

Smap3D

DESIGNED FOR PRODUCTIVITY

PLANT DESIGN



Turnkey software solutions for the engineering and fabrication of pipes

DESIGNED FOR PRODUCTIVITY

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Successful with Smap3D Plant Design

Selected References



„We are already reaping the benefits of Smap3D Plant Design shortly after implementation: Automated data transfer to CAD, ERP and other systems not only improves the efficiency and speed of day-to-day-design work, but other departments also benefit from the solution since relevant data are provided early on for further planning and changes.“

KRONES AG

Volker Richter, Head of Mechanical and Process Engineering



„With the introduction of the Smap3D Plant Design solution, we are able to complete more projects in a shorter period of time, and it has significantly improved our workflow. The numerous opportunities for integration, automations and elimination of interfaces means that we can work more quickly and accurately, right away. The software solution from tremendously simplifies nearly 2,000 masterplans per year.“

TechnoAlpin SpA

Andreas Weiss, Head of Engineering Draftsman



„Thanks to Smap3D Isometric, we are able to create a complete piping isometry, including all parts and welding seam lists, with just a few clicks to hand it over to our fabrication department.“

Walter Wettstein AG

Dominic Schnyder, Head of Design



„Arol Energy is now able to have a single solution that can run through the complete chain of engineering documents from P&ID generation, efficient 3D modelling and pipe routing up to the generation of isometric drawings for fabrication as well as equipment and line lists. This integrated solution reduces overall engineering hours and avoids errors between the engineering department and CAO/CAD service.“

Société Arol Energy

Sander Reijerkerk, Design Manager

Smap3D Plant Design

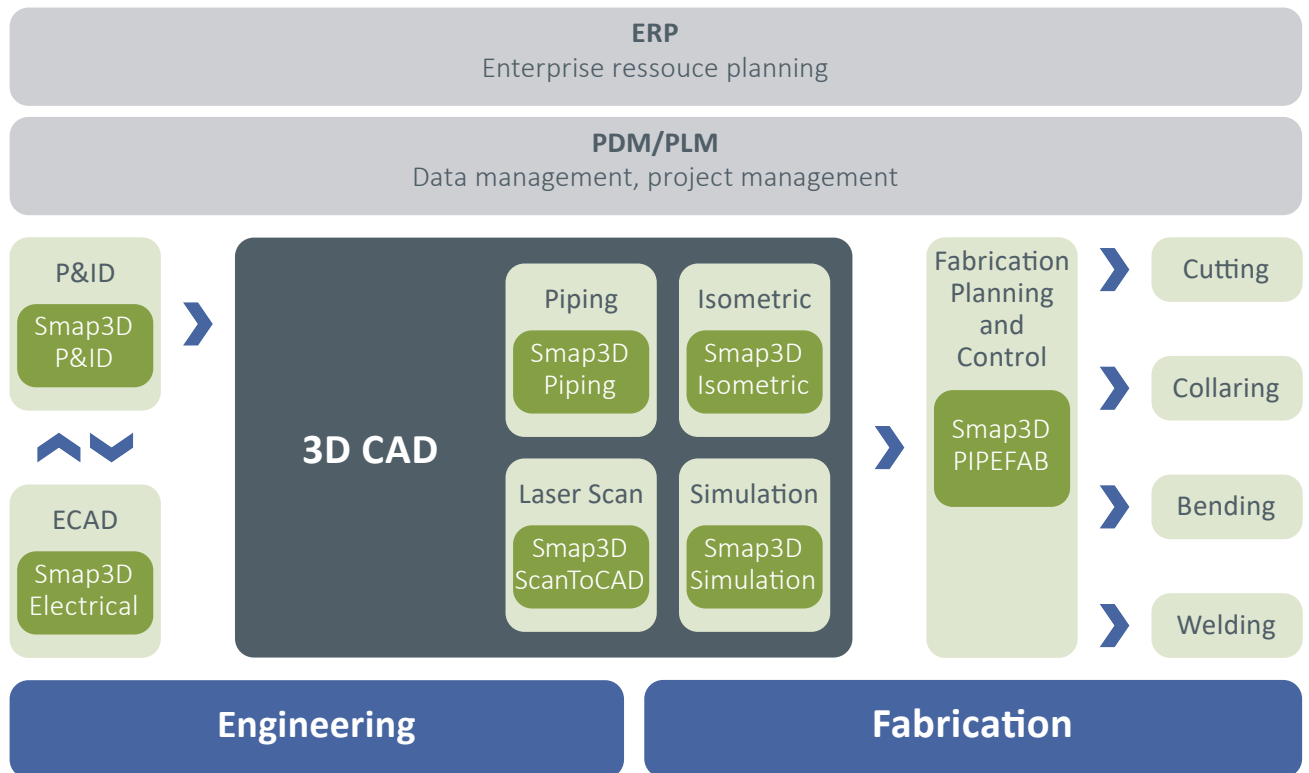
Smart 2D/3D plant and pipeline engineering

Smap3D Plant Design offers holistic software solutions for the engineering and fabrication of pipes. The software covers the entire process chain from process engineering (P&ID) through pipe design (3D Piping) including simulation and the derivation of isometrics through to fabrication planning and control with a high degree of automation. Thanks to in-depth partnerships, the connection to pipe production systems from well-known manufacturers

such as Pipe Bending Systems, T-Drill or Polysoude is extremely simple. The Smap3D engineering solutions are 100% integrated into the CAD systems SOLIDWORKS, Inventor and Solid Edge, thus enabling end-to-end engineering. Smap3D offers ScanToCAD, a 3D laser scanning solution for capturing and digitizing existing systems. The advanced and innovative ECAD software Smap3D Electrical complements the extensive Smap3D portfolio.

Consistent process reliability

Optimize, network and accelerate engineering processes



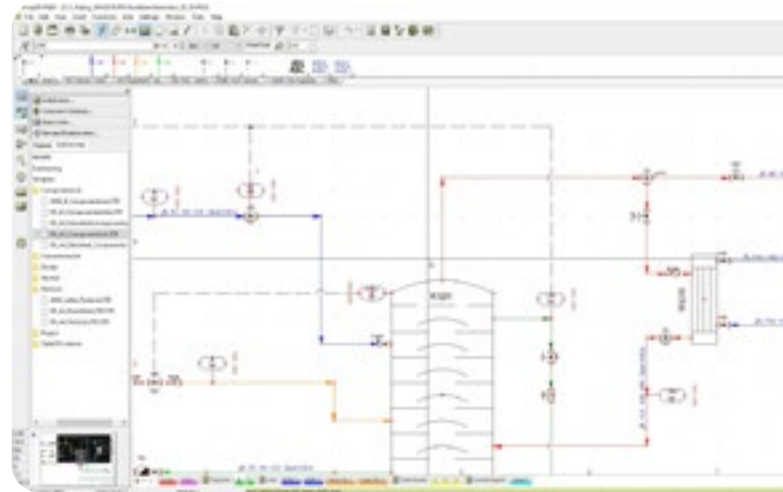
Smap3D P&ID

Intelligent application for process engineering

Smap3D P&ID is a database-driven CAD independent software for creating, adapting, managing and checking piping and instrumentation diagrams. The software supports you by simplifying and automating recurring tasks and is characterized by 100% configurability.

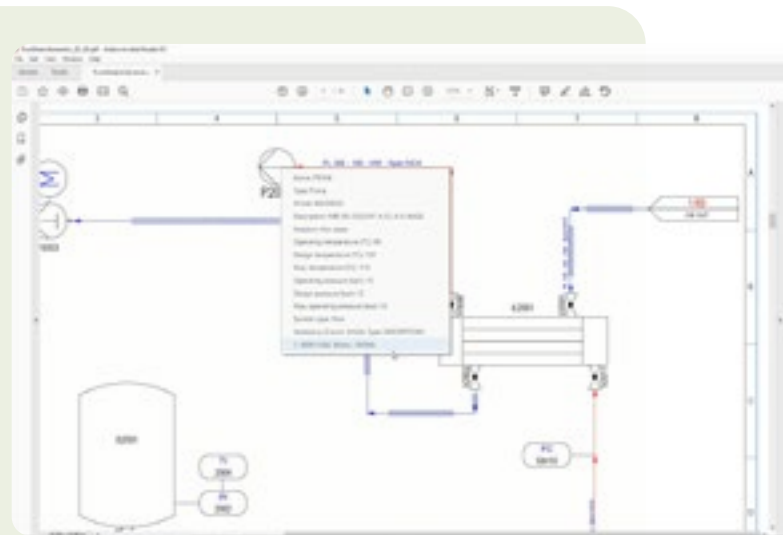
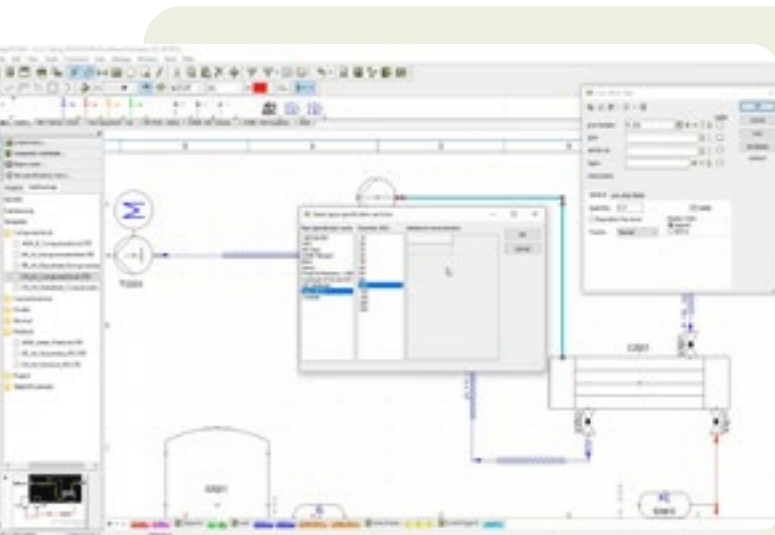
Smap3D P&ID contains symbol libraries (ISO/DIN, ANSI/ISA) and enables both the integration of existing symbols and the creation of new, company-specific symbols. All components are stored in a component database, can be supplemented with any information and assigned to symbols. Thanks to TAG numbering and supplementary wizards, you can maintain an overview at all times and guarantee a standardized syntax.

Smap3D P&ID makes your work easier thanks to dynamic lines (pipelines). For example, when installing or removing components, lines are automatically disconnected or connected again. Flow directions can be displayed and changed. All placed symbols are also automatically reversed if required. By assigning line properties (line number, pipe class, DN, etc.), the line becomes a logical pipeline.



Thanks to integrated design checks, individual P&ID drawings or the entire project can be checked for completeness, plausibility and accuracy. Customized design checks can be added quickly and easily.

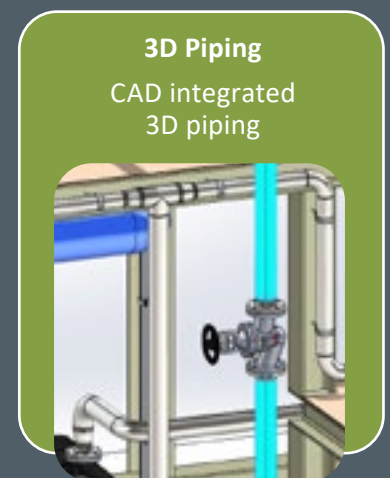
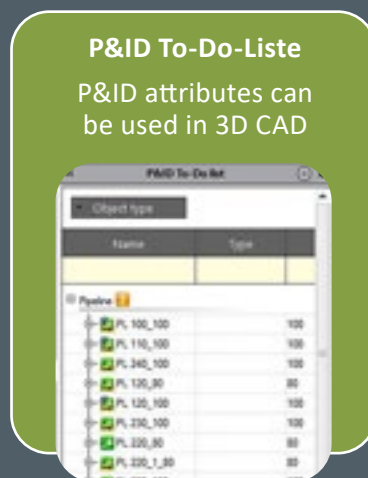
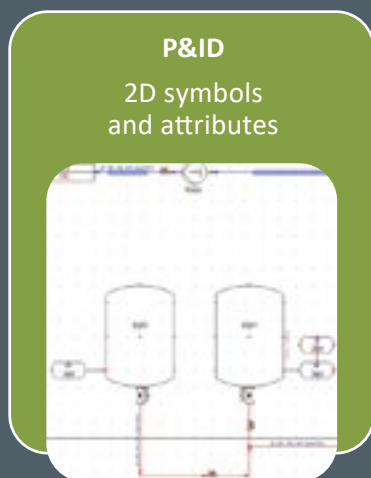
All information can be stored in BOMs or evaluations in the form of „sheets“ in a project and can also be exported as files. Their contents are also 100% configurable, can be saved and reused.



- Database-based and CAD system-independent P&ID solution
- 100% configurable
- Includes expandable symbol libraries (ISO/DIN, ANSI/ISA) and component database
- Automatic query of TAG numbers by the system
- Dynamic lines (lines) react automatically to disconnect and close (e.g. when installing symbols)
- Assignment of line properties
- Integrated design checks for checking individual P&ID drawings or the entire project for completeness, plausibility and correctness
- Output of drawings as DXF, DWG and as „intelligent“ PDF
- Storage or export of parts lists and evaluations
- Direct connection to 3D design solution Smap3D Piping via P&ID To-Do list

P&ID To-Do list: The intelligent connection to 3D piping design

The P&ID To-Do list integrated in Smap3D Plant Design is a function that creates an intelligent link between Smap3D P&ID schematics and the 3D piping design with Smap3D Piping. The existing attributes of these symbols and lines, which are defined in the P&ID by a process engineer, can be automatically evaluated with the P&ID To-Do list. They serve the design engineer in 3D CAD as a basis for creating 3D pipes and for supporting the complete 3D system engineering.



Smap3D Piping

Piping design directly in the 3D MCAD environment

With Smap3D Piping, you can automate the planning and modification of 3D piping in 3D assemblies and turn your 3D CAD system into a very powerful 3D plant engineering solution.

Smap3D Piping works as an add-in in the supported CAD systems SOLIDWORKS, Inventor and Solid Edge.



Inventor



Conveniently create 3D pipelines with pipe specs

Smap3D Piping uses so-called pipe specifications for this purpose. These are specification tables in which the relationship of the piping components to piping features is defined once for each company, department, or project. These pipe classes are stored as individual files in the system and can be easily maintained and managed using the pipe class editor.

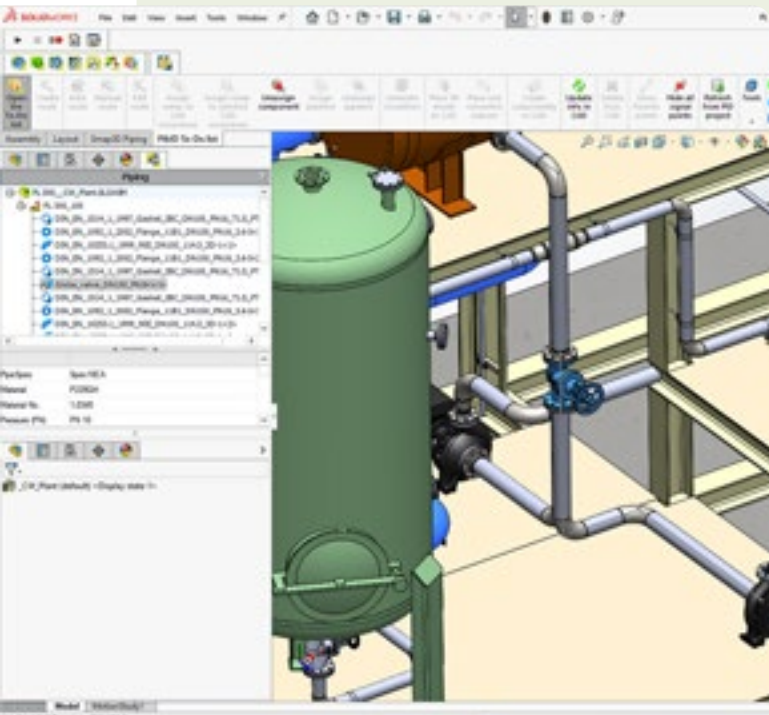
The high degree of automation prevents individual user errors and thus ensures a high level of process reliability. Smap3D Piping can accept created P&IDs, which are processed via the so-called to-do list. This guarantees that all pipes planned in the process engineering are trans-

ferred to the 3D model. The user draws the route of the desired pipework directly in the 3D CAD. Numerous optimization functions from the CAD as well as additional functions from Smap3D Piping can be used for this.

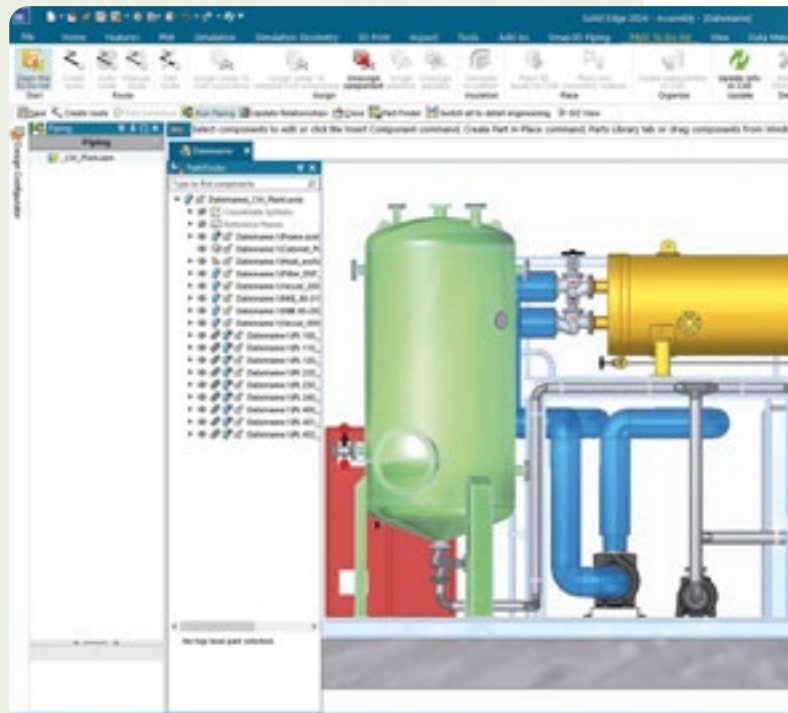
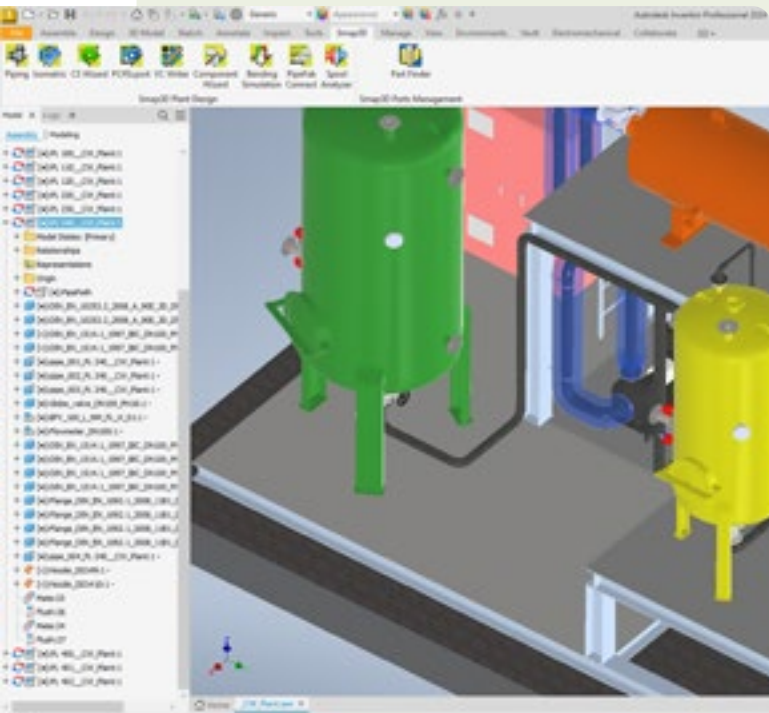
By assigning a pipe class, the desired pipeline including all additional components such as fittings, bends, T-pieces, seals, reducers, etc. can be created quickly and easily. Additional components such as fittings and instruments can be inserted into or removed from the pipework at any time, depending on the pipe class. Smap3D Piping then automatically calculates the „new“ pipe.

Smap3D Piping can also be used to process any non-circular cross-sections such as cable shafts, routes, ventilation ducts, etc. Integrated design checks allow, for example, collision checks or can recognize components and pipe paths that do not conform to pipe classes.

Smap3D Piping can be used to automatically create BOMs and derive pipework isometrics using the Smap3D Isometric module. This exports all the information on the 3D pipework and creates the isometric drawing fully automatically.



- Smap3D Piping automatically generates complete, three-dimensional pipelines with the correct fittings from the drawn piping paths.
- Smap3D Piping supports the installation of additional components (e.g. fittings, instruments). The existing pipelines are cut open and the required connections (e.g. flanges) are made.
- Changes to the piping route are updated automatically.



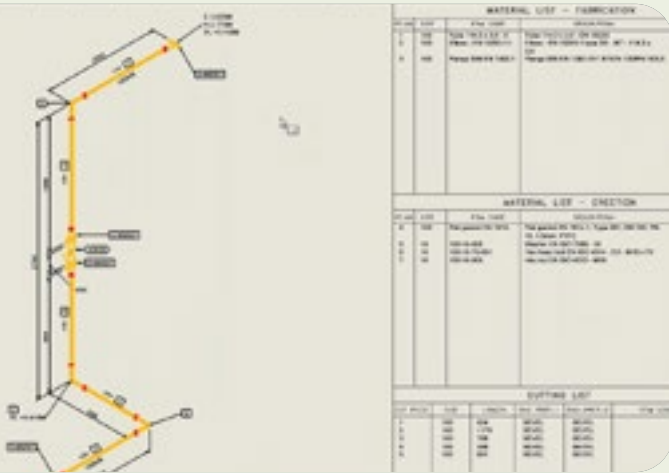
Smapp3D Isometric

Automatic generation of isometric drawings

User-friendly generation of isometrics and reports

Smapp3D Isometric exports all information from the 3D pipelines and creates the isometric drawing automatically. The software uses the ISOGEN® kernel from the market leader Alias.

- Generation of Isometric drawings at the push of a button from the 3D assembly.
- Export of information for pipeline analysis (SIGMA ROHR2 / CEASAR II®).



The pipeline illustrations as well as all relevant information – such as dimensions, forged hatching, annotations – are created automatically via preset parameters (styles), which can be configured individually.

Various parts lists (e.g. material lists, welding lists) can be automatically displayed on the drawing. Moreover it can be exported to the ERP system (ASCII file).

Smapp3D Industrial Pipe Specs

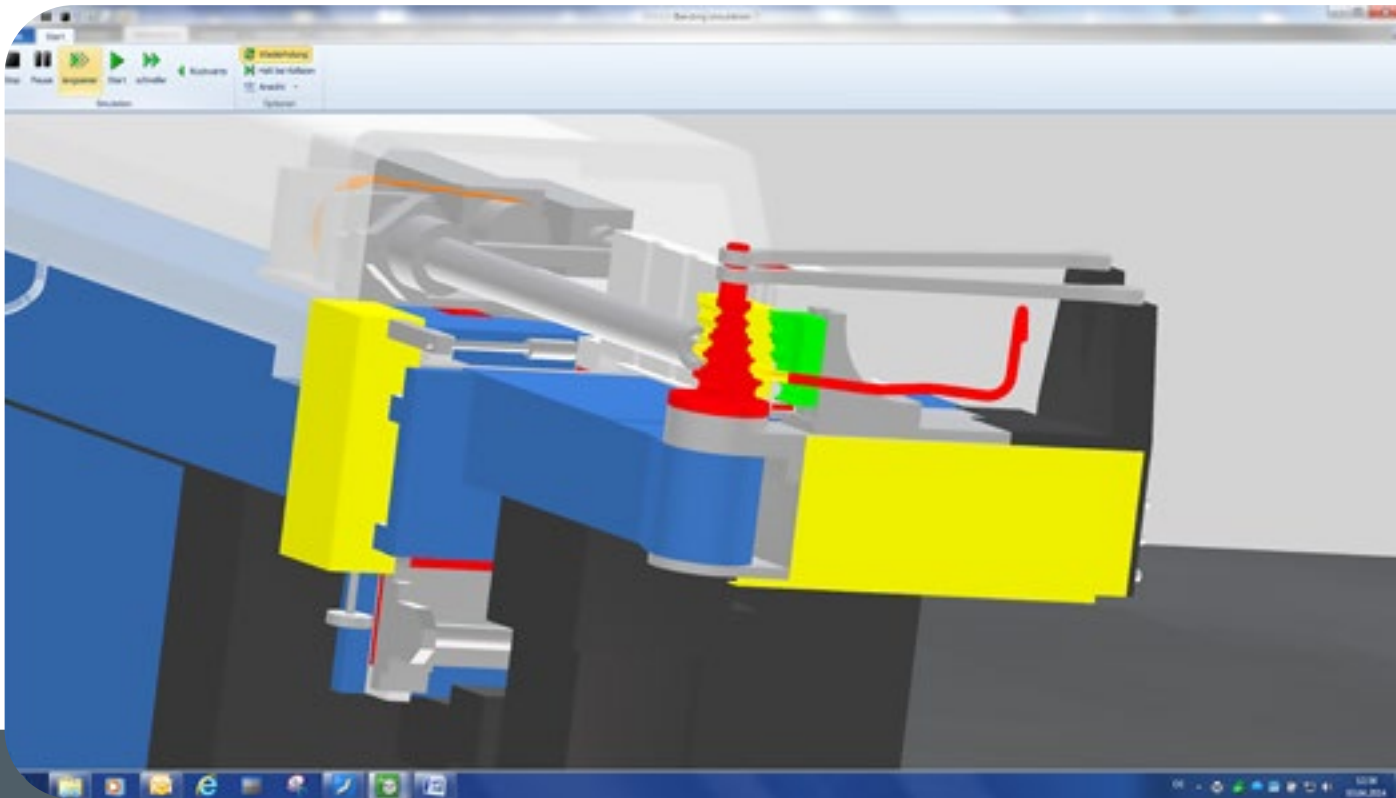
Pre-defined for different industries

The perfect basis for quick, individual adjustment

„Industrial Pipe Specs“ for Smapp3D Plant Design significantly simplifies and speeds up pipeline design: The add-on contains predefined pipe specs for different industries and sorts them according to different characteristics. This allows plant engineers to quickly find the appropriate pipe spec for individual adaptation.

Smap3D Simulation

Simulation solutions for bending, collaring and welding



Bending Simulation

Using Smap3D Bending Simulation the designer can quickly and easily check the bendability of pipes from the CAD system and, if necessary, visualize them in borderline cases. In addition to the geometry of the machine, the necessary kinematics for the production of a bending component is also mapped.

It checks for collisions between pipe and machine, which would make bending impossible in reality. A quick change in the design facilitates the production process and ensures that the pipe bending components can be manufactured as they were designed.

Collaring Simulation

Smap3D Collaring Simulation enables the designer to check the collaring of the planned pipe from the CAD and to visualize it if

necessary. A quick design change simplifies the manufacturing process and ensures that the collar can be manufactured as designed.

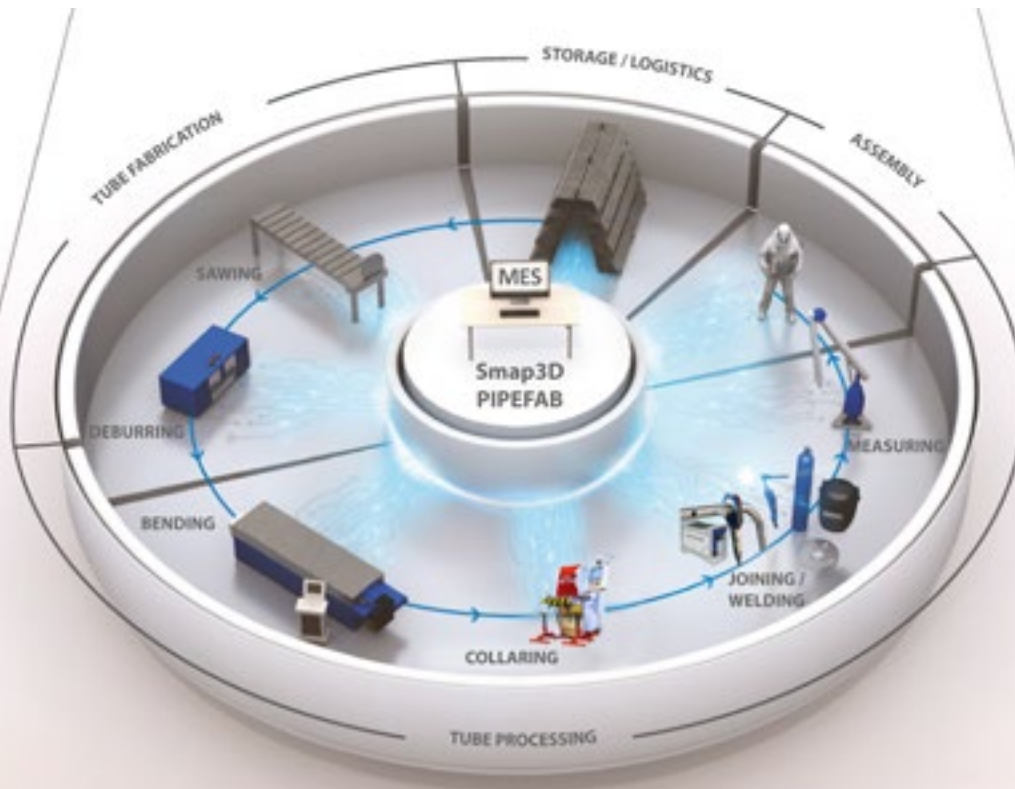
Welding Simulation

Smap3D Welding Simulation enables checking and visualization of the welding process of pipelines. The designer can also do this directly from the CAD. A quick change in

design simplifies the manufacturing process and ensures that the welding process can be carried out as planned

Smapp3D PIPEFAB

Solution for planning and control of the pipe fabrication



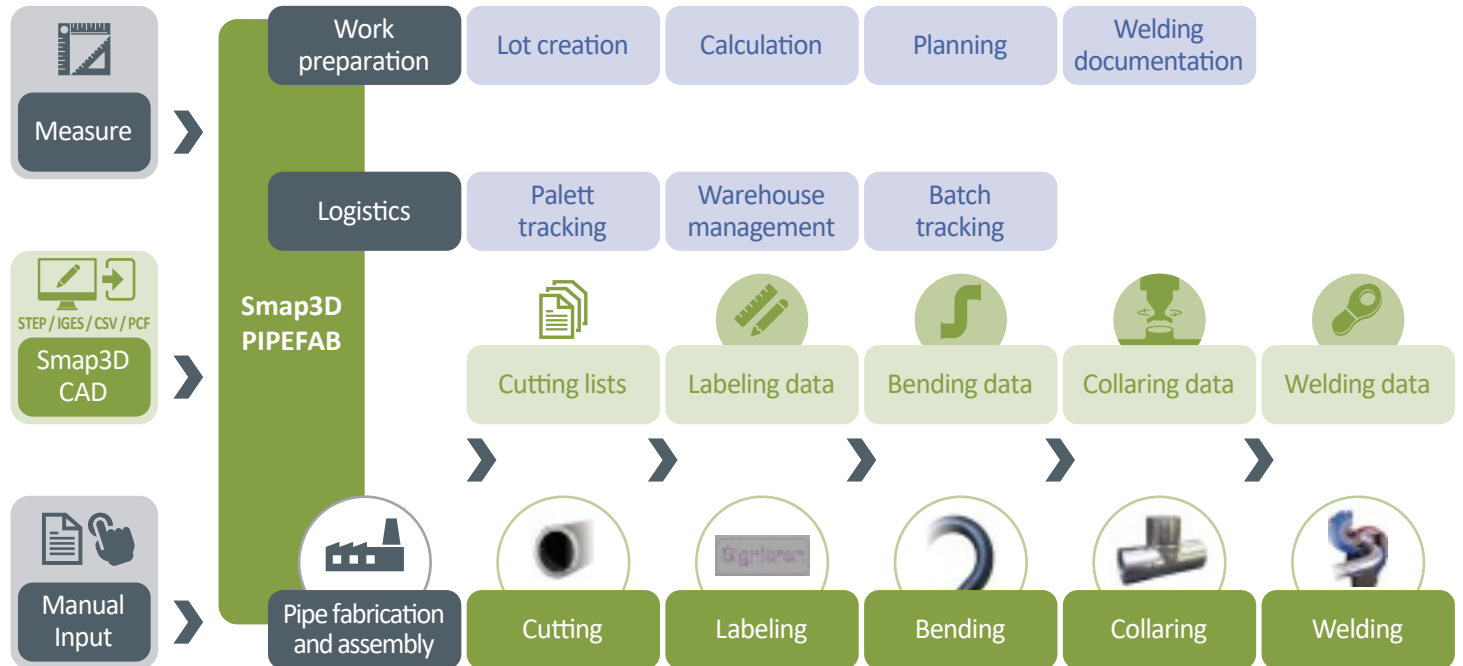
Smapp3D PIPEFAB is a modular, scalable software solution for pipe fabrication. This central planning and control tool creates efficient workflows in the overall process and thus, dramatically reduces costs in pipeline production.

Smapp3D PIPEFAB connects pipe design and fabrication by linking relevant design data with ERP data (e.g. master data) and technology data (e.g. welding gap) and storing the digital manufacturing process in a database. Machines that are connected via so-called „pilots“ thus receive all the information required for flawless execution from the very first pipe. The data can then be fed back to other systems such as ERP or PDM/PLM for documentation. In addition, assembly processes and logistics (e.g. pallet tracking) can be mapped.

Optionally, Smapp3D PIPEFAB can be extended by additional functions such as batch tracking, warehouse management, welding documentation management and controlling.

The solution can be directly integrated with the plant engineering software Smapp3D Plant Design and thus also with the CAD systems SOLIDWORKS, Inventor and Solid Edge. Alternatively, design data can be imported from other CAD systems via the STEP, IGES or PCF interfaces.

Smapp3D PIPEFAB enables dynamic production planning of a large number of individual orders, taking processes, machines and materials into account. The orders are broken down into lot size-optimized production units and then optimized for



each process according to, among other things, set-up time, waste, utilization or material flow. This allows prefabrication of the pipes to be decoupled from the fabrication order.

In addition, the solution combines functions for transferring and preparing product data for fabrication and functions for managing and documenting fabrication data and manufacturing sites. This ensures seamless documentation and traceability,

paving the way towards paperless production and facilitating the creation of a knowledge database on the shop floor.

Smap3D PIPEFAB can be directly connected to cutting, bending, collaring and welding machines from various manufacturers. Standardized interfaces already exist for the systems of the suppliers Pipe Bending Systems (PBS), T-Drill or Polysoude.

- Shorter throughput times thanks to dynamic fabrication planning and setup time optimization
- Prefabrication of pipes decoupled from the production order
- Perfect execution from the first pipe (first pipe = good pipe)
- Efficient personnel and material planning
- Seamless documentation and traceability
- Realization of paperless production
- Basis for the creation of a knowledge database

Smap3D PDM/ERP Connector

Universal PDM/PLM and ERP connection

Smooth exchange of document and article information

For Smap3D P&ID, we offer a neutral interface developed by us for connection to any PDM/PLM or ERP system - regardless of the manufacturer. The Smap3D PDM Connector ensures the smooth exchange of document information.

The connection to ERP systems via the Smap3D ERP Connector enables the transfer of article information to P&ID schemas. Smap3D Piping is connected via the PDM connectors of your PDM/PLM system.

- Integration into existing IT environments
- Transfer of parts list information from Smap3D P&ID and Smap3D Piping to the PDM/PLM or ERP system
- Integration of P&ID and Piping by providing the PDM functions within the respective module
- Automatic transfer of all metadata of a document, e.g. status, change history or editor
- Integration of P&ID and piping projects into existing workflows such as approval processes or neutral format generation
- Automated transfer of article information from ERP systems to Smap3D P&ID and Smap3D Piping

A selection of already integrated PDM/PLM Systems:

- SOLIDWORKS PDM
- Autodesk Vault
- Teamcenter
- SAP ECTR
- Pro.File PLM
- Windchill
- PDM Studio

We support you with our documentation during the introduction of the Smap3D PDM/ERP Connector or offer you the implementation as a service on request.

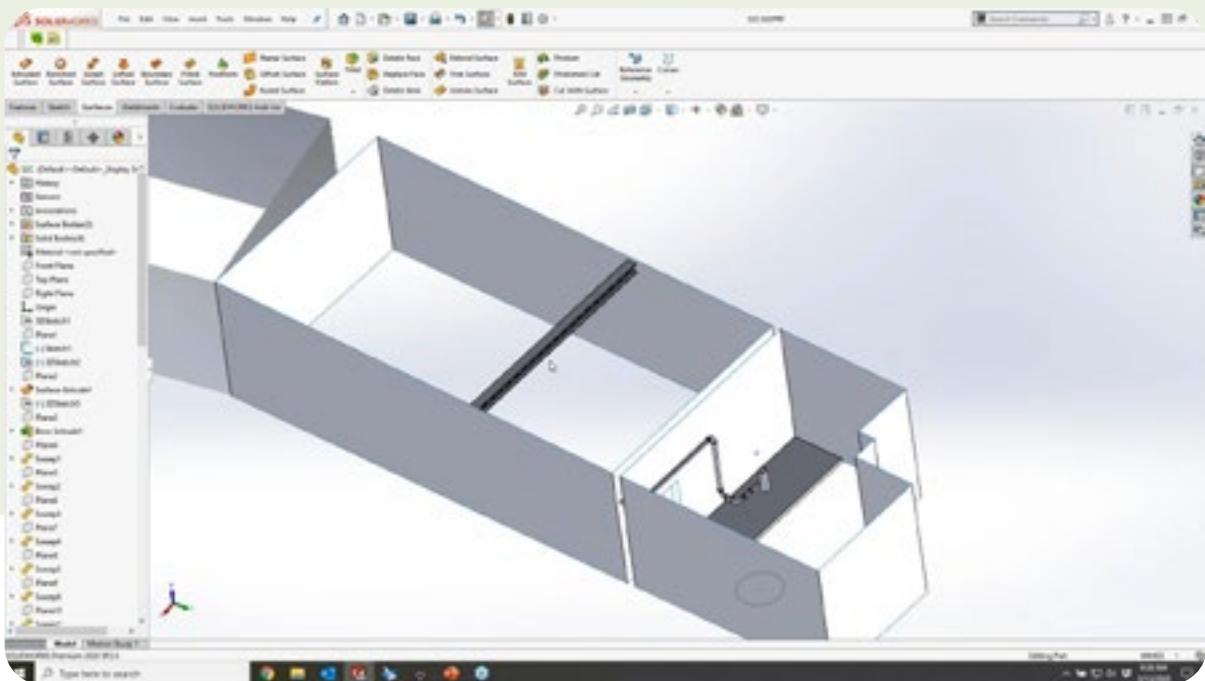
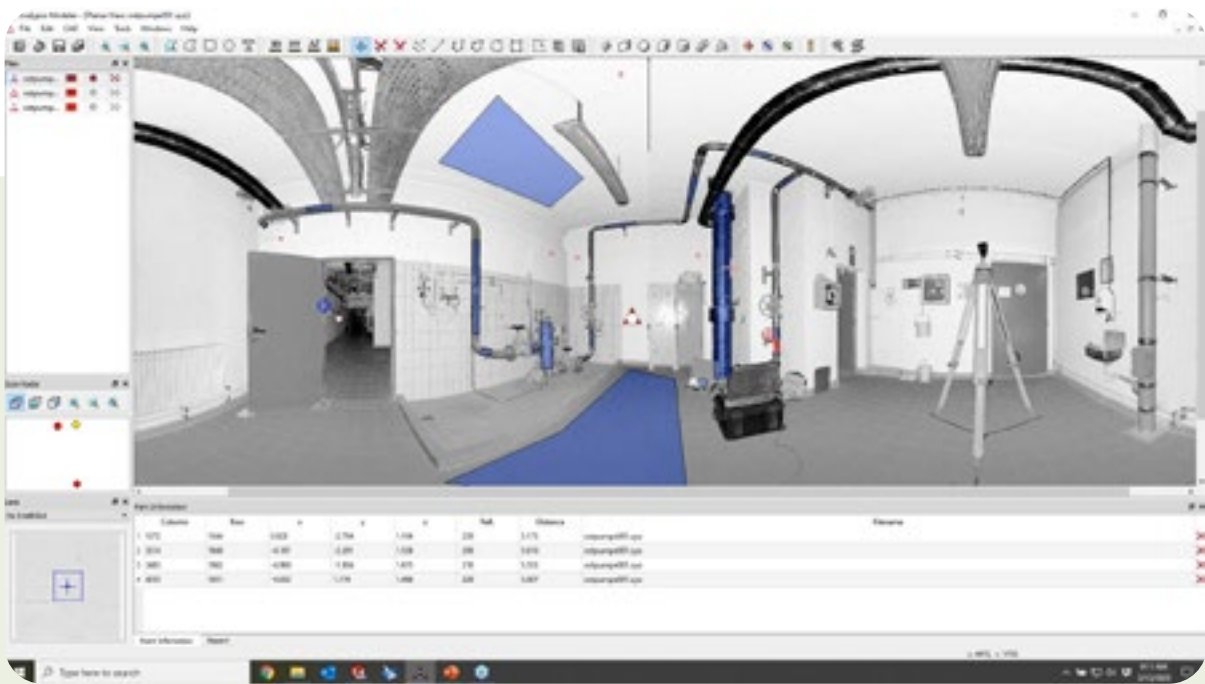
Smap3D ScanToCAD

Efficient transfer from 3D scan / point cloud into 3D CAD

Transfer existing surfaces and geometries from 3D scans / point clouds to CAD faster instead of drawing them yourself

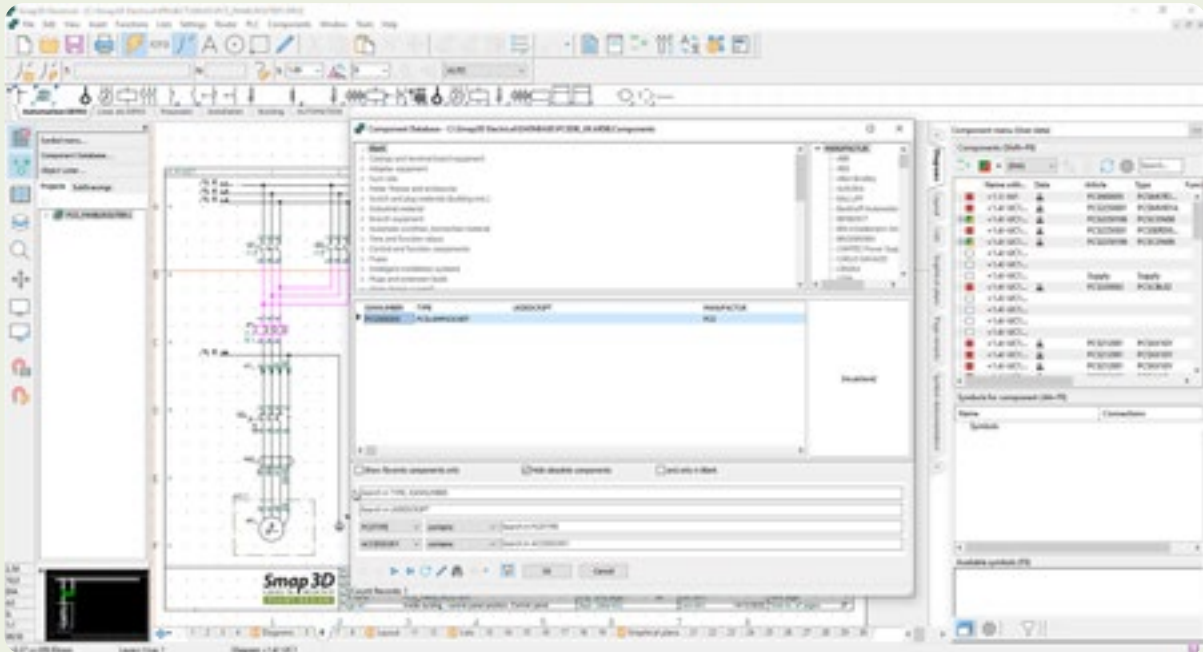
Smap3D ScanToCAD ensures that designers are able to transfer real existing surfaces and geometry from 3D scans to the CAD system faster, instead of drawing them themselves! The designer

selects which surfaces and geometries he needs. These are exported to the CAD system. Advantage: A big time-waster is eliminated – the data volume is reduced significantly!



Smap3D Electrical

Advanced and innovative ECAD software



Smap3D Electrical is an advanced and innovative ECAD software for electrical engineering, automation, installation, pneumatics and hydraulics. The software makes it very easy to draw electrical circuit diagrams and provides an overview of electrical designs at all times. This includes the component database, included part drawings and libraries from 48+ manufacturers and the automatic creation and updating of lists and reports. In addition to the basic drawing functions,

Smap3D Electrical offers an extensive range of functions and automatisms that have been specially developed for electrical projects. International standards for electrical design drawings can be easily supported as an integrated part of the software.

The Smap3D Electrical user interface and data format are identical to that of Smap3D P&ID. This guarantees an optimal exchange of information between process engineering and electrical engineering.

- ECAD software with a wide range of powerful functions and automatisms
- Includes extensive and expandable symbol libraries
- Creation of your own component databases and use of a large number of provided component databases (e.g. ABB, Bosch, Dehn, Phoenix, Siemens)
- Creation of parts lists (BOM)
- Import/export of DWG/DXF files
- Connection to PLC tools
- Automatic integration of article data

Successful with Smap3D Plant Design

Selected References



„By using the different Smap3D Plant Design modules we're able to reuse our information from the P&ID and pull it directly into the 3D Piping application built into Solidworks.“

Fogg Filler Company

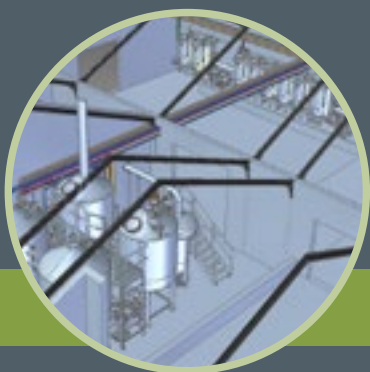
Jesse Reda, Engineering Manager – Systems



„By actively linking P&ID and 3D design in conjunction with the system's internal error correction, we were able to place our design focus even more on optimizing system efficiency and user friendliness. The result was exemplary drawings, which the globally operating and highly experienced client said they had never seen at this level of precision.“

Plan-eta GmbH

Jörg Müller, Managing Director



„The integrated piping planning solution has made us up to three times faster than the previous approach.“

KASPAR SCHULZ Brauereimaschinenfabrik & Apparatebauanstalt GmbH

Christian Montag, Group Leader Construction




Experience end-to-end pipe engineering and fabrication live
Visit our „The Connected Pipeshop“ showroom

With „The Connected Pipeshop“ we have created a complete solution for pipe manufacturers and plant engineers that covers the entire process from engineering to the fabrication of pipes.

Let us convince you of this ingenious, unique solution: at a workshop in our showroom in Lennestadt, Germany. Experience the individual components and let us talk about how this solution can also be used profitably in your company. Please ask us for an appointment!



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Smapp3D Plant Design needs no further system requirements. The recommended system requirements of the supporting CAD systems are sufficient.

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