Question:

My project design is for a product that is too long to fit into my laser machine. The laser machine has a pass-through door. How do I use the laser to cut my project in multiple sections?

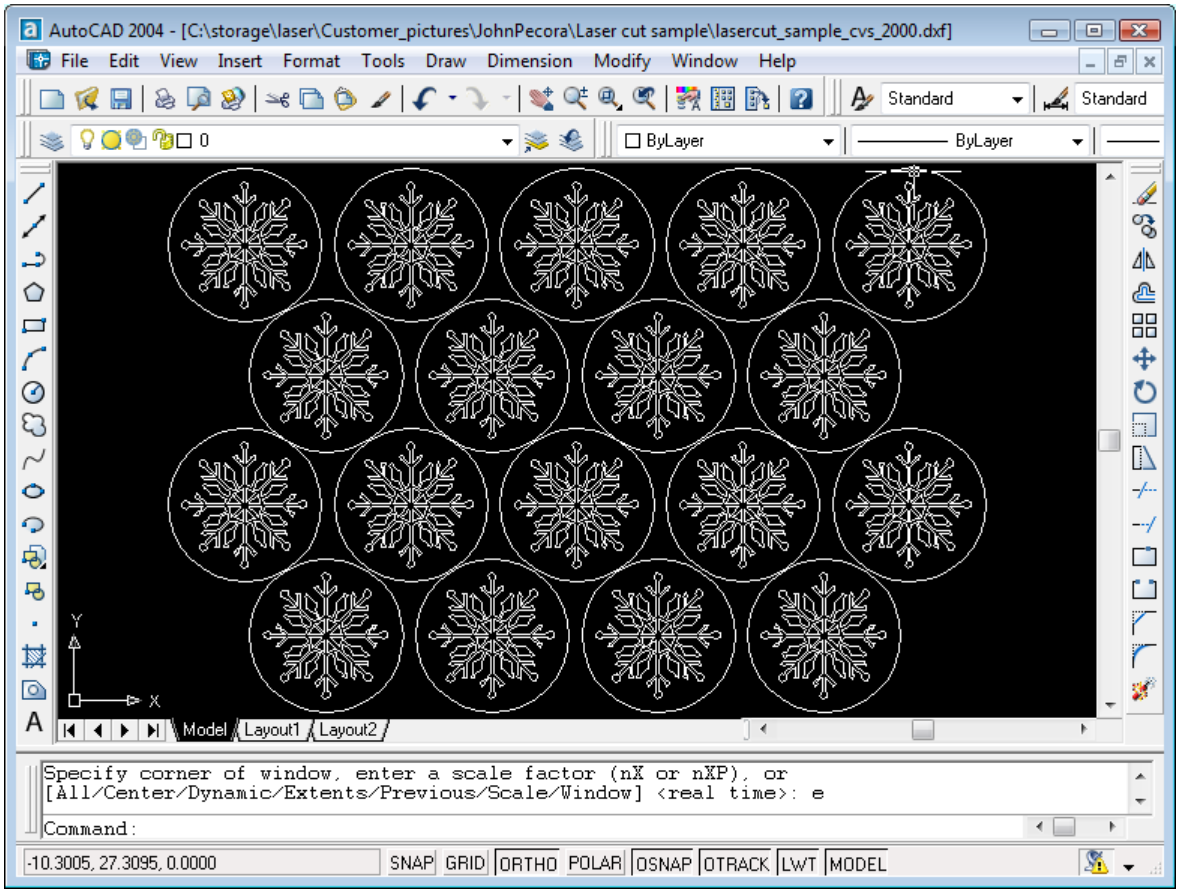
Answer:

Let us assume a few pieces of information. 1) The design is not wider that the worktable. 2) The material can be supported by some other table or rolled in and out of the laser machine. 3) We are allowed to make additional marks on portion of the material that will be discarded.

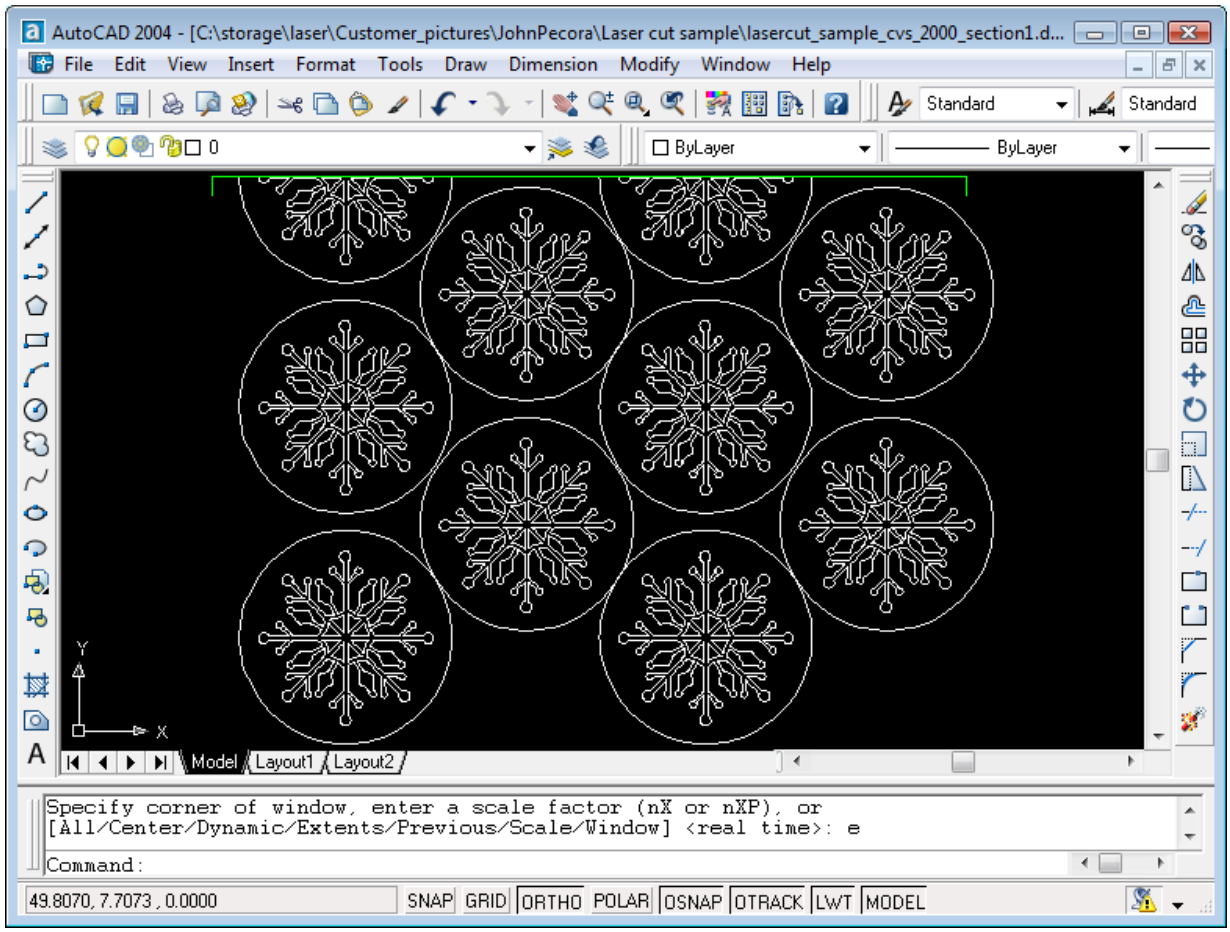
For a test design, I will be cutting a thin foam-board into multiple snowflakes. The intention is to save material at the cost of time. The design must be cut at full size, but obviously cannot fit into our RL-80-1290 laser machine. My plan is to cut out a section, move the material, cut the next section, move the material… keep cutting sections until the project is done.

We make sure that the design file is compatible with LaserCut 5.3. We will be importing vector graphics from a DXF file… It must be formatted as an AutoCAD 2000 DXF. The file cannot have any raster images embedded into it. The DXF file should not have any hatching sections (color or pattern fill areas). The design needs to have a set of markers added. After the markers are added, then the design needs to be split into sections for cutting.

The following design changes were made in AutoCAD 2004, but could be made in an assortment of development packages including AutoCAD, Corel, Adobe Illustrator… or most any other vector drawing system.



The figure shows the original drawing file. The circles are laid out such that they best fill a special piece of material. The layout is too wide for our machine, so it must be rotated… and then split up for cutting in two sections. Remember that the material outside of the circles will be scrap. We can make location markers in the scrap area.


AutoCAD 2004 - [C:\storage\laser\Customer_pictures\JohnPecora\Laser cut sample\lasercut_sample_cvs_2000_section1.d...
File Edit View Insert Format Tools Draw Dimension Modify Window Help
Standard
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Model Layout1 Layout2
Specify corner of window, enter a scale factor (nX or nXP), or
[All/Center/Dynamic/Extents/Previous/Scale/Window] <real time>: e
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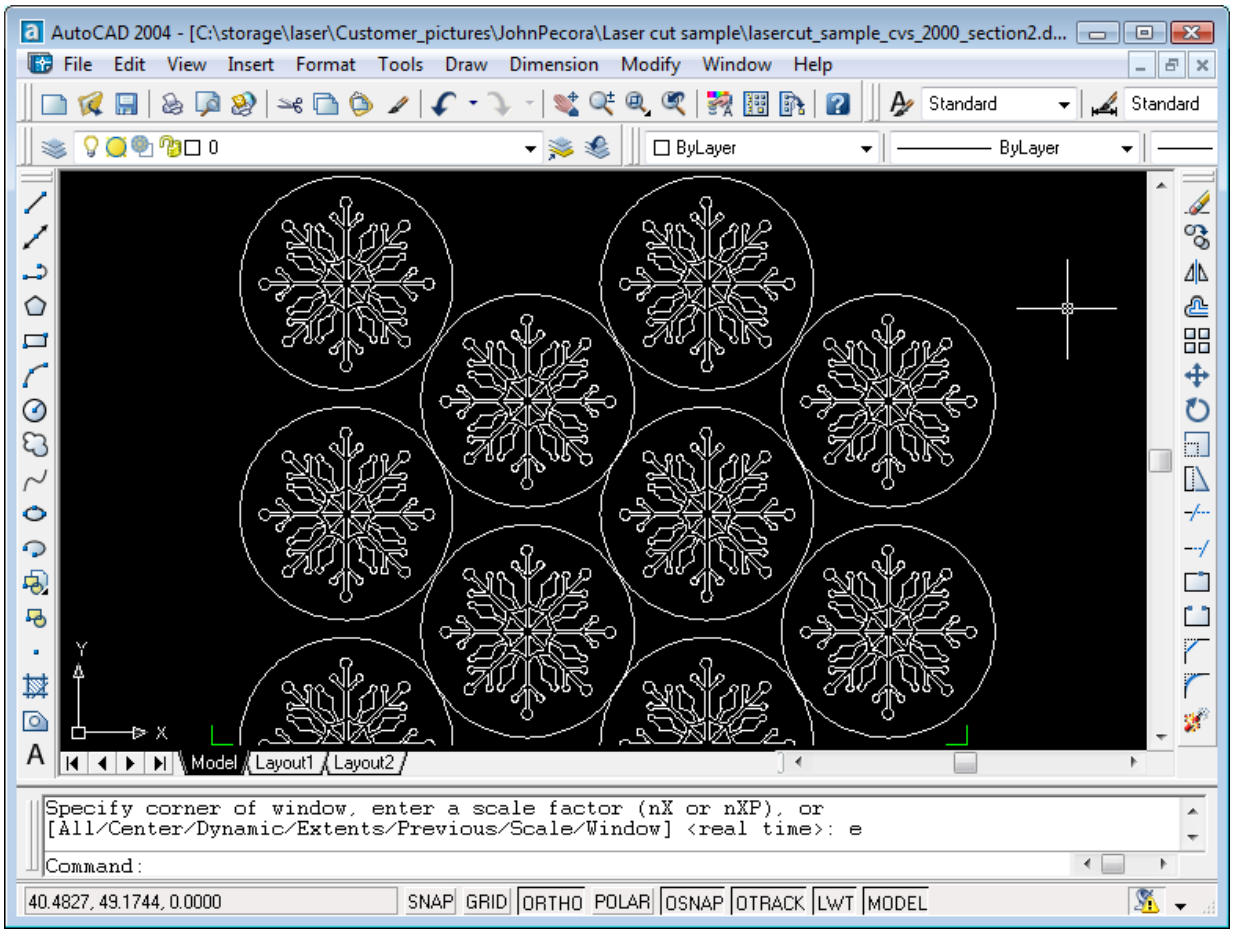
49.8070, 7.7073 , 0.0000
SNAP GRID ORTHO POLAR OSNAP OTRACK LWT MODEL


AutoCAD 2004 - [C:\storage\laser\Customer_pictures\JohnPecora\Laser cut sample\lasercut_sample_cvs_2000_section2.d...
File Edit View Insert Format Tools Draw Dimension Modify Window Help
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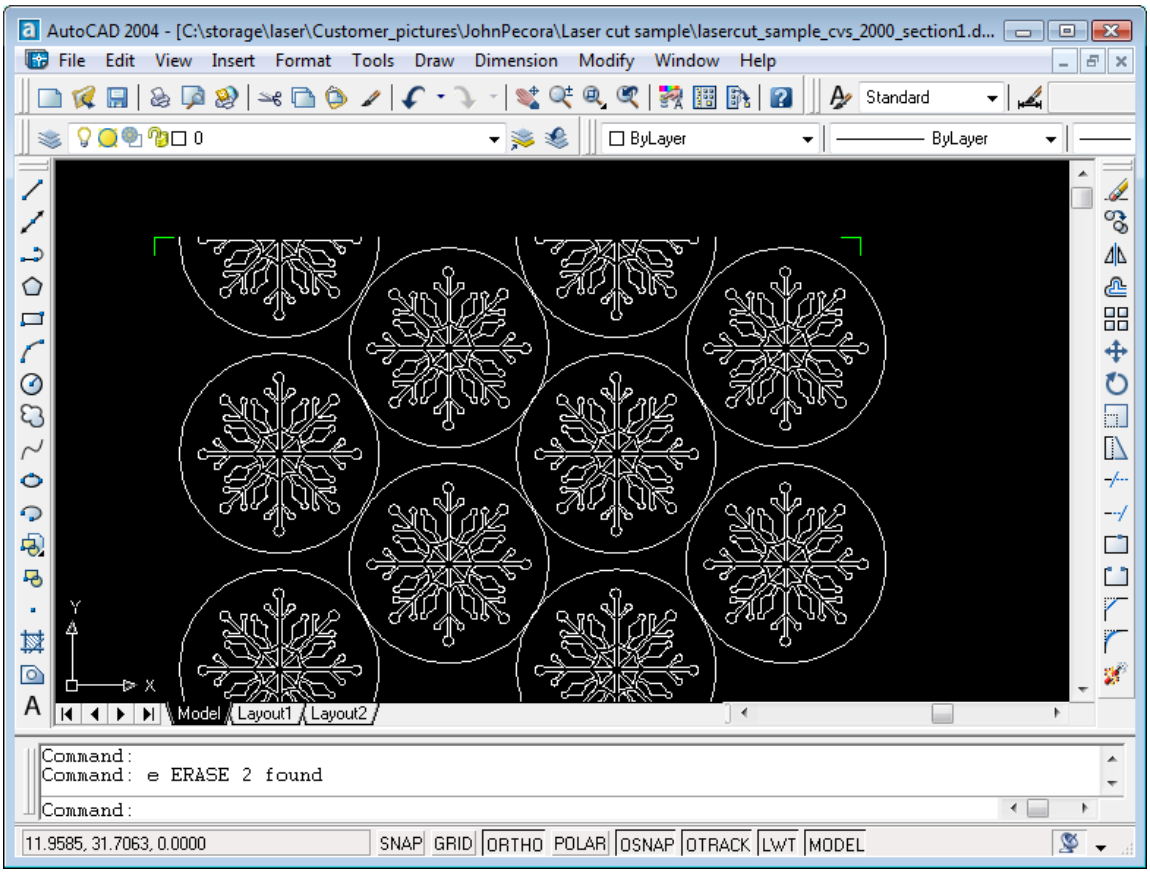
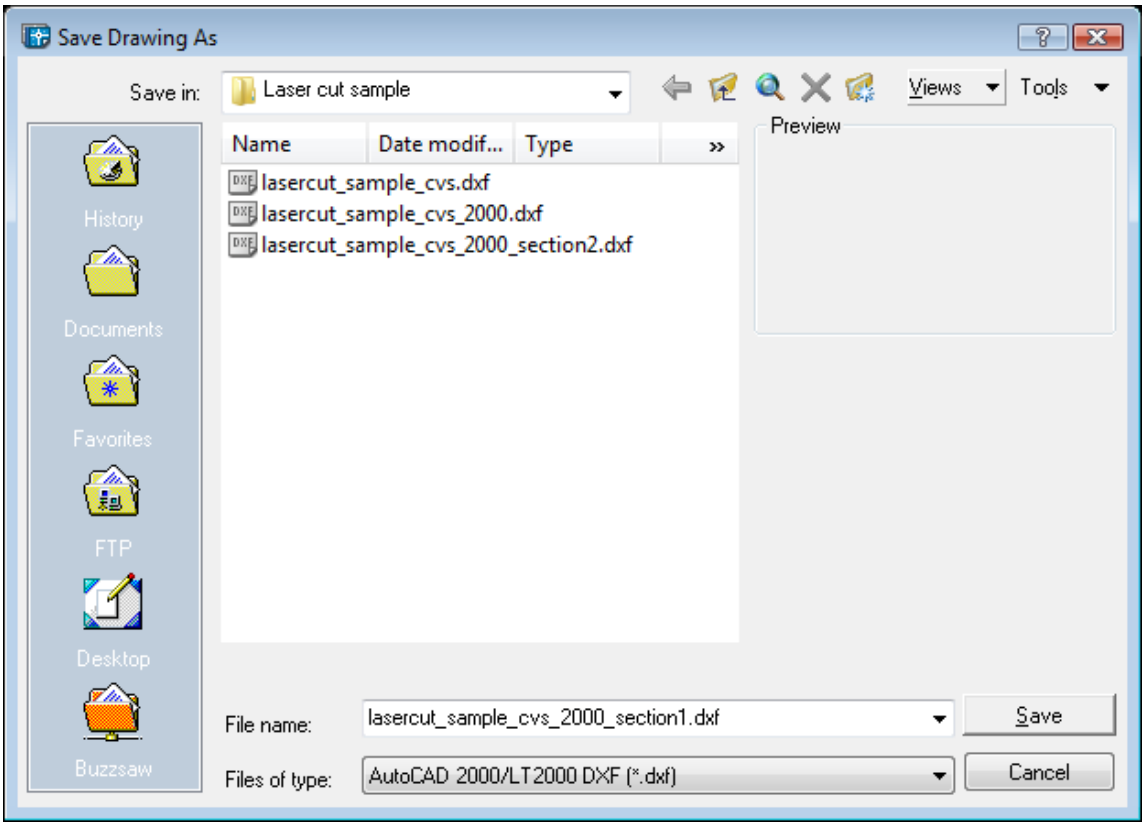
40.4827, 49.1744, 0.0000
SNAP GRID ORTHO POLAR OSNAP OTRACK LWT MODEL

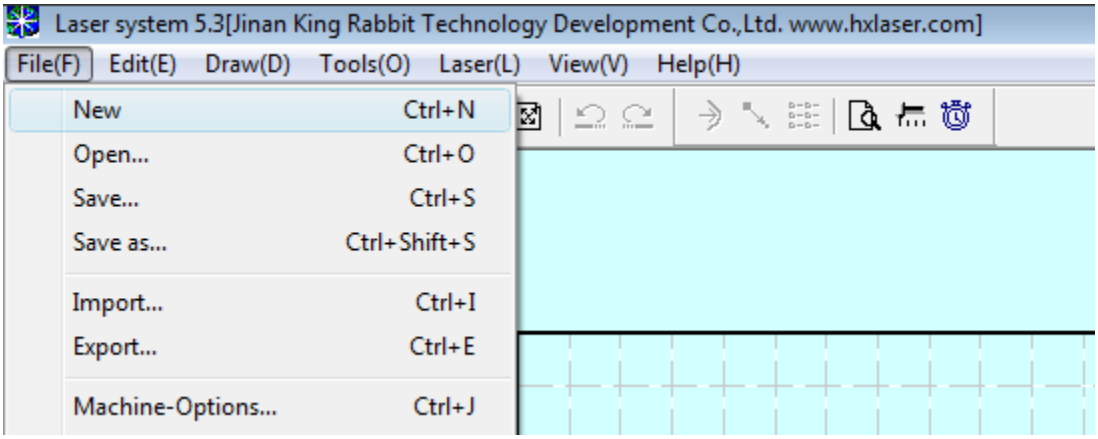
The drawing that we use has now been split into two sections. We added the green horizontal line to the drawing to allow us to trim the polylines. The green line is also trimmed to leave only two markers. Notice that the left marker is further left than any other part of the drawing. This is very important for the manual machine alignment.



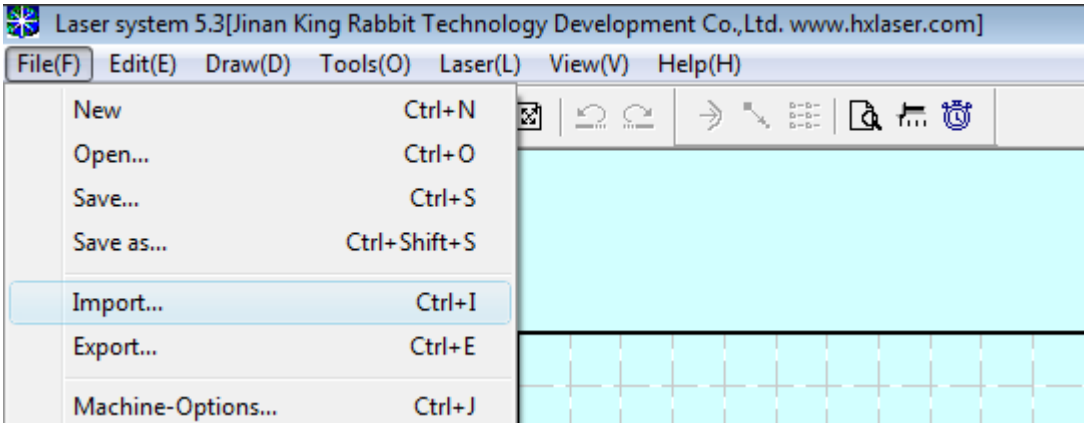
The two sections were saved to separate files because they will be used in the laser machine at two different cuts.

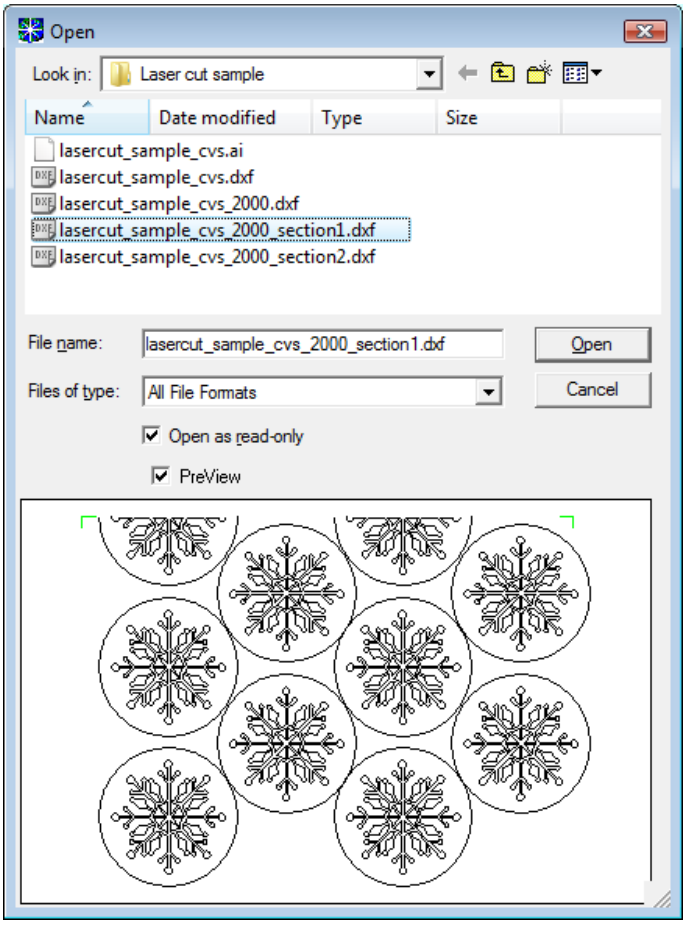


Start a new drawing

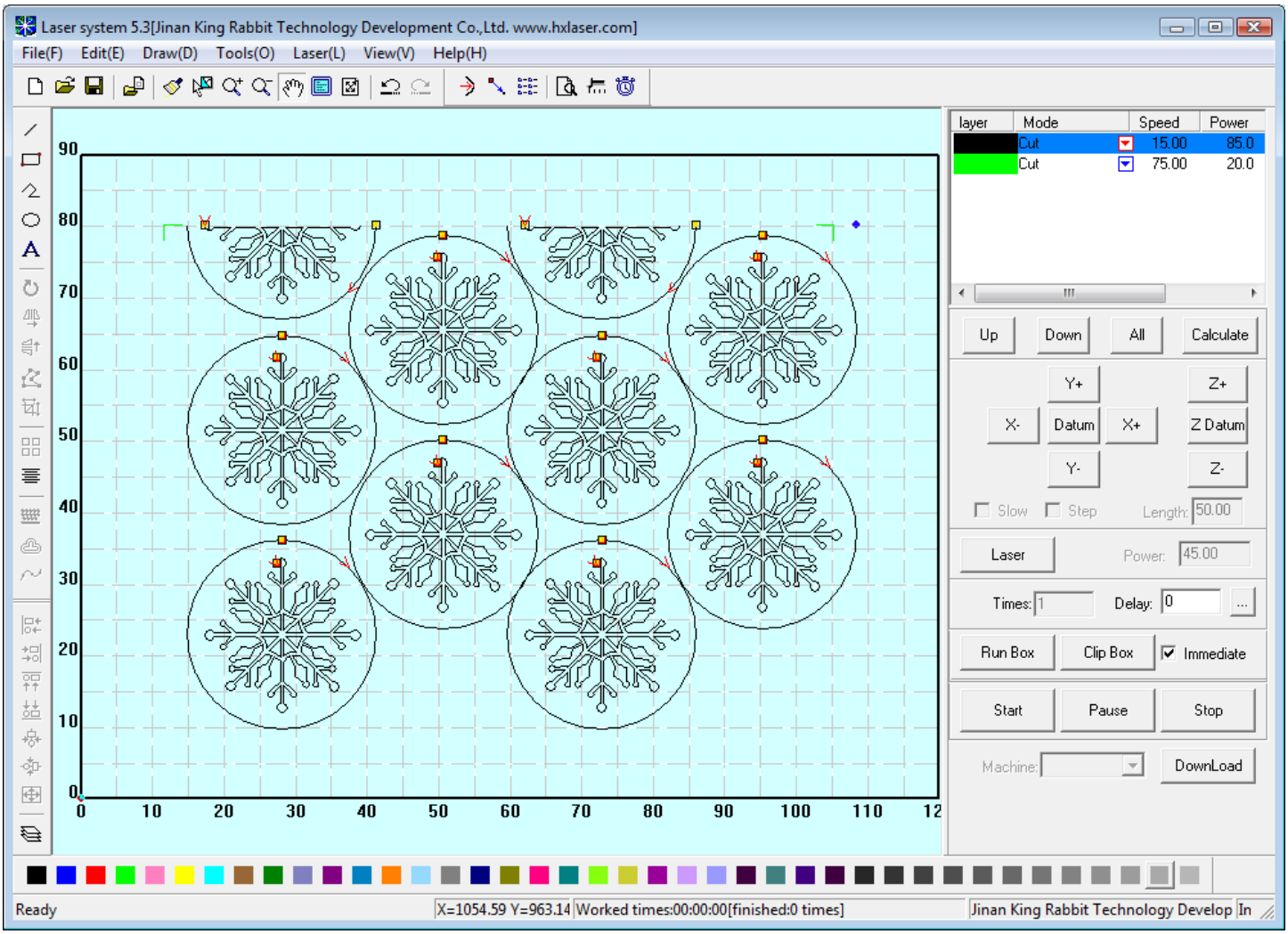


Import the file

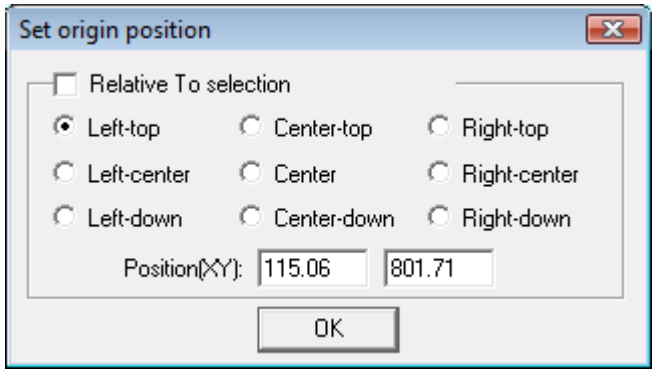




Start with the lower section. Import the DXF file into your new drawing / project. The drawing items should be imported at correct scale.



Make sure the drawing items are on a layer with appropriate power and speed for cutting through your materials. The green markers are set at a speed and power to only mark the locations. Notice the “Immediate” box is checked. This allows you to locate your laser head starting point manually.

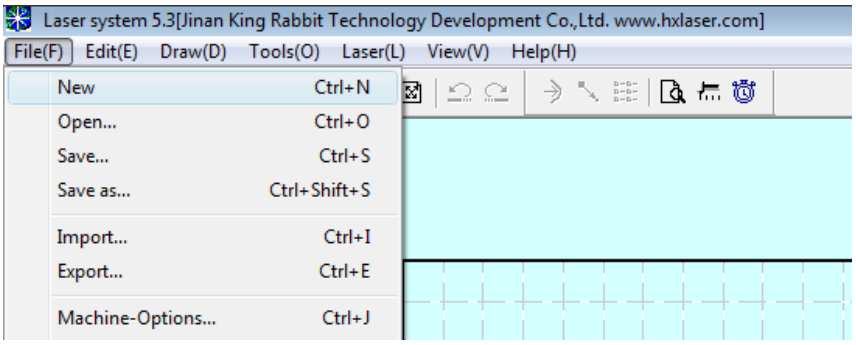


We set the laser point origin to be at the top left of the drawing items. This indicates the top left marker.

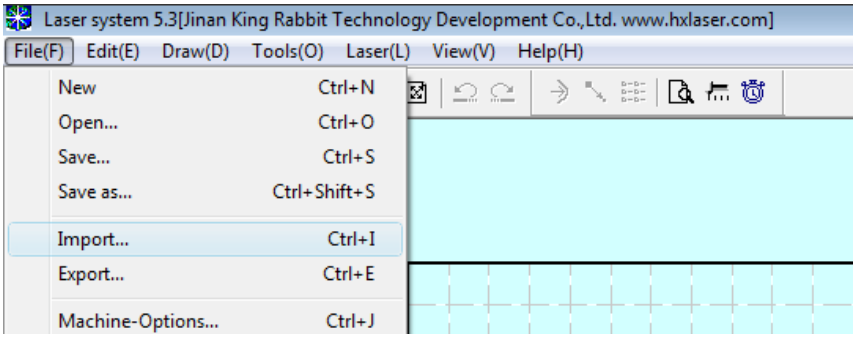
Save your project. … Load the material into the laser machine. Make sure the material is placed such that the lowest portion of the drawing will match to the bottom of the material. Download and Start the cut job… Watch the laser cut.

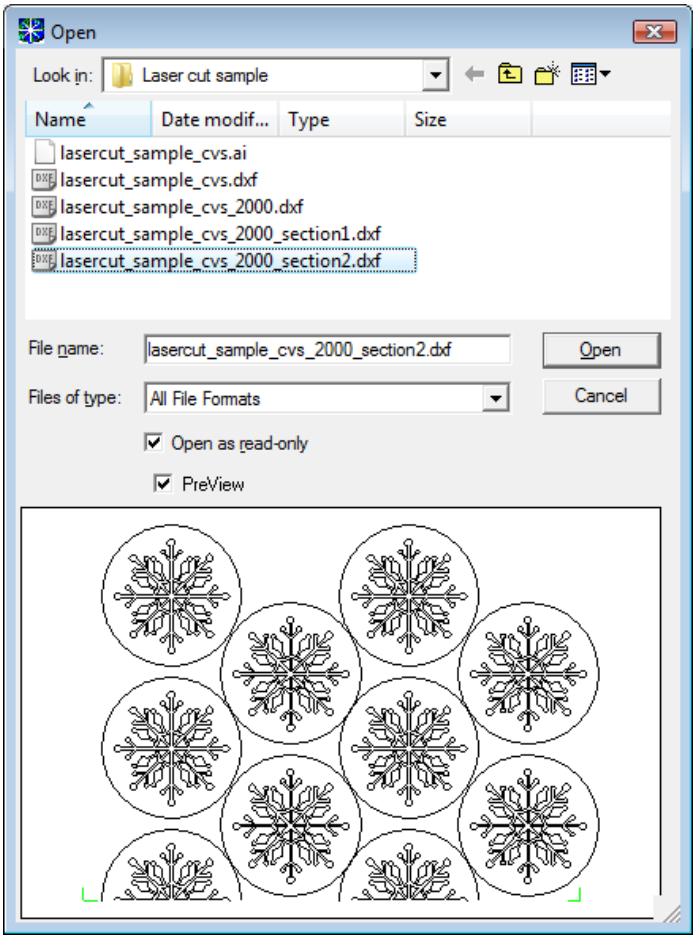
The next file is the difficult part. We will need to import the second section of the drawing and align it to the material that is already cut.

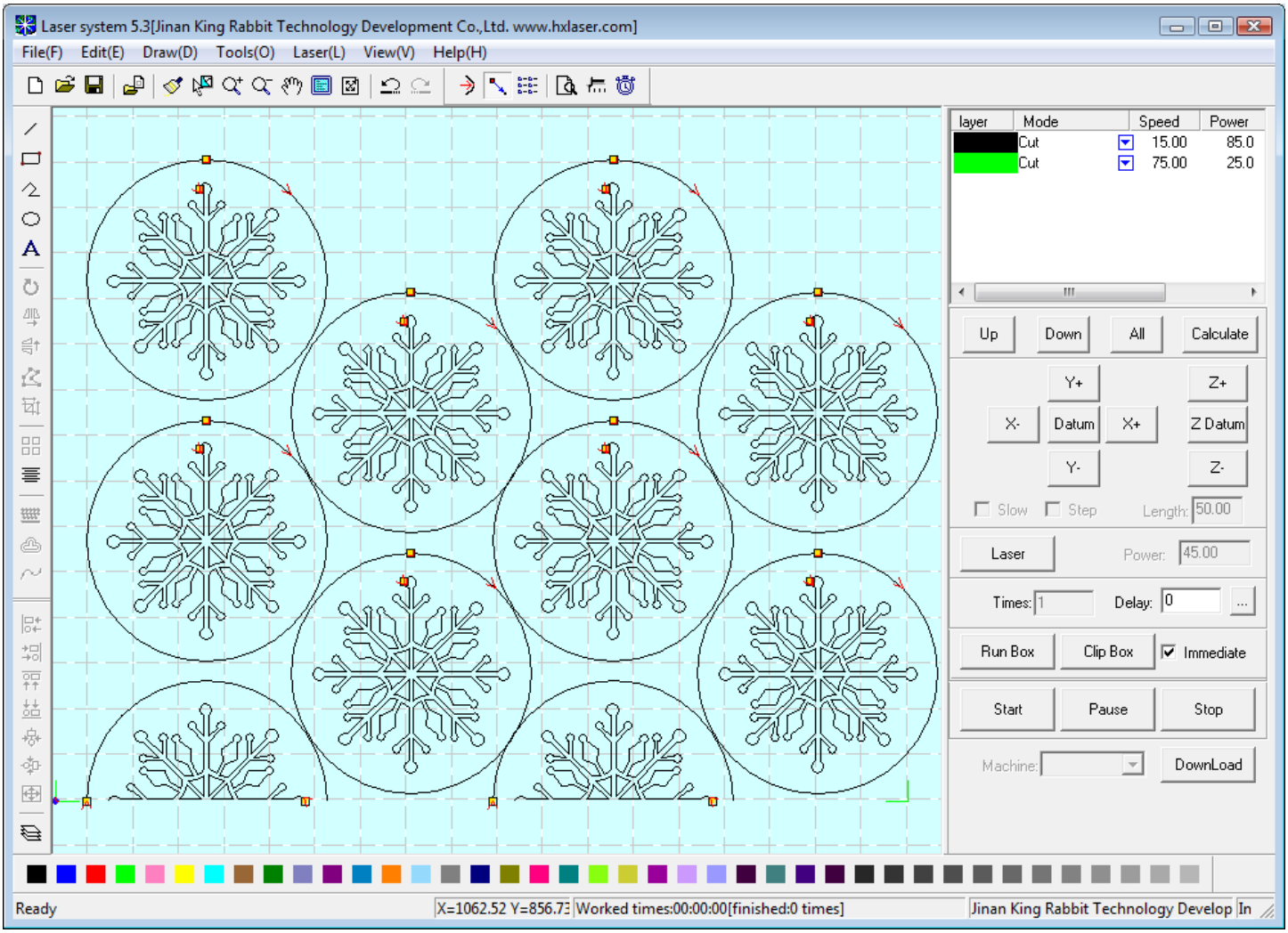
Start a new drawing

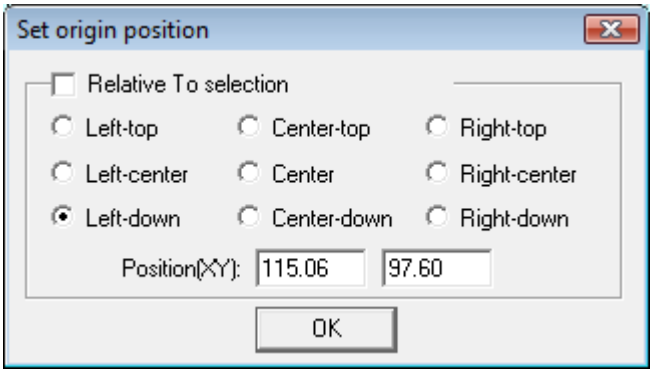


Import the file









We need to change the “Laser Origin” so that our starting point begins on the bottom left. This allows our new file to align the green markers to the previously cut markers.

Check again to make sure the settings are correct for speeds, laser power, and focus.

Move the material so that the laser has access to the remaining portion of the foam-board. The material should now be hanging out the front of the machine. Since the important parts of the material were already cut out, you might be able to cut off some of the scrap, which will make the thin foam-board more manageable. Make sure that you do NOT cut off the markers.

Place a piece of masking tape over the markers. You should still be able to see the marker lines through the tape. The masking tape will help us to better see the laser spots that we are about to make.

We need to make sure the material is SQUARE to the machine. Move the laser head to the bottom right maker. Use the "Laser" button to make a laser spot mark on the masking tape. Once you have the spot made on the right marker corner, then we know that this is our pivot point. Do not allow this pivot point to move.

(TIP) Depending on the material thickness, we can put a piece of tape on the honeycomb bed(under the material) and pin the board to the tape. The pin will act as a pivot point.

Move the laser head to the bottom left maker. Use the "Laser" button to make a laser spot mark on the masking tape. ONLY move the head left and right. Do not move the laser head in the Y-axis. Move the foam-board up/down by pivoting on the right marker. Once you have the spot made on the left marker corner, then our material is aligned with the project starting point. Download the project file to the laser machine. You should now be able to press "Test" to see how much space the laser will be cutting. Start the cut job… Watch the laser cut

My Tutorials aren't perfect… So ... I suggest that you practice before you destroy any valuable materials.

Ray Scott

www.scottware.net

3503 Carol Ann Lane

Middletown, OH 45044