CEMAT based on
process control system
SIMATIC PCS 7

cemat

PROCESS CONTROL SYSTEM

SIEMENS

CEMAT – the sophisticated control concept with a real future

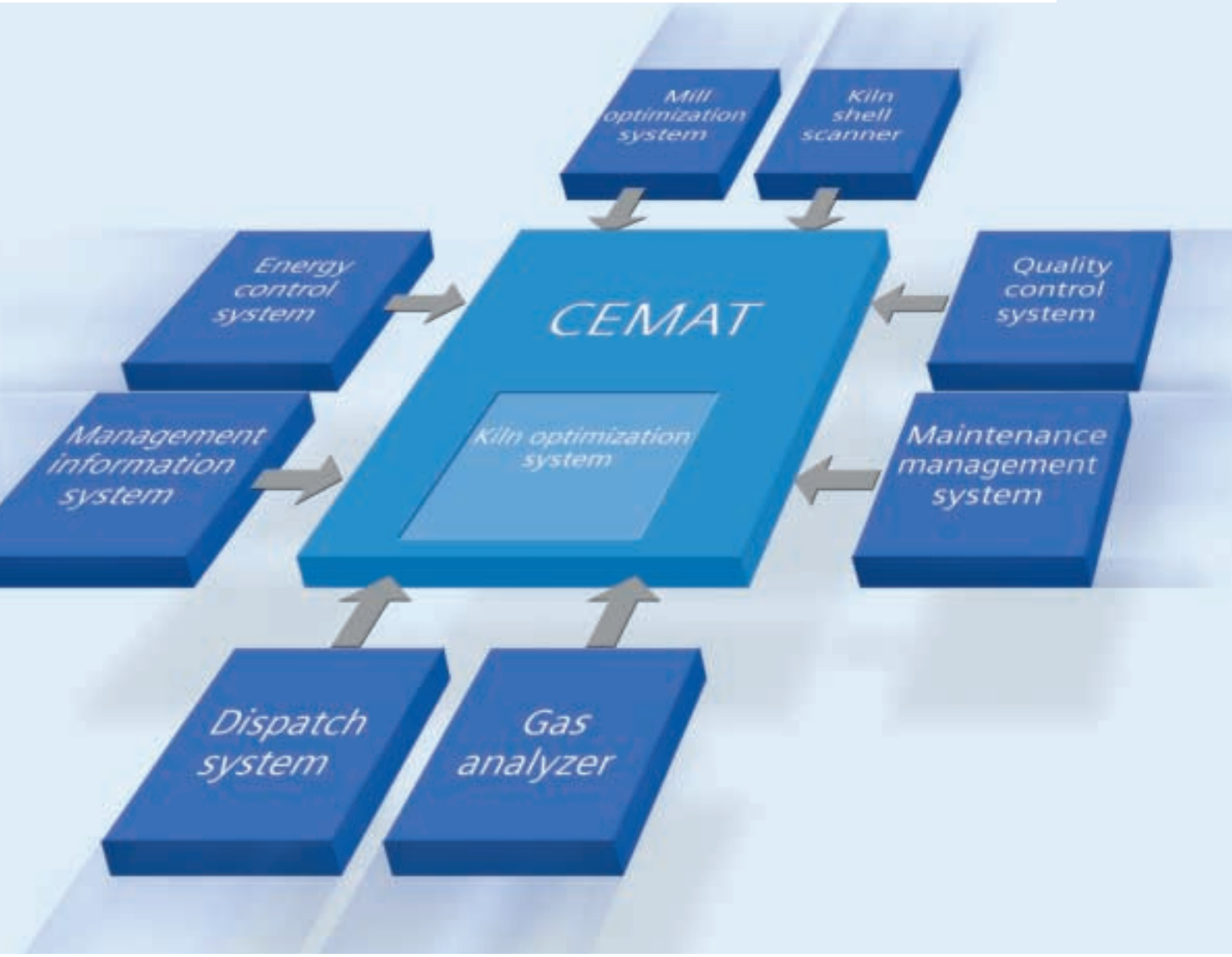
CEMAT® is a control system specifically designed for cement plants and has been well proven in this harsh environment over many years of service. The system is well accepted in the cement industry, and the number of CEMAT users is growing continuously. Siemens has designed the CEMAT control system from their extensive know-how in the field of cement production, established together with many cement manufacturers worldwide. The engineers who develop and support CEMAT can fall back on more than 35 years of experience in the cement industry. CEMAT is now based on the mainstream process control system of Siemens, SIMATIC® PCS 7, which offers a unique, open architecture for modern, future-proof and economic solutions for the cement industry. The system makes use of all features and functions of SIMATIC PCS 7 and adds further to the philosophy of plant operation, fault diagnosis including function blocks and interlocking as required in cement plants.

What does CEMAT deliver in addition to SIMATIC PCS 7?

CEMAT is much more than just a database with some cement-specific modules. It is a philosophy of how to operate a cement plant, how to make diagnosis to reduce downtime in the event of a plant problem to a minimum, and how to interlock the drives, dampers, belt conveyors and measuring values from the plant with each other. Because this is all preconfigured and well proven over many years, engineering is fast and reliable. And last, but not least, there is really a big database for cement-specific solutions that will release you from creating software and interlocking, that was already done some when, somewhere.

Some of the highlights of CEMAT based on SIMATIC PCS 7 are these:

- Easy and fast engineering with predefined CEMAT modules
- Proven software typical for specific requirements in the cement industry
- Strict guidance of the engineer during programming avoids patchwork of software
- Very low possibility of programming errors also because of standard interfaces between CEMAT modules
- Fast commissioning because of high quality of the user software
- Easy handling for the operator because of self-explaining standard faceplates
- Fast fault finding because of detailed fault indication with high-performance plausibility logic
- No unreasonable start of drives or groups because of detailed status report prior to any start.



Integration of technological modules – for even more effective production.

The integration of technological modules like a Mill Optimization System, a Kiln Shell Scanner or a Quality Control System into the CEMAT control system is as easy as making the user software with CEMAT based on SIMATIC PCS 7. There are standard interfaces available to integrate such packages from system integrators, and to handle them from the CEMAT operator console, too.
The latest version of CEMAT provides even the well-known CEMAT KCS (Kiln Control System) database to optimize kiln operation. Thus, no extra kiln optimization system is required.

CEMAT – integrated automation based on SIMATIC PCS 7 – a sound investment in the future

Developed in close cooperation with cement manufacturers worldwide, the CEMAT process control system presents a sound investment in the future of your cement plant. CEMAT – by incorporating optimized packages and other add-ons into an existing platform – provides users with a familiar "look and feel" during control system operation. For even greater operating convenience, the latest version of CEMAT is based on the Siemens mainstream SIMATIC PCS 7 process control system.

CEMAT – advanced, integrated automation

The latest version of the CEMAT system expands the SIMATIC PCS 7 into a process control system capable of meeting all the needs of the cement industry. Without sacrificing any of the features users have come to appreciate in previous CEMAT versions, it comes prepared for rapid data exchange over plant and even company networks.

Additionally, CEMAT supports a wide range of multimedia features, including

- Video sequences to aid operators and service personnel
- Integration of Autocad drawings (dxf) for circuit diagrams, panel drawings, hardware drawings, etc.
- Integration of plant maps for easy locating of aggregates, even in very large plants
- Camera images (kiln, cooler, etc.) displayed as a window in the flow mimic
- The ability to make context-sensitive information available when and where it is needed.

Management information functions integrated

Because CEMAT is now based on SIMATIC PCS 7, also several functions known from a Management Information System (MIS) are already included in the latest CEMAT version. This means that no extra MIS system is required for example for long-term data storage. With an add-on tool, the export of data to Microsoft Excel is also possible.

CEMAT – based on the SIMATIC standard

Based on the SIMATIC PCS 7 operating under Windows, CEMAT uses standard SIMATIC hardware, combines the best of conventional PLC and DCS systems, and is designed to meet the specific needs of cement plants. What is more, the system is open and prepared for future innovations and extensions. Thanks to its modular, expandable and flexible configuration, CEMAT can be serviced, modified and expanded by your plant personnel relying on the worldwide support of the Siemens Cement team.

CEMAT – pays big dividends

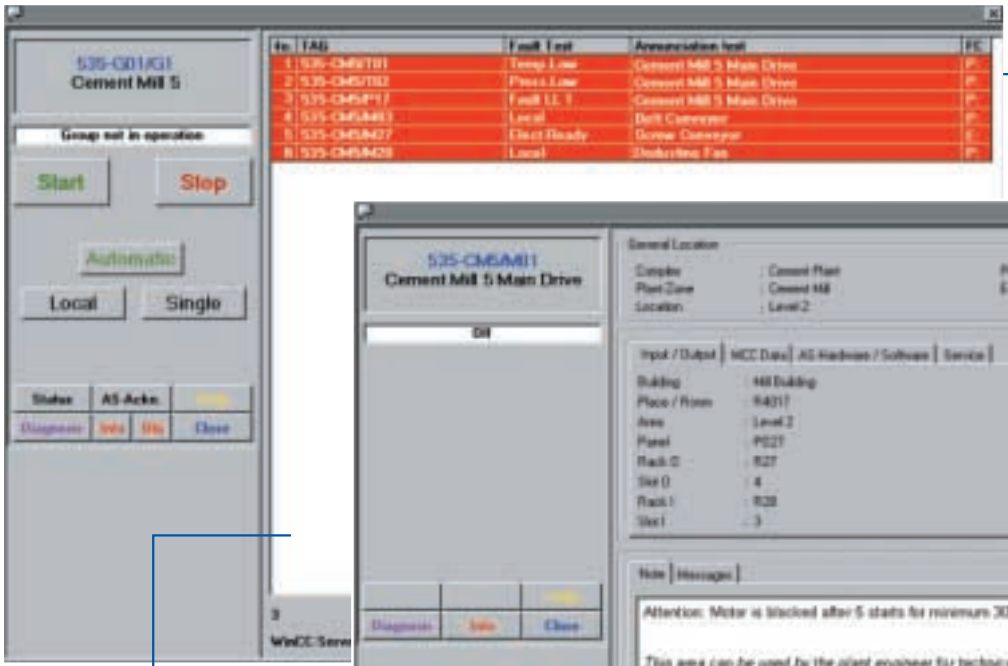
Equally important, a number of features ensures that an investment in CEMAT pays big dividends. In particular, CEMAT

- Requires small initial investment and generates low life cycle costs
- Guarantees state-of-the-art technology well into the future
- Makes plant personnel independent through full transfer of technical knowledge
- Avoids the need for continuing supplier support
- Does not require expensive outside programming specialists
- Secures high quality and efficiency through user software
- Keeps management well informed with current data
- Increases output, assures quality, reduces energy consumption and pollution
- Maintains high system availability on a consistent basis
- Provides diagnosis functions leading to fast fault localization.

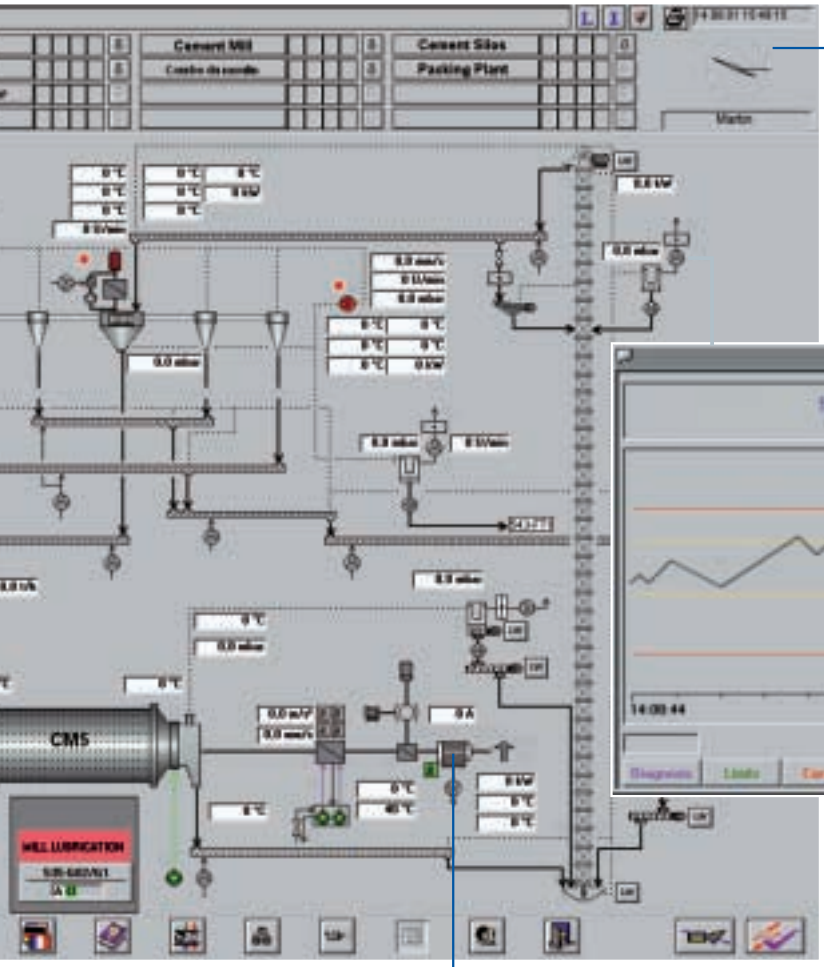
Sophisticated **fault diagnosis** and annunciation

CEMAT features a number of improvements in fault diagnosis and annunciation to include:

- **Reduced downtimes**
  The number of electrical and mechanical technicians can be reduced over the middle term.
- **Displays faults prior to start**
  Trial starts can be avoided, saving energy and improving capacity utilization.
- **Shows all faults, without exception**
  Personnel can rely on information, ensuring system acceptance.
- **Informs control room and management personnel**
  Operators and shift manager can identify faults rapidly, as well as coordinating repairs and starting sequence.
- **Enables fault analysis and statistics**
  Weak points can be analyzed and eliminated.

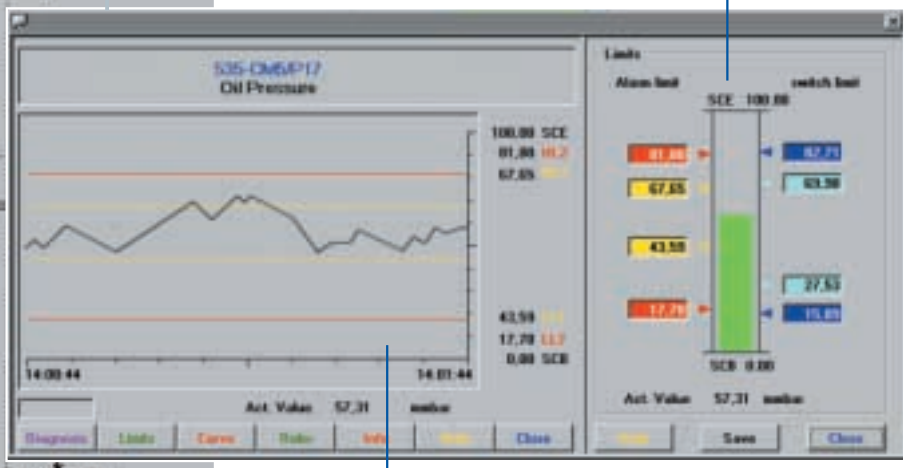


Automatic, group-wise diagnosis of:
- Plant faults
- Process status
- Starting conditions.



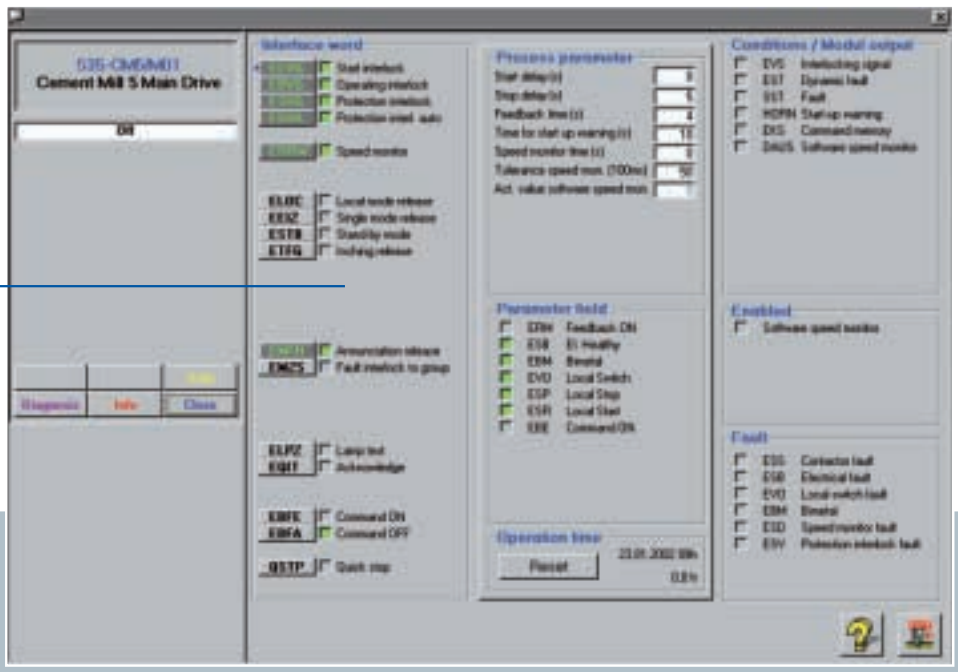
Easy-to-understand display content

Easy-to-adjust alarm and switching limits

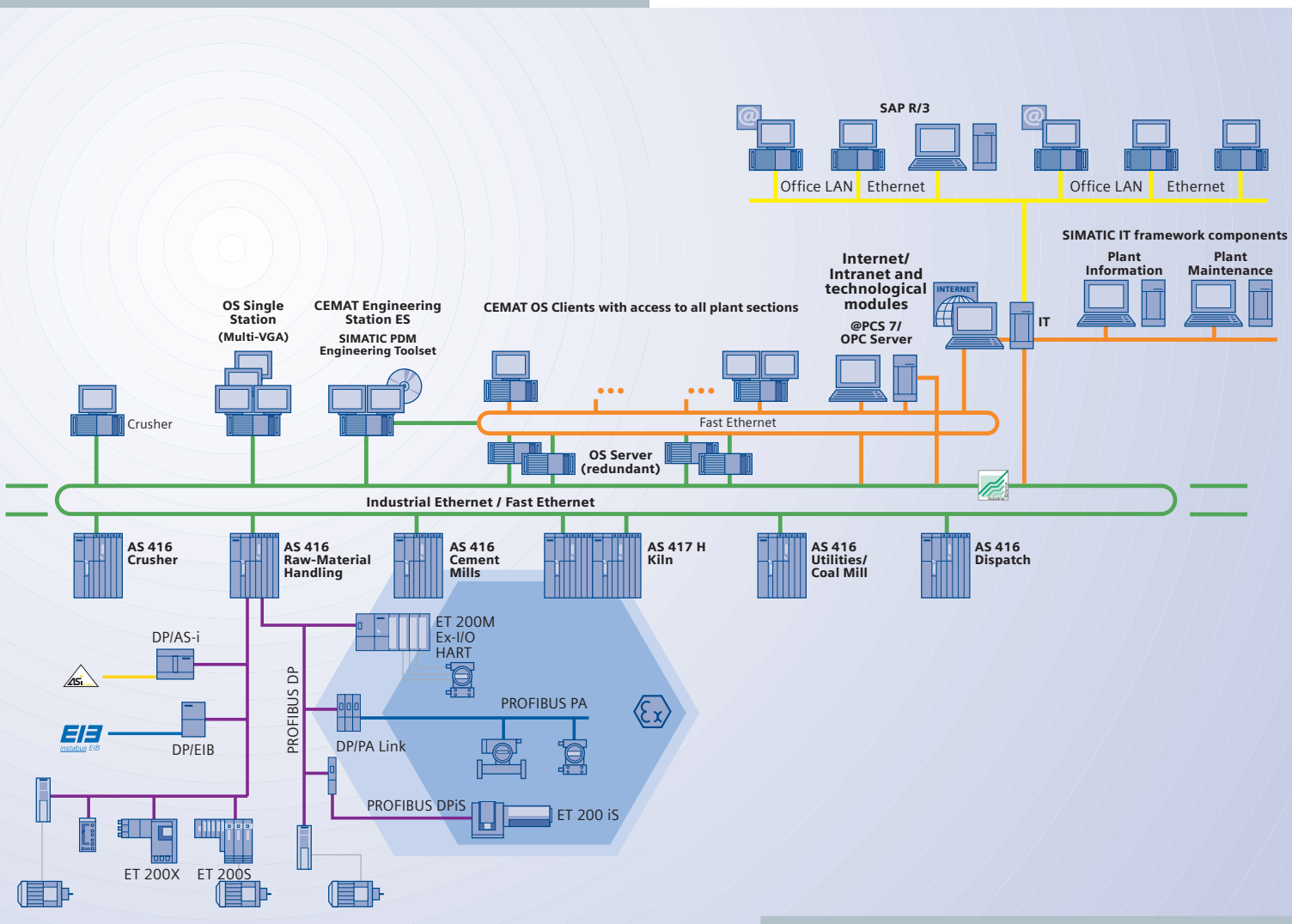


Automatic object trends in a short-time buffer

Detailed object information to hardware/ software service



Immediate display of fault cause or operator intervention


SAP R/3
Office LAN
Ethernet
Office LAN
Ethernet
SIMATIC IT framework components
Plant Information
Plant Maintenance
Internet/ Intranet and technological modules
@PCS 7/ OPC Server
INTERNET
IT
OS Single Station (Multi-VGA)
CEMAT Engineering Station ES
SIMATIC PDM Engineering Toolset
CEMAT OS Clients with access to all plant sections
Crusher
Fast Ethernet
OS Server (redundant)
Industrial Ethernet / Fast Ethernet
AS 416 Crusher
AS 416 Raw-Material Handling
AS 416 Cement Mills
AS 417 H Kiln
AS 416 Utilities/ Coal Mill
AS 416 Dispatch
ET 200M Ex-I/O HART
DP/AS-i
PROFIBUS DP
PROFIBUS PA
DP/EIB
DP/PA Link
PROFIBUS DPiS
ET 200 iS
ET 200X
ET 200S

Plant engineering with SIMATIC PCS 7 and technological **CEMAT database**

CEMAT CS provides a uniform, flexible and highly functional engineering platform for all design tasks – and for all components of the control system (operator command and monitoring system, automation system including decentralized peripherals), while the CEMAT library and the cement-specific technological modules save time and money.

One system for all batch sizes

The engineering system is highly flexible and can be used with equal effectiveness for all production batch sizes – from the very smallest to the very largest. From the first design of the system right through to process monitoring, the system employs the same set of tools that draw their information from a common project database. And that over the entire life cycle of the plant.

One toolset for every need

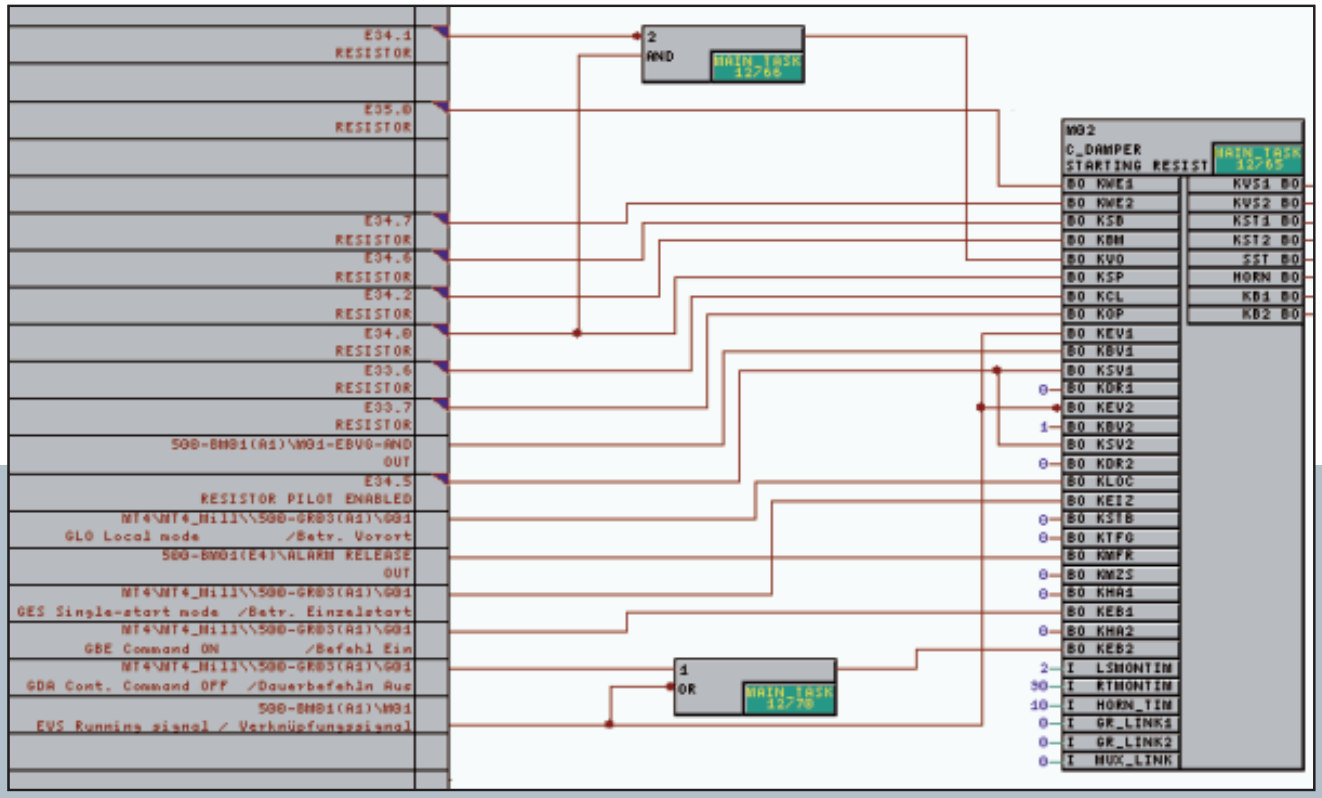
A comprehensive engineering toolset is available for configuration of the SIMATIC PCS 7 process control system. It comprises STEP7, CFC, SFC, the technological hierarchy and an import-export assistant – all based on a database common to the entire system. STEP7 supports the use of standard SIMATIC engineering design with a common database for all SIMATIC tools.

Easy hardware configuration

The hardware is configured using drag-and-drop technology, with components selected from a predefined list. This eliminates the need for hardware jumpers and switches. Documentation for all parameters can be called up or modified on the engineering workstation at any time.

Fast connection via CFC

Easy to understand and to use, the CFC (Continuous Function Chart) enables rapid design, implementation and testing. CEMAT supports all phases with modules for the motor, damper, controller, group, etc., which are then positioned in the CFC diagrams. A high-performance autorouting feature simplifies parameterization and the switching of objects in the diagrams.



Continuity saves money

Because the life cycle of a cement plant is much longer than the service life of a single control system version, it is essential that the strategy behind the development of a control system stay innovative.

CEMAT for the cement industry is designed with the future in mind, to guarantee compatibility with ongoing innovation. Even older versions of CEMAT – from V1.8 to V5 – can either be connected to the latest version or upgraded to this and later versions without difficulty. This saves you money when investing in new plant equipment or during system upgrades.

More than thirty-five years of experience in meeting the needs of the cement industry along with the most advanced control technology available combine to make CEMAT a leader in delivering outstanding value for money.

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