CONVERTING 2D IMAGES TO 3D STLS

Stratasys®
3D Printers and
Production Systems

SOFTWARE/PRODUCT/FINISHING

OVERVIEW

There are several ways to create 3D models from BMP images. This Best Practice explains how to do this by converting a BMP file to an STL file.

This method is useful in a wide range of applications. It opens possibilities for creating and simulating coins, medals, printing plates, stamps, height maps, bump mapping, textures, dactylography (fingerprinting), and customized giveaways, all before the stamping process.

The basic principle is to take a regular 2D image (in BMP format) and translate the image's gray shades into a 3D height map (Figures 1 and 2). The two-dimensional array (i.e. color) of each element is interpreted as a height value in order to store information on the height of each point. For example; the white points are flat, the gray points are higher and the black points are the highest.

Figure 1: An example of a flat image saved in BMP file format.

1. OPTIONS

1.1. The following steps in this procedure were accomplished using Microsoft® Paint image viewing software and Materialise® Magics STL editing software, and make reference to the menu options in those applications. Other similar software programs may be used to accomplish this procedure.
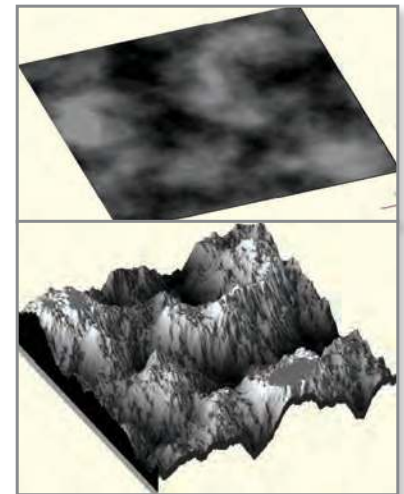

Figure 2: Height map.

Figure 3: STL created from BMP format.

Figure 4: 3D printed model resulting from an STL file made using a BMP image.

Figure 5: Final, painted version of the model.

2. PROCESS

2.1. Convert the Image to BMP Format

STEP 1: Open the image in the image viewing software that is capable of converting the file to a bitmap (BMP) format. Then save the image as a bitmap (BMP) file (Figure 6).

2.2. Create the STL File

STEP 1: Create an STL file from the BMP file by using the Materialise Magics editing program. Click on the Edit menu and select Create from bitmap (Figure 7).
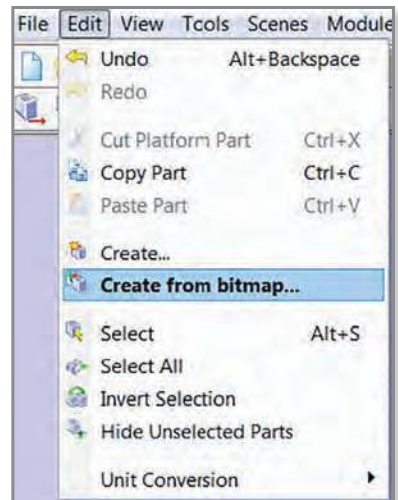
2.3. Edit the STL File

STEP 1: Choose the image (Figure 8).

STEP 2: Choose and set the following parameters according to the end-product dimensions (Figure 8).

- Depth (z) – the depth of the gray shade

- Depth (a) – the depth of the model base

2.4. Cut the Unwanted Details

STEP 1: Click on the View menu and choose Front view (Figure 9).

STEP 2: Go to Tool – Cut and choose a circle or polyline cut, depending on the model type (Figure 10).

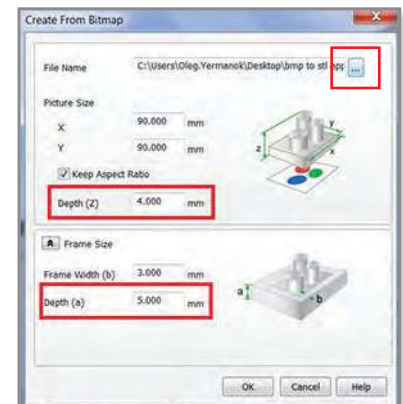**STEP 3:** Remove the excess area (Figure 11).

STEP 4: Save the part.

Figure 6: Save as a BMP picture.

Figure 7: Create from bitmap.

Figure 8: Choose image and then choose depth (z) and (a) depending on the desired result.

3. TOOLS & SUPPLIES

3.1. Software:

- Image viewing software such as MS Paint or equivalent

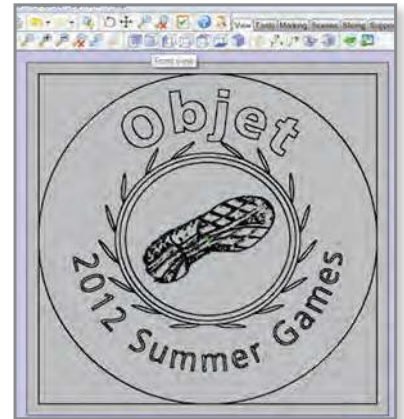- STL editing software such as Materialise Magics or equivalent

Figure 9: Front view in order to align the model before cutting.
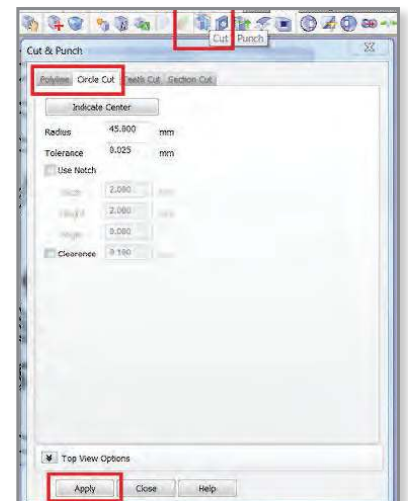

Figure 10: Cut functions.

Figure 11: Remove excess areas.

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