have a bending simulator? Yes. Bend-Tech SW has a simulator showing the tube being processed through a die. However, it doesn't include a graphical representation of the bending machine itself.

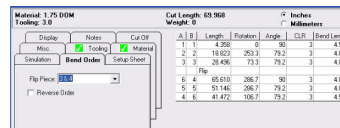


Will Bend-Tech SW work for a ring roller? Bend-Tech SW will give you the proper cut lengths, bending zones, bending angles and rotations.

Can I bend the part from either end? Yes. By marking the corresponding checkbox, Bend-Tech SW will calculate all values starting from the other end.



Can I flip a part end for end during bending? Yes. If you are marking the tube, Bend-Tech will give you all of the bend lines from one end before and after the flip. This can also be viewed during simulation.



What shapes will Bend-Tech SW allow? Almost any shape. Tubes in Bend-Tech are displayed as round or square, however, when you use a 3D Sketch Line in SolidWorks™ you can define it with any shape and define your tooling with your elongation values. In the case of a rectangular tube, you may set up the Bend-Tech model with different tools for the easy or hard direction of bending.

How can I justify Bend-Tech SW? Bend-Tech SW will save countless hours spent in engineering and on the shop floor. Bend-Tech SW will greatly decrease scrap and allow your shop to turn out more product with the same equipment and man hours. The interlink between SolidWorks™ and Bend-Tech SW, not only saves time, but removes one level of human error. Bend-Tech SW will quickly become one of your best productivity tools. At 2020 Software Solutions, our core belief is "Do it right the first time." That belief enables our customers to produce superior products with less overhead; essential in today's competitive marketplace.