

Consistent Information as the basis of Decisive Success

Project Structures and Maintenance using
zenon



A methodical approach to achieving greater efficiency

COPA-DATA's zenon provides essential functions and sophisticated tools to create a comprehensive solution for automotive production – from the human machine interface (HMI) through to an enterprise-wide production management system.

A consistent basis of information, starting with a holistic view of the manufacturing process, forms the basis for success and competitiveness in automotive production. At the process level, programmable logic controllers record and process data relating to the manufacturing process. To be able to control production processes on-site, users and maintenance staff generally use HMIs in the facility. The user-friendly, graphical user interfaces display the information for their respective manufacturing cells and archive operational status information and reports. Superordinate SCADA systems check the interplay of the individual manufacturing cells and thus enable information about complete manufacturing stages to be displayed and monitored. In doing so, the SCADA system will often draw upon the same information that has been processed by the process level user interfaces.

Realize optimization potential through focused action

When automobile manufacturers use zenon as their HMI/SCADA solution, they benefit from its flexible, open integration and thus create comprehensive potential for optimization. zenon's flexible, open integration makes it possible to use an HMI/SCADA application on control panels running Windows CE, on PCs running Windows XP, VISTA or Windows 7 operating systems, and Windows Server platforms. Projects optimized for the respective applications are all created with the same zenon Editor.

Example: A body goes through different manufacturing stages in the paintshop: these include pre-cleaning, cathodic dip coating (CDC) and subsequent drying, sealing and underbody protection with subsequent drying, filler, base coat, a top coat with dryer and cavity sealing to prevent rust. For each of these manufacturing stages, zenon projects specifically optimized for this process are used. They are available to users on-site and can also be installed on operating stations elsewhere thanks to zenon networking.

Work efficiently with multiple project administration using the project hierarchy in zenon

In addition to on-site stations, conventional systems set up additional data connections to controllers and create parallel visualization projects for superordinate control and monitoring tasks.

In contrast, zenon makes it possible to consistently reuse data and screens from the existing on-site projects. zenon multiple project administration creates a logical connection between individual projects and puts these together in a hierarchical connection. The user can display this project hierarchy graphically in the zenon Editor by dragging the project to the desired position with their mouse and, in doing so, creates a multi-hierarchical project tree. The highest project in the hierarchy is known as the „integration project“ or „umbrella project“. All other projects are subordinate to this project. The data from individual projects is available across all projects within this project structure.

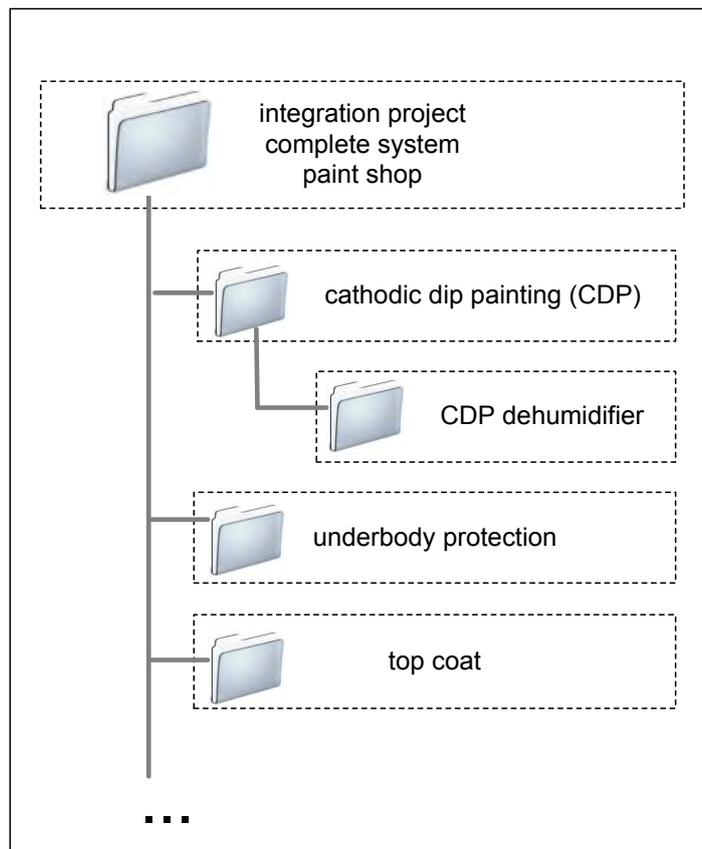


Figure 1: An example of a hierarchical structure in zenon from the Automotive Industry: Cathodic dip painting, underbody protection and top coat are applied in the paintshop. Drying the bodywork is a sub-stage of cathodic dip protection.

The zenon multiple project structure is comparable to a ringbinder: additional zenon projects – or sheets – can be added at any time. However, the zenon multiple project structure always automatically indexes all the information from sheets that have already been stored and when new sheets are added. If somebody opens a ringbinder, they can look through the pages and review all the information without having to remove the individual sheets. The same is true for projects that are created within a zenon multiple project structure: users can browse the individual screens or projects without having to access them separately. The integration project or „umbrella project“ is comparable to the table of contents in our ringbinder. It serves as a central navigation project and enables screens or data from subordinate projects to be displayed.



Configure centrally and use the configuration multiple times

In the zenon Editor, the user can link the cross-project data and variable values from other projects. Overview screens or factory layouts with detailed information are thus created quickly and simply. The whole process is coupled once, directly at the source. The values recorded in this way can be displayed throughout all projects so the Production Manager or a supervisor always have a consistent data basis for further analysis, trending etc. Changes or additions to communication are made at a central location – in the respective equipment project. The same flexibility exists for changes to functions or screens: the zenon user only needs to plan them once; subsequently they can be linked to multiple times.

In an integration project, users can create central alarm information lists or chronological event lists with just a few mouse clicks. These types of zenon screens give users the option to filter the lists in the respective screen switching function. If the user utilizes one of these types of screens in the integration project, zenon automatically expands the filter to the individual projects. zenon summarizes all data from individual lists. Thus, all project alarms are displayed in the alarm information list of the integration project and sorted chronologically.

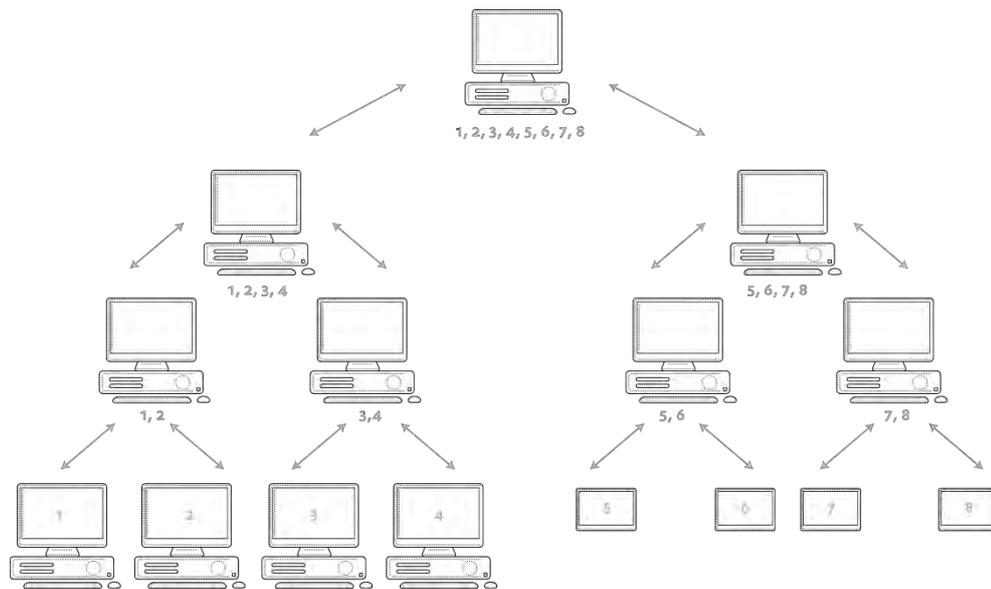


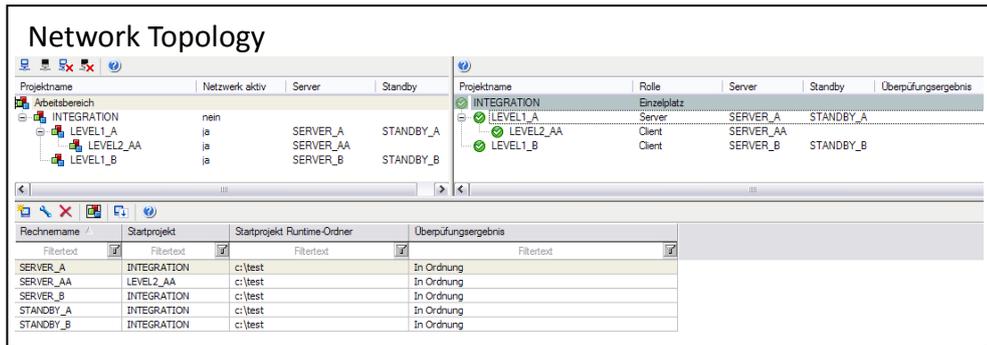
Figure 2: Project hierarchy and multiple project administration with zenon: The software creates a multi-hierarchical project tree, with the integration or umbrella project at the top of this tree. Multiple project administration makes it possible to structure the projects in logical arrangement to each other.

If companies use zenon projects in a multiple project structure, the individual projects remain unaffected. Data or screens from another project can be accessed through standard zenon interfaces. To do this, the projects are merely integrated into the multiple project hierarchy, without changes. Thus, the responsibility or possible guarantee rests with the respective project engineer. Project expansions or amendments are made directly in the individual projects. Any maintenance work that needs to be carried out only influences the project it directly involves and the system as a whole remains unaffected and continues to run reliably. Individual projects are therefore autonomous and the option to run these projects autonomously is retained.

Simple administration of a zenon network

The well-thought-out network functionality of zenon makes it possible to implement projects on different servers. Thanks to zenon's functionalities, the user can create very efficient complex network designs. The zenon user can configure individual stations in such a way that only the contents of the projects that are necessary for activities on the given site are visible at the process level. The zenon Editor supports users in the administration of the zenon network. The integrated topology management graphically displays the relationships of the individual projects with their respective servers. A testing routine checks the configured structure to see that it is complete and

that there are no errors in configuration. Errors in configuration are quickly identified. Should they be, the project-worker will see messages such as “Server and standby server are the same computers” or “No start project found” displayed. With the network node function, zenon also tests to see that the selected network topology can function correctly.



The screenshot shows the 'Network Topology' window in zenon. It displays a project hierarchy on the left and a table of server roles and test results on the right.

Projektname	Netzwerk aktiv	Server	Standby	Projektname	Rolle	Server	Standby	Überprüfungsergebnis
INTEGRATION	nein			INTEGRATION	Einzelplatz			
LEVEL_1_A	ja	SERVER_A	STANDBY_A	LEVEL_1_A	Server	SERVER_A	STANDBY_A	
LEVEL_2_AA	ja	SERVER_AA		LEVEL_2_AA	Client	SERVER_AA		
LEVEL_1_B	ja	SERVER_B	STANDBY_B	LEVEL_1_B	Client	SERVER_B	STANDBY_B	

Rechnernamen	Startprojekt	Startprojekt Runtime-Ordner	Überprüfungsergebnis
SERVER_A	INTEGRATION	c:\test	In Ordnung
SERVER_AA	LEVEL_2_AA	c:\test	In Ordnung
SERVER_B	INTEGRATION	c:\test	In Ordnung
STANDBY_A	INTEGRATION	c:\test	In Ordnung
STANDBY_B	INTEGRATION	c:\test	In Ordnung

Figure 3: An illustrative example of a network topology in zenon.

If users consistently use zenon across their automation infrastructure, they benefit from transparent manufacturing data – even in very convoluted systems – and from reusing data that has already been recorded. It is not necessary to configure projects more than once. As a result, both the effort involved and the incidence of errors are reduced considerably.

If you have any questions or would like any further information – our automotive experts are happy to speak to you at any time. Contact us by email at: automotive@copadata.com.



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