SOURCE: AUDI AG

GENERATE PROJECTS IN ZENON AUTOMATICALLY:

zag – the Wizard for the Automotive Industry

With the zenon automotive generator (zag), COPA-DATA is offering a wizard for automated analysis of PLC data and the implementation of visualization projects. A major gain for the automotive industry, which traditionally places great value on standardized components and reuse. AUDI AG also relies on our "zag".

The automation of engineering processes offers considerable savings in time and costs when implementing a project. Tight deadlines can thus be adhered to more easily. The engineer can delegate simple and repeated tasks to the wizard – so more time remains for demanding activities and the risk of incorrect project configuration is kept to a minimum.

"ZAG" IN PRACTICE: AUDI AG AS AN EXAMPLE

In automotive production, vehicle components and bodyshells are transported over long routes. At AUDI AG corresponding conveyor belt systems are installed one level above the actual production level and a maintenance team ensures interruption-free operation.

The individual transport sections are controlled by central STEP 7 PLCs. The control parameters of the transport routes are monitored and managed in the attendant control room. However, manual intervention in the individual transport sections from a central point is not permitted. Only sections that can be examined directly can be controlled manually. The reason for this is primarily the safety of employees. Streamlined Windows CE-based devices can be used because manual operation only requires part of the information from the control room.

STANDARDIZED ASSIGNMENT OF THE BLOCKS

Corresponding programs have been set up in the PLC for the control of the manual areas that belong to the panels. In doing so, each operable conveyor belt element corresponds to a standard function block in the controller. The assignment of the blocks to the individual conveyor belt elements follows a harmonized, standardized system of call-up parameters. It is also possible to assign conveyor belt elements to several manual areas or overlap these.

When planning the transport layout, the employees in charge define the individual manual areas and the locations of the control panels. When creating the program for central control, the calls of the function blocks are then linked to the appropriate parameters. The layout stipulated by the PLC programmer for the control panels is then taken into account when creating the attendant projects.

INTERPLAY OF PLC AND VISUALIZATION

The zenon automotive generator reads the required information from the equipment control programs automatically and can set many project properties independently this way. The wizard thus determines, for example, the number and type of projects for the control panels, reads the attendant conveyor system elements and adds them to the attendant equipment screens.

The "zag" also identifies global settings for all projects and configures them in the individual projects. This includes, for example:

– Display of name and status of the different load circuits
– Overview and status of the respective operating types of the control panels

– Setting the network addresses (PLC and control-panel addresses)
– Configuration of the message channel display

The message channel can be used for a detailed display of certain process devices or motor modules. The operator requests detailed data from the controller and it reports that data back for visualization. The type and content of the message channels is provided by the PLC programmer – the "zag" collects the necessary data from the controller program and creates the required operating elements for the user.

USER-FRIENDLY INTERFACE

With the help of tabs, the user interface of the wizard shows the respective current action of the "zag" with a clear overview. With each further processing step, a switch to the next tab is made automatically. The operator thus receives guidance and a comprehensive overview at the same time. All actions of the wizard are written to a log file for subsequent tracing or analysis.

CENTRAL DATA STORAGE

The zenon automotive generator stores information from the PLC program in a central file. The actual control-panel projects are generated from the data saved therein. If the PLC program is to be amended at a later point in time, this file is used to make a comparison. Existing projects are only supplemented. In the current version of the wizard, the information is read from a STEP 7 program. The central file allows an expansion of the wizard for other controller types. In this case, only the program part would need to be amended accordingly for data recording and storage. The reading of the central file and the actual project creation can be reused.

"An actual example of zag in use: for the new A4 and A5 product range, we implemented 300 projects with five suppliers for the conveyor systems in the body construction area. A project runs on each control panel. An employee would need five hours per project for configuration without automated engineering. That's a total of around 1,500 hours. With the zag, only around five hours plus subsequent visual corrections of around another five hours were necessary."

ERWIN-SEBASTIAN MEILINGER, AUTOMATION SYSTEMS PLANNER, FOR AUTOMATION SYSTEMS IN THE PAINT SHOP AND CONVEYOR SYSTEMS AREAS AT AUDI AG

"The zenon automotive generator from COPA-DATA provides clear advantages. First, we save a considerable amount of time and therefore costs when configuring new equipment. Second, with the zag, we can guarantee that all projects are harmonized and free of errors. For example, no unnecessary variables are created, projects are streamlined and accurate. All in all, with the zag we were able to increase the quality of equipment configuration and increase productivity."

ERWIN-SEBASTIAN MEILINGER, AUTOMATION SYSTEMS PLANNER, FOR AUTOMATION SYSTEMS IN THE PAINT SHOP AND CONVEYOR SYSTEMS AREAS AT AUDI AG

SIMPLE WORK WITH THE "ZAG"

Once the "zag" has been started, the user configures the wizard. In doing so, he stipulates the name of the central file and selects the attendant STEP 7 program using a combobox. Once all required data has been read from the PLC program, it is saved in the file and displayed in groups with a clear overview using the "zag".

In this summary, all control-panel configurations stored in the PLC code are also visible and ready for project configuration. The wizard operator can now select which control-panel projects he wants to create. The wizard carries out the following steps when creating a project:

1. Entering of the global data into the template project, including for example the IP address of the controller, configuration of the load voltages and operating modes
2. Copying the template project and automatically applying it to all control-panel projects
3. Activating control-panel-specific variables and addressing them correctly
4. Adding conveyor system elements assigned to the respective control panel from the symbol library, into the operating screens and linking them to the corresponding variables
5. Adding and configuring load circuit and mode symbols necessary for manual operation
6. Configuring the message channel diagnosis screen
7. Setting control-panel address for Remote Transport and create zenon Runtime files
8. Done! The control-panel project is now ready to transfer data to the panel.

The "zag" now automatically creates the manual operation screen, on the basis of the information read from the PLC program, and adds the attendant conveyer system elements into the operating screens of the control-panel projects. The person configuring the project can then move these elements to the correct position and also rotate them.

A tailor-made conveyor system layout is thus created if desired. It is of course also possible to subsequently amend or supplement projects with further conveyor system components, by means of an update function in the wizard.

Some of our renowned customers in the automotive sector are already using the zenon automotive generator. It has now been operating successfully at AUDI AG for three years.

BERND WIMMER,
INDUSTRY MANAGER AUTOMOTIVE

Video:
Save up to 98% of engineering time with the "zag"
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