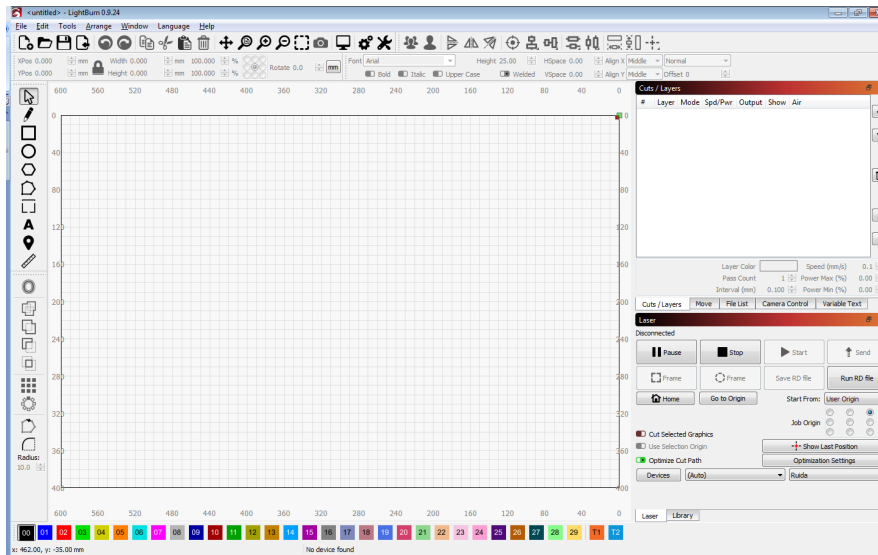


# Boxford Laser Cutter/Engraver


## Quick Start Guide – Lightburn - The Basics

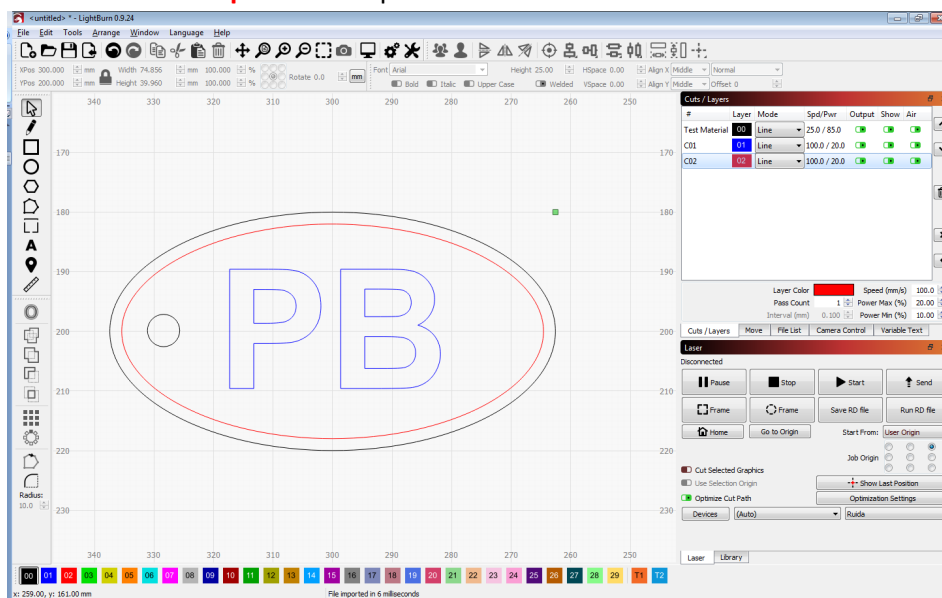
1. Launching the Lightburn application brings up the main software window as shown below.  
**Important:-** Select the **Window** menu item and ensure the **Filled/Smooth** option is checked.



1. Let's consider a simple key fob with 3 distinctly different types of work, distinguished by been drawn in different colours as shown below.

**Note:-** The key fob could be designed using the drawing and manipulation tools within the Lightburn software or alternatively it could be imported from other packages in a variety of formats using

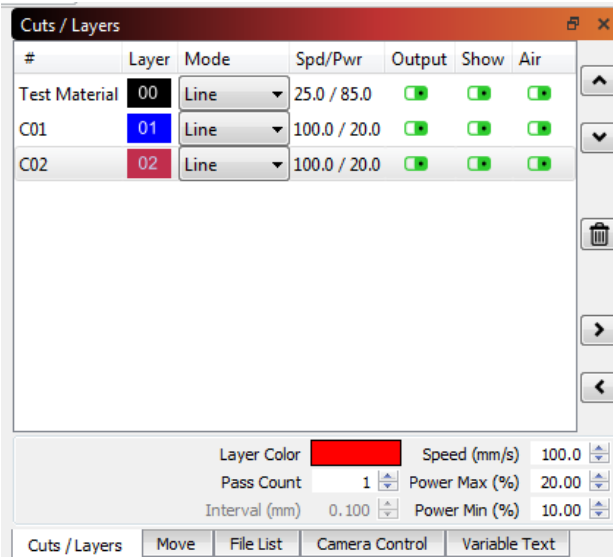
either the **File – Import** menu option or the toolbar button 



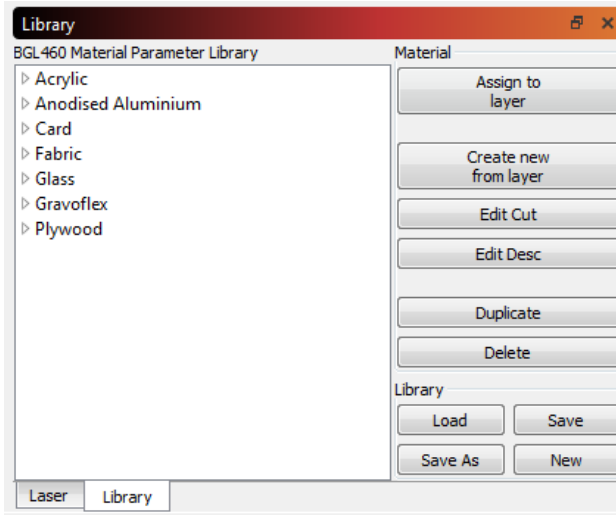
The requirement is to perform the following operations on 3mm Acrylic.

- a. **Black** - Vector Cutting
- b. **Red** - Vector Engraving
- c. **Blue** - Scan Engraving

- In the top RH corner of the Window, ensure the **Cuts / Layers** tab is selected as shown below.



- Select the **Black** colour in the Cuts / Layers window and then select the **Library** tab in the lower RH corner of the screen as shown below.

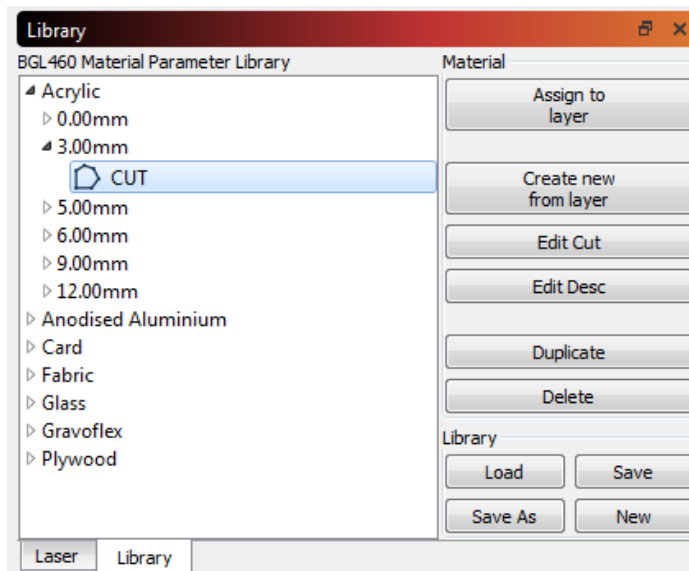


- A list of standard settings for various materials and types of Laser processing is displayed as shown in the example above.

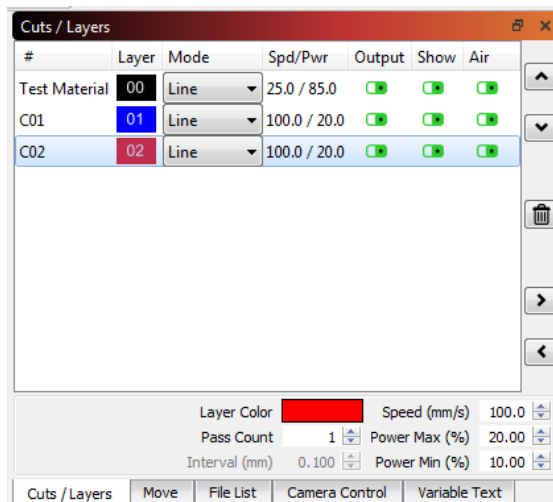
**Note:- If this list is empty, then ensure you have copied the Cutting Parameter Library from the memory stick to the application folder as detailed in the 'Lightburn Software Installation Guide'**

For the **black** colour the requirement in the example is to Vector Cut

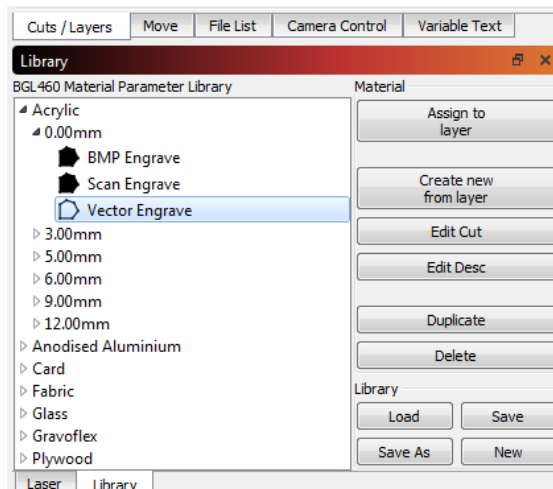
Expand the **Acrylic** material to list the thicknesses then expand the **3.00mm** option and select **CUT** as shown below followed by **Assign to layer**



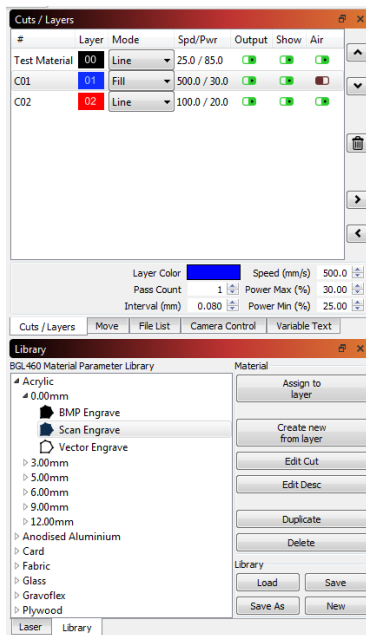
- Now select the **Red** colour block in the Cuts / Layers window. The Layer colour will change to red as shown below.



Once again, expand the **Acrylic** material to list the thicknesses then expand the **0.00mm** option and select **Vector Engrave** as shown below followed by **Assign to layer**

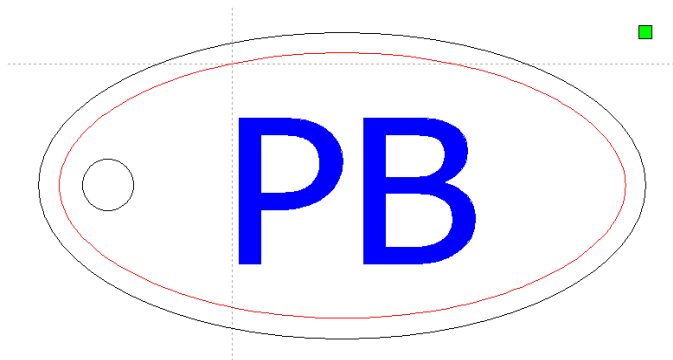


- Now select the **Blue** colour block in the Cuts / Layers window. The Layer colour will change to blue as shown below.




Once again, expand the **Acrylic** material to list the thicknesses then expand the **0.00mm** option and select **Scan Engrave** as shown below followed by **Assign to layer**

7. The blue item will now be filled as shown below.

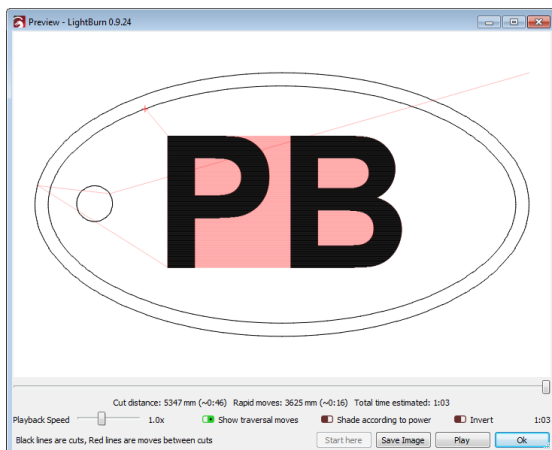


8. The configuration is now complete. The file can be saved at this stage in the Lightburn native file format (\*.lbrn\*) with all its associated colour settings if required.

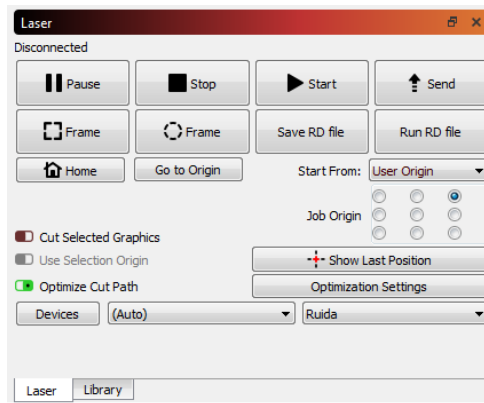
9. A useful feature within Lightburn is the ability to simulate the processing cycle. This allows the user to check that the cycle is as expected.

Select **Window – Preview** from the menu, or the toolbar button 

The window below is shown. The buttons and sliders control the simulation.



10. To download the file to the machine, we now need to concentrate on the bottom RH corner of the screen. Select the **Laser** tab as shown below.

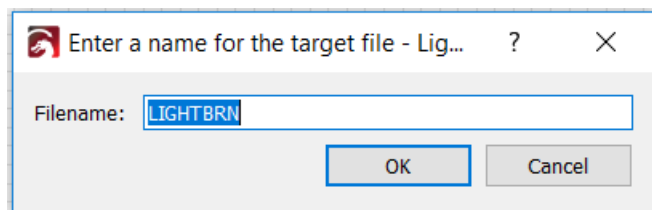


There are a number of options for positioning the final job on the machine bed, but for this example we utilise the anchor point and the machine floating origin.

Select the **User Origin** option from the **Start From** drop down menu.

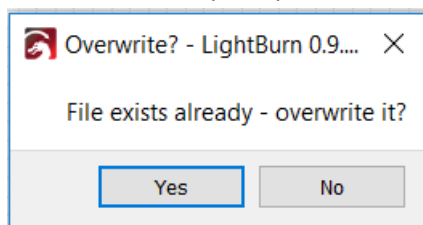
**Note:- the anchor point is the green square handle which in this example is in the top RH corner of the drawing geometry extents.**

11. Select the **Send** button. The window below is shown.



Select **OK**.

12. Select **YES** to the prompt shown below.



13. Place the material on the honeycombed bed and focus the machine.

The autofocus can be utilised as follows:-

- Using the **X** and **Y** (front to back and left to right) arrow buttons on the machine keypad, the cutting head is positioned over the material.
- Pressing the **Z/U** key to enters the sub-menu.
- The **Auto Focus** option at the bottom of the list is highlighted using the down arrow key.
- Selecting the **Enter** key on the keypad initiates the Auto focus routine.
- The machine bed moves up until the focus rod is actuated and then retracts to the focus height. During this movement, the LCD panel indicates 'Resetting'.
- When Auto Focus is complete, the LCD display returns to the initial screen.

14. Using the **X** and **Y** arrow buttons on the machine keypad, position the red dot pointer is moved to where the drawing anchor is required to be positioned.

**Remember, the anchor point is the green square handle which in this example is in the top RH corner of the drawing geometry extents.**

15. When in the desired position, the **Origin** button on the keypad is selected.
16. It is now good practice to check that the extents of the laser processing a, fit on the workpiece and b, are in the desired position. This is done by selecting the **Frame** button on the keypad. The machine moves to the job extents.
17. If the position is incorrect, then step 15, 16 and 17 can be repeated.
18. Next complete the following checks:-

- a. Ensure the Laser Key switch is set to the on position.



- b. Ensure the extraction system is operational.

19. Select the **Start-Pause** key to initiate the laser processing automatic cycle. File details, colour settings and cycle progress are displayed on the machine LCD.

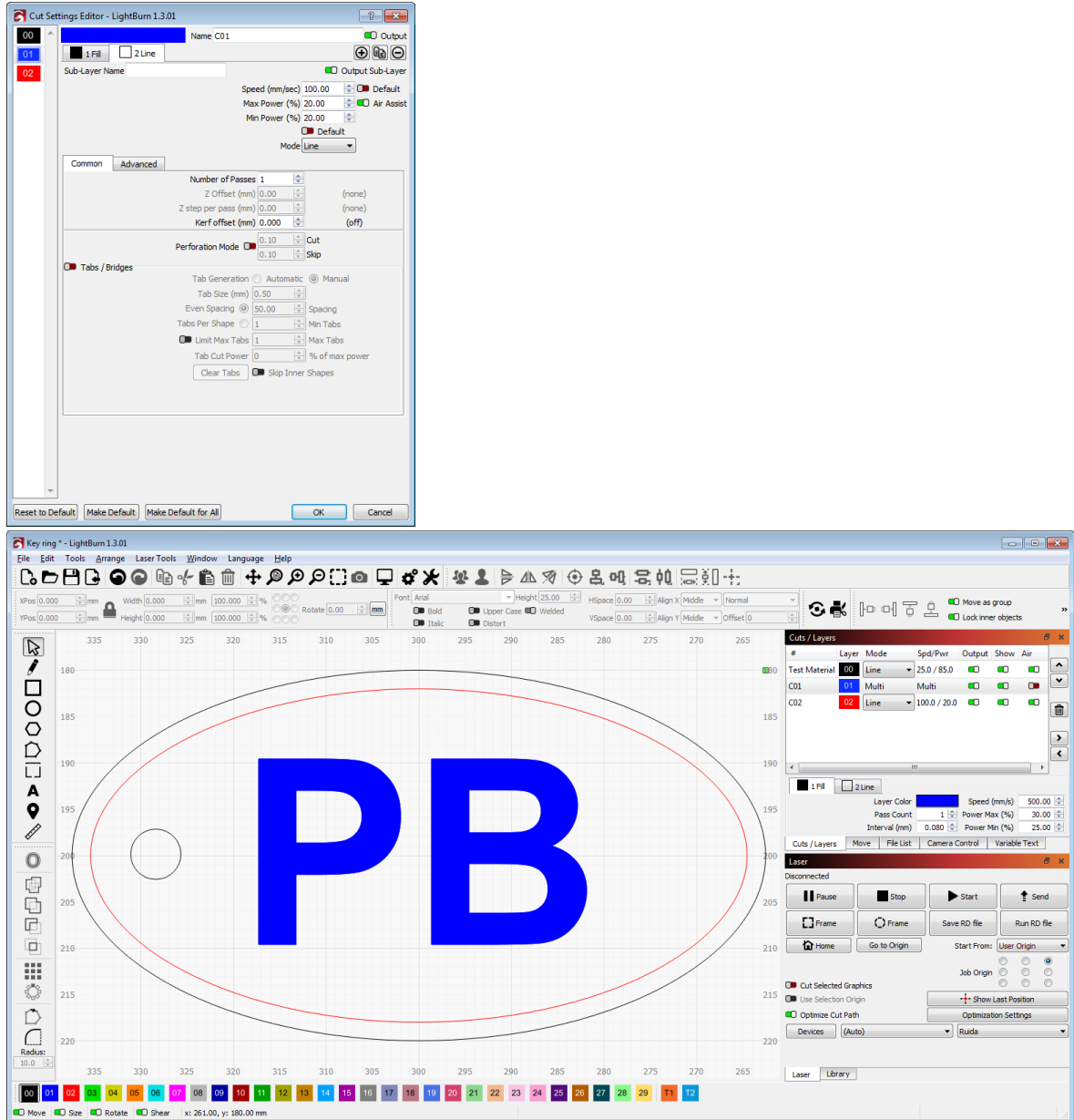


20. Final outcome show Scan engraved letters, vector engraved border line and vector cut hole and outer profile.



# Other Effects

1. A variety of other outcomes can be created by adding additional settings. In the example shown below, the mode of the blue colour has been changed to Multi by adding an additional layer to allow for a vector engrave process to be added around the letters.



The effect with and without the letter outline vector engrave can be seen below.



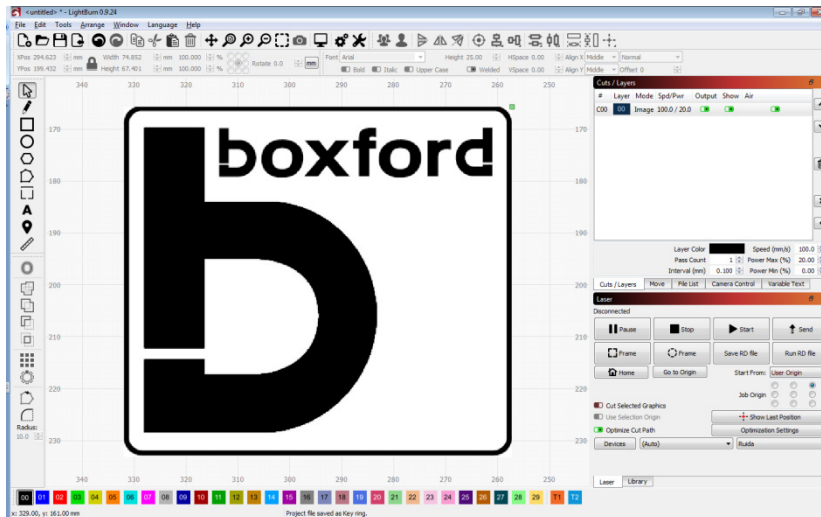
# Bitmap Engraving

1. Simple Black and white bitmaps can be engraved as follows:-

a. Import the bitmap into Lightburn using either the **File – Import** menu option or the toolbar

button 

b. The file is imported as shown in the example below.



c. In the **Cuts / Layers** tab in the top RH corner, the layer is assigned an Image mode.

d. Select the **Library** tab and then select the desired '**BMP Engrave**' material setting.

The example below shows the outcome on wood.

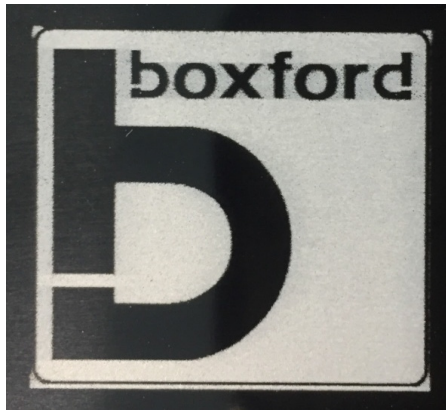


e. In a darker material like an engraving laminate of anodised aluminium, it may be desirable to engrave the white area and not the black.


To achieve this, simply double click on the BMP layer in the **Cuts / Layers** tab and select the **Negative Image** Check box.

The example below show the outcome on anodised aluminium.

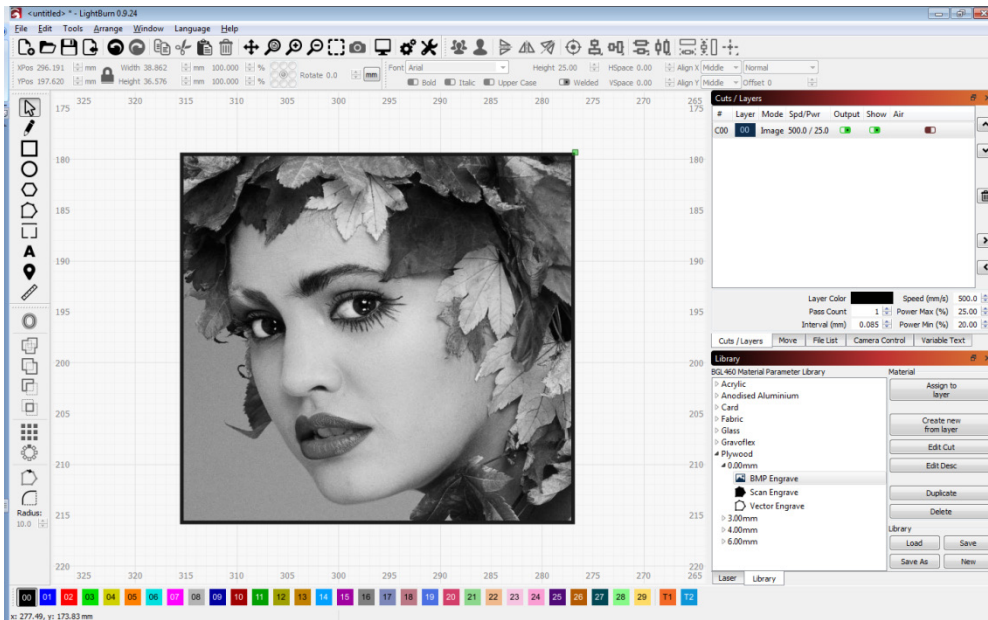




## Greyscale / Photograph Engraving

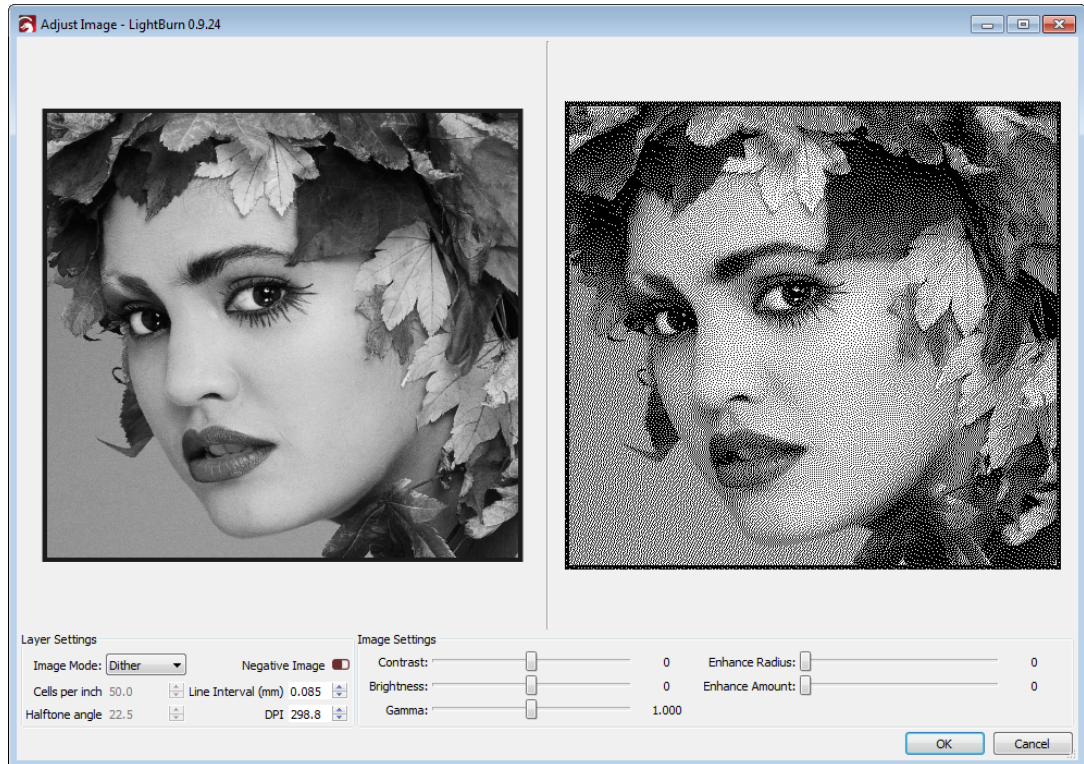
2. Import the greyscale / photograph bitmap into Lightburn using either the **File – Import** menu option or the toolbar button 

- a. The file is imported as shown in the example below.



- b. Select the Bitmap and the menu item **Tools – Adjust Image** or right click on the image and select **Adjust Image**

c. The window below is shown



- d. Select image mode **Dither**.
- e. Enter a value of **300** in the **DPI** edit field.
- f. Select the **OK** button.
- g. The bitmap is converted to a dot graphic as shown below, the denser the dots, the darker the shade.

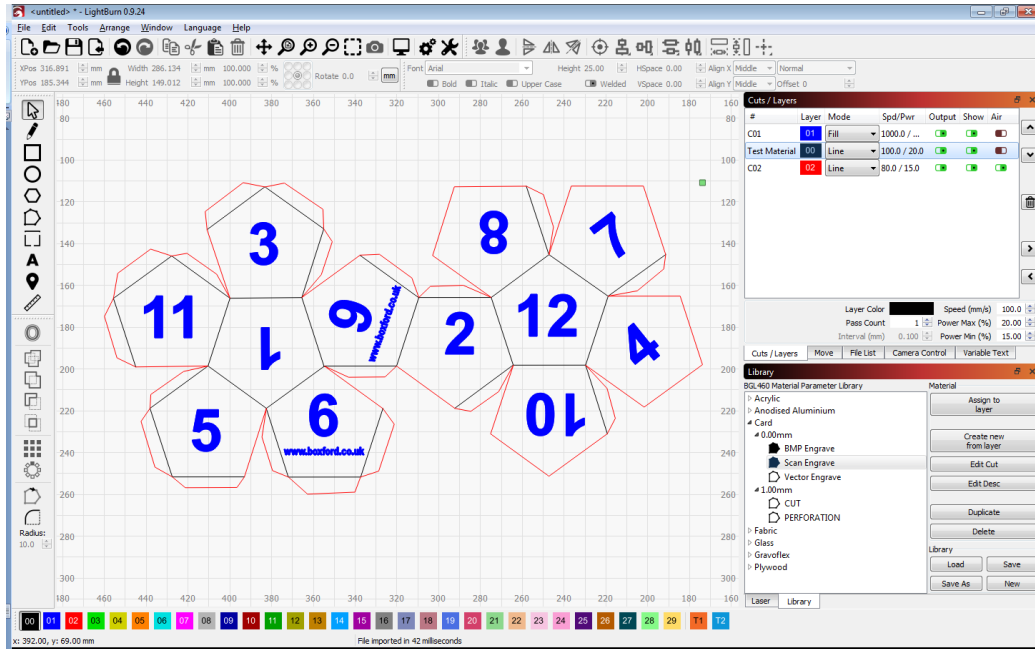


The example below shows the outcome on plywood.



# Card Score / Fold Lines

1. One additional option is to produce a dotted or perforated line which is particularly useful for producing card based developments or nets.
  - a. In the example below, the red and blue layers have been set to **Vector Cut** and **Scan Engrave** as detailed earlier in this guide.



- b. For the black 'fold lines', select the material ending **Perforation** from the card material library.
- c. The example below shows the outcome on a coloured card.





## **Important**

This guide has given a brief introduction to the Lightburn software application. For a comprehensive manual detailing ALL the software features, see help system on the software which also has a link to a printable PDF manual.