FAQs

Everything you need to know about the new Smart Objects

With the next version of zenon, you can create your projects even more efficiently and faster

What can you expect from the new zenon version 8.20? The answer is: Smart Objects. More than just an extension of the Editor – which already offers many options for quick and easy configuration – Smart Objects are the next logical step toward continuously improving ergonomics in engineering and further minimizing the barriers to entry for engineers who are new to zenon. In other words, they make daily work even more efficient and, thus, more profitable. Below, we answer some of the most important questions on this new topic.

What are Smart Objects and what are Smart Object Templates?
Let's start with the Smart Object Template. This is a component in the zenon Editor that combines known objects such as symbols, screens, or functions. Using these templates, you can create one object or several independent objects known as Smart Objects. The concept is the same as in zenon Logic, where a function block (User Defined Function Block, UDFB) serves as a template and can be used several times. Various object-oriented programming languages are also based on a similar concept; these are referred to as classes, which are used to create instances.

That is a lot of theory, but can you give us a practical example?
Take a pump, for example. It requires a symbol, detail screen, screen switch function, several variables for operation and monitoring, as well as alarm definitions via a reaction matrix. The individual objects and their connections are configured in the Smart Object Template. If several pumps of this type are required later in the project, the only thing you have to do is create a Smart Object, based on the Smart Object Template pump, and set a unique name. Accordingly, all zenon components are automatically created in the project.

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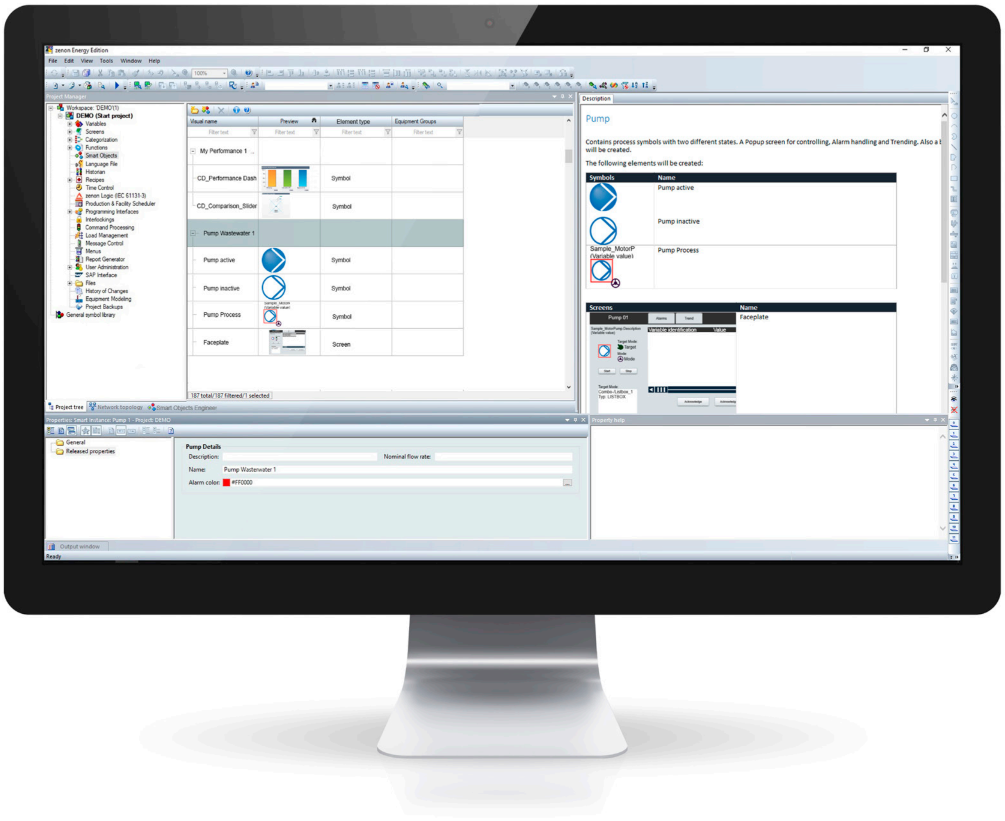

Visual name	Preview	Element type	Equipment Groups
My Performance 1 ...			
CD_Performance Dash		Symbol	
CD_Comparison_Slider		Symbol	
Pump Wastewater 1			
Pump active		Symbol	
Pump inactive		Symbol	
Pump Process		Symbol	
Faceplate		Screen	

187 total/187 filtered/1 selected

Properties: Smart Instance: Pump 1 - Project: DEMO

Pump Details

Description:

Nominal flow rate:

Name: Pump Wasterwater 1

Alarm color: 🟥 #FF0000

Pump

Contains process symbols with two different states. A Popup screen for controlling, Alarm handling and Trending. Also a b
will be created.

The following elements will be created:

Symbols	Name
	Pump active
	Pump inactive
Sample_MotorP (Variable value)	Pump Process

Screens	Name
	Faceplate

zenon Editor with an open Smart Object list including the available symbols and the released properties.

How do Smart Objects help me during the configuration? Let’s stay with the pump example. To use a pump in a project, simply create a Smart Object with a meaningful name, e.g. “FlowPump,” and zenon will do the rest. All the objects defined in the Smart Object Template are created in the project. If, for example, a variable with the name “State” is defined in the template, your project will now contain the variable “FlowPump_State.”

The same also applies to screens, functions, symbols, etc. Naturally, all the properties are also adopted. But the concept goes beyond that – because all required substitution rules are created automatically with the necessary links. This eliminates the project configuration time required for complex substitutions. As a Smart Object user, you do not have to worry about how the individual components will interact in detail.

The objects generated from each smart object are associated with it. Therefore, if you want to delete the “FlowPump” pump, you only have to delete the Smart Object. All associated objects are removed from the zenon project and no unnecessary components are left behind.

In the zenon project, I can simply drag a symbol from the symbol library into a screen and use it. If I want to use a symbol from a Smart Object Template, I have to create a Smart Object first. Isn’t that more complicated? Symbols and Smart Objects are two very different things. Essentially, a symbol is a group of graphical objects. A Smart Object, on the other hand, is an object with different zenon components as well as a logic to create substitution rules, for example. These processes are executed when the Smart Object is created. A symbol depends on variables which must be present in the project, while a Smart Object includes all the components and objects it requires. This may seem complicated to some users at first glance, but it has a decisive advantage: the Editor contains a list of Smart Objects that shows all the derived objects of a Smart Object Template. This gives you an overview of the different pumps that are used in the project (*Figure 1*). You can manage the settings for the individual pumps directly in this list.

The Smart Object library is a nice idea but, as usual with libraries, the objects are not entirely suitable for my project. How can I change this?
With zenon, you can maintain and reuse project content centrally. This philosophy has been continued with Smart Objects. Features like color palettes, styles, and language tables – to list only the most important ones – can also be used in connection with Smart Objects, making it easy to adapt them to your design guidelines.

As it may be the case, for example, that only one of several pumps is to be assigned a special color, the principle of "released properties for symbols" has been adapted for Smart Objects. With just a few exceptions, you can release symbol properties in the template as well as all properties of the configured objects. For example, you can release a button color for the pump, the limit value color for alarms, or a threshold value for the alarm. These properties can also be grouped and renamed. For example, you can combine the button color and the alarm color and define them as a property with the name "AlarmColor." This alarm color can then be set individually for each Smart Object under the "FlowPump" Smart Object.

How do I create a Smart Object Template?
As it does with the symbol Editor, the zenon Editor will contain a Smart Object Template Editor. This window offers a tree view similar to the project tree. The tree view is filtered and shows the components that are available for Smart Objects. In the Smart Object Template Editor, the Smart Object Templates are configured in the same way as the project itself. In other words, the Smart Object Template is an independent, small project within the main project with self-contained functionality. This means that only objects from this template can be used in the Smart Object Template. For example, only variables from this Smart Object Template can be used in a symbol; variables from the project or other templates are not permitted.

Can I use a Smart Object Template in another Smart Object Template?
Yes. Just as you can use symbols in other symbols, you can use Smart Object Templates in other Smart Object Templates. In an example from the energy industry, the smallest Smart Object Template represents a disconnector. It contains detail screens for the disconnector, variables, and command processing with all available switching actions. Templates for circuit breakers or transformers, for example, are prepared as additional objects. If you want to create a complete branch as a Smart Object Template, you can create and use a Smart Object Template for the disconnector in this branch. By giving these templates a specific name, the corresponding disconnector variables are available in the branch. If, for example, the disconnector template contains a "Feedback" variable, the branch template will include variables such as "GroundDisconnector_Feedback." If a branch Smart Object is created later in the project, the "Branch1_GroundDisconnector_Feedback" variable is automatically created in the project. This example can also be applied to a pump house with different pumps and other units.

Every project is connected to a real process. How do I connect Smart Objects to my equipment?
The zenon communication drivers are the connecting link to the real world. This is also the case for Smart Objects, where the applications can be roughly divided into two categories. On the one hand, there are the Smart Object Templates which were developed with a specific device, such as a certain type of pump, a specific bay controller, or a robot from XY, in mind. On the other hand, there are comprehensive Smart Object Templates; for example, for dashboard tiles for OEE displays or menu items.

For the former category, the communication protocol can already be defined during creation. If, for example, a pump only supports Modbus, the driver can already be fixed in the template. As a user, you only need to set the IP address correctly. With Smart Object Templates of the second category, the creator usually does not yet know which variables are required or which communication protocol is used. In this case, the released properties ensure the greatest possible flexibility as they enable individual variables in the Smart Object to be replaced in their entirety. If, on the other hand, you want to define alarm definitions, limit values, and other settings in the Smart Object Template, but want to adopt existing variable addresses from the project, you will be able to do this in the Smart Object.

I am creating a library of Smart Object Templates for my company. How can I share this library with my colleagues?
Naturally, export and import functions are also available for Smart Object Templates. The template's version number and the fact that changes can be detected are features that are particularly beneficial when using the import function. This ensures that you do not accidentally import an older version into a current project or inadvertently overwrite the Smart Object Templates currently being used.

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