SIMATIC WinCC Version 6.2

Innovated process visualization with integrated Plant Intelligence and efficient maintenance

Brochure • March 2007

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WinCC

SIEMENS

SIMATIC WinCC Version 6.2 Overview

SIMATIC© WinCC© offers complete SCADA functionality under Windows for all branches of industry ranging from single-user to distributed multi-user systems with redundant servers and cross-site solutions with Web clients. WinCC is the information exchange for vertical integration on a cross-company basis and it uses Plant Intelligence for more transparency in production.

The WinCC basic software is the heart of a wide variety of different applications. Based on open programming interfaces, development has already been carried out on a number of **WinCC options** (by Siemens A&D) and on **WinCC add-ons** (by Siemens-internal and external partners).

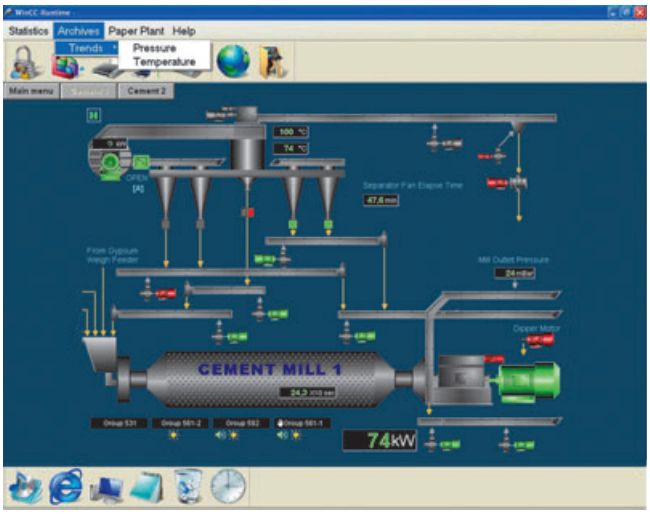
SIMATIC WinCC Version 6.2 includes a range of interesting functional enhancements in both the basic system and the options and offers now even more support for Plant Intelligence applications.

- **Innovations to the WinCC basic system**
  - Runtime-user interface with Windows Look & Feel
  - Alarm Hiding for better overview
  - Integrated Microsoft SQL Server 2005
  - Operation with firewall and virus scanners
- **Innovations to the WinCC options for Plant Intelligence**
  - WinCC/DataMonitor – Now with Published Reports and WebCenter
  - ***NEW:*** WinCC/DowntimeMonitor – Detection and analysis of downtimes of machines and plants
  - ***NEW:*** WinCC/ProcessMonitor – Management information system and online quality analysis
  - WinCC/Connectivity Pack – Easy data access in distributed systems
  - ***NEW:*** WinCC/Connectivity Station – Data access from any Windows computers
- **Further innovations to the WinCC options**
  - WinCC/Web Navigator – Web clients integrated into the plant-wide central user administration
  - WinCC/Central Archive Server – Central process data archiving
  - WinCC/Audit – Integrated project versioning tool
  - ***NEW:*** WinCC/ChangeControl – Traceability of configuration changes
  - WinCC/Redundancy – Synchronization of the message system and internal tags
  - ***NEW:*** SIMATIC Maintenance Station – User interface for efficient maintenance

Runtime-user interface with Windows look and feel

With SIMATIC WinCC V6.2, the project engineer can now integrate Windows objects into the visualization user interface of the runtime application. With them, the plant operator can visualize and operate the process via Windows user interfaces employing familiar **menus and toolbars**.

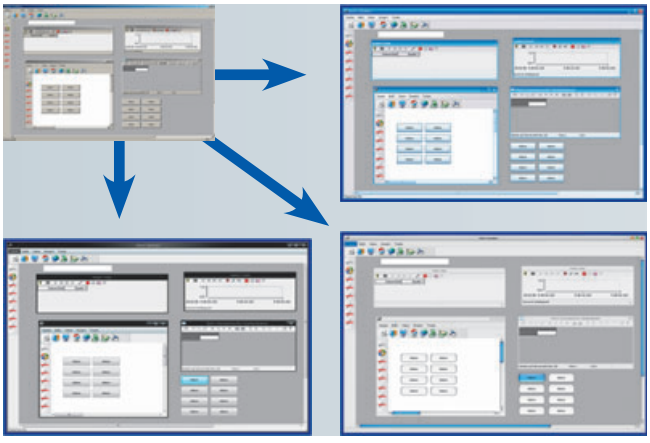
The configuration of the menus and toolbars takes place via a **separate WinCC editor**. The structure of the menus can



Process screen with application-specific menus and toolbars

be freely defined. For the icons on the toolbar, any kind of graphic can be used. These new user interface elements can be utilized in pictures and picture windows, be configured "fixed" or movable, and be operated in the familiar Windows manner.

In this context, text lists for the selection of options can now also be shown as combo boxes.



Process screen with application-specific menus and toolbars

SIMATIC WinCC Version 6.2
Innovations to the basic system

Within WinCC, all WinCC controls as well as a few Windows objects (buttons, scroll bars) can be switched regarding their display together with the Windows settings. All in all, this enables the creation of a **project-specific look & feel for the user interface**.

New highlight for the alarm system

The highlight of the expanded alarm system is the improved clarity concerning the alarm display and alarm operation through **"Alarm Hiding"**. With the function "Alarm Hiding", the operator suppresses unimportant system status messages on the alarm display, though they continue to be archived in the background. The "Hiding List" can of course be viewed at any time and individual or all alarms be displayed again by selection.

The hiding of alarms can also be performed automatically. Depending on the current plant status (e.g. in operation, being cleaned, maintenance), less relevant alarms can automatically be hidden.

Improved trend display

With WinCC V6.2, the functionality of the **WinCC Trend Control** has been expanded: Current values (online trends) and historical process values can be shown in the same trend display. To increase the clarity, only the Y axis of the currently selected trend can be shown if desired. Likewise, the common X axis can be highlighted via selectable coloring. A trend selection can be specified by the configuration or take place directly in the displayed trend via buttons, radiobuttons, etc.

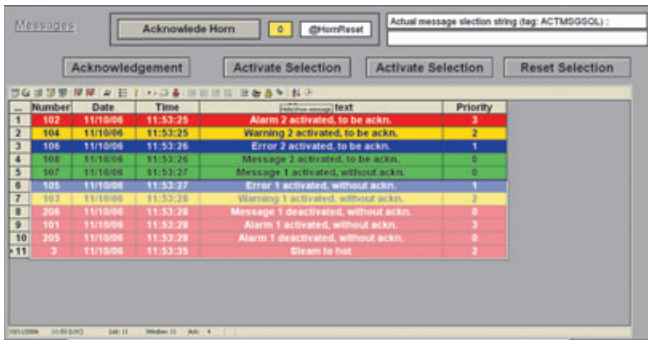
Process values displayed in the trend display can now be **exported into a CSV file** by clicking a button and then be analyzed with standard tools.

Microsoft SQL Server 2005

With the integration of the Microsoft SQL Server 2005 SP1 (Standard Edition), WinCC employs an up-to-date database that fits to a high-end-SCADA system with regard to performance and quantity schedule.

The SQL Server 2005 is the next-generation **data management and analysis** solution from Microsoft. This solution improves the security, scalability and availability of enterprise data and analysis applications, and at the same time simplifies their generation, supply and management. Building on the strengths of the SQL Server 2000, the SQL Server 2005 offers an integrated solution for the data management and for the analysis.

WinCC V6.2 uses MS SQL Server 2005 for the process database (archives) which belongs to the scope of delivery of the basic system.



Alarm display with "Alarm Hiding"

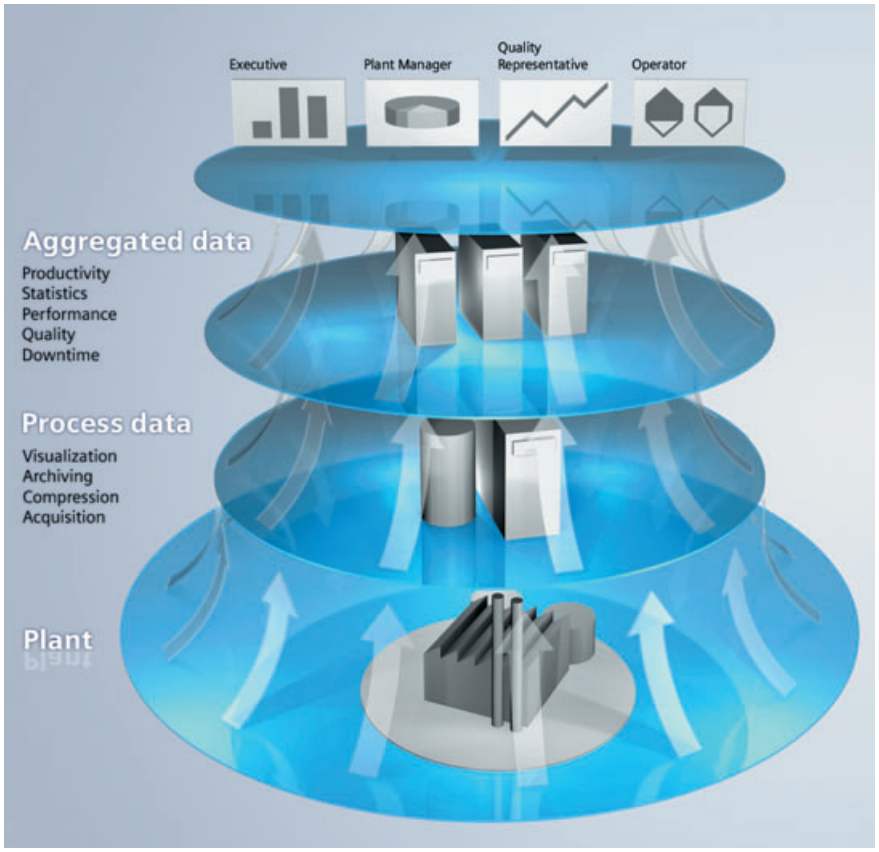
More security

To increase the security during runtime, WinCC V6.2 is now released for use with activated **Windows firewal**l. In addition to Symantec AntiVirus Corporate Edition, from Version 8.1 Trend Micro ServerProtect, from Version 5.56 and Trend Micro OfficeScan NT, from Version 5.02 the **McAffee-Virus scanner** is permitted too.

For WinCC projects integrated into STEP 7, an access protection is now provided.

Trend display in WinCC V6.2

SIMATIC WinCC Version 6.2
Innovations to the WinCC options for Plant Intelligence



SIMATIC Plant Intelligence

SIMATIC Plant Intelligence

With the integration of Plant Intelligence applications from the machine up to the enterprise level, Siemens Automation & Drives (A&D) is offering a complete and scalable solution from one source. Plant Intelligence is based on the intelligent utilization of data to generate important information in real-time, improving the decision processes implemented by the company. This procedure lowers the plant costs, prevents scrap, better utilizes the production facilities and ultimately assures a higher business efficiency and effectiveness.

An advancement from an inexpensive, scalable entry-level system on the basis of the process visualization system SIMATIC WinCC all the way up to a comprehensive optimization solution on the MES level with SIMATIC IT is now seamlessly possible. Plant Intelligence links the SCADA level with the MES level and in doing so provides a greater transparency in the production through an efficient acquisition, archiving, compression, analysis and distribution of production data.

The linking and integration of SCADA and MES result in an enormous advantage for the customer. The customer can initially – just like before – expand his/her existing SIMATIC WinCC SCADA solution with Plant Intelligence. Additional support is provided by innovated options – such as the WinCC/DataMonitor with published reports and a WebCenter for the distribution of information – as well as completely new option packages – such as the WinCC/DowntimeMonitor for the detection and analysis of downtimes and the WinCC/ProcessMonitor as management information system for the optimization of the production. The user can extend the plant transparency with additional expansions on the MES or enterprise level. SIMATIC IT is capable of correlating and analyzing parameters such as key performance indicators across multiple plants; thus, production data such as work orders, genealogy and batch data can also be analyzed.

SIMATIC WinCC/DataMonitor V6.2 – Published Reports and WebCenter

For the individual presentation or analysis, the DataMonitor offers several tools. Added to the established tools have been the Published Reports application for the event-controlled or time-controlled creation of reports in Excel or PDF format, and the WebCenter as the central information portal. Simultaneously with the DataMonitor, the previous tools also have received new names:

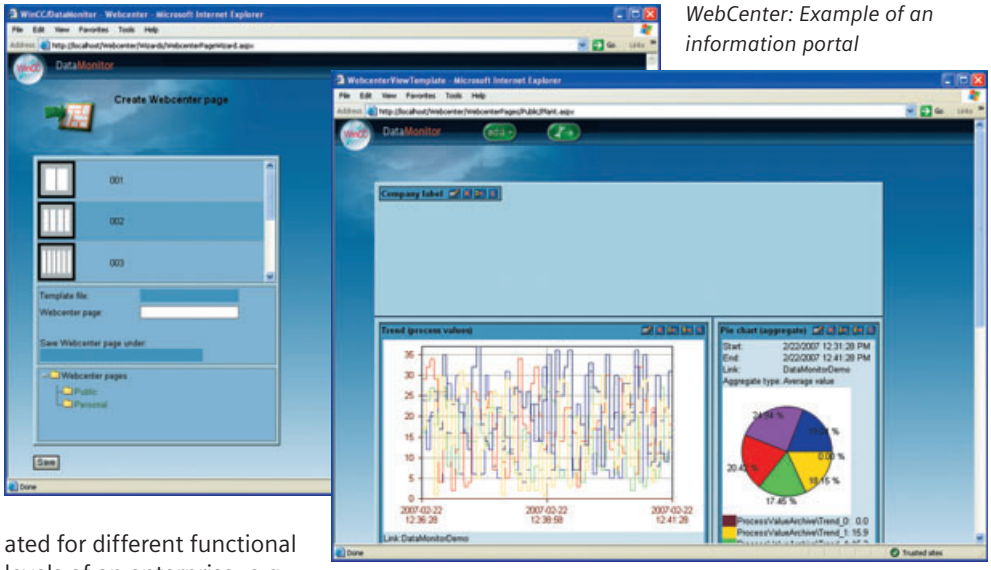
- Process Screens (previously: Dat@Symphony)
- Trends & Alarms (previously: Dat@View)
- Excel Workbooks (previously: Dat@Workbook)

Published Reports automatically generate print jobs from WinCC reports and prepared Excel workbooks. The reports are started time-controlled (e.g. at the end of a shift) or event-controlled (e.g. upon the change of a WinCC tag) and can be distributed by E-Mail. Reports created by Excel are saved as XLS file. The corresponding file created by the WinCC Report Designer is stored in PDF format. Then the reports can be further processed and analyzed.

The **WebCenter** is the central information portal for the access to WinCC data via the Intranet or Internet. In the WebCenter, the user can arrange

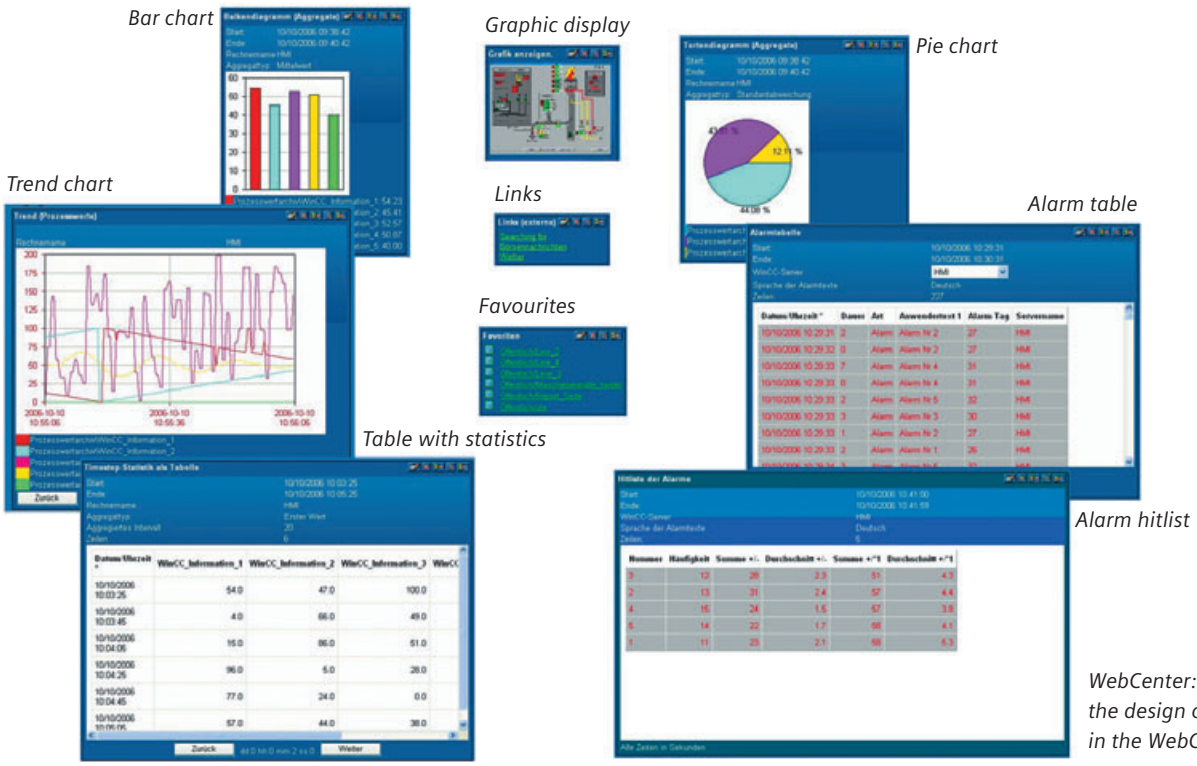
WinCC process data, alarms and process screens to form any screen view for different groups of persons, e.g. pie charts with quantity counters for the management, or temperature patterns for maintenance technicians. By means of these views, WinCC data can be compared, analyzed, interpreted and if necessary also exported over absolute or relative time periods.

In a WebCenter page, the user can compose own screen views from so-called WebParts (e.g. process value tables, trends, alarm tables, statistics displays, etc.) and save them. Thus, different information of a plant or process can be generated for different functional levels of an enterprise, e.g. for the quality control, the plant operator or the service personnel, always offering the facts clearly.



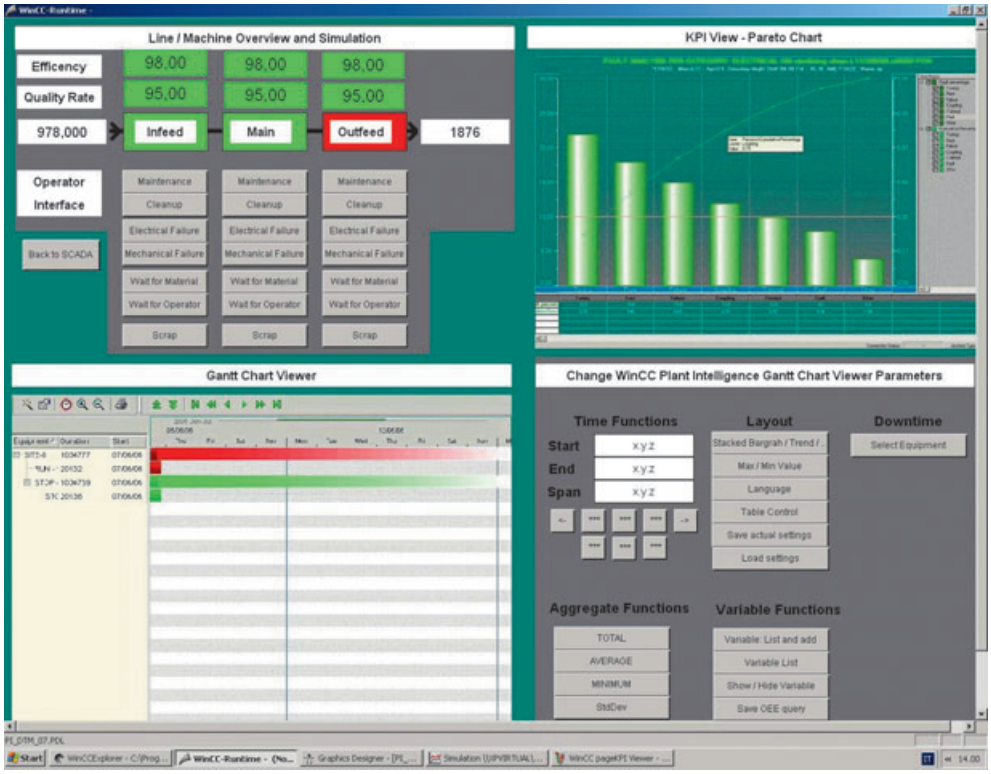
WebCenter: Example of an information portal

During the **introductory phase (lasting until 09/30/07)**, a single DataMonitor client license with full functionality can be purchased at a **special price**.



WebCenter: WebParts for the design of the pages in the WebCenter

SIMATIC WinCC Version 6.2
Innovations to the WinCC options for Plant Intelligence



DowntimeMonitor – Key performance indicators at a glance

to take corrective measures, which again increases the machine availability.

All analysis results are integrated into the WinCC screens in the form of controls. Here, several indicators are distinguished between:

- Gantt and Pareto charts
- Bar or column charts
- Trends or tables

The displayed data can be processed with WinCC and the WinCC options, and be distributed to different persons.

SIMATIC WinCC/DowntimeMonitor – Detection and analysis of downtimes

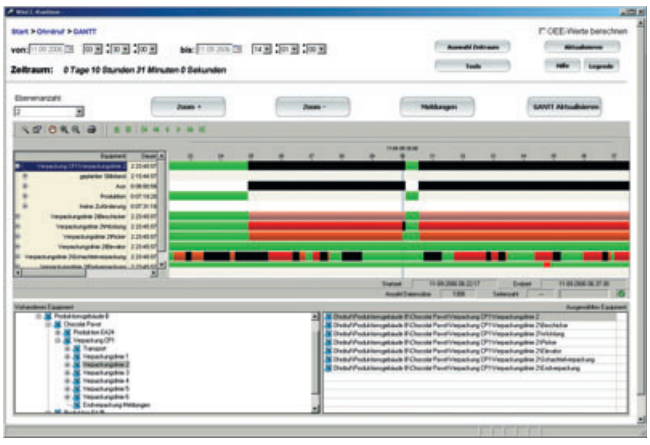
With the **WinCC/DowntimeMonitor**, the machine data management software, downtimes in machine-oriented or line-oriented production facilities can be detected and analyzed centrally. For individual units, machines or entire production lines, the following specific parameters can be derived from this:

- OEE (Overall Equipment Efficiency)
- MTBF (Mean Time Between Failures)
- MTFF (Mean Repair Time)
- And other so-called Key Performance Indicators (KPIs)

In doing so, production equipment can be defined individually by plant.

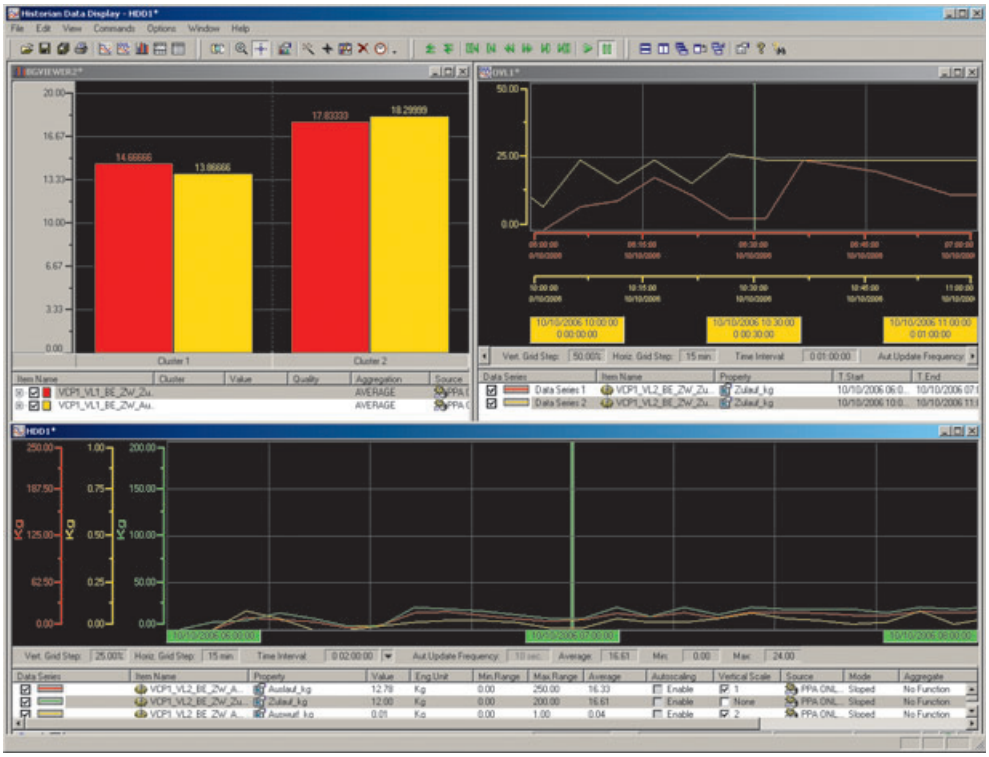
Error cause analyses provide information about the frequency and duration of machine or plant downtimes. Corresponding indicators can easily be integrated into the WinCC process screens.

In the DowntimeMonitor, the time model of the production equipment is determined from the production times, maintenance times and downtimes. Via a shift calendar, the shifts can also be included in the analysis. All plant statuses relevant for the analysis are parameterized in a detailed reason tree. The acquired data provides information about the efficiency of individual machines and entire production plants. The transparency of the data makes it possible to quickly respond to malfunctions and



DowntimeMonitor – Analysis via Gantt charts

ProcessMonitor – Management information at a glance



SIMATIC WinCC/ProcessMonitor – Management information system and online quality analysis for the optimization of the production

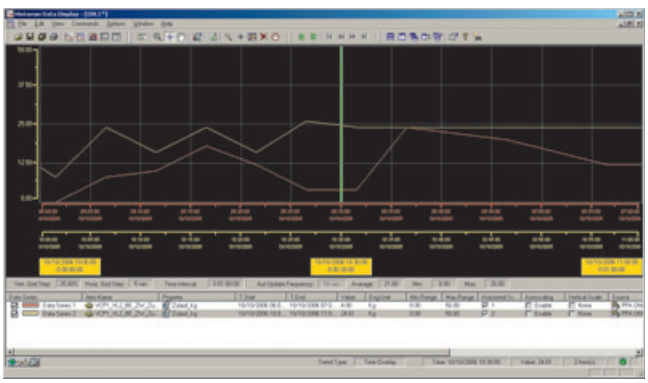
The WinCC/ProcessMonitor is employed for the collection, manipulation, analysis and storage of process values. The integration into WinCC assures complete transparency across all machine and plant data, which is the basis for optimizing the plant productivity.

In doing so, only **freely definable**, company-specific key performance indicators – such as the speed of the workpiece processing (ultimately the motor speed) – are determined and compared in relation to the quality of the product created. Furthermore, the appearance of typical malfunctions is analyzed, through which bottlenecks in the production process can be identified.

The depiction of the results takes place within WinCC via an expanded trend display **(Trend View)**, which also contains values acquired by the ProcessMonitor. These values can be displayed as a standard trend or as a trend with time overlaps. Thus, the comparison of key performance indicators over different time frames (e.g. during multiple shifts) is possible in one trend window. Another display type are X/Y trend profiles **(X/Y Trend View)**, in which any two values are directly correlated.

A message analysis **(Message Analyzer)** with the aid of the ProcessMonitor offers – in addition to the standard WinCC alarm display – the depiction of filtered results in the form of bar charts.

If own values are calculated by the ProcessMonitor on the basis of the process data provided by WinCC, these values can be transferred back to WinCC for further processing.



ProcessMonitor – Trend Window for the comparison of KPIs

SIMATIC WinCC Version 6.2
Innovations to the WinCC options for Plant Intelligence

SIMATIC WinCC/Connectivity Pack V6.2 –
Easy data access in distributed systems

Improvements to the access via the WinCC OLE-DB now simplify the programming in distributed systems. From a WinCC multi-client, a transparent process data access via the OLE DB is now also possible to **redundant WinCC systems and distributed configurations** with central archive server.

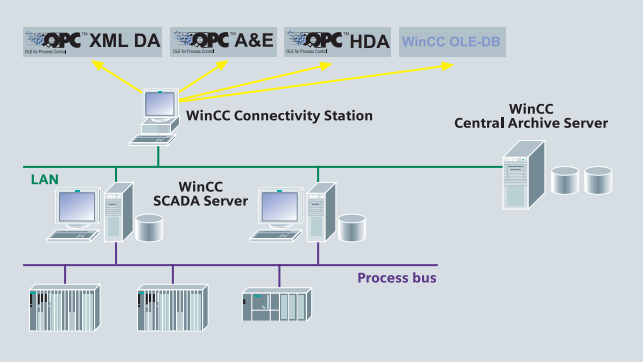
For the addressing, only the symbolic computer name is needed.

Provided that no process visualization is necessary at the station, any Windows computer can be configured as a so-called connectivity station via a WinCC option package – without requiring a WinCC installation for this.

SIMATIC WinCC/Connectivity Station –
Data access from any Windows computers

For an easy access by external computers to archive data, process values and alarms, the connectivity station was designed. The software requires **no WinCC installation**. The selective access to the WinCC process data (alarms, process values and user data) on the WinCC servers or a central archive server takes place in the usual manner via the WinCC OLE-DB (process values only), OPC DA, OPC A&E and OPC HDA. The data can then be **analyzed and processed** further with standard tools, or dirctly be used by higher-level information systems (MIS, MES, ERP).

Configuration is carried out by employing SIMATIC NCM-PC or SIMATIC Manager.



Plant configuration with WinCC Connectivity Station

SIMATIC WinCC Version 6.2
Innovations to the WinCC options

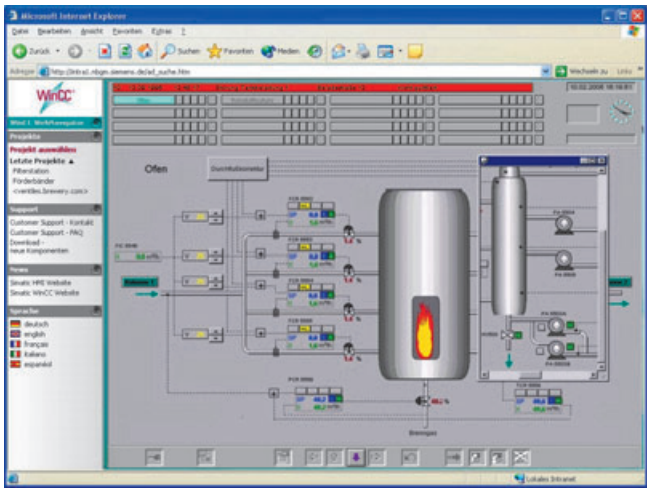
SIMATIC WinCC/Web Navigator V6.2 – Functional enhancements

In version 6.2, the Web Navigator client (Web client) is moving closer and closer to the functionality of a WinCC SCADA .

With the integration into the **central, plant-wide user administration** via SIMATIC Logon, Web clients now satisfy the high demands regarding traceability and can thus also be employed in an FDA environment. In the process, the administration of the users continues to be carried out from a central location

An **improved support for C scripts** now makes the use of global C variables, the integration of own header files and the publishing of own standard functions possible at the Web client. Effective immediately, variables can also be addressed indirectly. Furthermore, the use of computer-local variables is possible, e.g. "@CurrentUser" for the user currently logged in at the Web client.

Server views within the scope of the control functions and display options of the Basic Process Control are now also possible at the Web client.



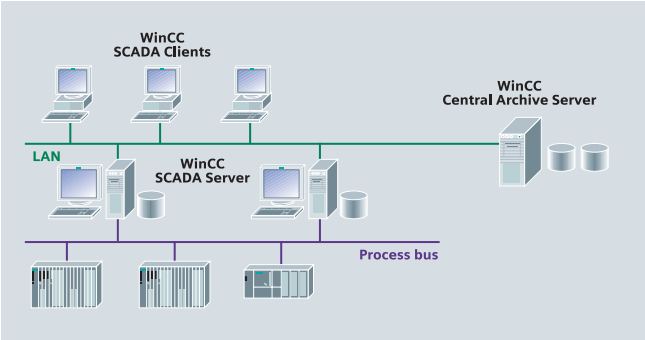
Basic Process Control at the Web client

SIMATIC WinCC/Central Archive Server – Central process data archiving

With the new option WinCC/Central Archive Server, a central WinCC archive server with 1500 archive tags can be set up on a Windows computer. Should larger quantity schedules ensue during the course of the project, the number of usable archive tags can be expanded with a corresponding PowerPack by 1500/5000/10000 tags to a maximum of 120000 archive tags.

As customary, the archives are created on the SCADA servers, which are the only ones also connected to the process. At the conclusion of an archive segment, the archived process tags are transferred to the central archive server. Accesses by the WinCC SCADA or Web clients to current or historical process data occur transparently, i.e. it is concealed from the client, where the data is physically stored.

Due to the redundant setup of the (central) archive server, a **data security** and availability reliability can be achieved soon.



Central process data archiving

SIMATIC WinCC Version 6.2
Innovations to the WinCC options

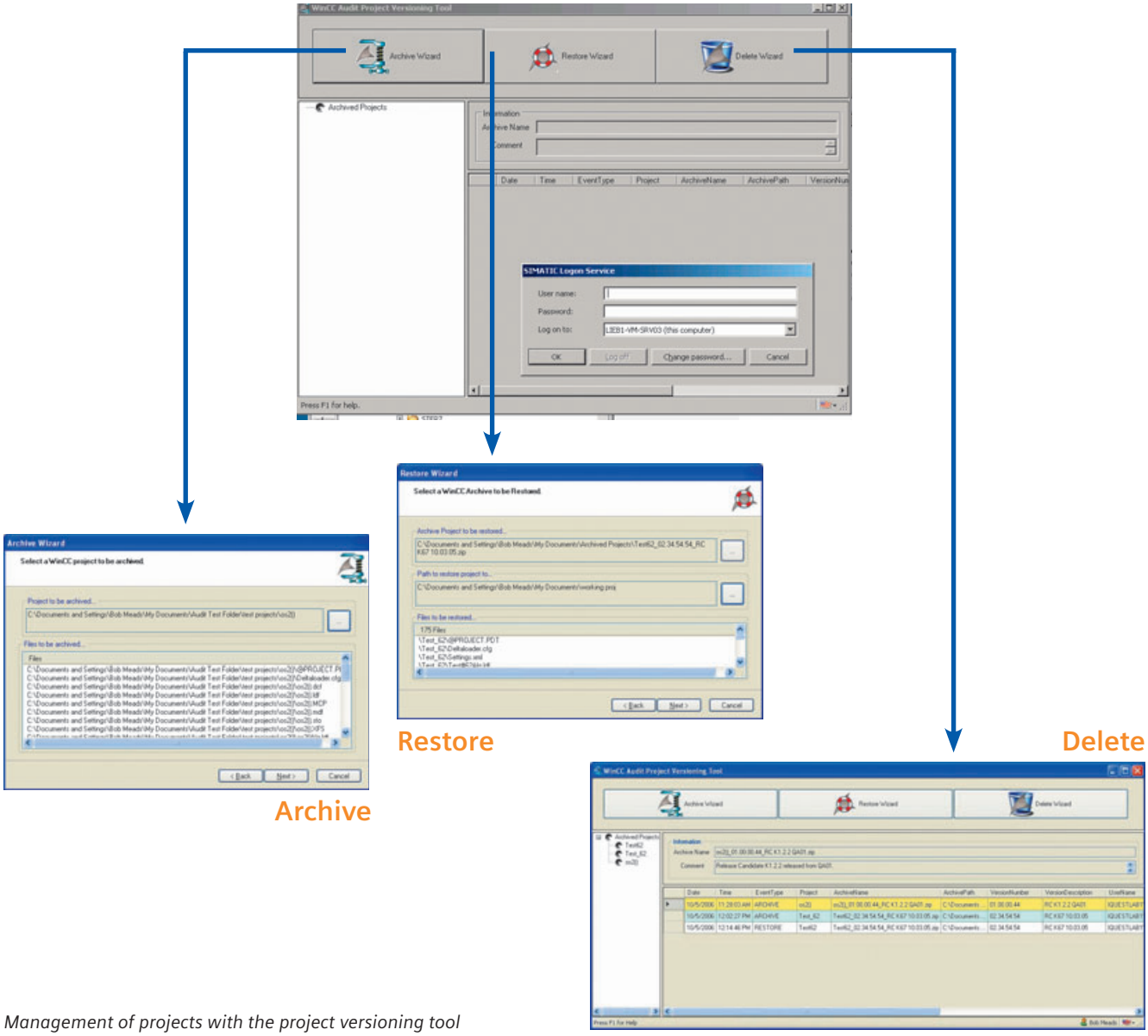
SIMATIC WinCC/Audit V6.2 –
Integrated project versioning tool

A **project versioning tool**, with which different project versions can be managed, is now an integral component of the option WinCC/Audit. By means of this tool

- WinCC projects can be archived, restored and deleted ,
- WinCC data including the project database, project files (e.g. screens, reports, scripts) and user documents can be archived
- Activities of the project versioning tool can be recorded

In the audit trail, the entries of SIMATIC Logon are now displayed as well, thus expanding the traceability by operator actions within the scope of the central user administration.

To view changes to the project throughout, the audit viewer provides a project versioning tool view.

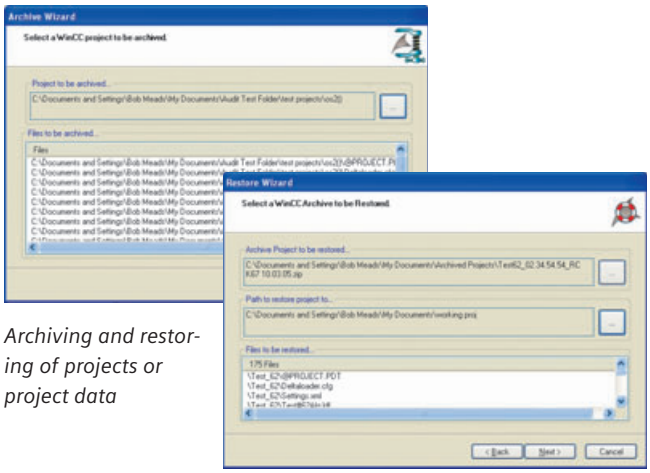


Management of projects with the project versioning tool

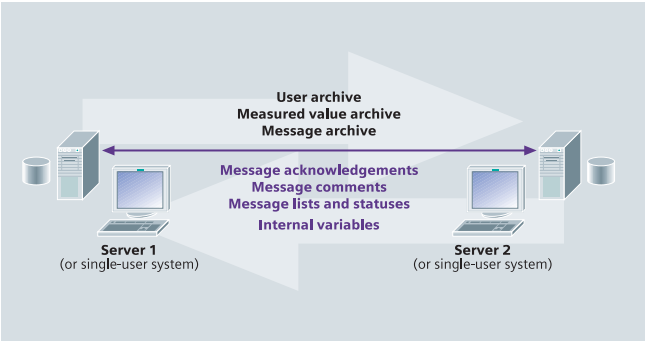
SIMATIC WinCC/ChangeControl – Traceability of project changes

Once a machine or plant has been put into operation, **changes in configuration** can become necessary in the course of adapting or expanding a flexible manufacturing plant. In doing so, it is of vital importance to completely record changes and to generate software versions that the project engineer or plant operator can always fall back on and safely reuse. With the WinCC/Change Control, all changes made to a plant beginning from the production start and continuing throughout the entire life cycle can be recorded and – using **defined versions** – be documented. In the process, the project versioning tool provides the possibility of backing up reproducible project versions, to restore them and to document them.

The change tracking of the configuration and also the document control and project versioning takes place in an audit trail – just like with WinCC/Audit. However, unlike with the function scope of WinCC/Audit, no configuration of operating traces is possible. Instead, an optimally tailored and cost-effective option package is provided for application cases where only a project management including change tracking and versioning is desired.



Archiving and restoring of projects or project data



SIMATIC WinCC/Redundancy V6.2 – Synchronization of the messaeg system and internal tags

In version 6.2, the option WinCC/Redundancy has also been expanded. Redundancy provides for an increased system availability with gapless data integrity. Should a WinCC server or single-user system fail, the redundancy partner will take over the tasks of the faulty computer. Following the correction of the malfunction, an automatic synchronization of all archives is carried out in the background. Effective immediately, this also applies to:

- Message acknowledgments,
- Message lists, message statuses and comments
- and internal tags.

SIMATIC WinCC Version 6.2
Innovations to the WinCC options

Benefits

- Visualization of the maintenance information of the entire automation
- Automatic derivation of the data from the hardware configurations
- Manufacturer-spanning display of service and maintenance data
- Traceability of events and operator actions via automated alarms, which form the basis for later analyses to optimize the plant
- Optimal resource planning via an overview of all upcoming maintenance jobs
- Consistency and homogeneity of data, visualization and operation with the SCADA system and maintenance station

SIMATIC Maintenance Station –
User interface for an efficient maintenance

Consistently high productivity is the competitive requirement par excellence in every production. Production downtimes should be avoided if possible or – if that cannot be accomplished completely – be kept as minor as possible. Frequently, downtimes are also caused by less than optimal maintenance. Here, **intelligent maintenance strategies** can be employed, whose essential goal is to make the maintenance plannable, as a result of which downtimes are considerably reduced.

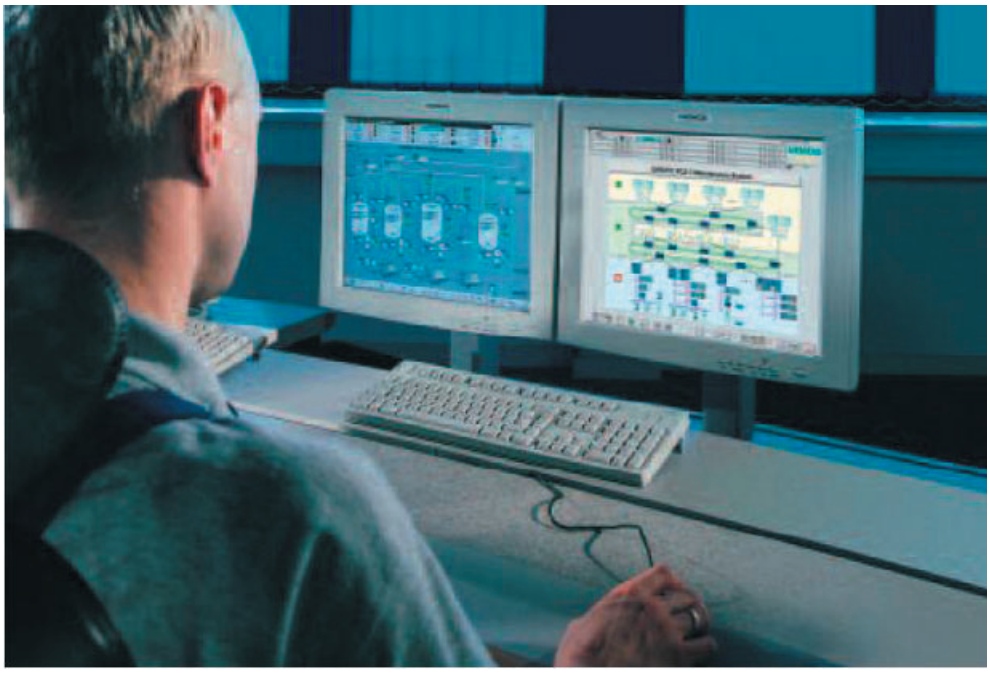
Efficient maintenance is possible in connection with the new WinCC option package SIMATIC Maintenance. Thereby it is irrelevant whether the process visualization and maintenance functionality run on a common computer or on separate devices.

Since the same operating and monitoring tools are being employed, the display can be switched between SCADA and maintenance at any time. The advantage is obvious: The operator can – at any time – also obtain an overview of current identification & maintenance (I&M) information, without having to interrupt the process.

The maintenance station is configured by selecting the automation systems to be displayed from STEP 7 to create a hardware configuration. With this hardware configuration, the maintenance station recognizes which devices belong to the plant and creates an image for the maintenance in WinCC. The integration of components is based on established standards and is possible for a large number of devices from different manufacturers.

The **project generates** itself automatically in the form of hierarchically structured, already connected WinCC screens – without additional programming work for the user – and then is automatically transferred to the maintenance station. New hardware components brought into the hardware configuration of STEP 7 are automatically made available to the maintenance station. A manual updating is not necessary, follow-up costs are avoided.

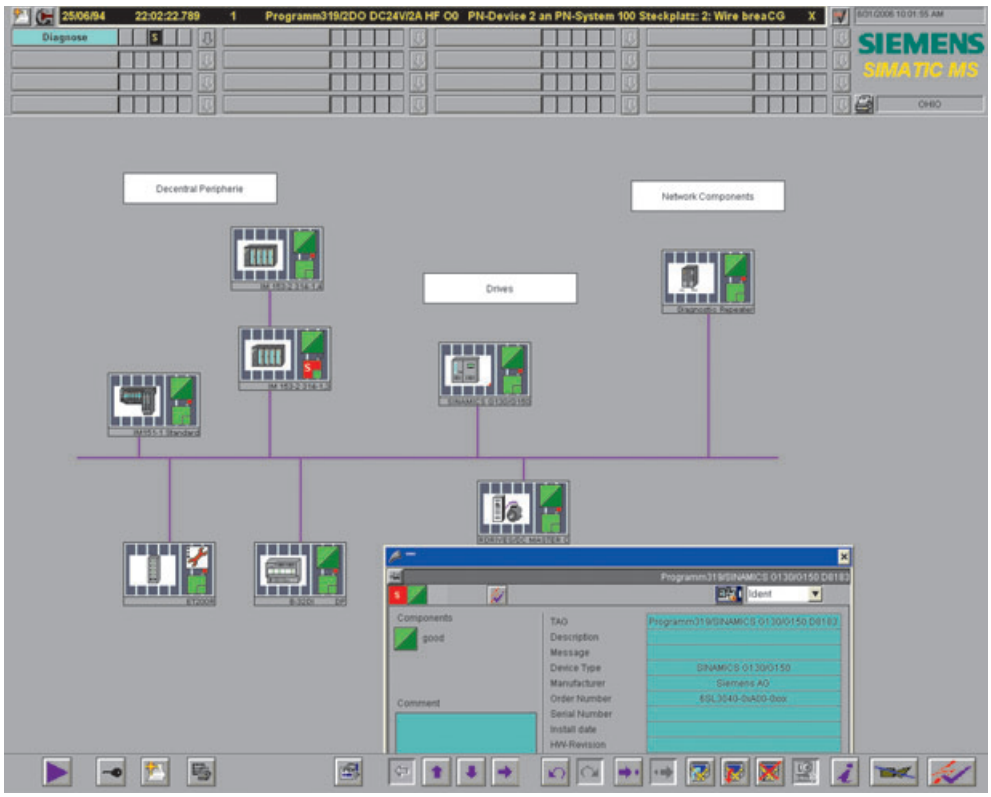
In runtime, the maintenance station displays all connected control components, switching units, drives, etc. and moni-



Monitoring of the plant status

tors the current plant status. In doing so, the program not just responds to errors once they have occurred (i.e. **corrective maintenance**), but also to measures entered into the system that are to prevent errors prior to their occurrence **(preventive maintenance)**. Such time-dependent or load-dependent measures take place regularly and/or after a certain number of operating cycles, operating hours or load peaks, and can be scheduled in such a way as **to optimally utilize the existing resources**.

The SIMATIC Maintenance Station offers perfect support for performing the maintenance. In doing so, it generates a comprehensive database for the later optimization of the plant and ultimately results in reduced maintenance costs.



Monitoring of the plant status via automatically generated screens

More information in the Internet

SIMATIC WinCC Homepage
www.siemens.com/wincc

SIMATIC WinCC Options
www.siemens.com/options

SIMATIC WinCC Add-ons
www.siemens.com/addons

SIMATIC WinCC success stories
www.siemens.com/hmi-success-stories

Information on Plant Intelligence
www.siemens.com/plant-intelligence

WinCC Competence Center
www.siemens.com/competencecenter

WinCC Specialisits (former: Professionals)
www.siemens.com/wincc-specialists

SIMATIC Service & Support
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SIMATIC Contact Partners
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Further information material
www.siemens.de/simatic/printmaterial

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