Wrapping Vector Objects around Circle – Reference Documentation

Purpose

The purpose of this reference document is to describe the 'Wrap Circle' feature in IPGScan which wraps vector objects around a circle of user-specified radius.

Vector objects that can be wrapped around a circle in IPGScan include text and all vector shapes that are directly defined in the IPGScan GUI as well as vector shapes that are imported from DXF files.

'Wrap Circle' as Object Property

IPGScan treats 'Wrap Circle' as a property of a vector object, just as position and rotation. Among these object properties, 'Wrap Circle' takes priority over rotation and position.

When 'Wrap Circle' is set to true for a vector object, IPGScan first wraps that object to an imaginary circle centered at (0, 0) with the user-specified radius. After the vector object is wrapped and positioned accordingly, IPGScan then applies position and rotation settings to the 'wrapped' vector object.

For example, this rectangle object has the following three properties:
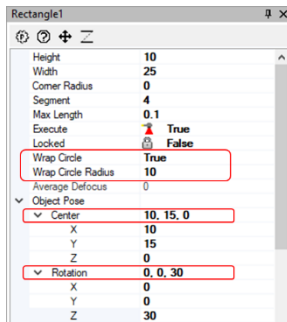
1. Wrap circle is 'True' and Wrap Circle Radius is '10'.
2. Center position is (10, 15, 0).
3. Rotation is around z-axis by 30 degree.

Note – no matter at what order the above properties are being entered in IPGScan, IPGScan will apply the 'Wrap Circle' property first, followed by rotation and then the center position is adjusted. Therefore, the resultant shape and its position/orientation with respect to the origin are as shown in the picture below.
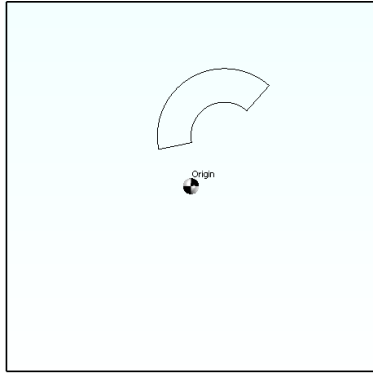
Illustrated below is how each individual property affects the rectangle based on the priority order of the properties, although all the changes occur to the shape at the same time in the canvas.

First, 'Wrap Circle' and 'Wrap Circle Radius' is 10.
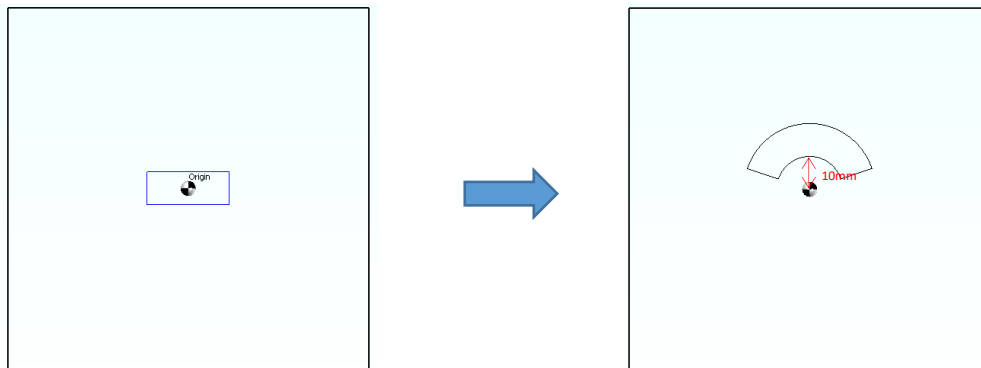
Note – IPGScan always assumes the circle that a vector object wraps around is centered at origin and with user specified radius, so the resultant vector object after wrapping will be positioned around that circle (the circle will not be shown in IPGScan). If the user wants the post-wrapping vector object at a different location and/or a different orientation, the user must adjust the object's coordinates and/or rotation accordingly.

Secondly, rotation around z-axis by 30 degree
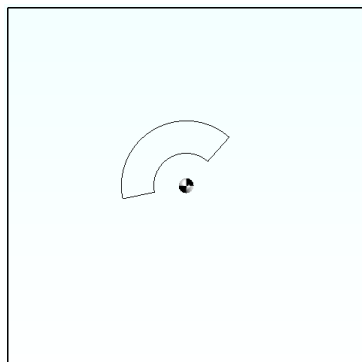
Finally, adjust position to (10, 15, 0)
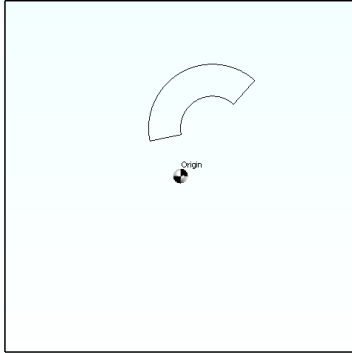
Procedure

'Wrap Circle' to Vector Object defined in IPGScan

Below describes the steps to set Wrap Circle property to a vector object which is defined in IPGScan:

1. In the IPGScan job file, select the desired vector object to set the Wrap Circle property.
2. Change its Max Length to a non-zero value, e.g. 0.1 (mm). **Note** - the default value for Max Length is 0. Failure to change Max Length to a non-zero value before 'Wrap Circle' will produce an incorrect result.
3. Set 'Wrap Circle' to True, and set Wrap Circle Radius to the desired value. The vector object will then appear wrapped around a circle of that radius centered on origin.
4. Adjust rotation and positon of the wrapped vector object accordingly, if needed.

'Wrap Circle' to Vector Object imported from DXF

If the vector object to be imported is at (0, 0) in the DXF file, users can import the DXF file as it is. Users can then follow the same procedure described in the above section to set 'Wrap Circle'.

If the vector object to be imported is NOT at (0, 0) in the DXF file, here are the steps to ensure correct 'Wrap Circle' result.

1. Import DXF and select 'Move To Center'. The DXF example used here includes a rectangle located at (10, 16.65) in the DXF coordinate.
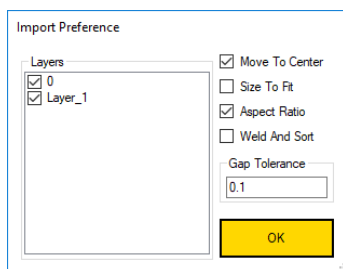
After the DXF is imported with 'Move To Center' selected, you will find the rectangle shape centered around origin in the IPGScan canvas. However IPGScan treats this rectangle as part of the DXF object, whose coordinate in the IPGScan canvas is now (-10, -16.65). If you proceed with
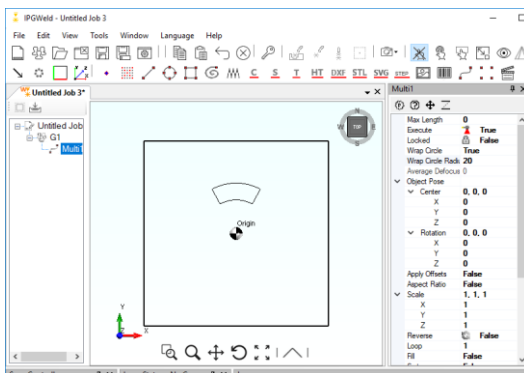
'Circle Wrap' now, an incorrect result will occur. Additional steps are needed before 'Wrap Circle' is applied, as described below.
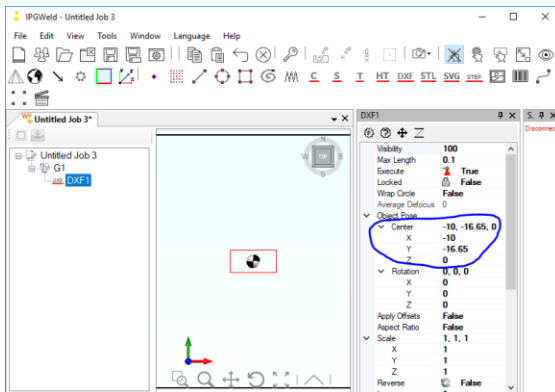
2. Select this DXF object, right click and select 'convert to Multi Shape'.
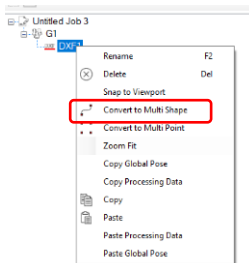
3. Select this multi-shape object and set its Max Length to a non-zero value, e.g. 0.1 (mm). **Note** - the default value for Max Length is 0. Failure to change Max Length to a non-zero value before 'Wrap Circle' will produce a wrong result.

4. Set 'Wrap Circle' to True, and set Wrap Circle Radius to your desired value. The vector object will then appear wrapped around a circle of that radius centered on origin. In this example, Wrap Circle Radius is set to 20 (mm), the resulted object is shown as below.

5. Adjust rotation and positon of the wrapped vector object accordingly, if needed.