ZW3D Flexible Electrode design

For plastic mold design, electrode design has always been an inevitable topic. ZW3D2017 added a new module for this topic which aims to speed up the electrode design. The following is the tool bar for the new module:
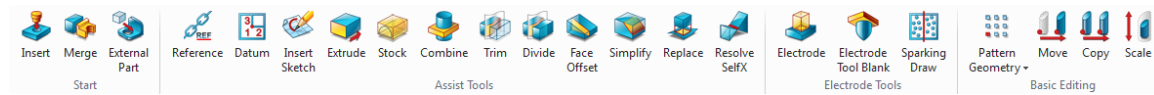

Figure1   New electrode design module

1.   Clear and simple workflow

In order to make the design process easier and more logical to understand, the tool bar starts from the "Insert", "External part" etc. Geometry referring command also helps us to have a clear idea about what object the electrode will be used for. Just insert or copy the object by the start column command. Meanwhile it enable you to determine whether built the associative relationship between the electrode and the referred object:
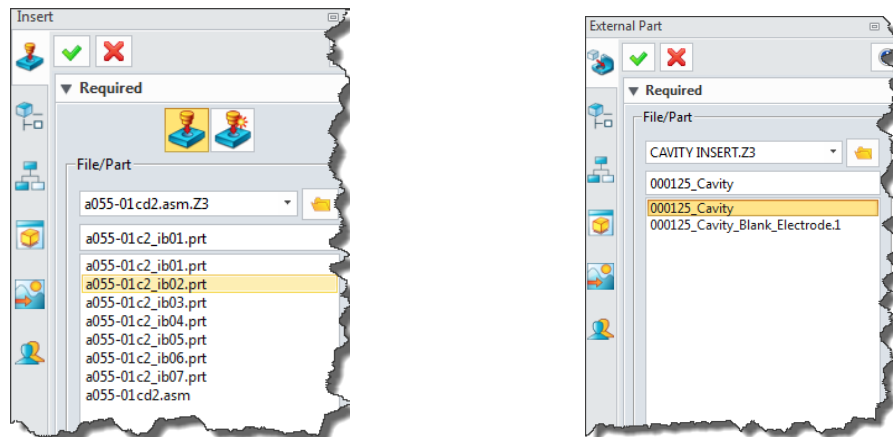

Figure2   Insert command (left) and External command (right)

Then we can choose tool to design electrode based on the geometry.

2.   Integrated tools save steps

When you start working with the referred object, you can quickly find the tools in this tool bar.All of these tools are useful for the electrode design. You can find assist tools and electrode tools to create your electrode shape. Generally, use assist tools in manual mode and electrode tools in auto mode.
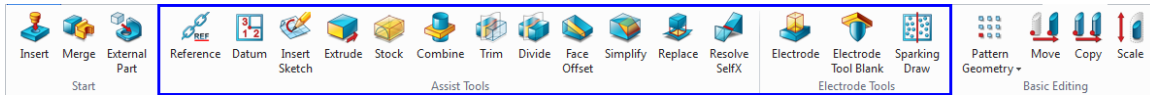
Figure3 Integrated tools for electrode design

3.   Variety of tools for electrode design increases working flexibility

3.1 Auto mode

The Electrode Tools are the auto electrode creation tools which can quickly create the electrode shape by using the geometry as follows:
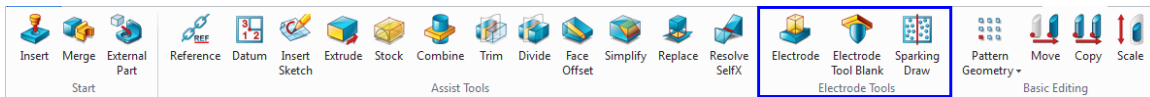

Figure4 Electrode tools for auto electrode design

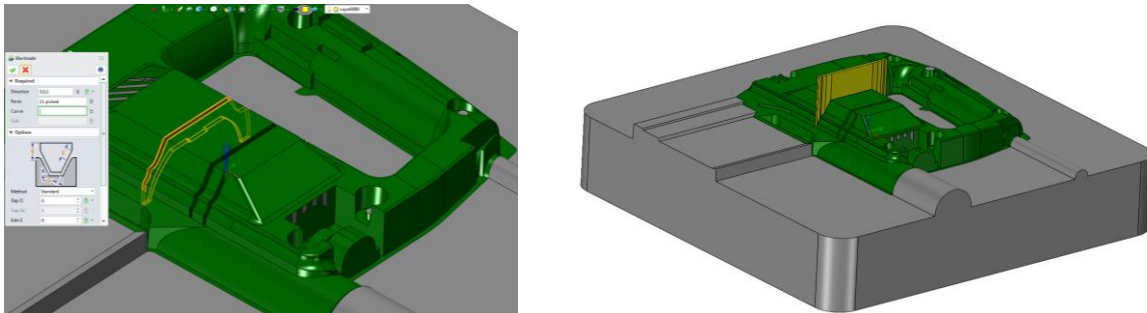The following is an example by using the tool

Figure5 Pick the regional face for electrode (left)   Create electrode shape by the faces (right)

If the bottom face crosses multiple regions then we can use the curve option as follows to split it and get the needed electrode shape as follows:
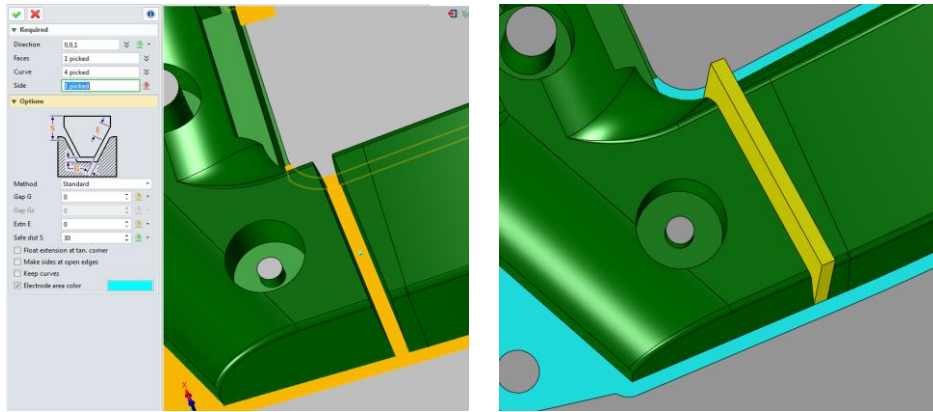
Figure6 Curve or edge for splitting

With the assist tool, "Replace Face" command can easily change the shape of electrode to fit the shape of geometry as follows:
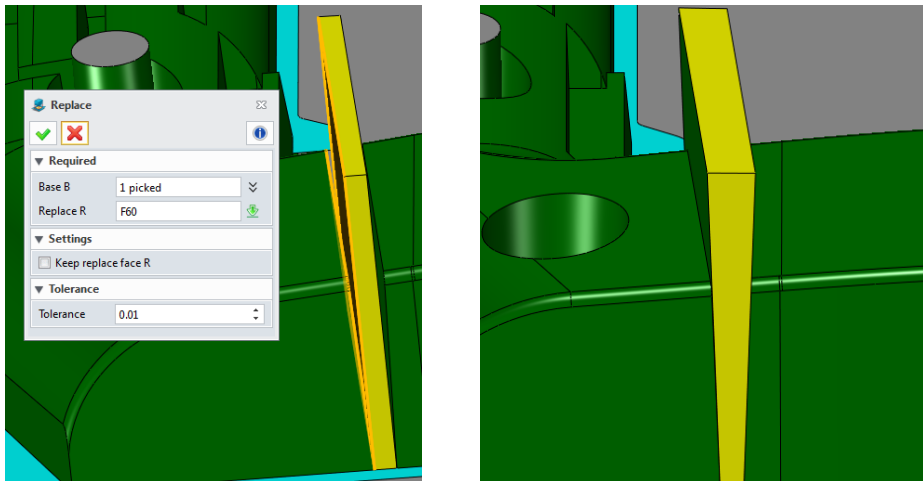

Figure7 Replace the electrode's face to fit the target

The case mentioned above is a normal and simple one, sometimes we have to deal with some cases that are more complicated, like the network slot electrode case below.
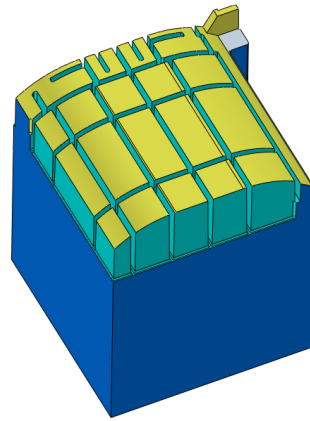
Figure8   Network slot electrode case

This case is to create the electrode for a network slot.

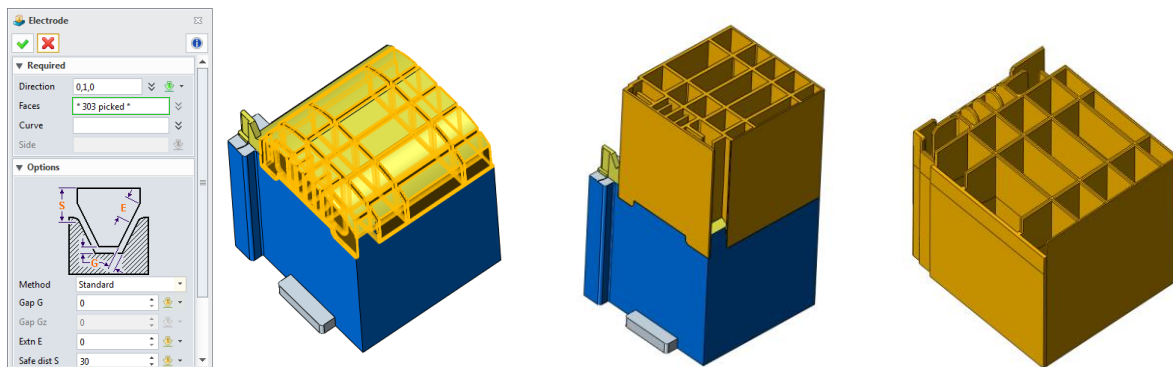Things become easier in ZW3D.Use the" Electrode" command and then pick the pocket as follows:

Figure9   Create electrode for a network slot

3.2 Flexible manual way

With the hybrid modeling technology and flexible surface modeling tools, it is easy to handle some special cases which have complex surface shapes. The following is a case to create electrode in a narrow and tiny region, and the shape is very complex as follows:
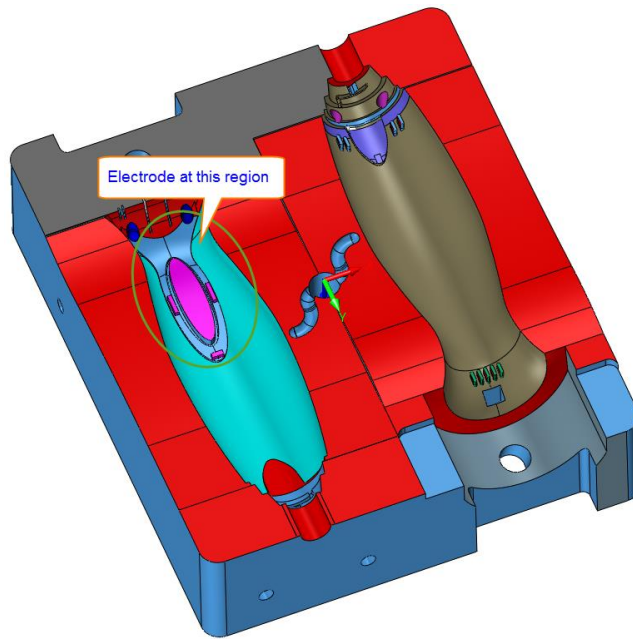
Figure10 Complex shape

So under this situation, how to quickly create the electrode? We may think about using Boolean and Replace face etc. commands to do it. Yes it is a choice, but may not be the best one. In ZW3D, users can directly extract the needed electrode shape by "Explode" command as follows:
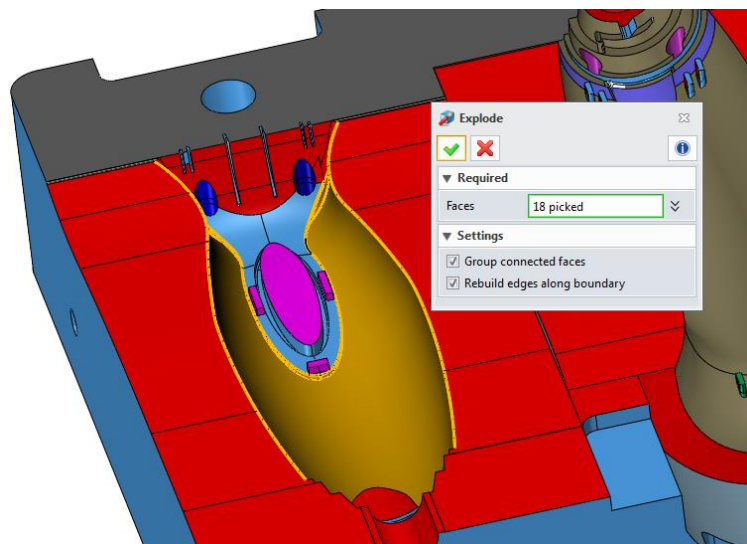

Figure11 Explode the needed shape

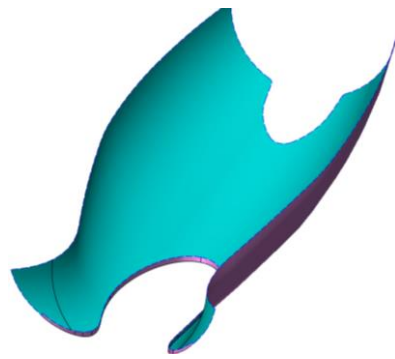After a quick surface exploding, we can get the result as follows:

Figure12 Explode surface for electrode

After got this surface shape, we can use the surface tool like sweep, FEM patch etc. to quickly complete the design as follows:
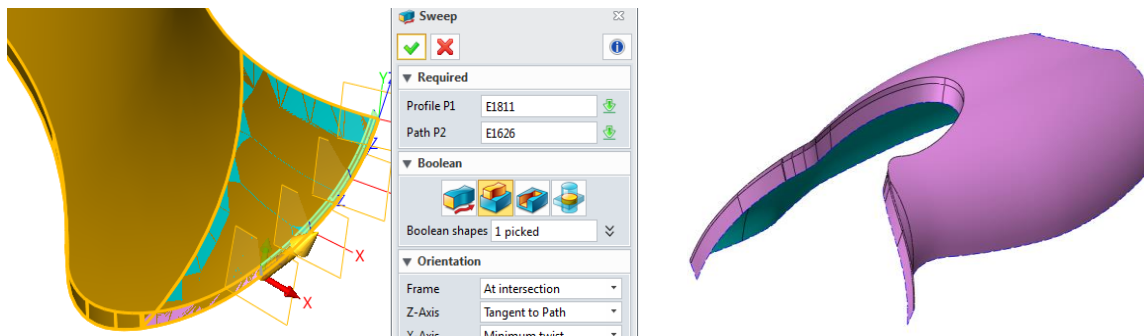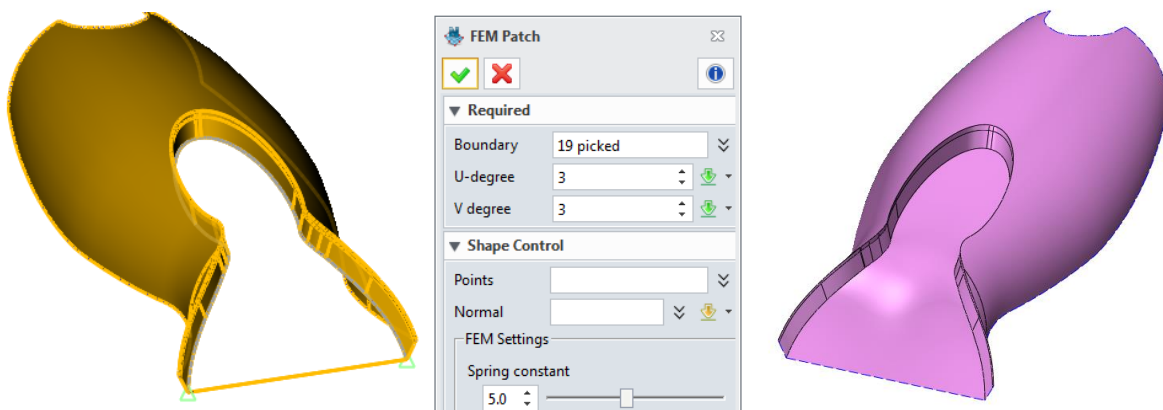

Figure13 Complete the electrode shape (1)

Figure14 Complete the electrode shape (2)
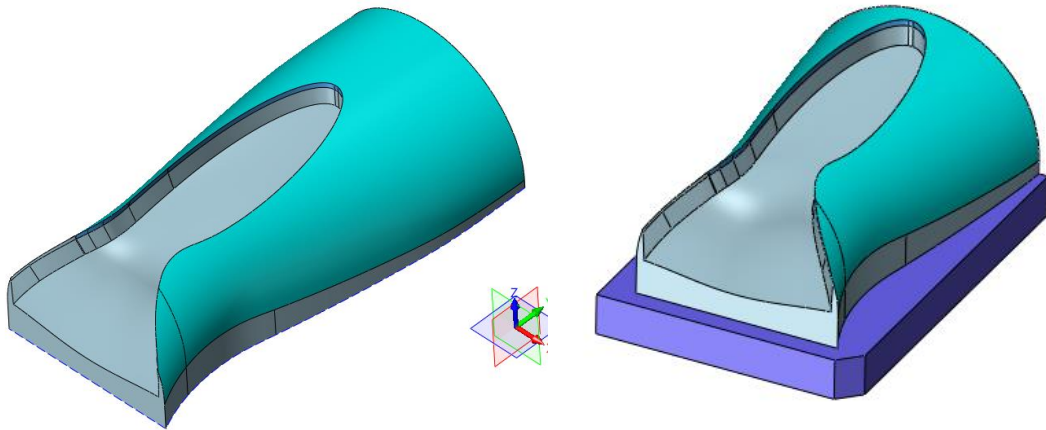
Final result :

Figure15 Final result

4. Automatic electrode blank

With the "Electrode Blank Tool", we can add the blank for the electrode shape quickly as follows:
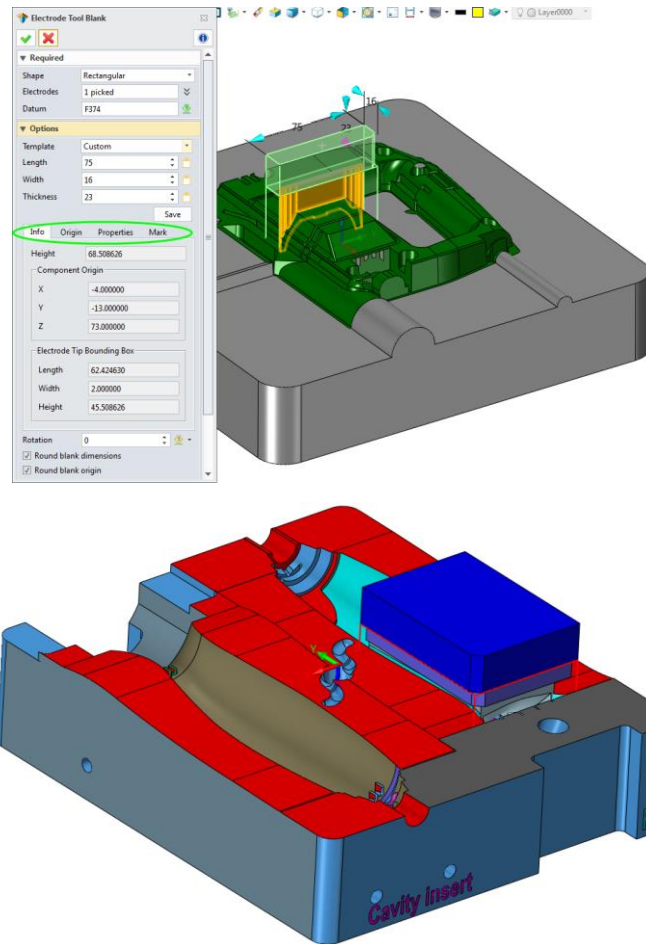

Figure16 Add blank

The blank command provides the options: Electrode's basic size, Material, Origin, Mark, and Properties etc.as follows:
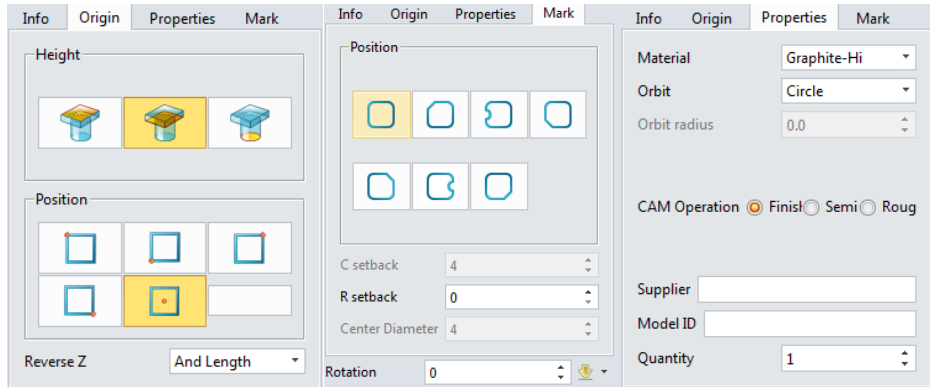

Figure17 Blank properties

5. Customizable sparking Drawing

At the last step for the electrode is to output the sparking drawing for workshop. In the tool bar we can find the sparking drawing command, and create the sparking drawing as follows:
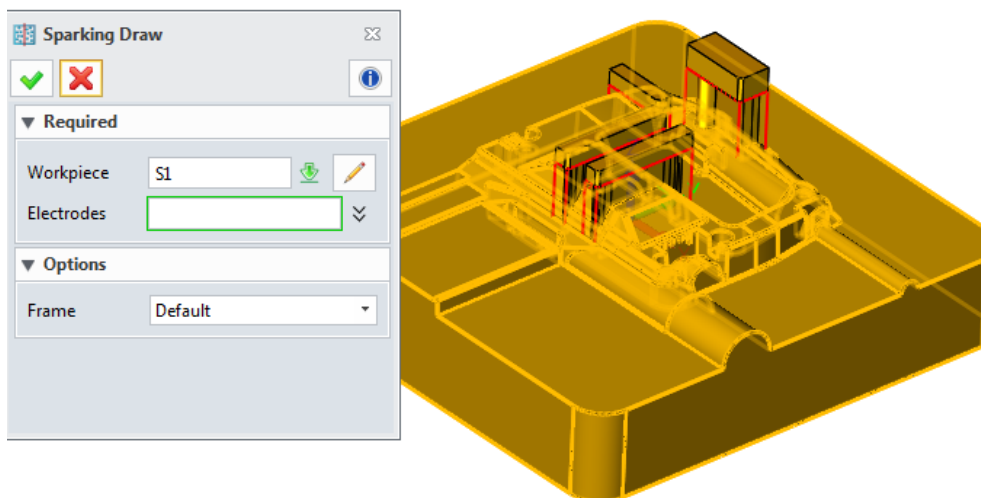

Figure18 Sparking Draw

The related sparking drawing based on the specified work piece will be automatically created as follows:
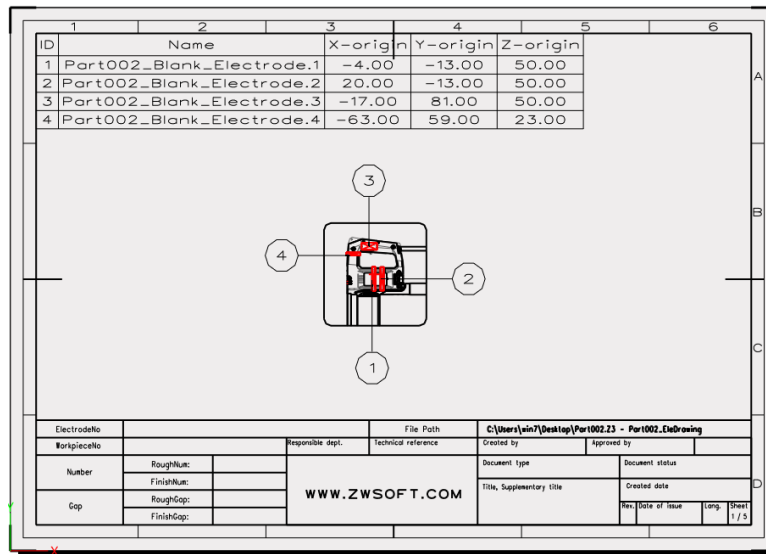
1) General drawing

Figure19 General drawing

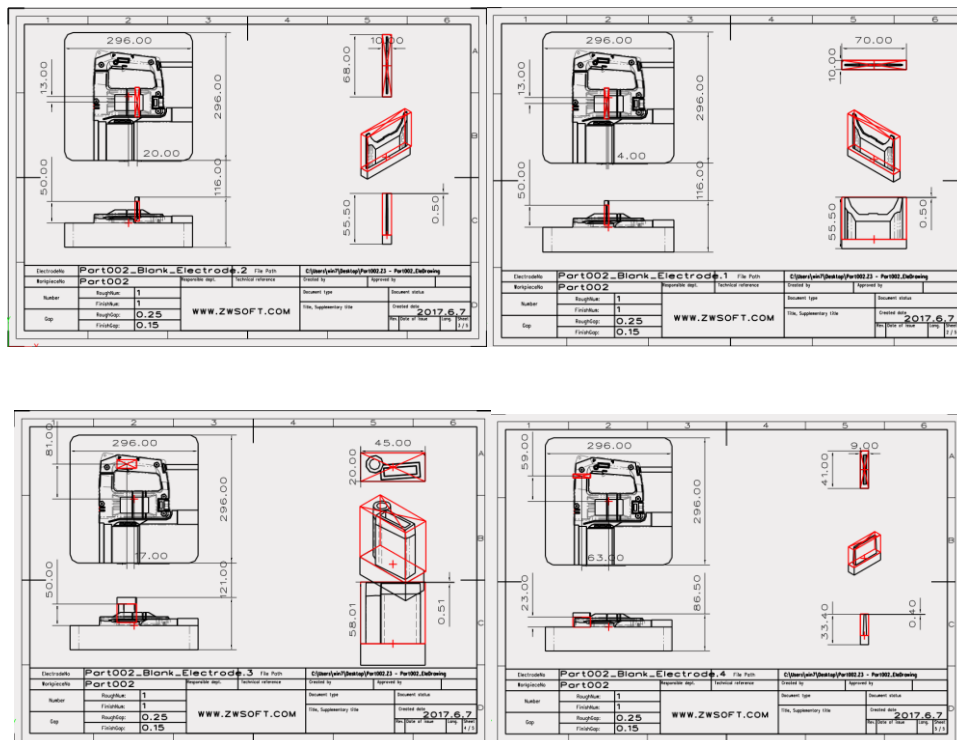## 2) Separated electrodes drawing

Figure20 Seperated sparking drawing

After creating the sparking drawing, we can output it as DWG or DXF file or as PDF file.

At the same time, the sparking drawing is customizable to match different requirements.

To summarize, we can get a convenient and flexible electrode design module in ZW3D2017. This module provides both auto and manual modes to create the electrode shape meanwhile supports to automatically create the blank for electrode shape and provides the customizable sparking drawing for workshop.

About ZW3D

ZW3D is all-in-one, affordable CAD/CAM solution that enables concept-to-finished-product designs in an integrated, collaborative environment. The proprietary Overdrive™ kernel delivers 3D part and assembly modeling, 2D production drawings, reverse engineering, motion simulation, mold design, and integrated CNC machining. It simplifies the design process from concept to completion.

To experience ZW3D 2017, where the only limit is your imagination, please go to www.zwsoft.com and download a free 30-day trial today.

Key words:

ZW3D2017, Electrode design, Hybrid modeling, Sparking drawing