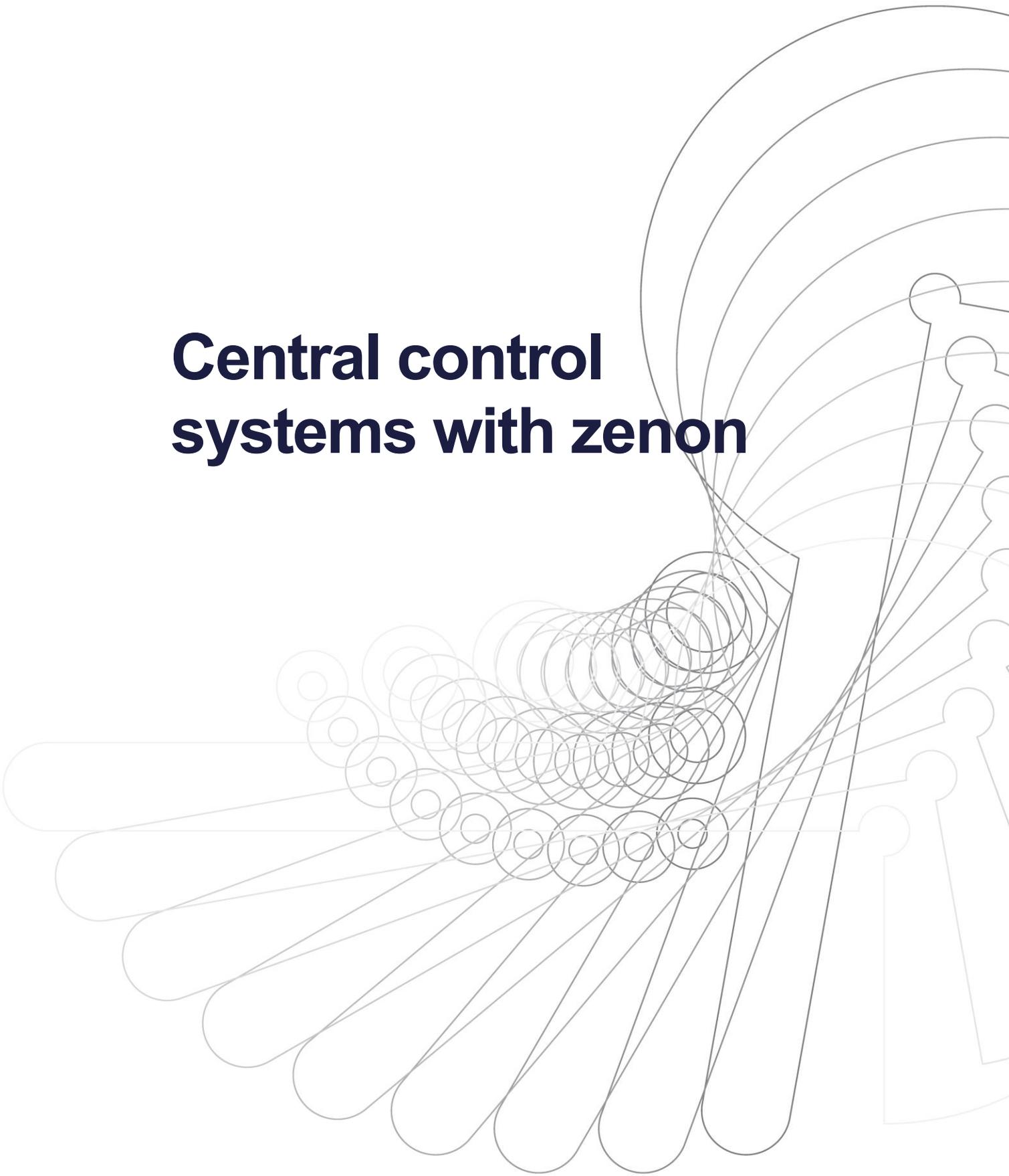


Central control systems with zenon



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Central control systems with zenon

The tasks of a central control system (CCS) are the visual display and the checking of vehicle manufacture as a "Production & Performance Management System" with zenon. The system has been designed as modular, for all plants and manufacturing technologies such as bodywork, paintwork and assembly.

The system of the central control system with zenon carries out its integrated tasks on the servers and provides the results to the clients. It is fundamentally a matter of recording equipment and production values, calculating output counters and evaluating and processing the messages and faults that arise in the process. Based on the data determined from manufacturing and the production figures calculated, the attendant reports and evaluations are generated.

The evaluations show, among other things, the numerical relationship of the causes of the faults, sorted according to systems, logistics, production, and the top 10 according to frequency of fault with the cause of the fault and the down time. Performance figures are grouped and organized according to equipment areas and manufacturing groups; the desired key figures are evaluated according to equipment and shift models.

The reports and evaluations are available in both table form and graphic form. The periods of interruption calculated constitute the break-adjusted net value. Free breaks, such as for meetings for example, are taken into account for the interruption statistics. It is possible to provide the data in the office world or on the Internet, due to the data formats used.

Project and system access for powerful user administration is included in the scope of performance. This can also be connected to the existing infrastructure on the basis of Active Directory.

The graphic design of zenon functionalities and standard tools meets the desired requirements and means ergonomic usability. All texts are designed for online language switching into the language of the respective user.

The overall system allows for redundant operation of the server with a hot-standby server, as well as a database server and a redundant web server pair. The equipment can be equipped with as many client workspaces as desired. Important process information can thus be quickly and securely called up at the desired place in the company at the press of a button.

There are numerous system benefits from using zenon:

- *The basis for productivity and quality*
Data is recorded securely, processed efficiently and documented in a sustainable manner. All common types of control can be connected using the many direct drivers in zenon. In doing so, the protocols of the respective manufacturers are used. zenon uses internal mechanisms to continually monitor the quality when transferring data. A valid data basis for the system is thus ensured.
- *Transparency for correct decisions*
Machine operators and management need a seamless and meaningful evaluation of the production data. Stable data logging and further processing are fundamental to this. The data from the manufacturing process is reliably recorded and subsequently processed with the zenon functions. There is then information available in the different hierarchies of manufacturing, optimally-prepared according to the requirements.
- *Flow of information as a decisive factor for success*
Simple distribution of data allows consistent checking of the manufacturing process. All data that is recorded and processed in zenon is available at the required positions due to the zenon network functionalities. In doing so, different end devices can be used to display data, such as a PC, tablet or smartphone.
- *Usability significantly reduces the life-cycle costs*
Your own maintenance staff can easily maintain and expand projects. The use of zenon as a development tool for the user interfaces supports the person configuring the project with the design of user-friendly user interfaces. The users get the information required for their current task and are guided through the operating process. This ensures higher acceptance of the systems and the initiation phase is minimized at the same time.

Network topology with seamless redundancy

The basis of the system is an autonomous, redundant head station. For each technology area (bodywork, paintwork, assembly), separate head stations are envisaged, in order to organize the responsibilities without retroactive effects. The active server has priority for the project data and the controller connection. As a result, all data is automatically distributed to all clients and the hot-standby. Communication is thus spontaneous, i.e. only changed values are transferred in order to minimize the communication load.

If the server breaks down, the hot standby server upgrades itself to the active server and takes over all tasks. With the help of an intelligent mechanism, there is no loss of data, even in the "downtime" when the server switch takes place. The data recorded by the hot standby server is always current and entered into the attendant archives. The redundancy integrated into zenon does not need any additional hardware or software components.

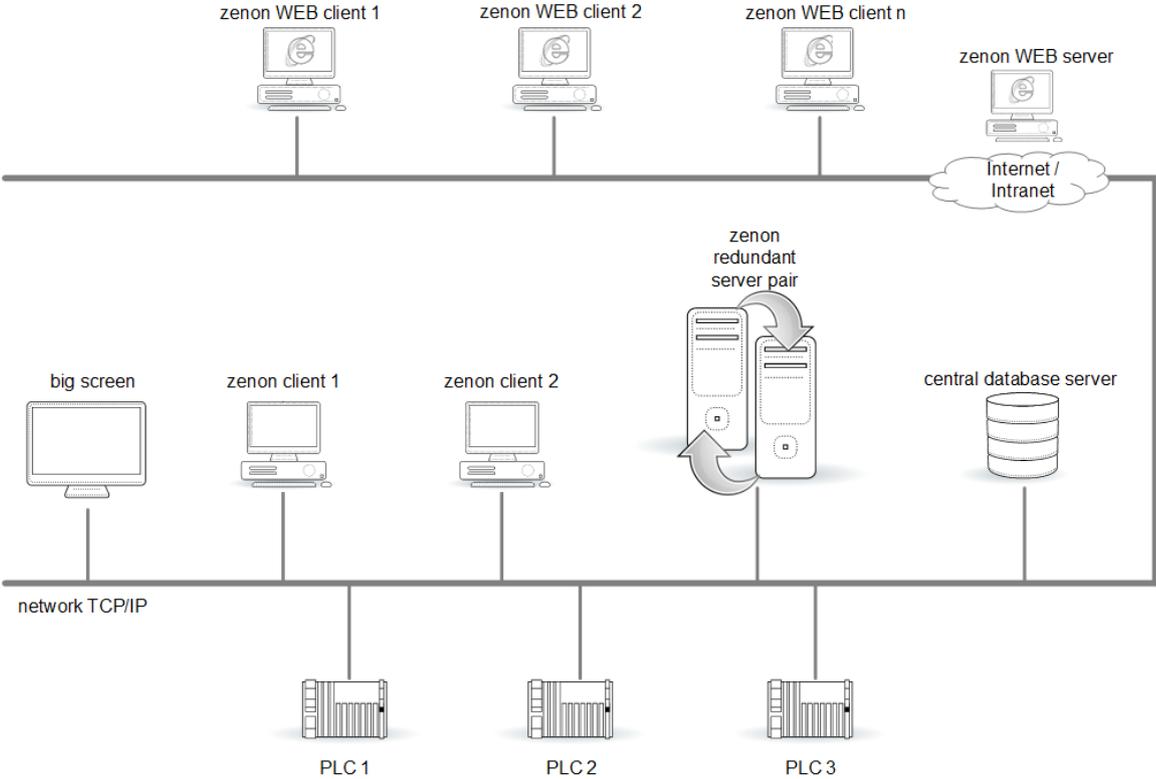
A database server is connected for long-term data archiving. This database server saves all historical data in highly-available form in an SQL database. A zenon web server is used for the operation of the equipment via an intranet, which can also be implemented as redundant. The zenon web server transports the zenon projects to the client web browser without further intermediary steps or conversions.

As a result of the flexible network functions of zenon, optimum integration into existing systems and infrastructure is made possible. The viability of the investment is thus increased markedly.

With its decentralized structure and direct access to subordinate projects, zenon has proven itself to be very secure and flexible. Process data can thus be effectively transferred to ERP level.

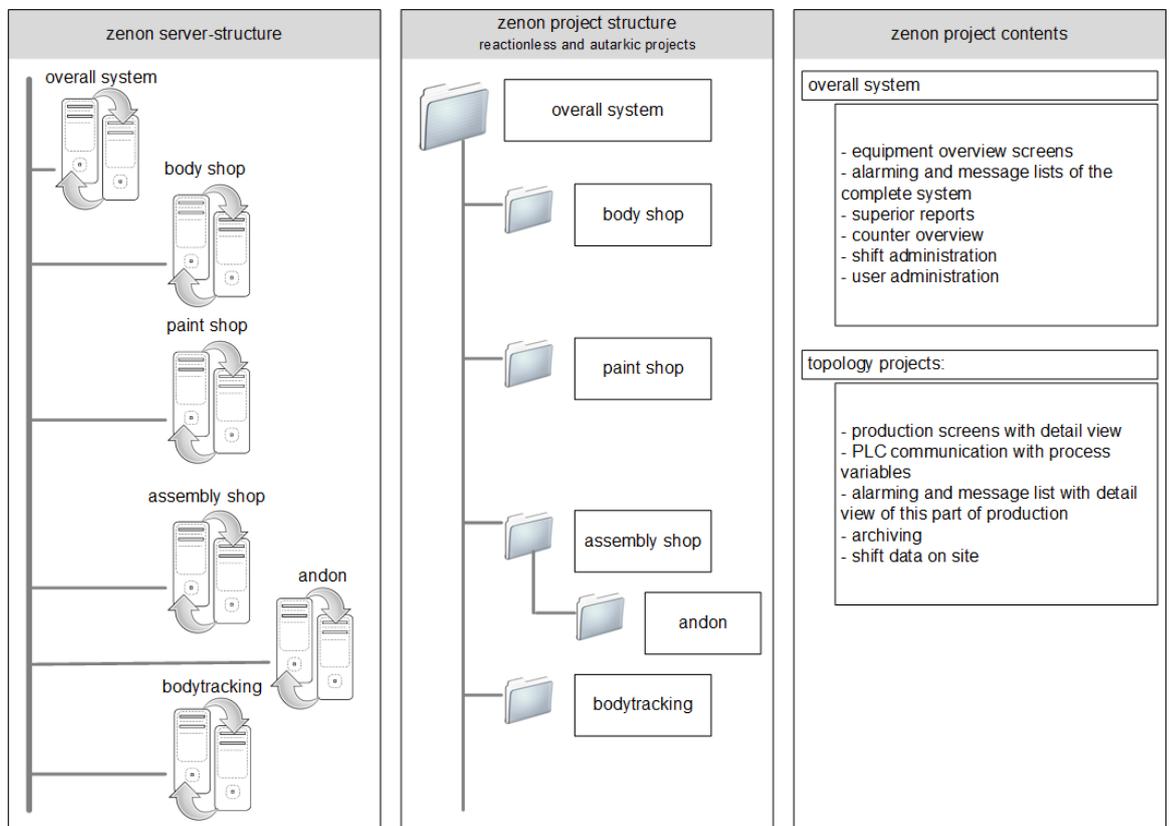
zenon is designed for particularly precise and secure processes. It is most of all the quality assurance of manufacturing companies that benefit from this. Sources of errors are also detected as far as possible in complex manufacturing processes in real time. If defects are apparent in the end product, the cause is found quickly by means of detailed logs and can be rectified comprehensively.

Downtime can be recorded precisely and the reason for it can be analyzed. Set-up times and running speeds are optimized quickly and manufacturing statistics are easily kept.



Project structure with zenon Multi-Project Administration

zenon Multi-Project Administration is used for a powerful project structure. Several projects can thus be started at the same time at one PC station. zenon Multi-Project Administration allows different configuration of different clients. The individual projects are allocated to the respective servers for the technology area in the process. The operator has optimum access to the data that is relevant to them.



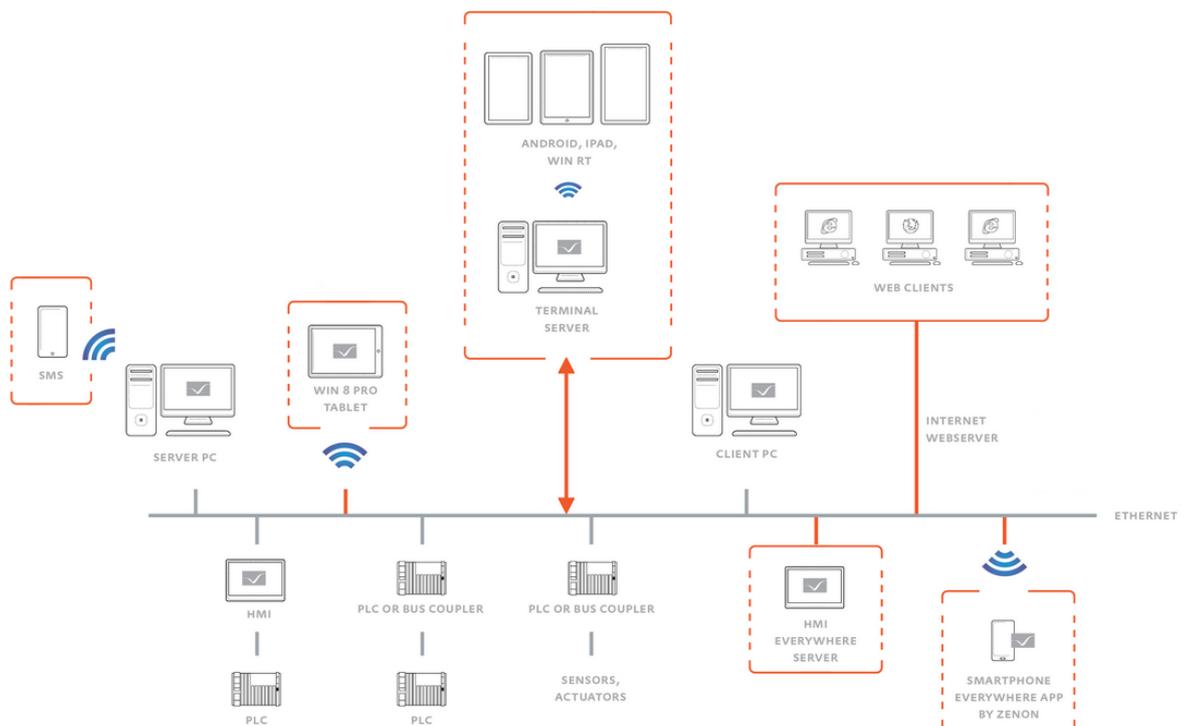
Web monitoring

With the zenon web server, the zenon projects are transferred to the intranet or Internet. In doing so, the zenon web server shows an interim software report, which routes the zenon projects for display in a web browser. Operation and evaluation is carried out on the zenon web clients. No additional conversion is necessary due to the use of a browser plug-in and the projects are available immediately in the web browser.

For communication, the high-performance, spontaneous data transfer in the zenon network is used. In doing so, only the amended reference data is transferred. The screen on the web clients is automatically refreshed when a value changes. The web clients synchronize the static screen information automatically in the background and thus always have the current project status. There is thus no maintenance of the web client as a result.

zenon data on mobile end devices

A connection to mobile end devices is also possible without any problems due to the open architecture of zenon. Here, depending on the task at hand and/or the mobile device used, different methods of communication can be selected.



In order to allow a task-related view of data, the user has the following different methods available for data display:

- Regardless of the operating system of the tablet or smartphone, all native functionalities can be used by means of a terminal server connection.
- With the Everywhere App by zenon, data from the central control system can be displayed directly on the smartphone or tablet.

With the connection of mobile end devices, important security functions are supported by zenon:

- 192-bit encryption
- User administration and unlimited Active Directory support
- File signature: zenon recognizes manipulated program files
- Authentication: only authenticated clients gain access to a zenon server
- http tunneling for zenon Webserver
- https for Everywhere App by zenon
- IP V6

zenon in the cloud

The integration of zenon into the Microsoft Azure cloud platform makes it possible to provide all data from individual production sites of a company in just one system, in real time. As a result of this, people in charge of production can get an overview of overall consumption and overall effectiveness, compare individual sites or production lines with one another and thus improve quality management.

With the help of this comprehensive collection of data, zenon consequently also supports predictive analytics solutions. Evaluations of the data from individual production sites are of course still possible. The zenon cloud solution integrates different systems, acts as a cockpit for key figures and makes both real-time data and historical data accessible.

Additional Big Data tools supplement the scenario and can be used for further analyses. Hybrid scenarios, i.e. a solution that is a combination of cloud and "on-premises", can also be easily implemented. Particularly-sensitive data can thus continue to be saved locally if required.

The zenon cloud solution has numerous benefits:

- New and comprehensive possibilities for the optimization of production and reduction of consumption
- Access to data throughout technology areas or plants for production figures, loss calculations, maintenance intervals etc.
- Cost-effective infrastructure
- Unlimited scalability
- Reliable and secure IT infrastructure
- Real-time and historical data analysis



As a result of the compiling of different data in a "cockpit" display, the user has all information available at a glance.



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