



# Comos E&IC – reduced iteration loops for high-grade engineering

**Process technology and E&IC engineering are two aspects of the process industry that are growing ever closer. When networking these two fields using bidirectional amalgamation of data and graphics, engineering demands a particularly high level of transparency. In this area factors like straightforward navigation to other data views, such as P&ID, help to simplify and accelerate workflows.**

When creating E&IC circuit diagrams, planners must be able to map I&C and electrotechnical processes quickly and easily. The two-way connection between data, devices and structures must be clearly defined, so that all sections can call up the latest information at any time. Given the large volume of data involved, which arises due to the complexity of the process units, it is essential to have reliable, loss-free data transferral, particularly with regard to the transition between P&ID or fluid technology on the one hand and switching cabinet construction on the other. The object-oriented **Comos E&IC** module, which

seamlessly builds on the requirement data created in **Comos Basic**, ensures that all relevant data and documents are maintained efficiently and cost-effectively.

**Comos E&IC** allows circuit diagrams to be created quickly and easily, both single line and detailed diagrams, with integrated intelligent symbol use and optimum connections to other sections. High data consistency, combined with noticeably reduced project lead times, reduces costs while improving engineering quality at the same time.

### Competitive edge, thanks to lower costs and higher quality

With **Comos E&IC**, we offer I&C planners from all branches of industry a tool designed for fast and uncomplicated completion of jobs concerning devices and signals as well as detailed field planning. The seamless transition from basic to detail engineering in the E&IC field simplifies documentation and change management while reducing potential sources of error at the same time.

Thanks to its seamless meshing with P&ID and fluid technology, **Comos E&IC** is an efficient tool for engineering departments and is already being used to great effect in many branches of industry, such as chemicals, petrochemicals, power generation, pharmaceuticals, water engineering and paper. Thus **Comos E&IC** is a valuable aid for all kinds of electrotechnical planning. It simplifies and accelerates project management substantially by allowing project work to be performed across several locations and technical areas and by enabling the straightforward exchange of data with service providers and suppliers. **Comos E&IC** is not only geared towards major corporate groups, but can also be used by smaller companies to hone their competitive edge.

### Key features to benefit you:

“ All E&IC development work is always object-oriented. ”

“ The close interlinking of process technology and E&IC planning helps to minimise iteration loops, which leads to higher quality at lower costs. ”

“ The seamless transition between basic and detail engineering enables fast and reliable data and document revision management and permits a very high level of transparency within the handling processes. ”

“ With its rule-based and automated functions, the E&IC system identifies inconsistencies at an early stage of the project, and thus helps to avoid errors. ”

“ Intelligent data exchange with external partners and suppliers – without data loss ”

“ Straightforward importing of existing data from external systems; bidirectional interface for automation systems ”

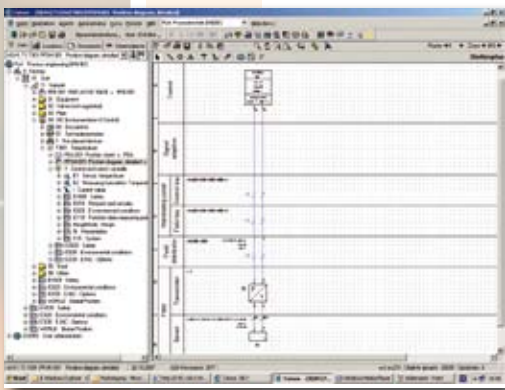
“ All applications are available on a single user interface. ”

“ Data access and evaluation are facilitated by integrated reporting and query functions. ”



# Comos E&IC – optimised cooperation and higher added value

**Fast Track Engineering, i.e. intensive overlapping of planning stages and sections during the course of the project, is an essential feature of the process industry in particular. It is the only way to achieve significantly shorter project turnaround times. In Comos E&IC, users have access to a valuable detail planning tool for exploiting rationalisation potential.**



Metering Point Plan

As with all modules from the **Comos** family, **Comos E&IC** is based on the principle of object-orientation. Both the graphic character and the attribution of each component are administered together as objects. By intelligently linking individual objects, consistent data is available to

those involved in the project anytime and at any location. This reduces the number of redundancies as well as the time-consuming, expensive and error-prone process of reworking data and documentation manually. Even if errors still occur, they are detected early on by automatic checking routines and can be rectified immediately. The straightforward navigation between circuit diagrams, construction plans, object attributes, data sheets and lists simplifies and speeds up project work. An initial estimation of the

devices and materials required is possible early on in the E&IC development process; with automated generation of corresponding bills of materials. Parts of inventory documentation created in external formats (e.g. DWG files) can be integrated very easily. Thanks to its clearly structured interface and its intuitive navigation, **Comos E&IC** does not require any special CAD or programming skills.

Of course, **Comos E&IC** supports all current international standards. High-performance module technologies allow standard templates to be created and accessed at all times. A variety of interfaces to automation systems allow the process control systems to be calculated at an early stage of the unit planning.

# Optimum E&IC planning – fast, reliable and straightforward

## Controlled data flow between the individual technical sections

Unlike the unidirectional data transfer in CAD-oriented systems, **Comos** allows data to be exchanged in both directions. This means that changes made to the drawing are automatically entered into the database and also that modifications in the database are transferred to the drawing. This is even the case when the receiving application is not used in the project stage in question.

## Extensive object libraries

Each symbol on the E&IC corresponds to an object in the database.

With **Comos E&IC**, complete object libraries – based on IEC 60617, JIC and ANSI – are integrated in the object structure and can be used immediately after delivery of the software.

## Clear administration of different identification labelling systems

Different identification labelling systems, in the form of tree structures, make it possible to obtain different views of units, locations and documents. Users have direct access to specialist systems such as the German KKS system – Kraftwerk-Kennzeichensystem (power plant classification system) – or product labels based on IEC 61346. In-house identification labelling systems can be implemented very easily, in which case they are automatically used for labelling the objects in the E&IC. The use of alias labelling systems allows users to switch object labelling automatically according to the client's wishes.

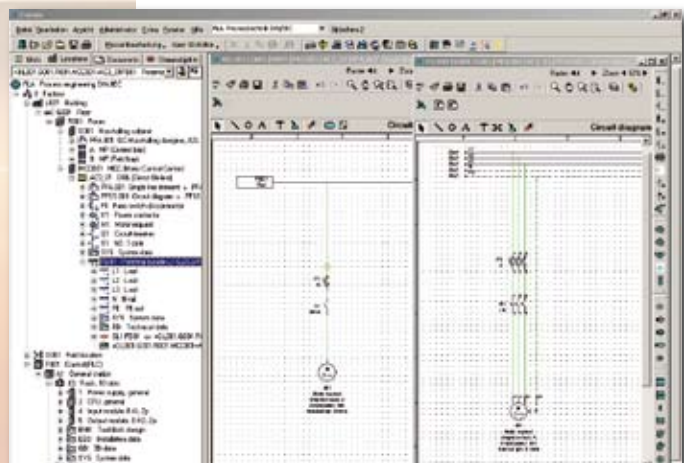
## Intelligent connection technology

Automatic connecting in circuit diagrams assist planners in their everyday work. The system automatically recognises the type of connection that is required (e.g. connections to protective earth). The direction of connections can also be changed at a later stage. The connection lengths are calculated and the information made available for wiring work.

## Intelligent assembly group management

**Comos E&IC** supports the setup of intelligent assembly groups which can then be made available to users in the form of libraries. The reuse of unlabelled unit components or

Single line and detailed diagram



subunits brings considerable advantages, thanks to the ease of handling, in terms of the rationalisation of unit planning.

### High-performance inheritance and linking technology

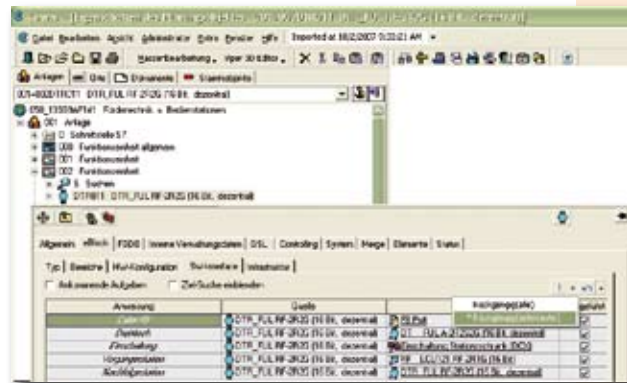
Visualised data traffic between individual objects ensures transparency in each stage of unit planning. The system makes suggestions – including visual aids – regarding which objects the data should be transferred to. For example, when changes are made in data sheets, attributions are updated automatically; title block information is read online from the structure, which greatly reduces the amount of data that needs to be inputted.

### Checking using flexible, integrated rules

Standard checking in the form of freely configurable online checks, e.g. collisions during the construction of switching cabinets. The corresponding rules are integrated and can be supplemented by rules defined and added by users.

### Revision management with integrated change tracking

Reliable revision management is another key feature of **Comos E&IC**. Once changes have been made, revision information is automatically generated and the changes shown by means of redlining. Revisions can be saved in full in the form of PDF documents, with comments if required. All revisions are automatically documented with date, reviser name and revision index in the title block.



Screenshot of eBlock technology

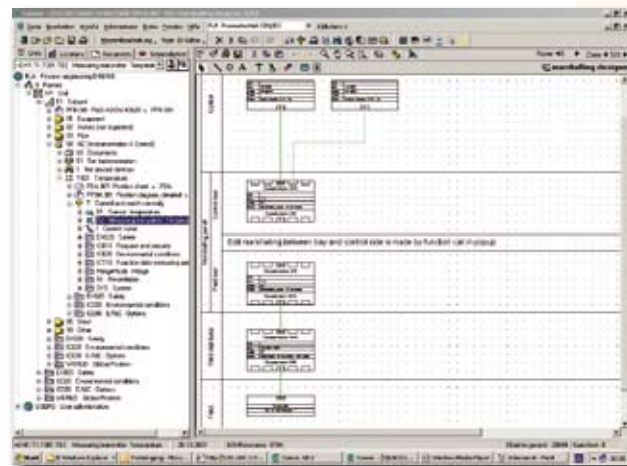
### Importing and exporting from AutoCAD® or EPLAN®

Importing and exporting from standard CAD systems such as AutoCAD®\* and EPLAN®\*\* is very straightforward. Information (especially block and cell information) can be read and **Comos** intelligence added. All E&IC plans can be exported in EXF or DWG format. You can use **Comos** for planning and still deliver your documentation as an EXF or DWG file.

### Moving measuring points

**Comos E&IC** supports the mass rearrangement of measuring points by means of an intuitive graphic interface, thereby saving planners laborious and time-consuming routine work.

### Marshalling designer



# Comos E&IC

## Our sights are set on the future – to make sure the future belongs to you

Today's markets are characterised by increasing complexity, relentless development and new challenges – and the process industry is no exception. Rationalisation, productivity maximisation and efficient workflows are not just the key factors of today – they will continue to be so in the future as well. However, you can rest assured that we at **Comos Industry Solutions** will stay 'on the ball', adapting our software to the latest developments so that you will always have the best possible support for your individual requirements. Our number one motivation is to make sure our customers are satisfied. So our research and development activities are geared towards offering you ever greater benefits from our products.

This is why the forthcoming version of **Comos E&IC** already includes the intelligent module system eBlock for automatically creating units.

**Interested in finding out more?** Our in-house experts will be glad to answer your questions and to provide you with an offer tailored to your requirements. **We look forward to hearing from you!**

\* AutoCAD® is a registered trademark of the company Autodesk

\*\* EPLAN® is a registered trademark of the company EPLAN Software & service GmbH & Co. KG

As a world-leading provider of comprehensive Life Cycle Management systems, **Comos Industry Solutions** offers professional software solutions and services. The integrated **Comos** concept is designed to cater for both customer-specific requirements and established industrial processes. The individual modules can be used as either stand-alone software or as a complete software suite. **Comos** is the complete solution for end-to-end basic and detail engineering processes, catering for all industrial plant life-cycle phases. The **Comos** philosophy, products and services have long been trusted by plant designers, operators and contractors.



More information, as well as contact data for our company locations around the world, can be obtained here:

E-mail: [info@comos.com](mailto:info@comos.com)  
Internet: [www.comos.com](http://www.comos.com)

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