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Fast & easy EI&C engineering with COMOS Automation

COMOS – Making data work.

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COMOS – Making data work.
Better quality decision-making throughout the plant's entire lifecycle

COMOS EI&C
Optimized Electrical, Instrumentation & Control system and fluidic engineering

COMOS Automation
Fast & easy EI&C engineering

COMOS Logical
Efficient graphical function engineering

COMOS Solutions

COMOS – Making data work.

With COMOS, Siemens is the only company in the world to offer the process industry a software solution for the integrated management of plant projects – from engineering and operations to modernization as well as dismantling.

COMOS ensures that engineers and operators can access all project-relevant data at all times, across all company levels and in all project phases. COMOS offers a seamless flow of information by providing a common database. Because all data is always available and up-to-date, it depicts the actual as-built status of a plant at all times.

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Image Brochure

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Business Value Calculator

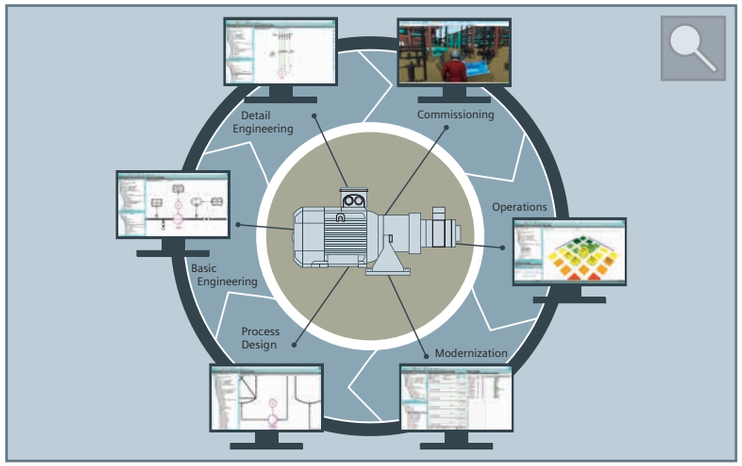
COMOS - Making data work. Information mobility over the entire plant lifecycle

This way, COMOS lays the foundation for greater reliability in decision-making and more efficient processes throughout the entire plant – for a lasting improvement in competitiveness.

All software solutions are integrated with each other and cover all lifecycle phases – from process design to basic and detail engineering to operation and modernization.

They can be individually implemented, as required, or employed as stand-alone solutions.

COMOS is based on a uniform database which provides all information in an object-oriented manner. The open software architecture facilitates optimum integration of third-party systems and allows for seamless integration in existing EDP landscapes.



Object orientation in COMOS: All object specifications are available everywhere and at all times.

COMOS Automation – Fast & easy EI&C engineering

The solution COMOS Automation supports electrical engineering for the plant through to full automation covering all processes relevant to electrical, instrumentation and control engineering by specialized solutions. Among other things, logical inter-object links and automated sequences are graphically mapped in diagrams and hydraulic as well as pneumatic workflow schemes are created on the basis of existing data.

The integration of COMOS and the SIMATIC PCS 7 process control system makes it possible to combine data from concurrent work processes and operations.

Find all information about COMOS Automation on the following pages.

To find out what advantages COMOS offers for your personal requirements, **click here** and you will reach our website with more information.

Empower your data value – Discover targeted, practical COMOS applications!

COMOS EI&C –
Optimized Electrical, Instrumentation & Control system and fluidic engineering

Electrical, instrumentation and control technology represents an important part of system planning because the majority of electrical and electronic devices include I&C-relevant components.
The representation of EI&C processes requires optimum networking with the process technology to allow for maximum accuracy and expedited planning. COMOS EI&C represents a software solution which details and specifies all functional EI&C data that was schematically described during process planning. This is optimized by the seamless connection to upstream process engineering. All tasks in the field of devices and signals are included, as well as detailed field planning tasks.

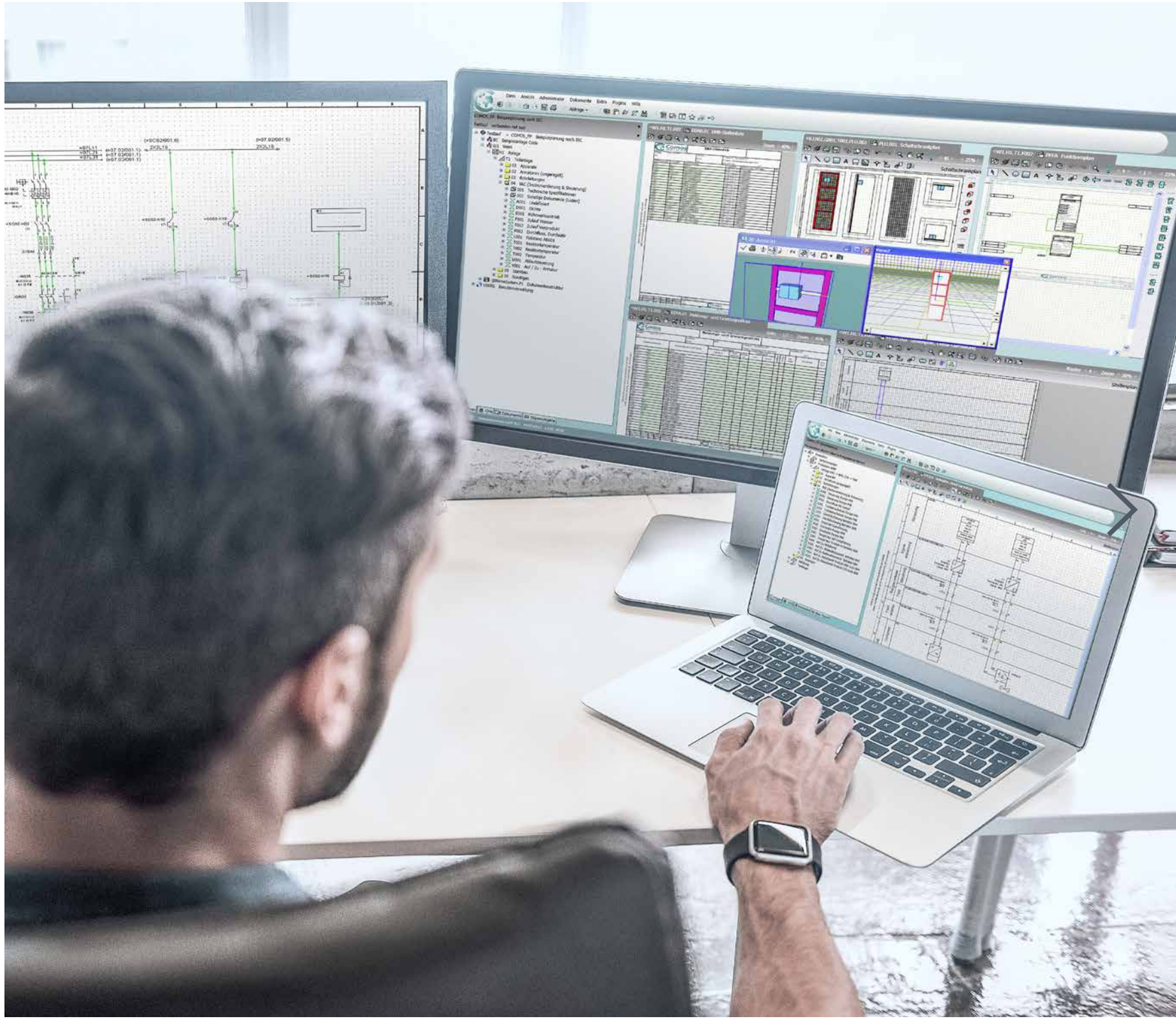
The interlinking with fluid technology enables the fluidics engineer to use data from the EI&C engineering or previous planning steps for further processing.

Generation of circuit diagrams

COMOS EI&C represents the ideal software solution for the quick and easy planning of switchboard systems, including automation solutions. With an object-oriented approach, the individual planning object only has to be defined once in COMOS, irrespective of its form of presentation. The planning object is represented on the various plans, whether single- or multi-line representation. The object contains attributes for all disciplines, which can easily be expanded by the user. Standards-based representations can be generated in IEC or JIC. Depending on the requirements, the view can be alternated between the two standards with a single mouse-click, making manual transfer a thing of the past.

Object libraries

Complete object libraries based on international standards are available to the user for the generation of circuit and connection diagrams, etc. The objects can be immediately used and individually adjusted or newly created.

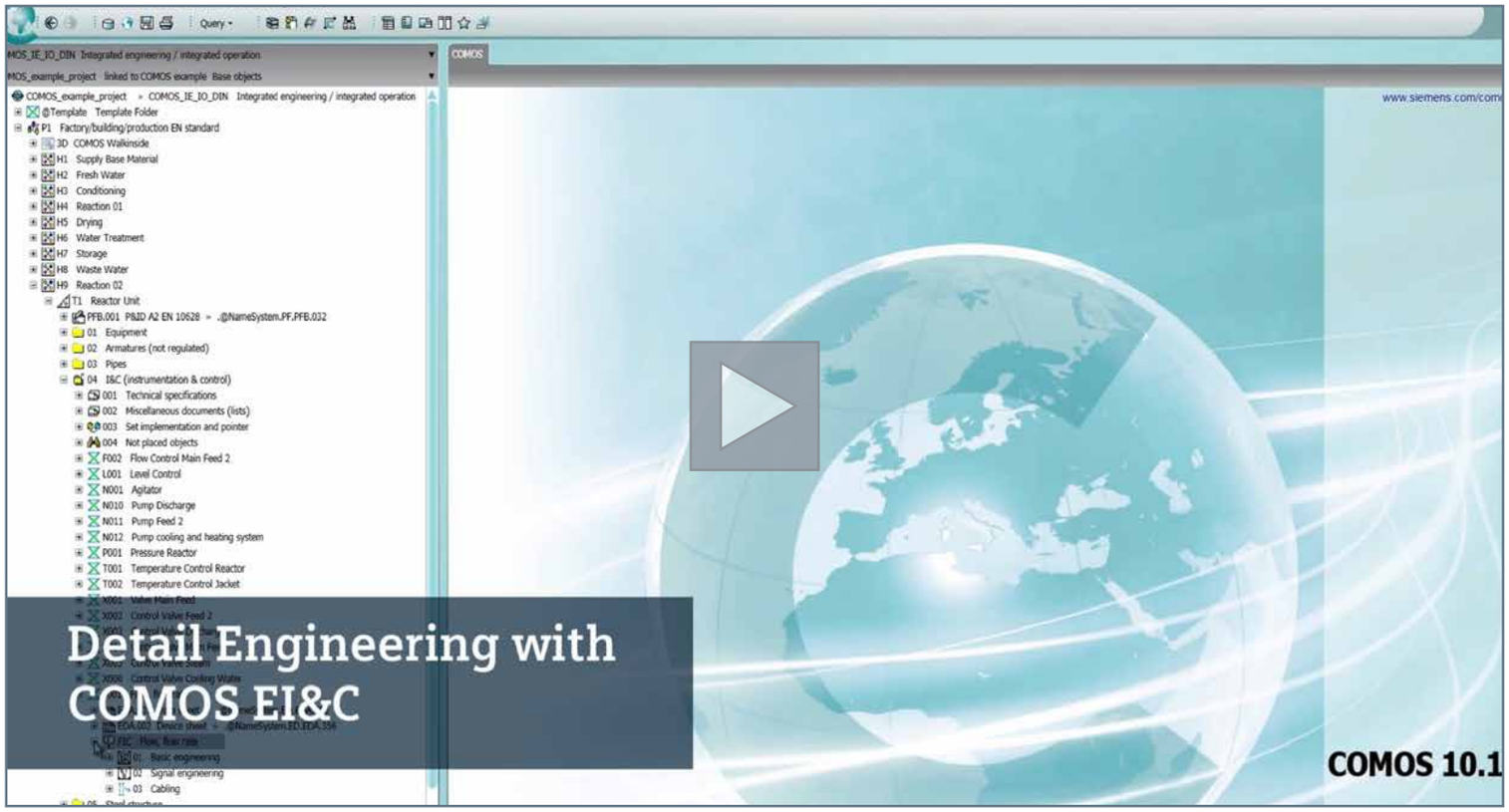


Efficient preparation of organizational charts

The COMOS Marshalling Designer supports easy bulk creation of signal routes that are defined within the organizational charts. Flexible, rule-based cable, terminal and I/O assignments are supported. Organizational charts are created automatically on the basis of routing data, connections do not have to be drafted wire by wire. This considerably reduces the need for updating templates.

Evaluating documents

Evaluating documents such as terminal diagrams, cable lists, parts and order lists are automatically generated in COMOS. The system performs an automatic evaluation every time a document is opened or printed. The basic COMOS function of revision management, including change tracking, is very important in this context as the documents created within the scope of electrical engineering serve as mounting documents and also provide the foundation for future maintenance works. The software offers the option of implementing individual or large-scale revisions of the centrally collected and saved data in a controlled manner.



Fast & easy EI&C engineering with COMOS Automation

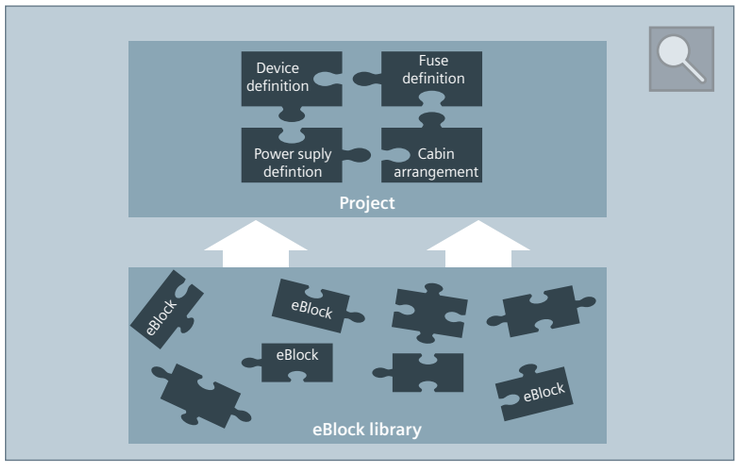
eBlock technology

The eBlock technology represents a COMOS solution for the intelligent management of assemblies for step-by-step engineering with progress control and workflow support. The tasks defined in the eBlocks are displayed as plain text instructions and reliably guide the planner through the decision-making process. The stored engineering blocks enable decisions made in this way and their effects on other disciplines to be stored transparently within the system. The execution of eBlock tasks creates the required cross-discipline object structures within the planning project. Consistent logging facilitates a complete reversal of all engineering decisions at any time and thus allows for an effective redesign. The possibility of reusing labeling-neutral engineering blocks or components offers significant potential for rationalizing plant design. The eBlock-technology enables a significant increase of efficiency in the engineering, while at the same time improving the quality of the plant documentation.

2D/3D control cabinet design

COMOS EI&C facilitates both 2D and 3D views of the control cabinet. Control cabinets are planned and equipped using various parameters such as installation clearances, depth and height offset, including subsequent collision checks. The Cabinet Equipment Assistant permits efficient, rail based mounting.

With autorouting, the connection routes within the control cabinet can be implemented in an uncomplicated manner. In addition, special conditions can be individually defined for cables. The length and dimensions of wires are calculated automatically in COMOS. This data can be transferred to prefabrication machines which cut the wires to the required length, treat the wire end in the specified manner and correspondingly label the wires on both ends. Data for the control cabinet's drilling plan can also be transmitted to a drilling / milling machine, enabling the preparation of cutouts and holes to be automated.



Intelligent assembly management based on engineering block technology

Further features of COMOS EI&C:

- Load and power estimation
- Signal tracking
- Potential tracking

The integrated fluid-specific engineering enables a holistic and mechatronic view of all devices and information required for the plant. The interlinking of fluidics and EI&C technology allows for data from the EI&C planning or previous planning steps to be available to the fluidics engineer for easy reuse. Fluid-specific documents can be created quickly and easily. First, the structures are defined: All system components are structured and organized by system, circuit and equipment. The fluidics diagram is configured by simply dragging and dropping the components onto the circuit diagram. Selection lists, for instance, allow for the rapid and fault-free specification of valve characteristics. Subsequently, all connections are created and specified. Project evaluation, as well as the creation of parts lists, piping lists, tubing lists and lubrication point lists, is carried out automatically. Furthermore, large-scale processing and provision of supplementary information are also supported. The system's clear structuring facilitates a transparent circuit configuration and allows for early fault detection and correction.

The displacement-step diagram offers an ideal overview of the functional dependencies between electrical and fluidics technology. Furthermore, it considerably eases and speeds up PLC programming, as the procedures are already defined in the diagram.

Discover our successful
Project References

Your benefits with COMOS EI&C at a glance:

- Increased engineering quality through consistently object-oriented EI&C engineering
- High transparency through seamless transition from basic to detailed engineering
- Time and cost savings through minimization of iteration loops
- Reduced costs through early estimation of demand for devices and materials
- Incorporation of external partners or suppliers without loss of data or quality
- Discipline-specific fluidics implementation
- Accelerated fluidics engineering through unique logic functions and automatisms
- Optimal integration of the automation engineering with SIMATIC PCS 7

COMOS Logical –

Efficient graphical function engineering

In an increasingly competitive market, engineering time has to be optimized. It is therefore essential that planning phases are no longer implemented sequentially, but as far as possible in parallel. As a result, function planning, which is usually carried out toward the end of a project, often has to be performed with incomplete information. This generates incorrect information that frequently has to be corrected.

The changed framework conditions thus necessitate iterations in order to assure the quality of planning. By using COMOS for integrated planning, these redundant cycles are effectively minimized.

COMOS Logical represents the ideal software solution for the graphical creation of function plans and sequences in accordance with applicable standards. The seamless information flow in COMOS facilitates planning on the basis of pre-defined signals. Changes can be tracked and implemented more rapidly and the potential for errors is greatly minimized.

Function plan generation

The function plan is of central importance for control technology as it represents the system behavior in the form of building block networks and sequence descriptions. The individual function blocks on the plan can consist of a complex network of simple blocks or can be represented in a separate plan. Procedures and dependencies are described and defined in these plans. Some information on the number and type of signals as well as numerous parameters are available from EI&C planning. This information is directly available in COMOS Logical, where it can be defined in the next step. Signals are reused in a standardized manner and managed in the function planning. The function planning and control technology requirements are integrated in the system and can be easily re-utilized.

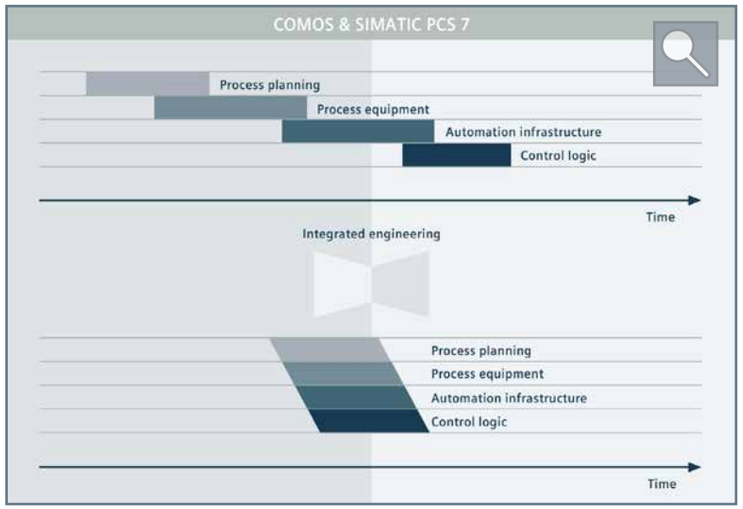
Functions such as autoconnect and autorouting considerably ease the generation of plans.

Cross-references and signal lists are also created automatically, based on the connection information. Thus the application is made easier and more comfortable. Function plans can be represented in COMOS on the basis of IEC or VGB standards. In addition, the software offers libraries for function blocks which can be individually defined or imported. Depending on the requirements, the function plan can be customized to individual needs and graphically implemented.

Scalable code generation

The automation solution can be generated from the graphical function planning for different target systems and the number of target systems is expandable. Using interfaces to the established control systems, this code or automation function can easily be transferred. Not only individual functions, but also complete programs can be generated and transferred. The system-neutral generation of code thus permits optimum integration into the plant lifecycle.

Easy graphical function planning with COMOS Logical



Faster reaction on changes and minimization of errors through consistent data.

Your benefits with COMOS Logical at a glance:

- Efficient function planning through easy handling
- Easier function planning through integration in the overall process
- Saving of time and effort through easy transfer of automation-relevant data
- Accelerated commissioning through "Integrated Engineering with COMOS and SIMATIC PCS 7"

We look forward to your questions and suggestions! Please fill in the quick and easy contact form below, and one of our experts will be in touch soon.

First name*	
Last name*	
Company*	
Position*	
Street/no.	
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Your message	

☐ I hereby agree that my personal data will be used by Siemens and/or Siemens subcontractors exclusively in connection with the requested services. I herewith consent to any further disclosure of my personal data by Siemens Industry if such disclosure is mandatory by law or court judgement.*

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* Required field

COMOS – Making data work. For you too!

We are quite certain that your plant data and information are the key to unlocking your potential. If you like to know why we are so sure about this, you should speak personally to one of our experts. Just get in touch with us. We are there for you at all times!

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Integrated Engineering: COMOS & SIMATIC PCS 7
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Glossary:

Object orientation in COMOS
In COMOS, all data relating to the same component (a pump, for example) form a unit – an object. Changes to object specifications are stored in the central COMOS database so that the updated data is available everywhere and at all times.

As-built status
As-built status is the term used to describe the actual status of a process plant at the present time. Because the COMOS database is always up-to-date, it can be accessed at any time using the system.

Open system architecture
COMOS' open system architecture provides an optimal framework for integrating third-party systems. The software can be adapted perfectly to operation-specific requirements and can be seamlessly integrated in existing IT landscapes. As a result, it makes a big contribution to the homogenization of a company's software applications.

eBlock technology

(engineering block technology)
eBlocks are engineering blocks which offer the possibility of integrating company standards for the realization of a specific function. The dependencies between the engineering disciplines as well as the documentation parts to be generated are saved in these blocks.

Load and power estimation
The consumption of individual devices or entire networks can be defined and saved in COMOS in the form of a detailed load and power estimation. Any time the maximum power limit is exceeded, it's visually indicated in a clear manner. As a result, the required power supply or energy consumption can be easily determined.

Signal tracking
Signal routes can be tracked and followed in COMOS EI&C via the organizational chart's connection routes. The transferred signal can be evaluated at every device and every connection point. The system saves which signal is transferred via which connection, from the signal source to the sink, in a detailed manner.

Potential tracking
COMOS EI&C is able to forward logical potentials within the data structure via the connections. The potential can be forwarded in three ways: Via the linked connection, via special transfer with terminals and optionally via specified throughput connections.

Autoloop
Autoloop represents a functionality of COMOS which evaluates connection information available within a signal route and creates the plan based on this information.

Autoconnect and autorouting
Two contact points are interconnected on a plan and the line curve is automatically created in COMOS.

Security information

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept. For more information about industrial security, please visit https://www.siemens.com/industrialsecurity .

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