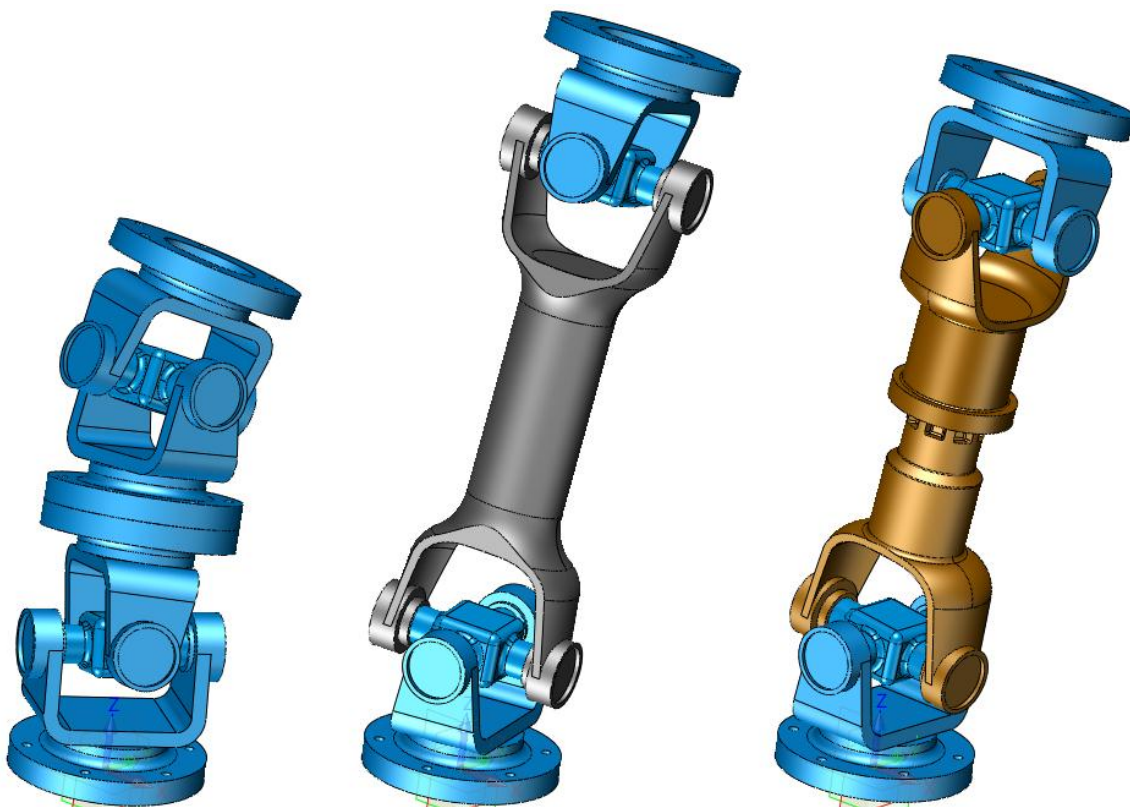


Library Design Speeds Up Your Product Design with ZW3D

ZW3D CAD/CAM White Paper



Sep.2017



Contents

Overview	1
1. How to Define Part Configurations.....	2
2. Create Library by Configurations	4
3. Create Library by Excel Data	6
4. Application of Part Configurations	7
5. Application of Assembly Configurations	9
Summary	11



Overview

How to reduce repetitive work is always a topic for designers since it is inevitable to handle similar works during the process of designing such as dealing with the frequently used component. At the same time, the successful design experience or data is also wished to be reused in the new design efficiently since this also can help shorten product designing time and speed up the process from product to market. The part configuration table and part library functions in ZW3D are aimed to solve these kinds of problem.

In ZW3D 2018 these tools have been polished again. Now it is much more conveniently and easily to create desired part configuration which allows to configure all of the necessary information for a part family such as dimension, variables, features. Even the part attributes like mass, area, volume and part number etc. also can be configured into the part configuration table. And for creating the part library now it is more flexible since it allows to create the library by part configuration and the excel file which recorded the parameters of the part family.

Besides configuring part information and attribute, the assembly information and attribute also can be configured so that it is easy to create a product family.



1. How to Define Part Configurations

ZW3D 2018 provides a new part configuration table to help quickly manage the parameters used in the design. After finishing the original design then we can make use of the configuration table to create different configuration with different dimension and attribute. Following is a part from a universal joint product designed in ZW3D 2018

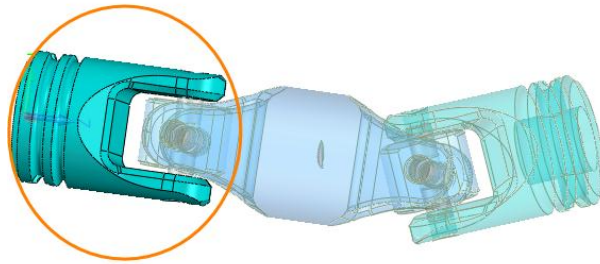


Figure1 Universal Joint part

By the part configuration table we can record the parameters and attributes used in the design as follows:

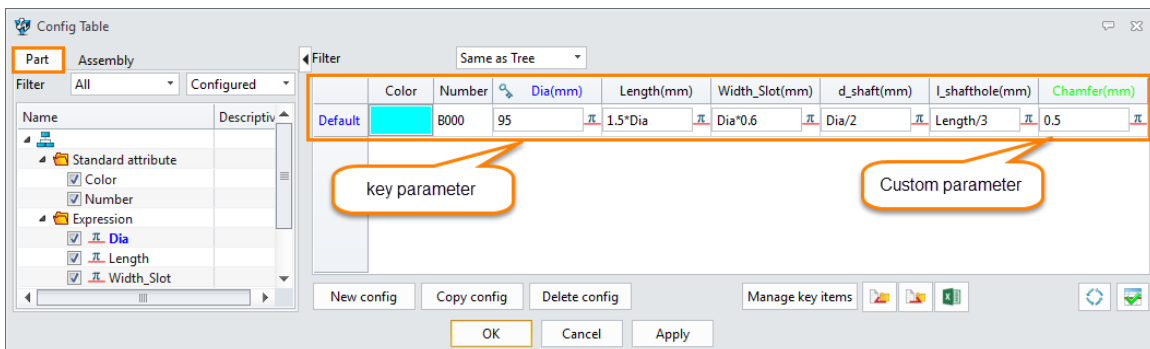


Figure2 Part configuration table

At the same time we can define the driving parameters by different attribute which will determine where the data come from: key parameter will be selected from the predefined date list; Custom will be allowed inputting manually. In this version we can quickly input a series of data for key parameter by excel file as follows:

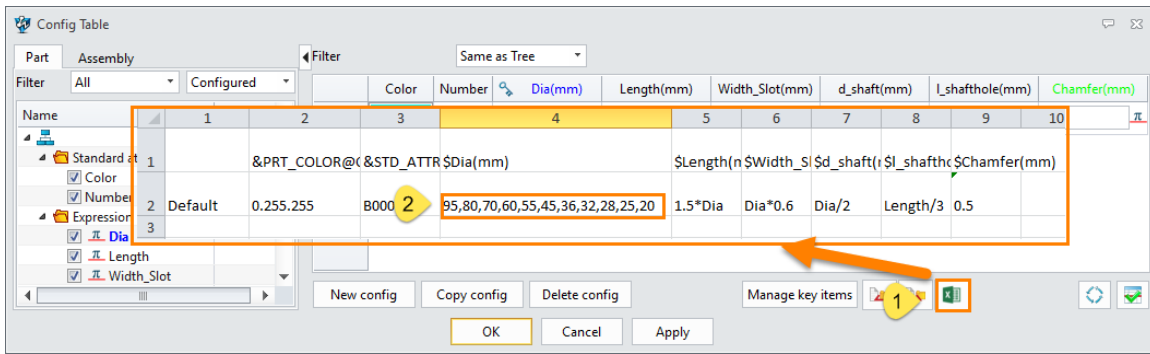


Figure3 Input a series of data for key parameter

Save the excel file then the configuration table will automatically generate related configuration according to the input data in the excel file as follows:

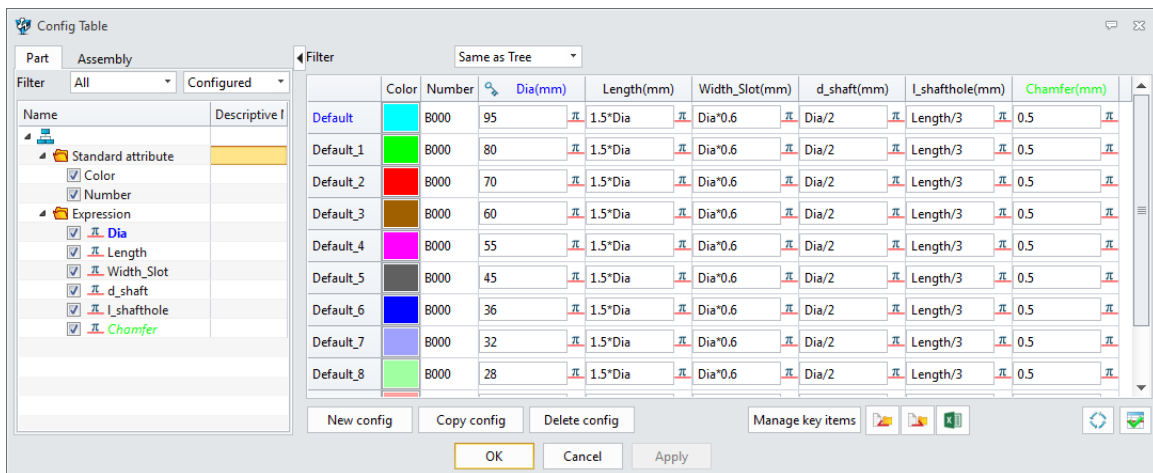


Figure4 Finished configuration table

We can also modify the items of configuration such as color, mass, parameter etc. in the table. After creating the configuration according to the input data we can check if there is any problems with these generated configurations by new verify tool. So that we can eradicate the error or mistake in the table as follows

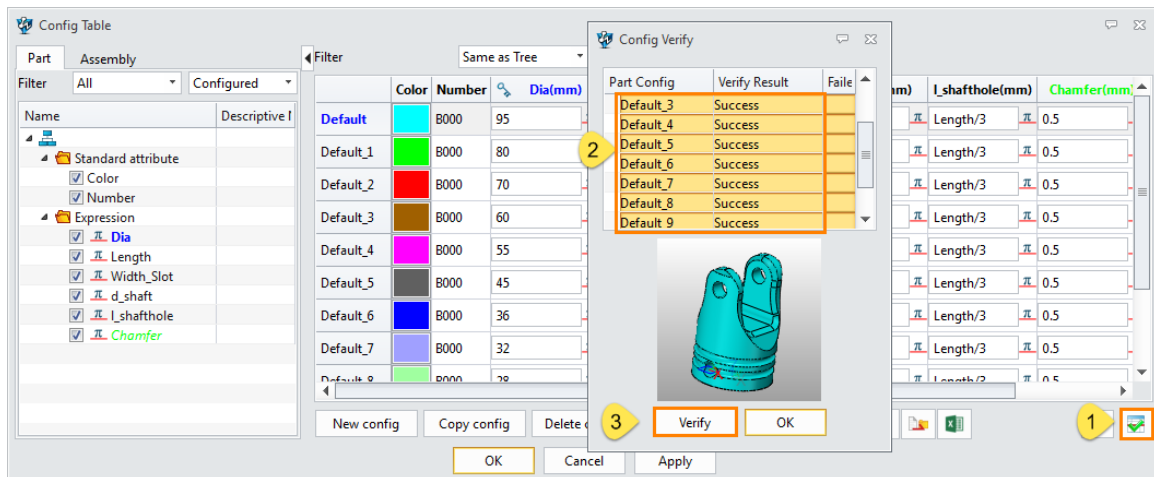


Figure5 Verify configurations

2. Create Library by Configurations

After publishing the verified part-family into the reuse-library by part table function as follows:

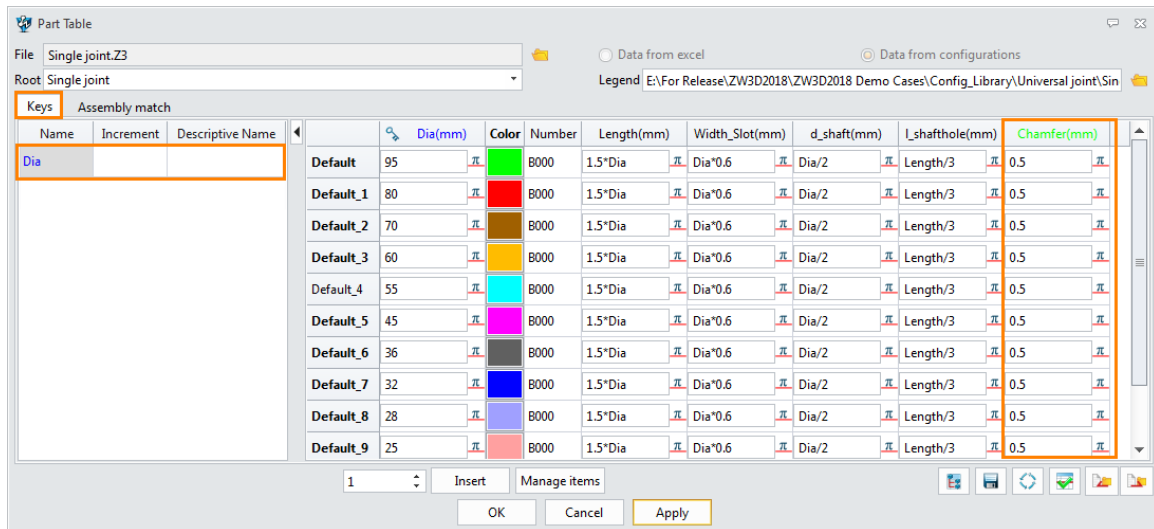


Figure6 Publish part family by Part table

Out there we can specify how to access the part family by the excel file or directly by part configurations. Besides we also can specify image to indicate the dimension of the part family. After publishing it into the library we can call the part family by reusing the “Reuse-Library” function through the following interface:

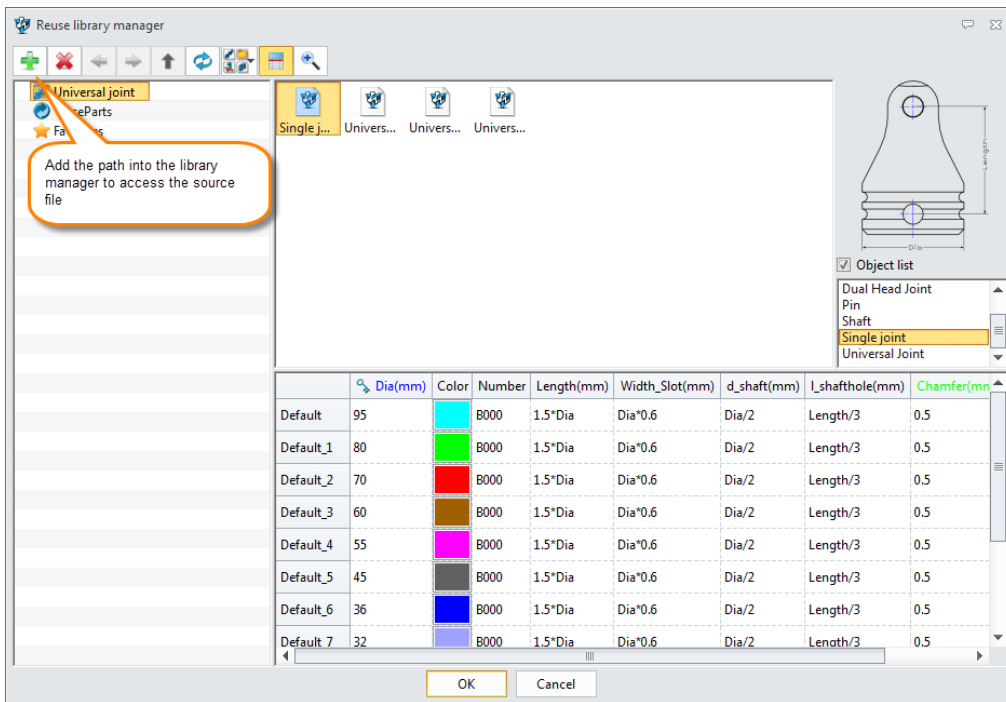


Figure7 Call the published part family by Reuse Library

After confirming the source file we can choose the parameters as follows

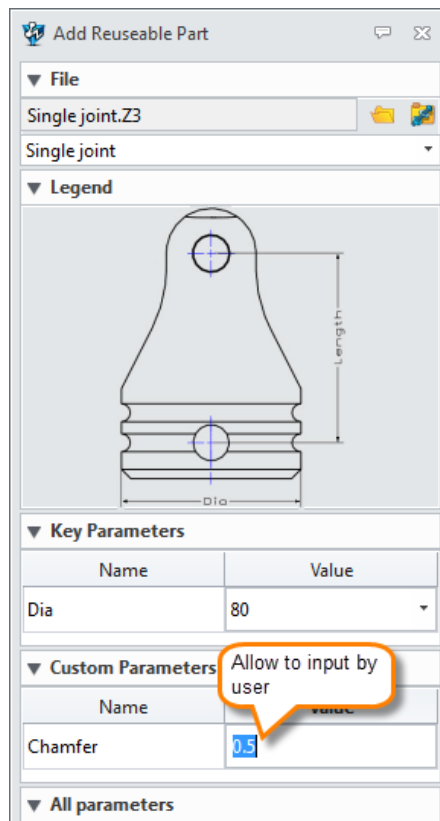


Figure8 Choose parameters for a part



Following are some instances from the part family



Figure9 A families of part

3. Create Library by Excel Data

Just as we mentioned above, it also supports to create the reuse library by publishing the excel data directly. Let's take a look at this:

1) Save the original design data as excel file by exporting function in configuration table

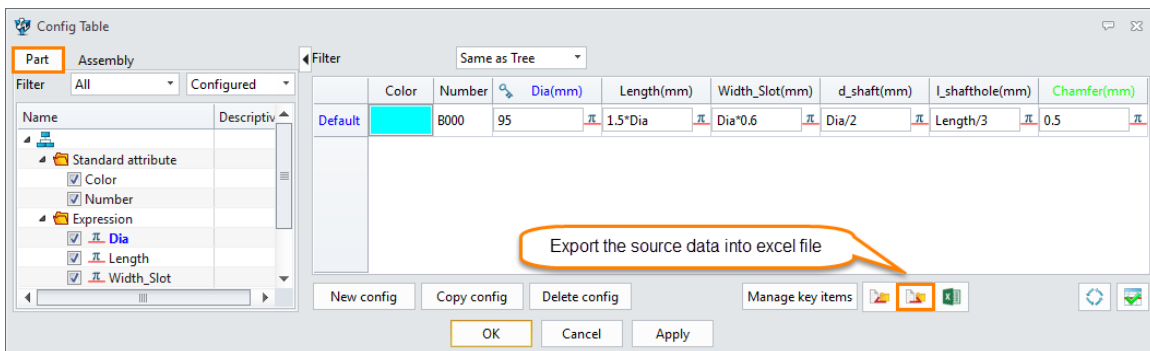


Figure10 Export the original design data as excel file

Then open the saved excel file to predefine data for key parameter as follows:

	1	2	3	4	5	6	7	8	9
1	##KEYS								
2	<NAME>	\$Dia(mm)							
3	<TAG>								
4	##CUSTOMS								
5	<NAME>	\$Chamfer(mm)							
6	<TAG>								
7	<MIN>	1							
8	<MAX>	8							
9	##PARAMETER								
10	&PRT_COLOR@Color	&STD_ATTRIBUTE@Number	\$Dia(mm)	\$Length(mm)	\$Width_Slot(mm)	\$d_shaft(mm)	\$l_shaftthole(mm)	\$Chamfer(mm)	
11	Default	0.255.255	B000	95,80,70,60,55,45,36,32,28,25,20	1.5*Dia	Dia*0.6	Dia/2	Length/3	0.5
12									

Figure11 Modify data in excel file

2) Then we can publish it by part table and get the same result as follows:

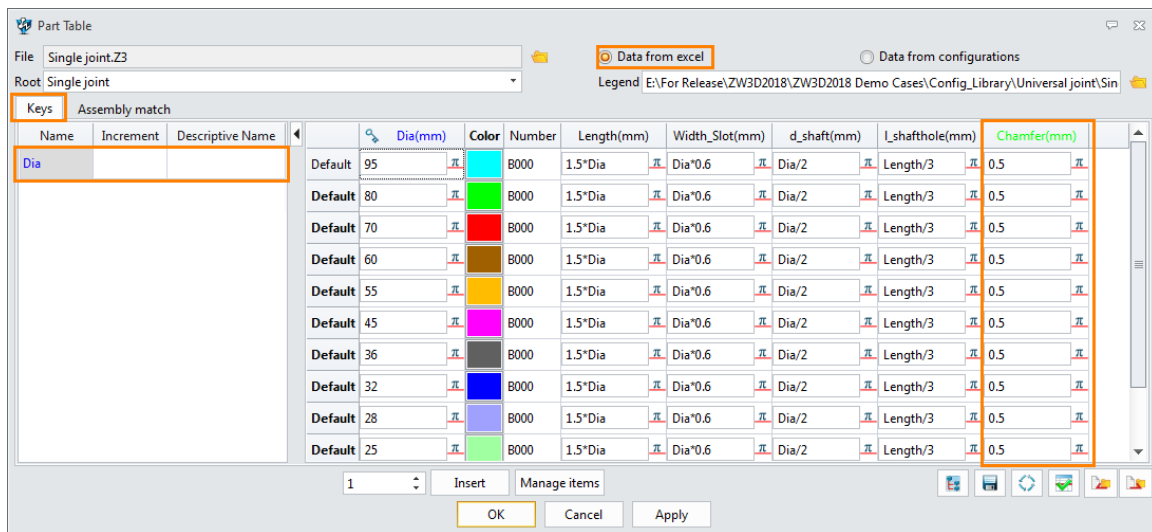


Figure12 Publish from the excel file

3) Using the same way to reuse the published data when we need to use it again.

4. Application of Part Configurations

As we know that alternate components can develop a family of assemblies from a single assembly design. Since the new configuration table also supports to manage the configuration of component so that it is convenient to get a family of assemblies. Following is a simplified assembly of a handle and a drawer from furniture industry

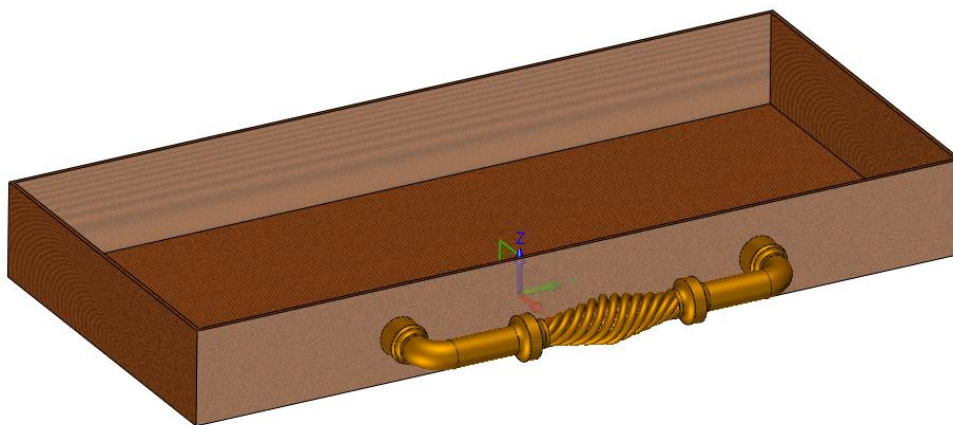


Figure13 Simplified assembly of Handle and Drawer

We finished 3 different structures for the handle by 3 different configurations in the same part as follows:

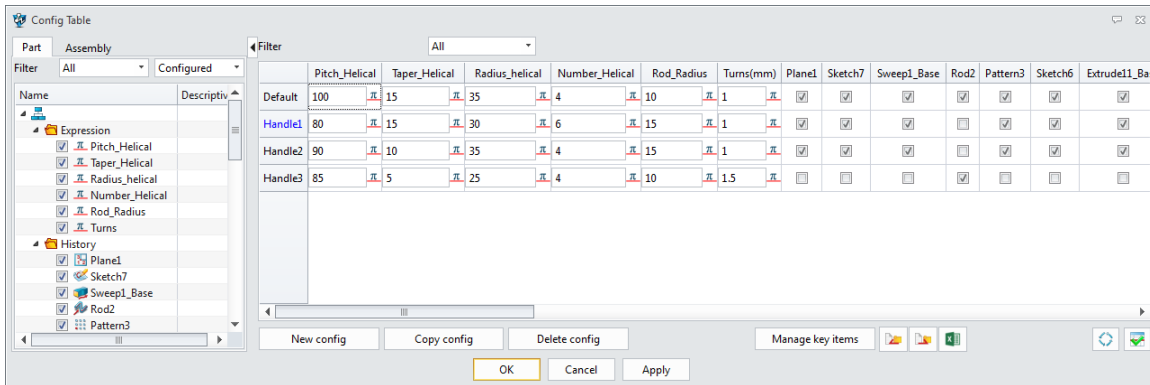


Figure14 Configurations for handle design

After inserting this handle as a component into an assembly we can configure the component's configuration as follows

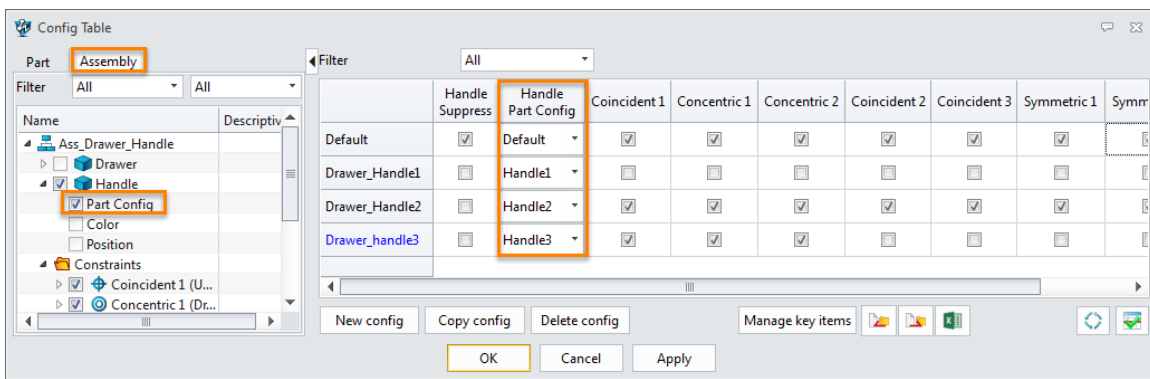


Figure15 Configurations for component

By choosing different configuration for different assembly we can get a family of assemblies as follows:

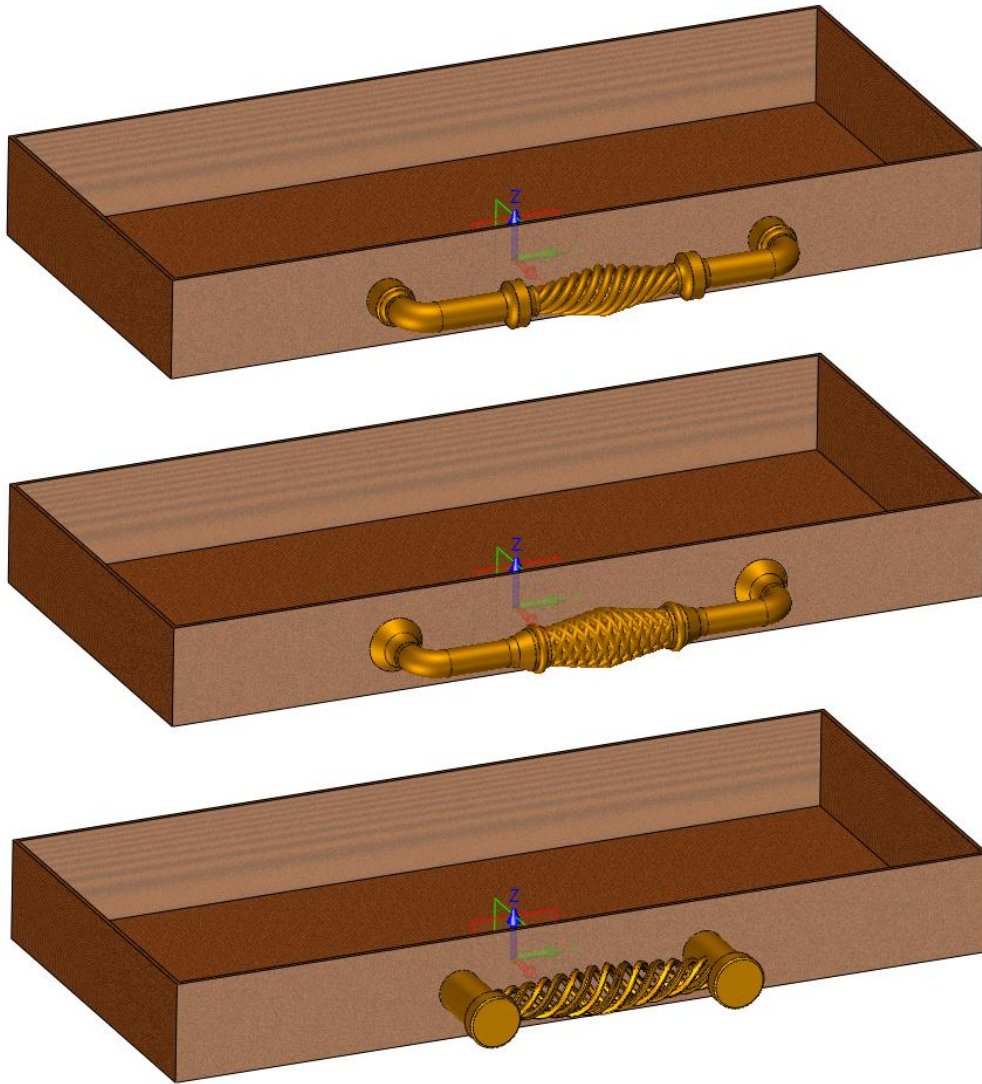


Figure16 A family of assemblies

5. Application of Assembly Configurations

It is very normal to design a new product based on existing product just only by changing the key sub assembly which determines product's performance. That means an alternative sub-assembly for general assembly will be helpful to speed up the new product design. Just as mentioned above, ZW3D 2018 allows configuring the assembly's component, constraint and the components configuration as well. Therefore we can achieve it by configuring assembly. Following is a design for a universal joint product:

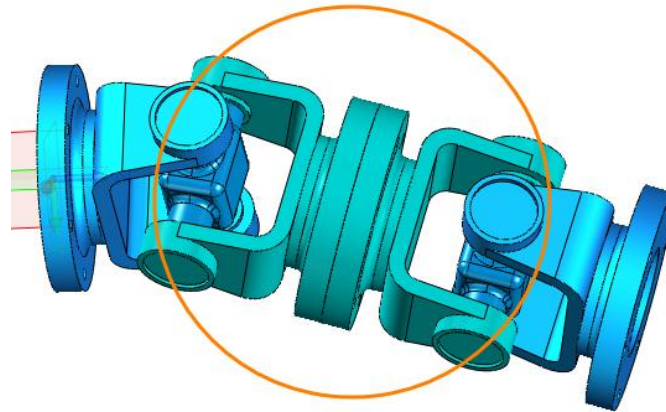


Figure17 Universal Joint_Flange connection

Since the connecting components can be different components according to different situation such as using shaft or stretchable bush and shaft etc. Therefore we can design the sub-assembly by different configurations. After just only alternating the sub assembly's configuration we can get different products. As follows

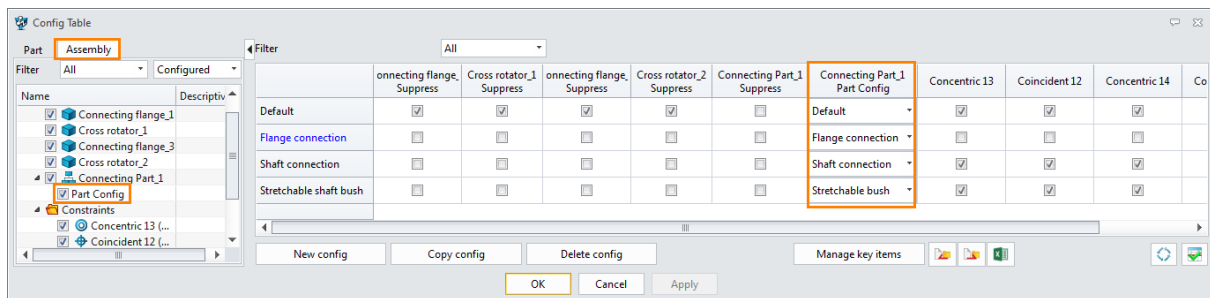


Figure18 Configuration of sub-assembly

By alternating different configuration we got a series of product design as follows:

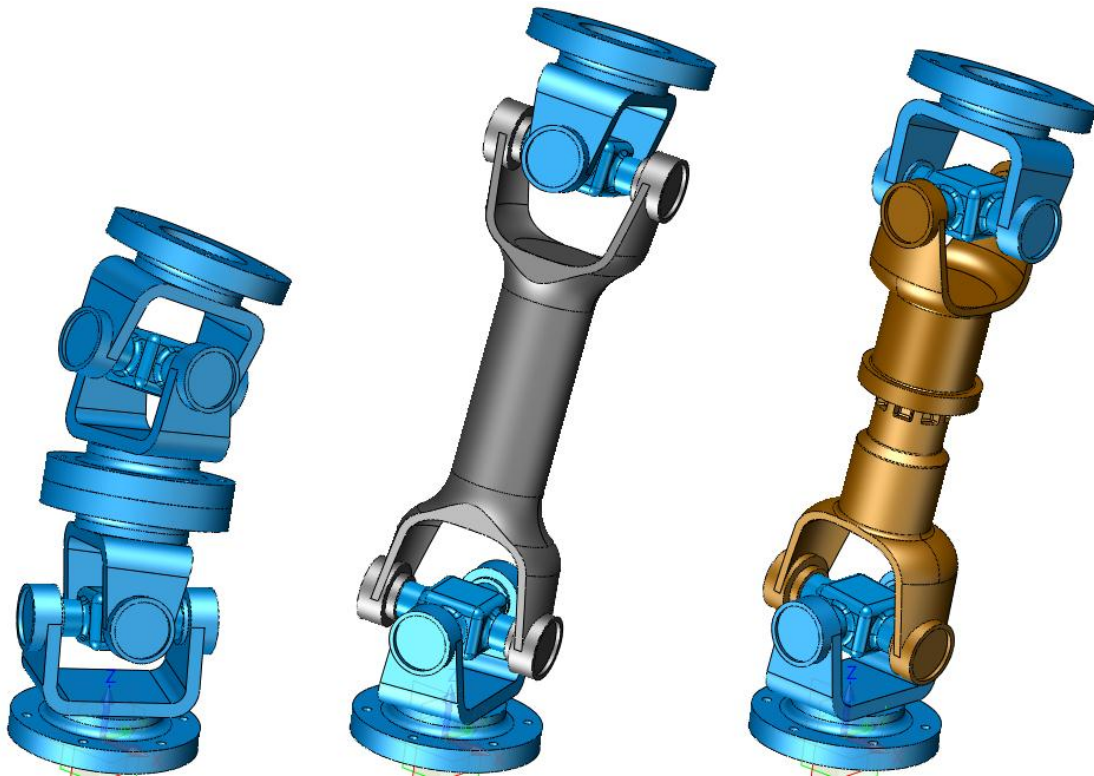


Figure19 A series of universal joint products

After finishing it, we also can publish the sub assembly by part table into the reuse library as we have talked about in the part library section.

Summary

At last, let's review the new part configuration and reuse library function in ZW3D 2018:

Expanded capability: it is able to configure different items such as part attribute, dimension, feature etc. to drive part family with different dimension, color, also different features; at the same time not only part can be configured but also assembly is supported to be configured to match different product design requirement.

More efficient and flexible: using different parameter type to control how to input driving data key parameter and custom parameter increased the reuse library's flexibility; Both part configuration and excel data can be used to publish to reuse library which admirably increases the flexibility for different requirements.

ZWSOFT Headquarters

Address: 32/F, Pearl River Tower, No.15, Zhujiang West Road,
Tianhe District, Guangzhou, 510623, China
Tel: +86-20-38289780 Fax: +86-20-38288676
Email: sales@zsoft.com
Website: <https://www.zsoft.com/zw3d/>

United States Branch

Address: 927 New Haven Ave., #307, FL 32901
USA
Tel: +1-3216163369
Email: bradgilger@zsoft.com