ESplan® Engineering Desktop – EED –
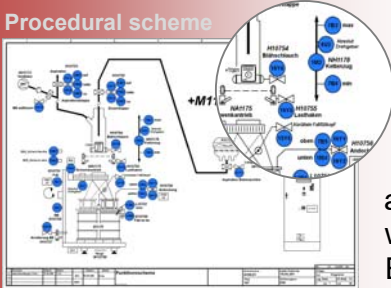
Interdisciplinary Engineering in a new Dimension – Parallelized workflows in the construction sector, in the process and manufacturing Industry.

Procedural scheme

With the **ESplan® Engineering Desktop** Software, the CAx solution for Process Engineering, Electrical Engineering, Mechatronics and Mechanical 3D Engineering is available for the first time in the design area of the process and finished industry. The use of a common data base allows cross-departmental interdisciplinary engineering in a parallel workflow. This covers process engineering and goes through R & I, P & ID, Electrical and Fluid, switch cabinet planning, 3D cable laying, to spatial engineering on the 3D CAD model from mechanical design.

P&ID scheme
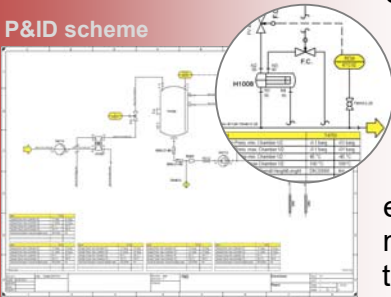
ESplan® Engineering Desktop provides a holistic, end-to-end configuration and ensures maximum data consistency from process engineering to mechatronics. For the first time, it combines electrical engineering and mechanics 3D engineering into a virtual mechatronic model. This means that production data is generated in the near future and thus fulfills the requirements for shorter innovation cycles for machine, plant engineering, automation technology and automotive.

Mechatronics
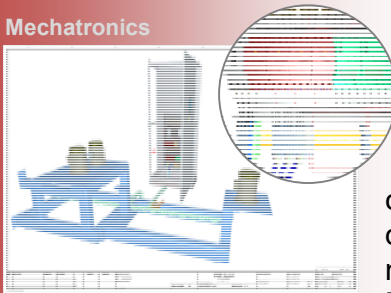
Through the implementation **ESplan® Engineering Desktop** you achieve a continuous optimization of the development and production processes, with considerable time savings or cost reduction of the product creation process. In doing so, resources are accessed from all engineering disciplines in order to supply, inter alia, the data used to determine the manufacturing costs. The integration into existing IT landscapes such as: PPS, ERP, PLM / PDM takes place with a seamless integration.

Pneumatics
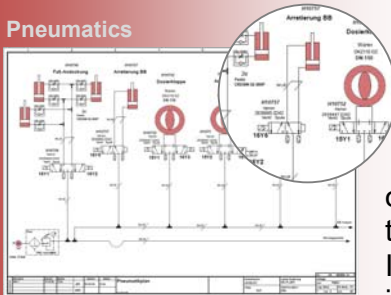
ESplan® Engineering Desktop uses state-of-the-art software technologies such as the Multithread and Multicode Processors to update database entries in real-time. The otherwise usual generation runs of the overall project are not required. Thanks to the integrated PassOver technology, the user has direct access to stored data of an object. Intelligent user management prevents unintentional changes of the data by individual trade union areas.

Circuit diagramm
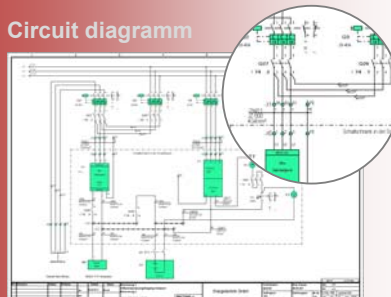
ESplan® Engineering Desktop has a modular design and can be expanded with increasing requirements. The platform system for the planning and documentation of machines and systems is the proven and correspondingly modified CAx System **ESplan®**.

ESplan® & **Espace®**   CAx - inside professional solution

ESplan® expands the classic object-oriented, graphical plan type through the additional object-oriented database-supported plan type. In order to optimize the day-to-day work process or to ensure maximum performance and comfort, **ESplan®** not only a CEA but also a CAD program.


With extensive CAD functionalities, **ESplan®** offers tools to generate specific resources in the shortest possible time during project processing.


The intelligent CAE objects in **ESplan®** allow inheritance when copying Symbols, Macros, entire Pages or Projects. Automatic cross-references and test routines ensure the logical contexts of the control processes. Cross-Project and cross-project planning provides information on of the use of components or devices at any time and allows immediate page switching to linked pages oft he planning and forms. All engineering disciplines in **ESplan®** are divided into sections (E, M, SL, BL, R&I, P&ID, FLU, 3D,) within a holistic project.

The fundamental basis in **ESplan®** is the new multi-views master object NVG (New Distributed Device). The NVG embodies a master object with type-depended, scalable database tables for recording any specification data of any device in the relevant departments. In addition, it includes an area-controlled multi-view concept for the symbol mapping in plans of different trade union areas of a holistic project.


The cross-project navigation in the **ESplan®** provides information about the use of the components at any time and allows the immediate page change to connected pages of the planning and forms.

Integral component of **ESplan®** is the process designer. It allows the planning and creation of complex plant structures, while the work with several sections or trades as well as with complex functions modules is 100% supported. This process designer is designed in such a way that an operation can be carried out even without **ESplan®** editor skills. This is followed by the automatic generation of entire projects from intelligent macro variants with their template storage.
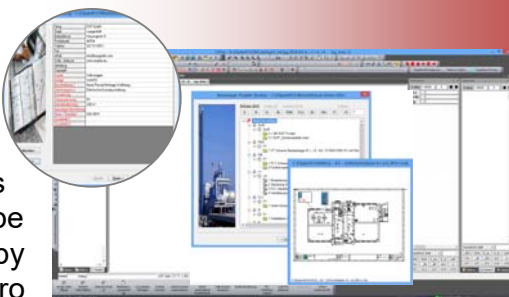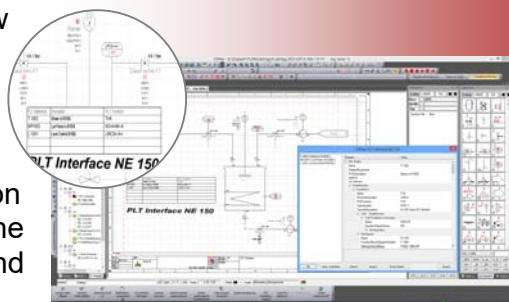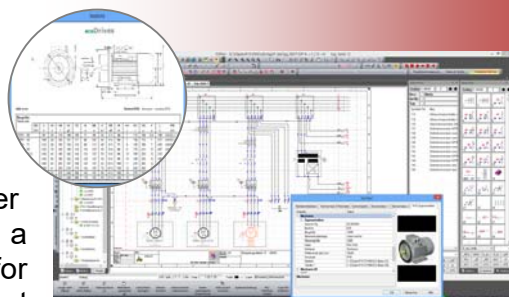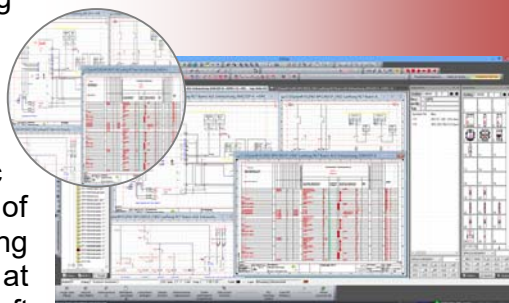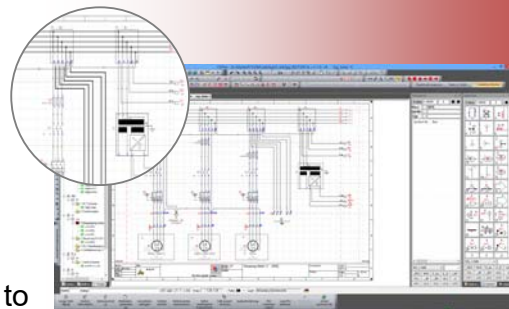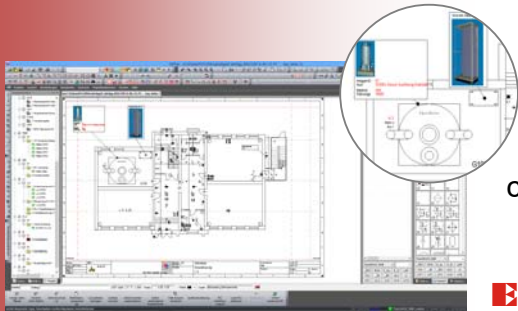
The optional **Espace®** module is available for the complete mechatronic handling of such holistic projects. With **Espace®**, a 3D mechatronic modeller with native interfaces to all major 3D mechanics CAD systems, machine and plant cabling, cabinet assembly and routing area automated.
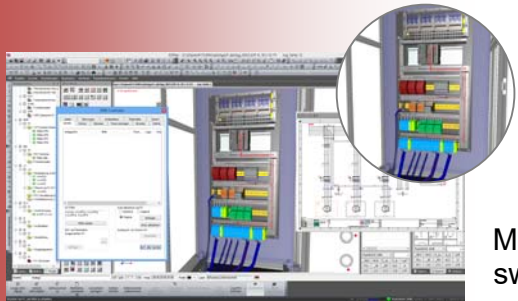
Espace® combines the work steps of the electrical and mechanical design with a common data management. Connections and connections existing in the circuit diagram are intelligently and data-consistent in the mechatronic 3D model. Both graphical and database changes are inherited in real-time in the **Espace®** software product.
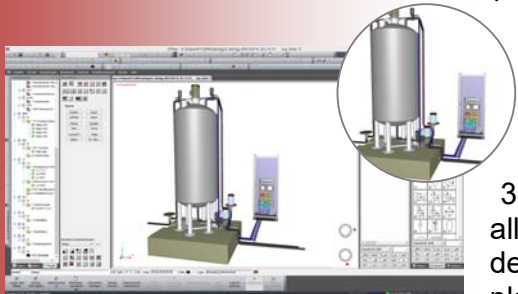
Multiple distributed similar component objects e.g. In the P & ID, switching and Fluid plan can be changed directly at any point in the project via all plan types.
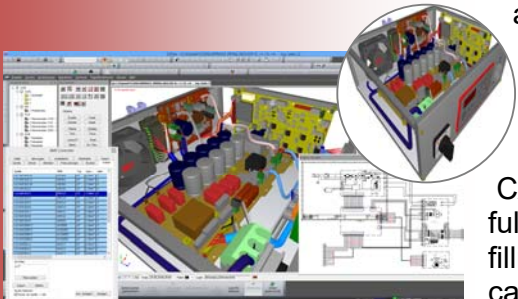
The usual workflow via various offline software tools with the associated media breaks in the communication of the planning teams is completely eliminated. The Connection of mechanical 3D constructions with Electrical and Fluid realized with **Espace®** allows the assembly and instrumentation of virtual models in derivation from the circuit diagram in real sizes. Preliminary planning without shifting data is also possible for subsequent adjustment.
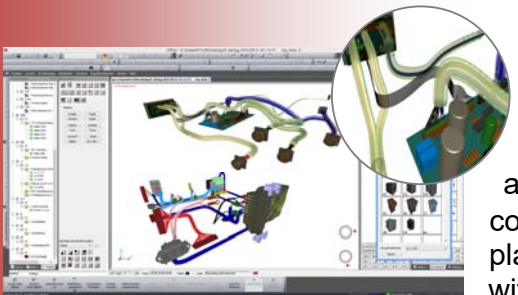
Espace® does not require the knowledge of a standard 3D mechanical CAD design package and should not replace the CAD design. The integrated car router for cabinet wiring works fully according to the Street-Mesh process. The concept ensures filling safety and collision-free cable routing. The auto generated cables can be processed by a line designer.

Espace® generates Documentation, Production and Production data as well as data transfers to CNC and cable assembly systems in highly automated form. Validation and cost control are already taking place in advance and do not require the construction of a physical prototype. The **ESplan®** and **Espace®** platform concept allows for a step-by-step harmonized entry without putting a strain on the company´s workflow.
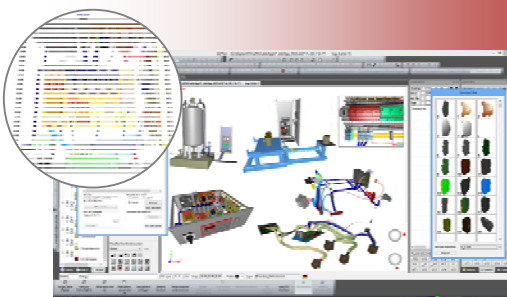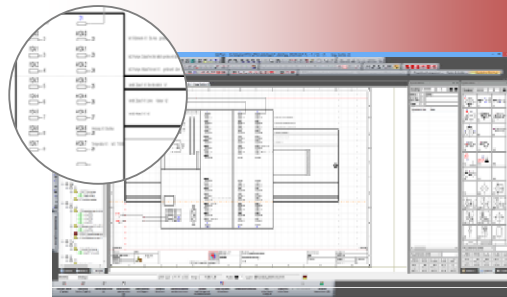
Functional extraction ESplan® & Espace®.

ESplan® Functions:

- 2,5D CAD - full-fledged 2,5D CAD (self-developed over 30 years of experience)
- Data security - 100% upwards compatible since the first version
- DWG / DXF - Exchange (Layers, Areas, Administration, Icons etc.)
- Process engineering - Flow diagrams, R&I, function plans, etc.
- Process control technology - PLT NE150 Interface based on the <AutomationML/>
- Fluid - Hydraulics and Pneumatics
- Process designer - complex Project structures, Switching data generator, Modular concept
- Hardware-oriented - one-wire cable connections
- Multiwiring - complicated wiring of multiple wire connections
- CircuitCleaner - Project checker for logical, functional project control
- Integrated PDM - linking project accompanying data
- Audit management - Audit administration with list and image data storage
- Language Management - Plan Translation System in Languages (UNICODE)
- Management - UPM - Use Police Management, Administration of user rights
- Planning. Resources: Symbols, Macros, Page and Project copies
- Freely definable grid in X, Y and switchable grid, any sheet size
- Project structure editor for the processing of plant / site (Project) structures
- Automatic creation of tabular terminal diagrams and DIN terminal diagrams
- Business List (BOM), Step List, Summary List
- Cable connection plan and cable plan
- Occupancy control of distributed devices (Contactors, Potentials, demolitions, etc.)
- Terminal and block terminals Management with graphical Terminals display in plan
- Material-/Article data
- Device Box function for the immediate creation of black boxes in the plan
- A/O Box Creation: Creation of further A/O identification on the drawing page
- free creation of Symbols, Macros and Drawings
- Parametric design in Scales and Unites
- …
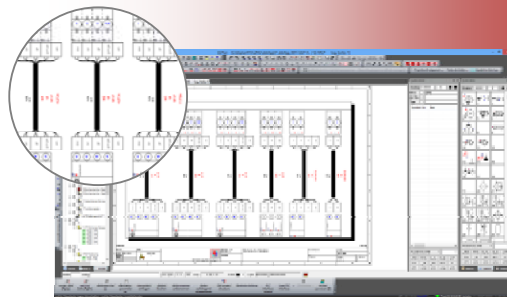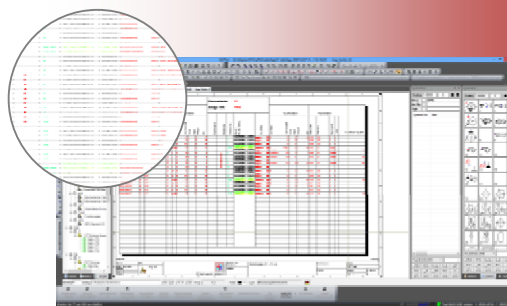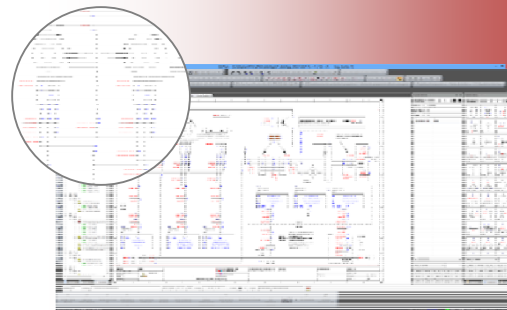
Espace® Functions:

- 3D CAD - full 3D CAD (self-developed over 30 years of experience)
- Assembly - automated assembly based on the circuit diagram
- Data security - 100% upwards compatible since the first version
- Collision test, Barrier surfaces
- Free-hand cables, Copper, Hose, Envelopes with calculation of the length
- Device tag Controller is the Controll-Center for in- / expansion and Routing
- Drilling data export related to the respective mounting plate
- Fully and semi-automatic layout system Plan data supported and monitored
- 3D List Export
- 3D Part lists and Step lists
- 3D Object settings - Symbols, Macros
- 3D Processing functions
- 3D Boolean functions
- 3D Raster
- 3D Feature-Tree management
- 3D BUS-Technology
- Orbital and Single Axes Camera Management
- Material and Colour assignment of 3D Objects
- Model View: 4 views Synchronized or single view
- …