This document includes:

- Principle of the function
- Application method

RDImage

Software functions application note

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Introduction

This section provides information about…

- What is RDImage
- How to open RDimage
- How to use RDimage to edit an image
- How to do a engraving
- How to engrave an image by laser machine
- Advanced options for edit the template
- Create new type of a material
- How to engrave by laser machine

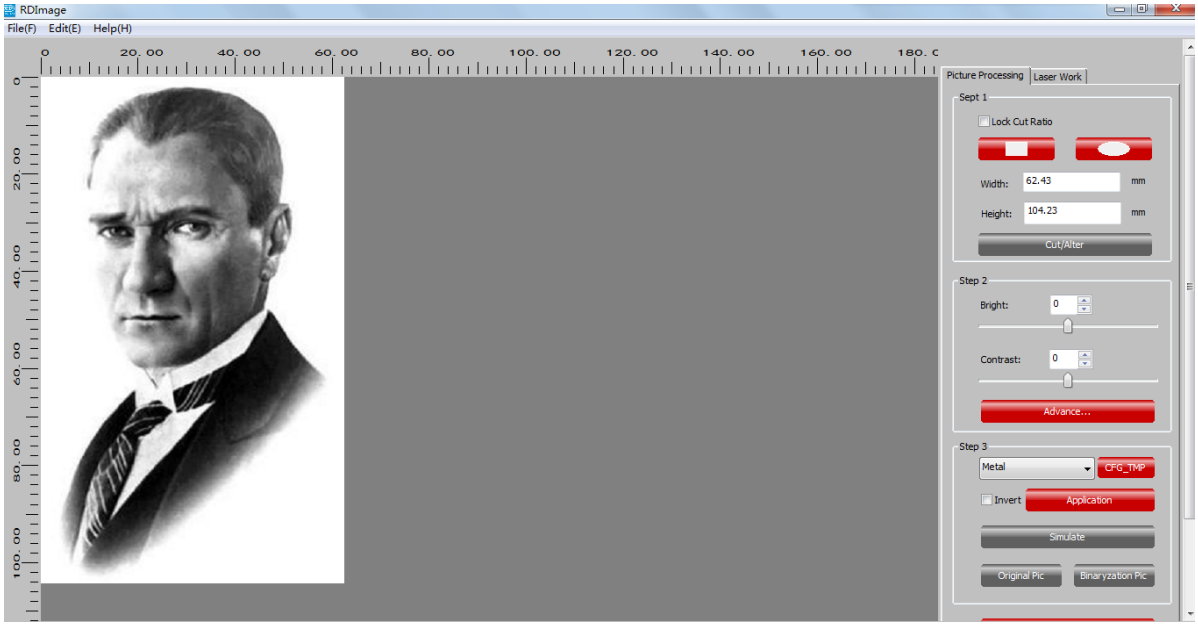
Section 1 What is RDImage?

RDImage is software. The software is focusing on image processing that include of image transformation, gray, dots and modifying the size of the image. RDImage is working as a module in the RDWorksV8. RDImage is plugged in the RDWorksV8.

RDImage can processing different image style such as BMP, JPG,JPEG etc. All the image can be processed to a style that can be engraved with laser. It is very easy to operate for the customer to do some picture engraving with RDImage.

RDImage can make the work much more simple. What users do is only to change the size of the picture and select the material that would be engraved on. And then start the laser engraving.

The UI of RDImage is shown as bellows:

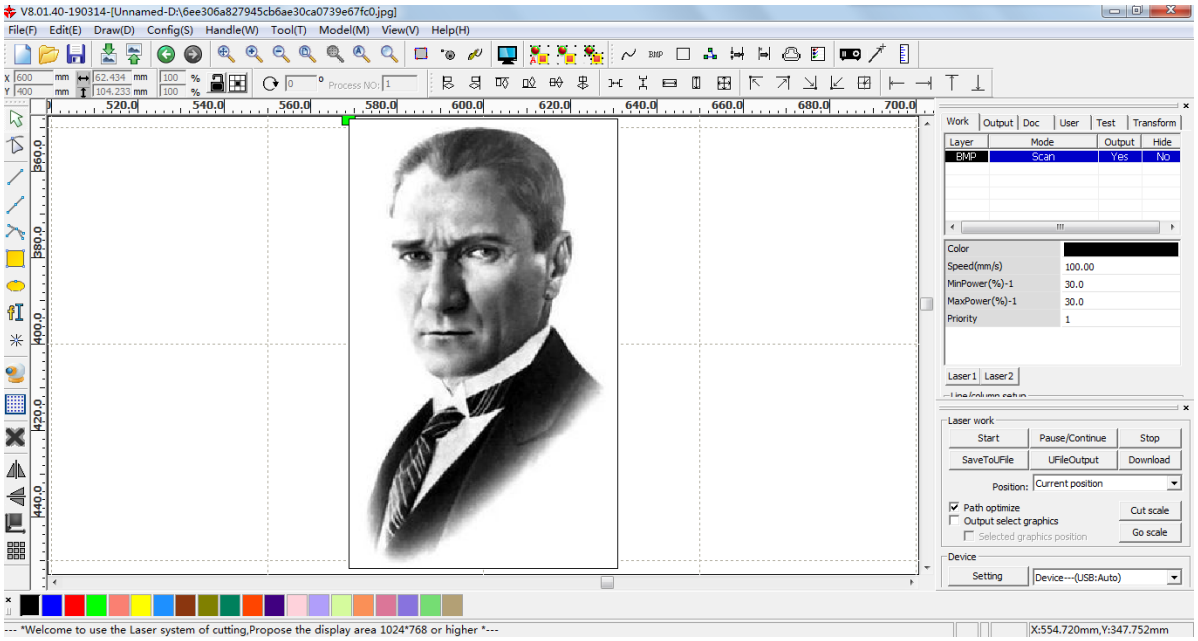


Picture 1 RDImage UI

Section 2 How to open RDImage

When user installs the software package on the computer, the RDImage will be installed in the computer together with RDWorksV8.

The main UI of the RDWorksV8 is shown as picture 2. An image has been imported.

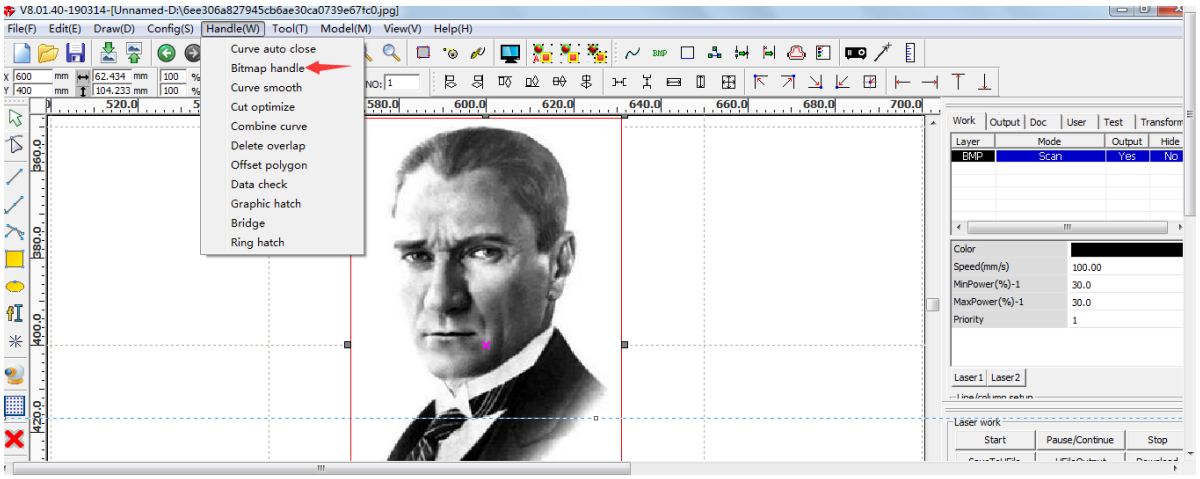


Picture 2 RDWorksV8 main user interface

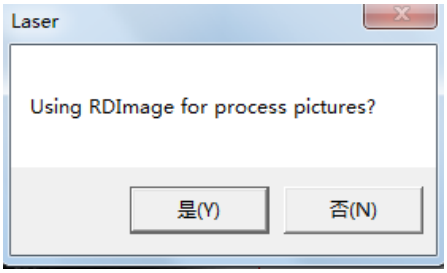
User can open the RDImage in the RDWorksV8 by the following steps:

STEP1: Import an image by the RDWorkdV8. Shown as picture 2.

STEP2: Select the image with cursor. Once the image is selected, the outline of the picture will changed from black to red.



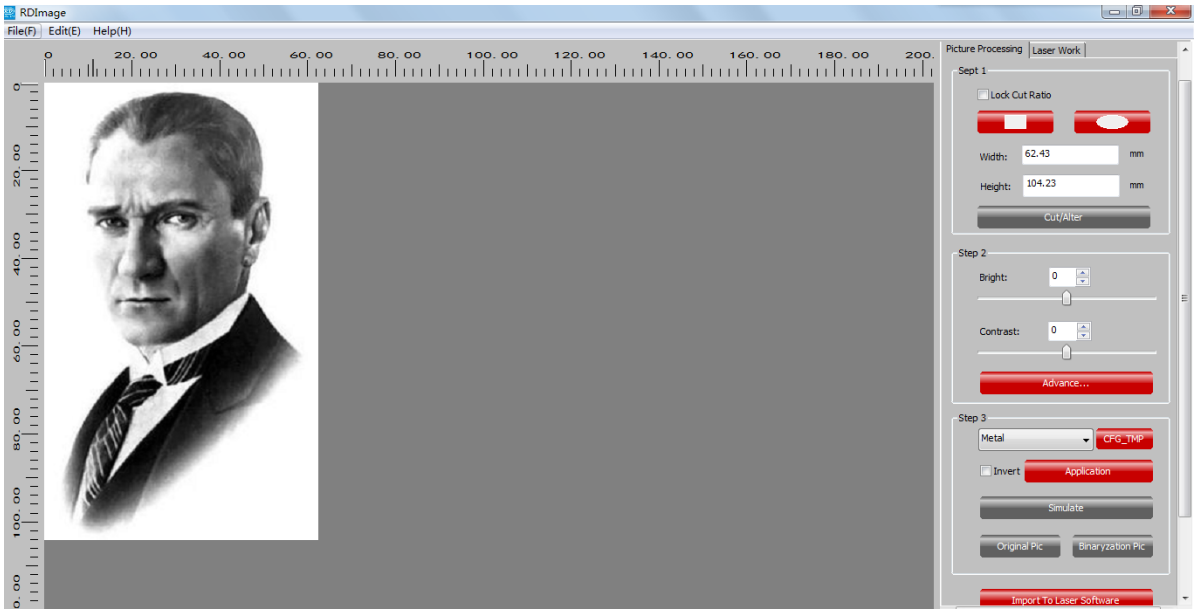
STEP3: Click the option named【Handle】 and select the 【Bitmap handle】, a dialog will be popped up. Shown as picture 3.



Picture 3 Entry of RDImage

STEP4: Chose 【YES】 to call the RDImage. Shown as picture 4

If user has process the image by PhotoShop or other software and the image has been transferred to the format such as dots or net-dots image. User can select【NO】to enter the normal image process. RDImage will not be called. If the image has been processed by PHOTOSHOP or other software to meet the format that the laser machine can do, there is no need to go to 【Handle】 and select the 【Bitmap handle. The processed image should be gray or binary image.



Picture 4 RDimage UI

Section 3 How to use RDImage to edit an image

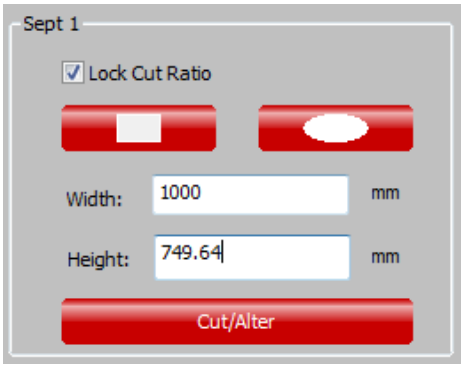
When a gray or color image is imported into RDWorksV8, the image will be transformed to gray format. The image that imported into the RDImage is shown as follows.

Original image

After imported image

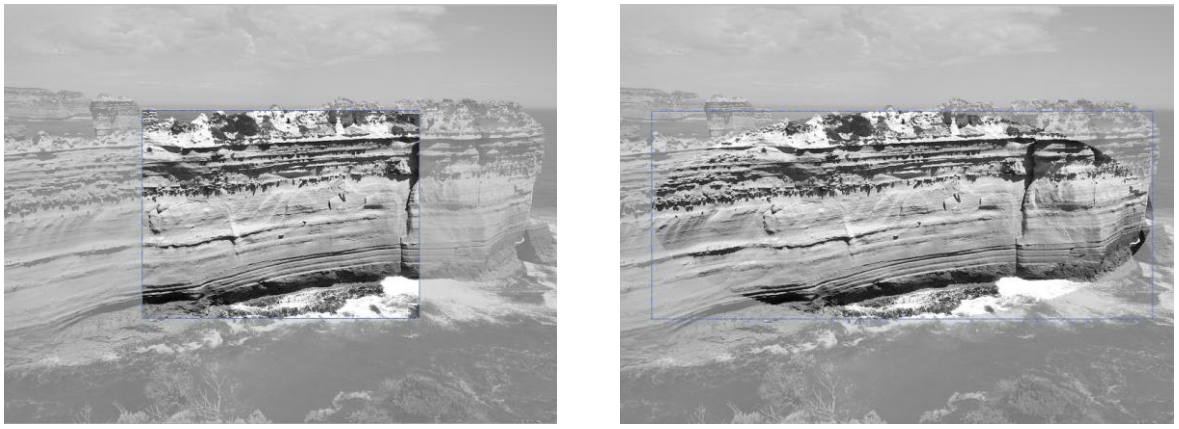
With the wheel of the mouse, user can zoom in or zoom out the picture. User can change the

picture size by the parameters shown as picture 6. The trim tools include of changing the length and width of an image. User can change the length and width of the image with these 2 edit blank. 【lock cut ratio】 is used to control the ratio of the length and width. Once the option is enabled, the ratio of the image will be locked. Whatever the value user edit, the length and width will keep a constant value as the original image would be.



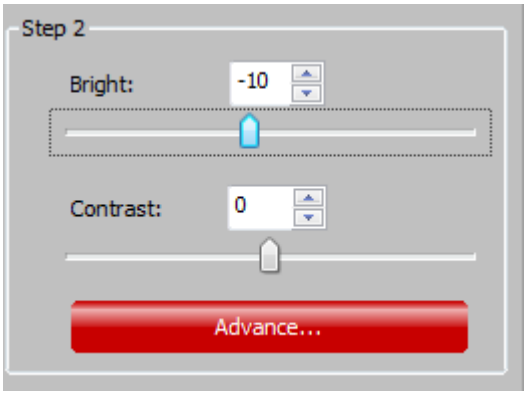
Picture 6 Image trim tools

User can use rectangle tool and ellipse tool to get part of the picture to be engraved by laser machine. Shown as picture 7.

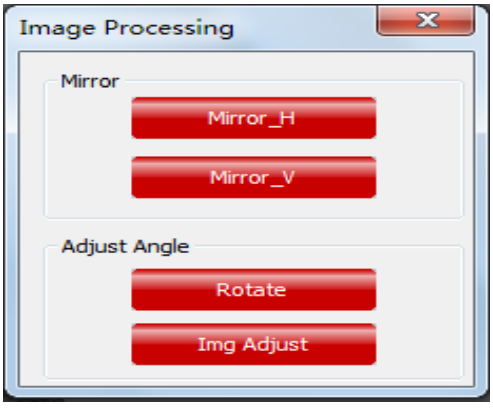


Picture 7 Handled by the rectangle and ellipse tools

User can use the image processing tool to change the property of the image such as brightness and contrast. The tools are shown as picture 8.



Picture 8 Image adjust tools



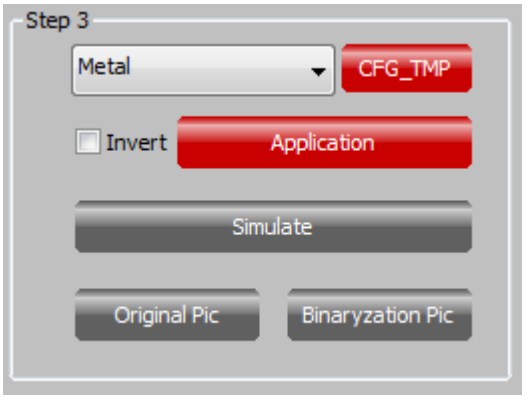
Picture 9 Advanced tranformation

User can drag the slider to change the brightness and contrast. This adjustment should according to the laser engraving result. Change the brightness and contrast and check the

laser engraving result and try to find the best parameters that can get the best engraving result.

Section 4 How to engrave an image by laser machine

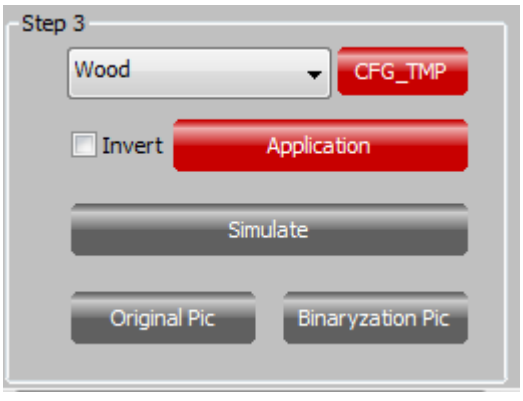
RDImage is an exclusive image processing software that can optimize any photograph for laser engraving onto a material. The software applies special image filters to the image and adjust the brightness, contrast, sharpness and definition appreciably for the material that will be processed. With the software, it is as simple as selecting your target material from the material form a list and cropping, resizing, rotating or mirroring the photograph as needed.
The main control table as the picture 10



Picture 10 Image filters

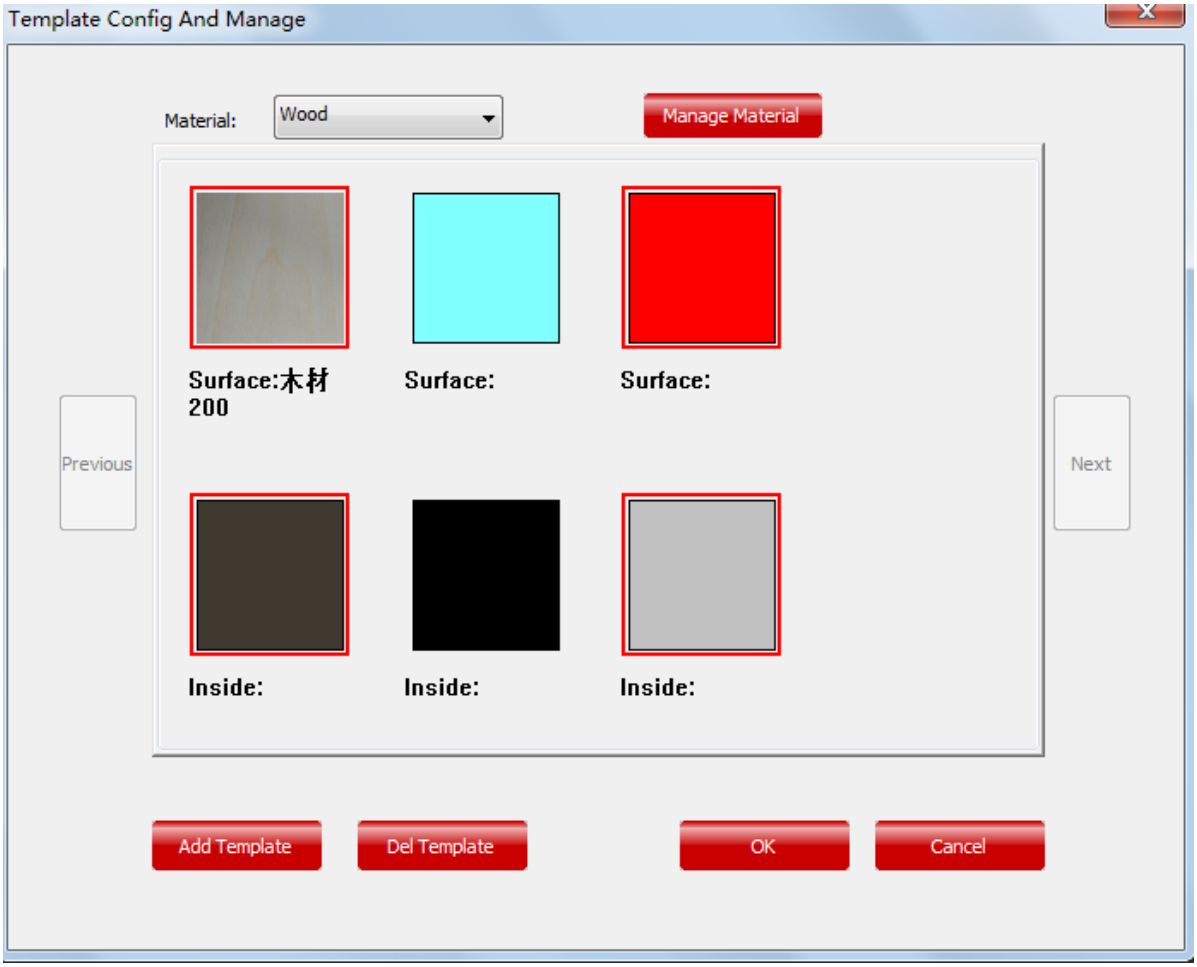
【material list】: now the list include of metal, wood, leather, marble, glass, fabric, acrylic and double color board. And this material list is open, user can test and try to extent the type of the materials.

The material list is the material that you want to engrave on it. So before you start a engraving, user should select a material type according the actual material target. Now we do an engraving on wood to be an example to guide user to engraving on wood.



Picture 11 material selection

But wood include of many types. Different wood has different stripe and texture. This stripe and texture has influence on the image filter algorithm. So user should define the stripe and texture. Definition of the type of woods can be done by click the button 【CFG_TMP】.
The interface is shown as picture 12.

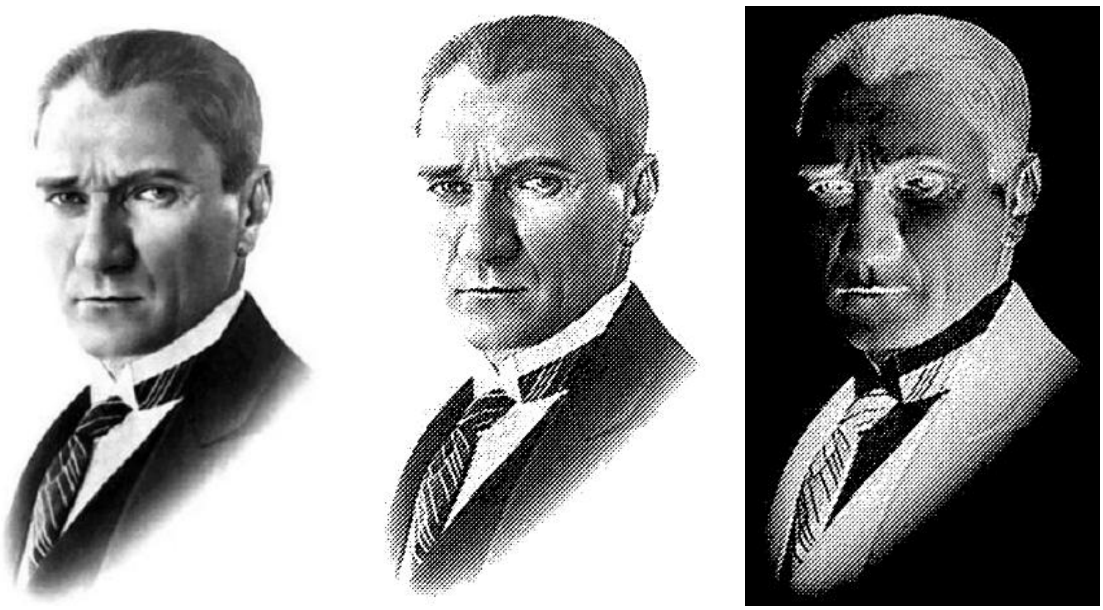


Picture 12 Material management and material type management

【Add Template】 is used to add an wood type to the list. There are 2 pictures for one type of wood. The surface is the actual stripe and texture of the wood. The inside means the color of the material when the material has been processed by the CO2 laser. So for each wood template, there should be 2 items (surface and inside). Here comes one question: how to get the surface and inside of the wood? This will be described in the following sections.

So user can add many kinds types wood as possible. For each wood type, there are 2 pictures. The above we have add 2 more templates. When user want engrave on a material, user can select the similar material as the actual target material to be the template. Now we select the first one.

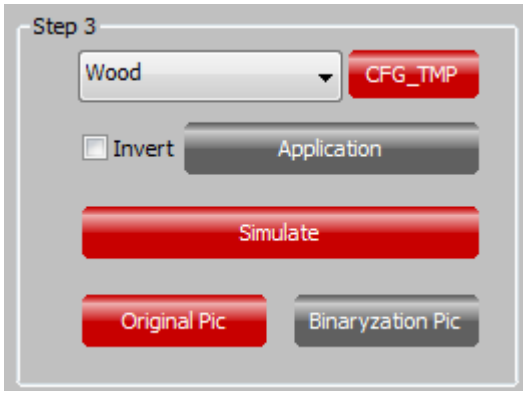
After RDImage processing, the picture will be processed to binary image. Shown as picture 13. the image on the left is the original image. The middle one is the image processed by RDImage. The right one is processed by invert color.



Original picture　　Processed by wood　　Processed by wood(invert color)

Picture 13 Photograph processed by wood type

After 【Application】, the actual processed photograph will be displayed in the UI. Then the 【Simulate】 will be activated. User can click the button to preview the actual engraving result on the wood.



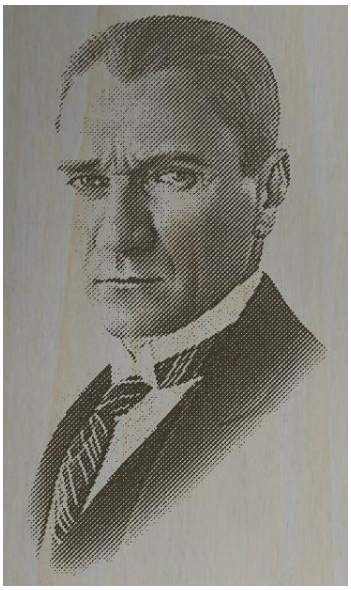
Picture 14 Processing control

【Original Pic】 is to show the original photograph that has not been processed.

【Binaryzation Pic】is to show the processed photograph.

Once【Simulate】is activated, the button function is to show the final engraving result on the actual material.

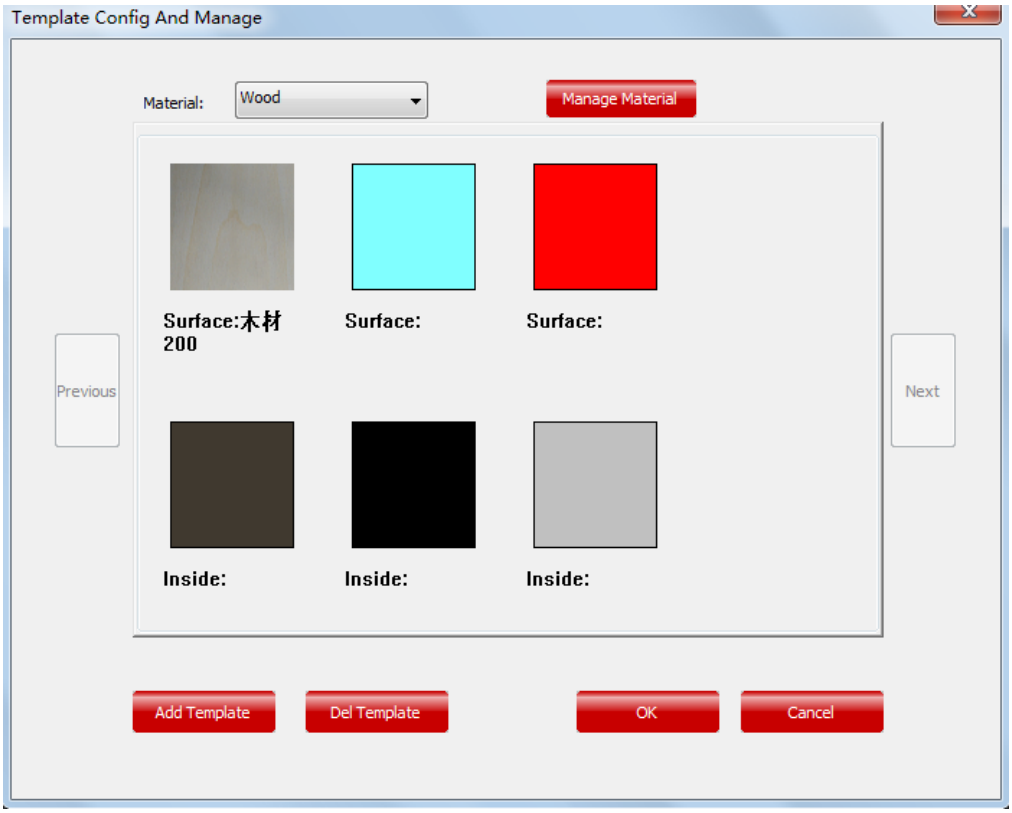
The actual engraving result on wood is shown as picture 15.



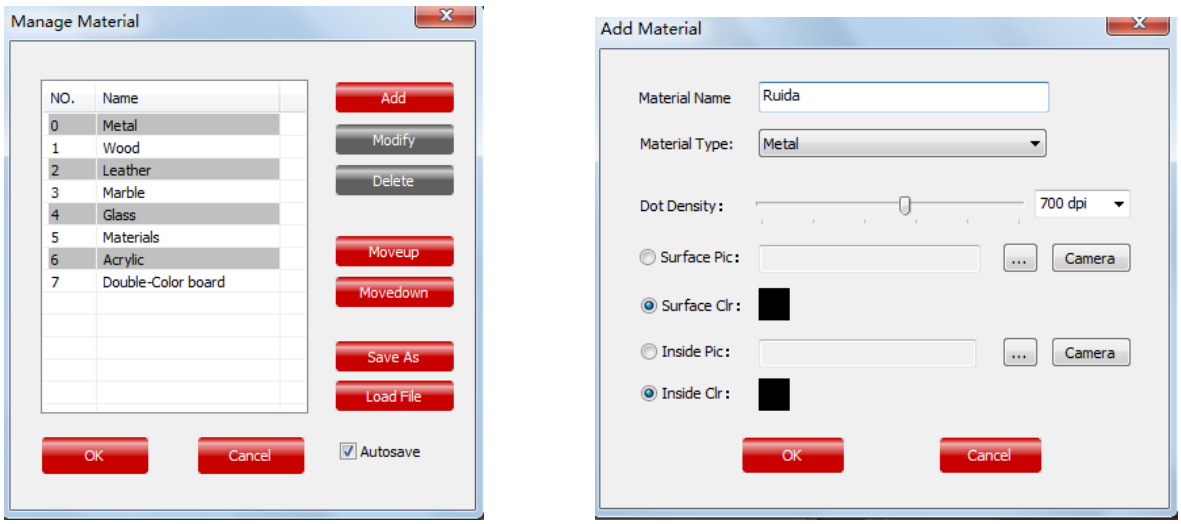
Picture 14 Actual engraving result on wood

Section 5 Advanced options for edit the template

RDImage has a function that allow user to extend the material options. Normally the wood, metal, leather, acrylic, marble, glass, double-color board have been included. User can add new material to the list. Shown as picture15



Picture 15 Material list edit



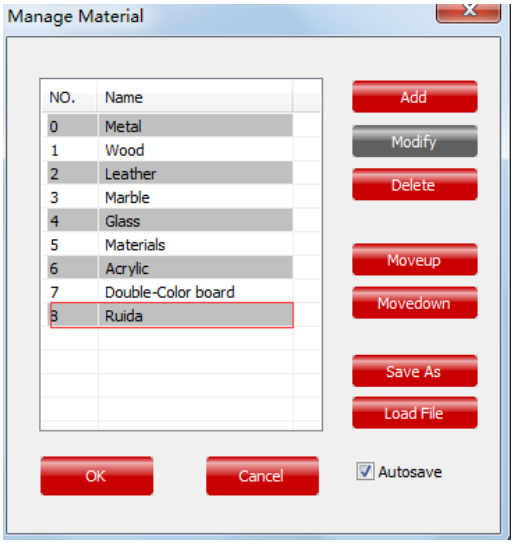
Picture 16 Material edit and configuration

Click【**Original Pic**】, new material can be added to the current material list. When a new material is added, the parameters that used to describe the property. These parameters include DPI, surface and inside. The surface and inside of material can be from color or from a picture that can describe the stripes of the material. User can also use a camera to take photo from the material. The 【**Camera**】will call a camera to take a photo. If there are files of picture that can describe the stripes and color of the material, RDImage can import the file by the 【**…**】.

Notice:
The surface is the picture of the original material stripe and color before any processing. The inside is the picture of the processed after the laser engraving.

【**Dot density**】is to modify the DPI. The DPI can be changed from 100 to 2000 DPI. User can change the DPI and test the engraving result and get a perfect parameter.

After all the parameters have been configured, the new material will be existed on the list, shown as picture 17.

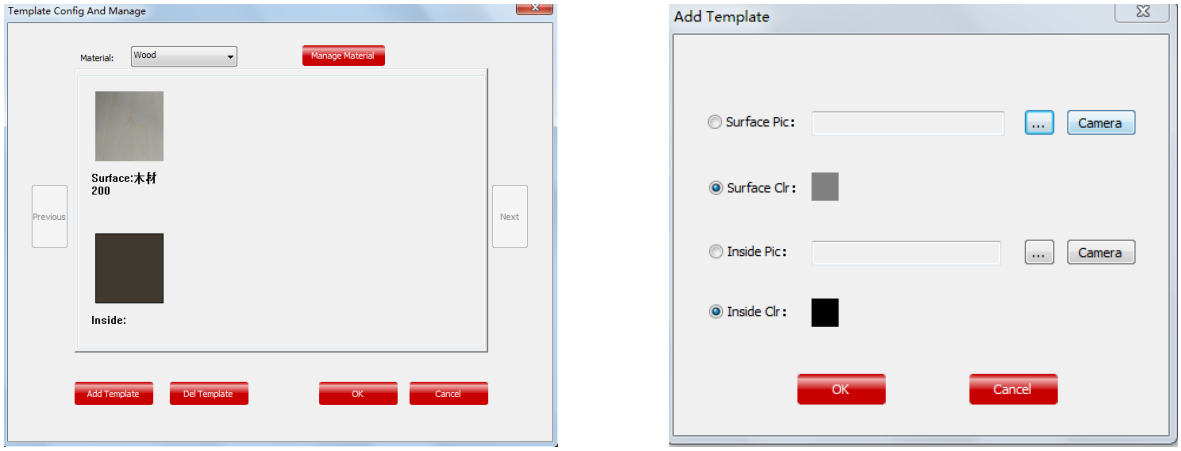


Picture 17 Add new material to the list

With【**Save as**】, user can download the setting of the material list to local computer and save as a file for backup.
With【**Load file**】, user can load the extern configuration from the local file that backup in the computer.

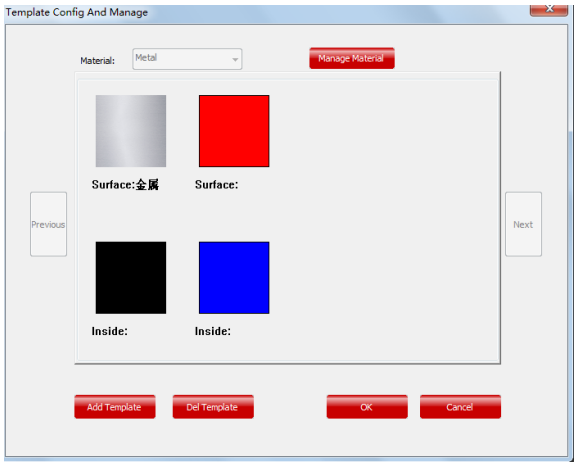
Section 7 Create new type of a material

RDImage support creating new type of a material. For example, user can add new type of a wood because there are different wood stripe and color according to different woods. Template creation UI is shown as picture 18



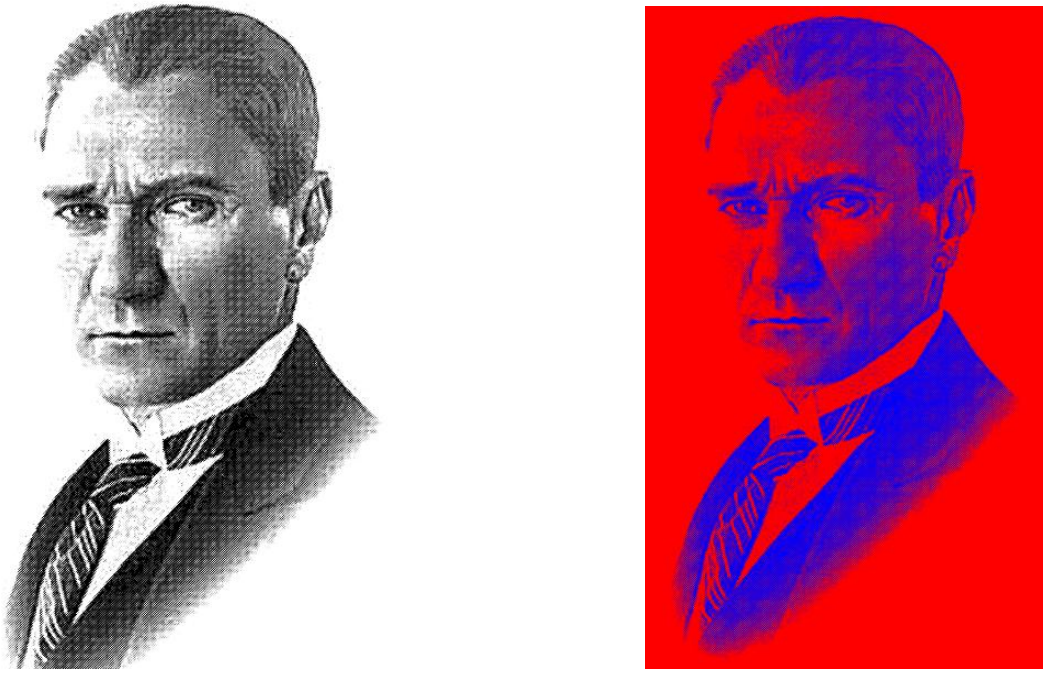
Picture18 template creation

There are 3 ways to create the new template by select the image file, from the camera or from the color.



Picture19 Add new template

Picture 19 has added a new metal which the surface is red and the inside is blue(laser processed). User can select the template and start an engraving. The engraving result can be simulate by the RDImage with 【**Simulate**】.



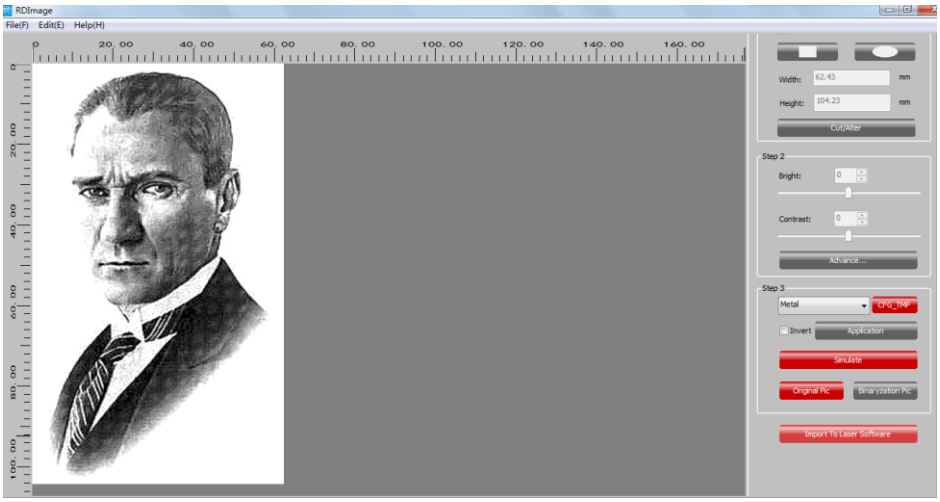
Picture20 The actual engraving result on one type of metal

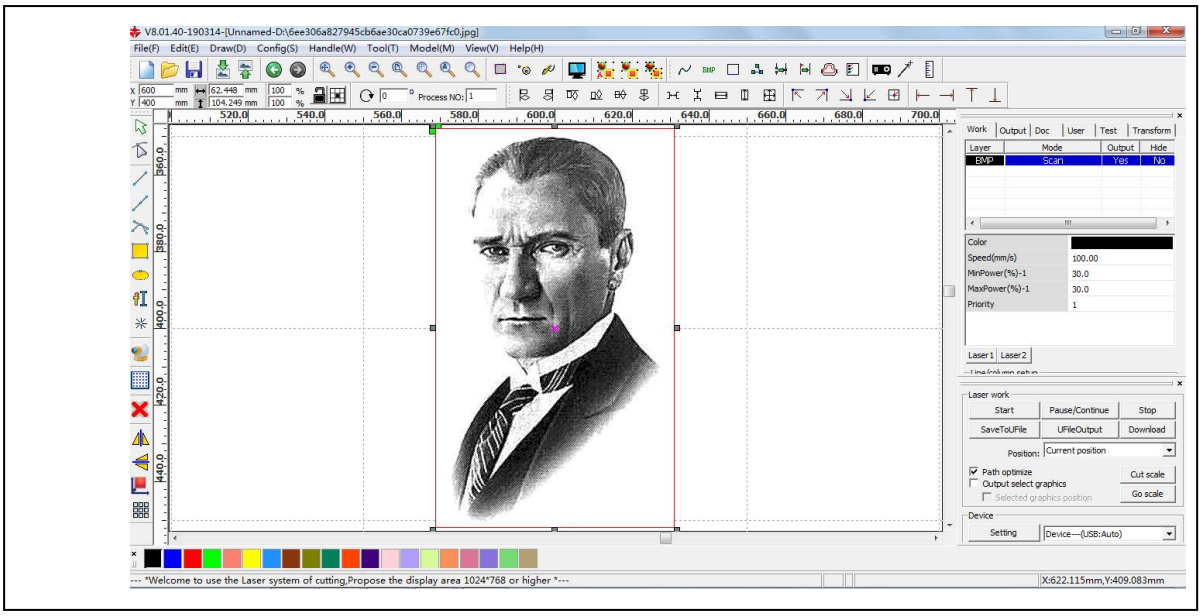
Section 8 How to engrave by laser machine

RDImage is a photograph processing software. All the photograph should be done by laser machines. what the RDImage does is a perfect photograph processing algorithm according to the laser engraving property. It give an optimized way to generate a best image that suitable to the laser machines.

When use has done the section1~7, the image can be engraved by the laser machine. There are 2 ways to realize the laser engraving.

(1) Import the processed photograph to the RDWorksV8 and do an engraving. Shown in picture 21-22. Picture 21 is an image in RDImage. Picture 22 is an image that import from RDImage.



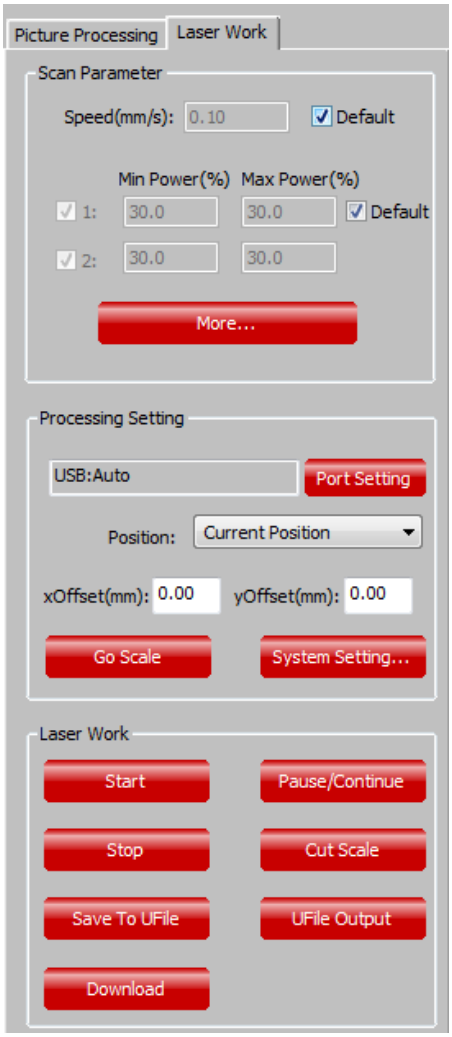


Picture 21-22 Import image from RDImage to RDWorksV8

After import the processed image to RDWorksV8, user can do a normal laser engraving.

User can directly do an engraving with the RDImage software. The control UI is shown as picture 23. the power of the laser and the speed of engraving can be modified.

The operation of the engraving can be guided by the RDWorksV8. Please refer to the manual of RDWorksV8.



If an large image processed in RDImage is imported into RDWorks V8, RDWorksV8 response slow or hang up. So the image should be done in RDImage to do an engraving.

(2) Engraving the processed photograph directly by RDImage.
Set all the parameters correctly and press【**Start**】 to start engraving work directly!

Great thanks to Mustafa Kemal Atatürk!

Mustafa Kemal Atatürk (1881-1938) was an army officer who founded an independent Republic of Turkey out of the ruins of the Ottoman Empire. He then served as Turkey's first president from 1923 until his death in 1938, implementing reforms that rapidly secularized and westernized the country.