CADMATIC

Plant Design Software

Feel Empowered

CADMATIC
SOFTWARE SOLUTIONS

Why CADMATIC
is the Smart Choice

Empowers users to
increase business efficiency

CADMATIC software solutions are designed to empower and assist users to maximize the efficiency and quality of their work. CADMATIC software has the shortest learning time for comparable systems on the market. It has a proven track record of reducing engineering errors, shortening project lead times, improving the efficiency of change management and enhancing information accessibility.

Intelligent and specification-driven
software eases design work

The software user is at the core of our software development. CADMATIC's specification-driven design system automates routine design tasks and improves the efficiency of design work, engineering and production. It allows designers to focus on design quality. In the background the system ensures that all materials and components are automatically selected according to pre-defined specifications.

An investment-performance
ratio that makes sense

We pride ourselves on providing our customers excellent value for the investment they make in CADMATIC. The investment-performance ratio of CADMATIC software is without doubt the best on the market for systems with comparable capabilities. The modular software structure further means that the investment can be flexibly packaged to deliver maximum returns in the shortest time possible.

### Open software with
extensive interoperability

CADMATIC has been designed to be as open as possible to allow cooperation with different technology suppliers. We also have a proven track record of working with our customers to develop customized integrations where needed.
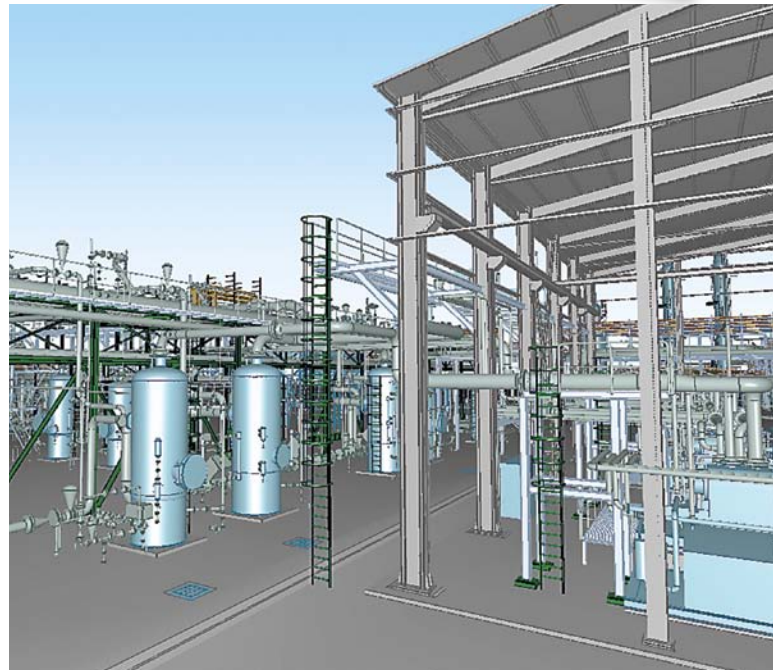
Distributed design

CADMATIC software has been optimized for use in globally distributed environments that allow you to take advantage design resources across the globe.

Customer support that
exceeds expectations every time

All our support team members have design backgrounds with solid knowledge of project design work and are able to quickly and efficiently handle all support requests. The support team co-ordinates help desk services, user training, special training courses, as well as software tailoring tasks for special application needs.

Pharmaceutical

Oil & Gas

Power
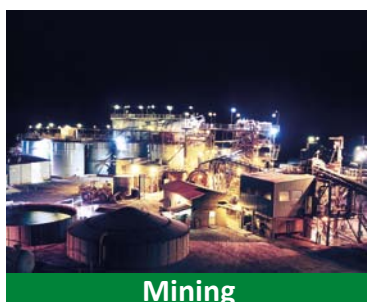

Chemical

Plant Design Software
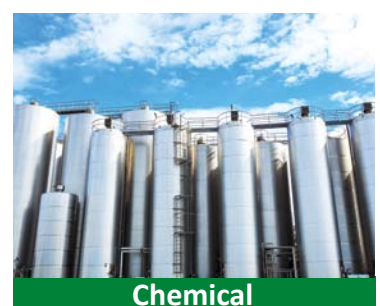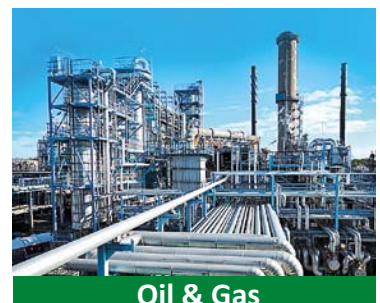
Benefits...

- Minimize design errors

- Shorten project lead times

- Increase efficiency of change management

- Enhance information accessibility

- Gain flexibility with interoperability

- Distribute your projects globally

Pulp & Paper

Food & Beverage

Mining

Offshore

Comprehensive Plant Design, Engineering & Construction

Intelligent diagrams integrated with 3D model

The CADMATIC Diagram module for flow diagrams, P&IDs and cabling diagrams is fully integrated with the 3D model. It provides the user with easy-to-use and efficient tools to create, modify, and manage a comprehensive range of diagrams.

Intelligent symbols, unlimited process size, control of revisions and advanced database management with a user-definable report generator are just some of the features of the Diagram module.

Documentation for different piping and instrumentation diagrams, equipment lists, pipeline lists, and valve lists etc. can be automatically produced. Diagram can be used independently or with the 3D Design seat and can be interfaced with calculation software packages.

Preliminary layout

Preliminary P&IDs can be created with CADMATIC Diagram already in the concept selection phase, whereas preliminary GAs and layouts are created with CADMATIC Plant Modeller.

Preliminary structural design includes the positioning of structural units such as stairways, ladders and platforms. The preliminary 3D modelling of buildings can also be included.

The space requirements including passage ways, access to and clearance around equipment are evaluated in 3D where alternative layouts can be studied. The arrangement, positioning and elevations of major equipment is included.

After the concept selection the process and utility P&IDs are finalized and data cards completed and more detailed 3D plant design initiated.

Specification-driven design for efficient plant layout

CADMATIC 3D Plant Design is an integrated, database-driven design module. It provides powerful tools for 3D layout-, piping-, HVAC-, cable tray- and structural design of plants. It also produces information for construction, installation and ordering materials.

The software lets users concentrate on important tasks: creating equipment layouts, routing pipes and ducts, locating structural units, allocating service spaces and laying electric cables.

At the same time the software takes care of the rest: controlling collisions and indicating connections according to diagrams, storing units for further use and checking the compatibility of components.
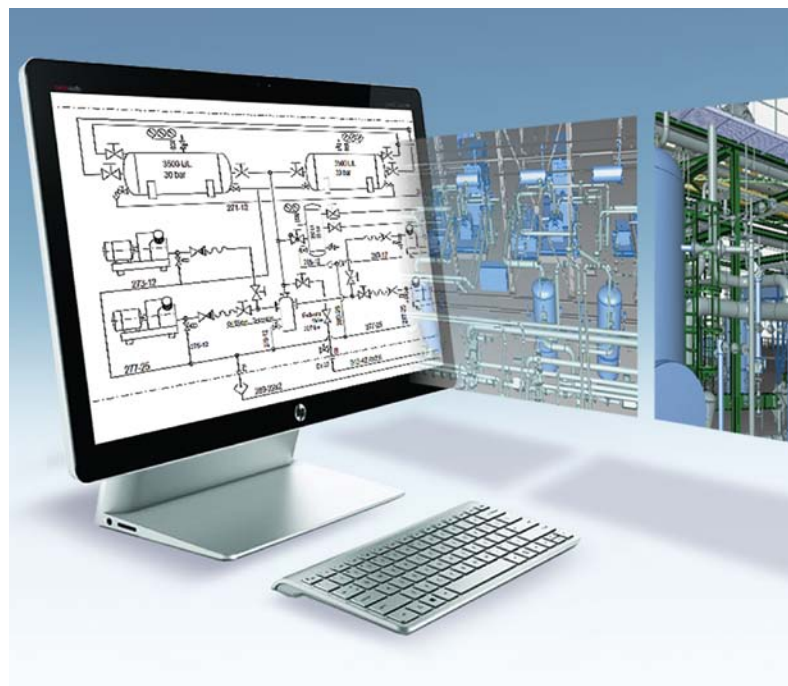
Diagrams   **Preliminary Layout**

Simple document generation

At any stage of 3D modelling the user can generate documents for construction including layout drawings, sketches, piping layouts, isometric drawings for pipes, duct spools, unit and structural parts drawings, and extract BOMs and MTOs.

The inbuilt AutoCad-like drafting tools allow fast and effective finishing of the drawings to be exported to DWG or PDF formats, or printed directly. Bills of materials and other construction data can be extracted in suitable formats: preliminary lists of materials, construction materials for zones, buildings and areas.

Plant Layout → **Document Generation** → **Construction**

Information **Sharing**

Construction information at your fingertips

CADMATIC information management solutions are valuable assets that can be used effectively during the engineering, construction and installation phase of the plant.

The eBrowser visualization tool can be used by construction crews on-site to review the model and verify details of any objects, check dimensions, visualize schedules, use maps and make markups in the model. The visibility of areas and systems can be easily controlled to achieve the desired focus on particular areas.

For even more mobile onsite inspections eGo, the Windows tablet version of eBrowser, is a very handy tool. It includes almost all eBrowser's functionalities and allows the user to navigate in 3D using the map, touch screen and zoom in and out function.

eShare makes information available for all related business processes such as project management, procurement, production, construction, operations and maintenance. eShare provides real-time accurate information by accessing available project related databases.

Benefits...

- P&ID and 3D model integration

- Specification-driven design minimizes user errors

- Multi-user/multi-site access

- Efficient document generation

- eShare for project handover and construction follow-up

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3D Model at the Heart of Engineering

Component Library

Data Management

Process diagrams form the basis of your plant design

CADMATIC Plant design software features intelligent bidirectional integration between process diagrams and the 3D model. P&IDs and intelligent symbols are linked to the project database. The bi-directional link ensures that changes made in process diagrams are automatically reflected in the 3D model and vice-versa.

Specification-driven pipeline routing

CADMATIC piping design is guided by predefined specifications, which means that the right and correctly dimensioned materials, pipes, connectors and other components are automatically selected for the designer. The design system suggests the best pipe routes and warns the user if any collisions occur.

Comprehensive component library

CADMATIC's database has an extensive digital library including ready-to-use devices, equipment, pipelines, supports, ducts, cable trays and steel and concrete structures. This eases the work of the designer significantly.

Database manages all changes

Change management is extremely easy in CADMATIC. All changes made to the model, layouts or piping geometry are immediately stored in the database while related documentation is always kept up to date.

Laser scanned point cloud imports for plant revamps

Laser scanned point clouds can be imported directly into CADMATIC and placed in the 3D model. They can be used as references in measuring and fitting, while designing new items in detail or remodelling existing items. This feature is ideally suited for use in revamp projects.
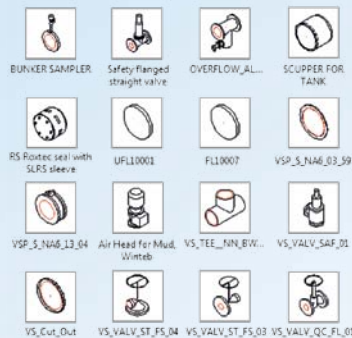
Automated document handling

Documents are intelligently integrated with the 3D model and database from where documents can be generated automatically. When required complete and section plans, axonometric drawings, isometrics and spools can be viewed and printed out. For material purchasing and intake the database can also produce detailed material listings.
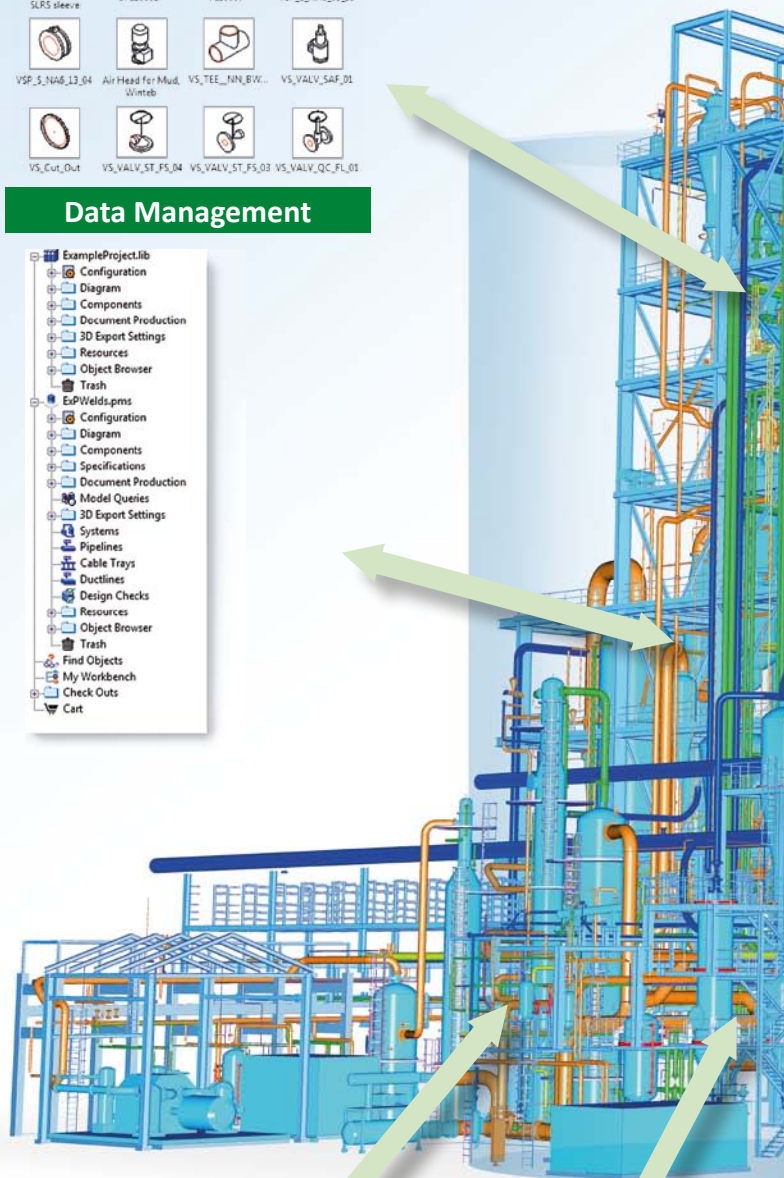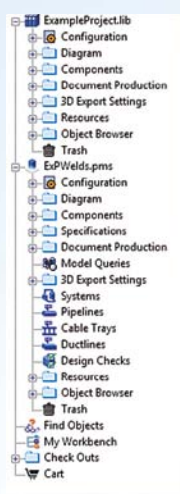
eShare for information Management

CADMATIC eShare is the ultimate information management tool. It visualizes and shares project and asset information in a single and easily accessible web portal. The system makes all design information contained in the 3D model easily available to other related business processes such as project management, procurement, production, construction, operations and maintenance – and vice versa.

Diagram

Layout

Plant Design Software

3D

3D Model Objects

Project Follow-up

Project Review

Integrations

- 3D Model Import/Export
- Calculation Analysis
- Manufacturing Data
- Material Management
- Document Management
- Maintenance Management

Document Generation

Point Cloud Import

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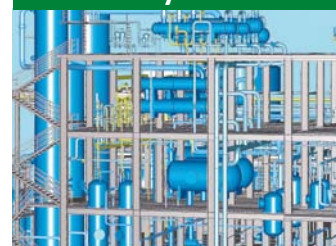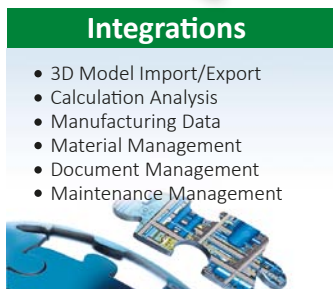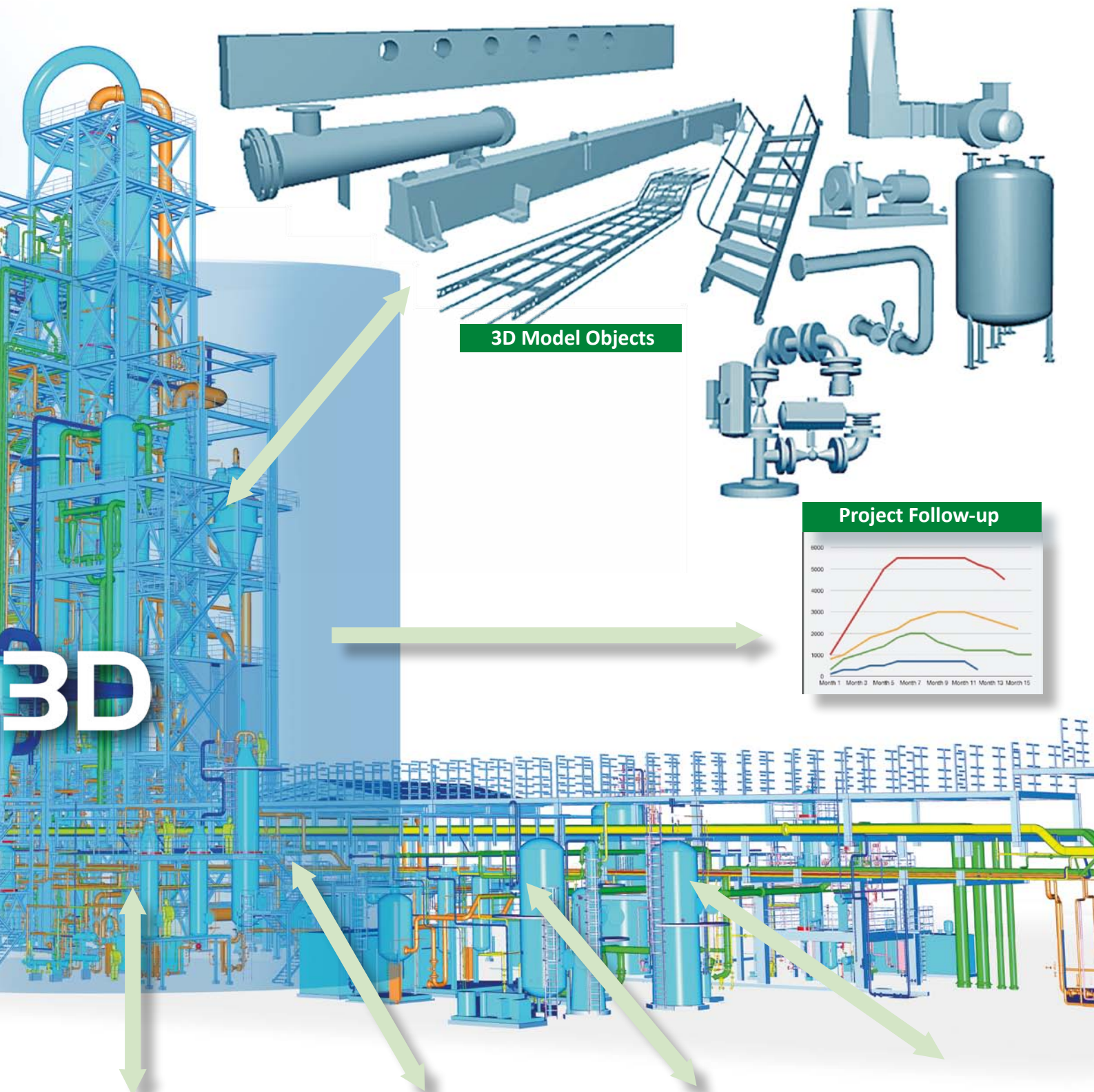
Global Work-sharing for Increased Efficiency

Concurrent and distributed design

CADMATIC offers advanced solutions to shorten the time required by design and to cut down the design costs by distributing the project to be carried out to locations that provide the best performance and cost efficiency.

The planning and implementation of a plant investment involve a number of parties: the plant owner or operator, equipment supplier, design and consulting offices, subcontractors etc. These parties have traditionally generated and stored 3D models and documents independently in several different physical locations before transferring the data. This however often results in uncertainty regarding the accuracy or validity of the design data.

CADMATIC's solution for work-sharing

The CADMATIC solution stores the 3D model and documents in a database hosted by a database server. It is therefore easy to divide design work globally between several design offices. Server replication and the addition of new design teams is thus reduced to a few mouse clicks.

In a globally distributed project the data is updated between remote design sites via an online network connection such as the internet or by simply exchanging the file in an email attachment.

Information management that adds value

At all stages of the project life cycle there is a great amount of information being produced and collected. It increases exponentially as the project progresses and evolves when the project status changes from concept to design and construction, asset management and maintenance.

The CADMATIC Information Management solution

The CADMATIC Information Management solution provides a single access point to all project-related information with an easy-to-use web-based interface.

The eBrowser project review tool visualizes the project in 3D without complex CAD tools. Users can share comments and check details about any object in the model. A windows tablet version of eBrowser called eGo adds even greater mobility and easier on-site use.

CADMATIC eShare makes information available for all related business processes such as project management, procurement, production, construction, operations and maintenance. eShare provides real-time accurate information by accessing available project related databases. It improves communication and reduces information inaccuracy risks.

REPLICA

Plant Design Software

MASTER DATABASE

REPLICA

Replica's Replica

REPLICA

OWNER/
OPERATORS

EPCS

ENGINEERING
COMPANIES

SUBCONTRACTORS

MAINTENANCE

TRAINING

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One Solution for Entire Plant Investment Life Cycle

A central principle that guides software development at CADMATIC is design and information management solutions that encompass all stages of the plant investment life cycle. The software scope covers areas from basic and process design to detailed design through to prefabrication/construction, plant start-up, operation & maintenance, and plant revamps.

The CADMATIC 3D model and design database constitute an efficient project databank. Integrated data management guarantees that all data entered into the design systems are accessible at subsequent stages of the design project. During operation CADMATIC eShare can be used to integrate and manage design information contained in the 3D model with other enterprise information management systems.

Process and detailed design

All data entered in the various software modules during the design stages are included in databases, making the information available to all users. The data generated during the process planning and entered into process diagrams can be used in detailed plant design and 3D modelling etc. For the purpose of change management between process planning and plant design, the software features a special communication mechanism that alerts the system to any changes that have been made.

Prefabrication, construction and installation

At the construction site, the CADMATIC 3D model and design database are used by the installation staff and supervisors. All engineering details necessary for the installation work are readily at hand in the plant model, which allows easy reproduction of additional data to support the manufacture, installation and supervisory functions.

The detailed CADMATIC 3D model supports extensive use of prefabricated units in the manufacture and installation, thus contributing to reduced project time and costs. Possible as-built changes are made at the site in the 3D model.

Start-up

During the commissioning of the plant, the CADMATIC 3D model and design database are utilized for operator and maintenance staff training. In addition to process diagrams, it is possible to visualize various processes and systems and to conduct virtual checks with regards the operation and maintenance locations.
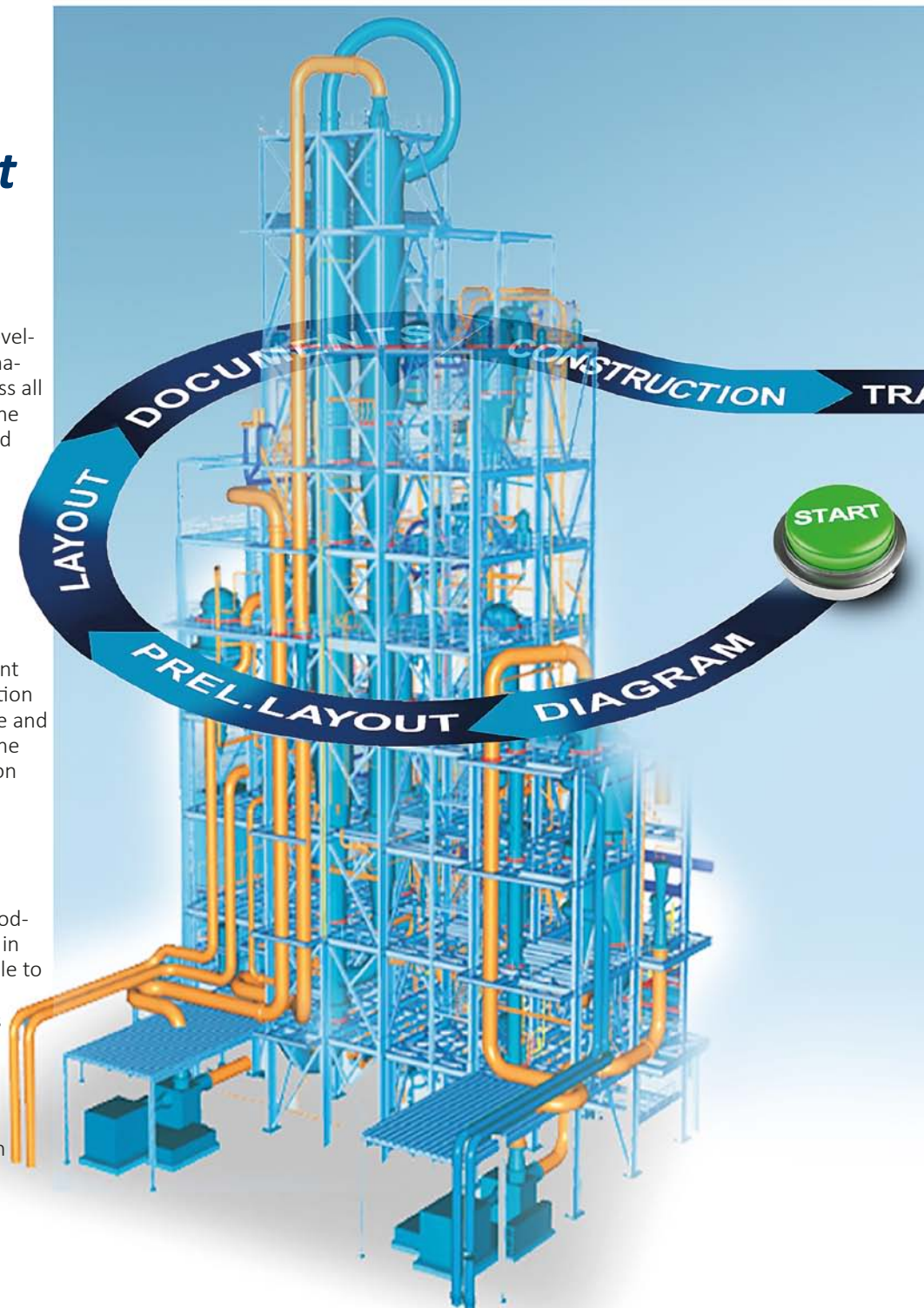
AINING ▶ START-UP ▶ OPERATION ▶ MAINTENANCE ▶ REVAMPING

Operation and maintenance

The CADMATIC 3D model and design database can be integrated with the maintenance and document management system of the plant. With the help of CADMATIC eShare, design information can, in fact, be integrated with all related business processes such as project management, procurement, production, construction, operations and maintenance. Maintenance procedures become more efficient and the accuracy of the data is guaranteed. Manuals and related documents are stored in the 3D model and can easily be accessed at any time by the staff. Operator and maintenance staff training can take place long before the plant is in operation with the help of CADMATIC's virtual walk-around feature.

In addition, eShare can be integrated with risk analysis software (e.g. RBI), process control systems like OSIsoft PI, and inspection systems. This way integrated eShare acts as a single window to the plant information.

Integrated eShare allows the plant personnel to work more at the office and to easily to access plant data. Daily work, for example checking distances and planning of maintenance activities, can be performed more safely without the need to go to the site.

Lifecycle Management...

- *One solution for entire plant life cycle*

- *Trustworthy engineering data throughout lifespan*

- *Eases operation, maintenance and revamps*

- *Information management made easy*

- *Facility revamp the easy way*

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Facility Revamps Made Easy

Laser scanned data ensures perfect design fit

When a facility needs to be revamped and the 3D model and/or other facility information is inadequate or inaccurate laser scanning technology can be used effectively to gain accurate information about the facility.

The CADMATIC Laser Scan Modeller has been designed specifically to import and use information produced by laser scanners seamlessly for further design. It allows point-clouds created with laser scanners to be imported directly in the 3D design tool with the use of familiar design tools.

Reduce time required for revamp design

With Laser Scan Modeller the user can view and examine an existing facility layout when sketching a new layout, use point clouds as references to measure and fit equipment, or to design new items in detail or remodel existing items. This dramatically reduces the time required to start and complete revamp designs.
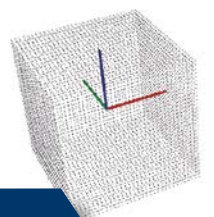
While modelling the revamp the user can also directly use the settings, library and components of other CADMATIC modules for the correct attributes and materials.
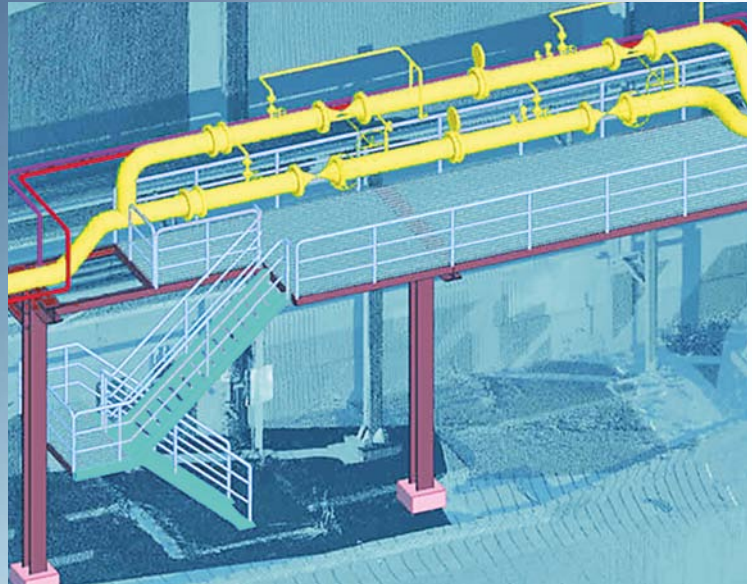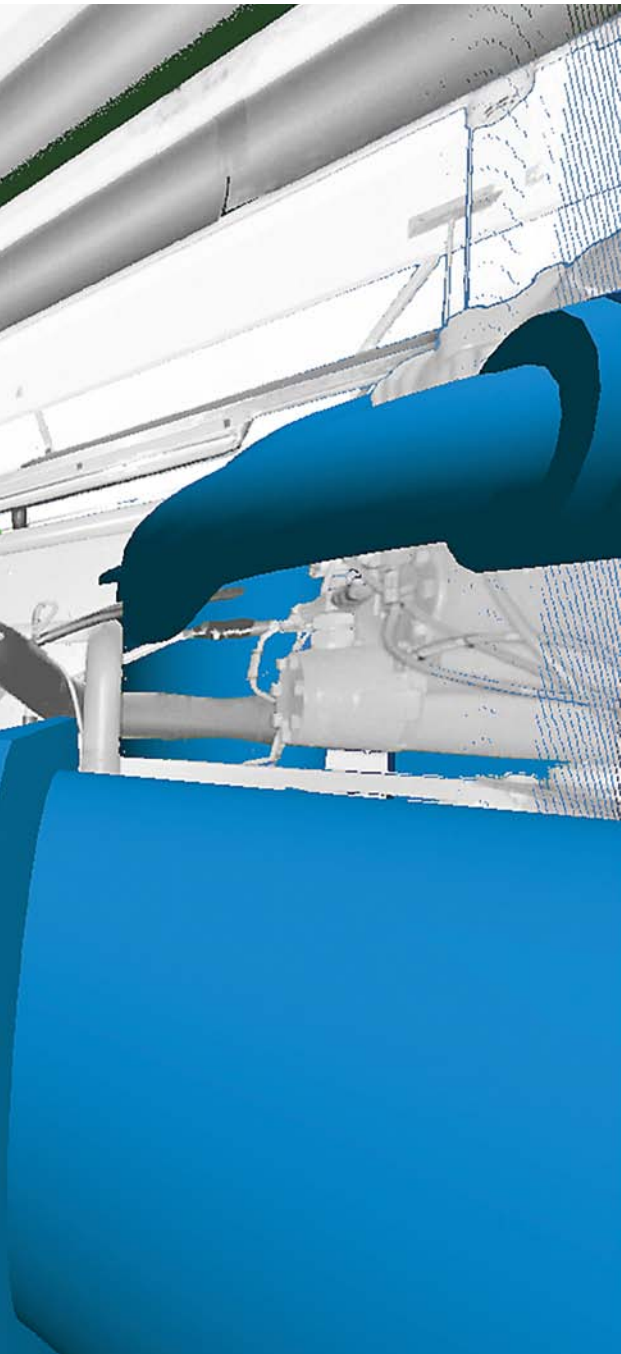
Preparation

Scanning

Registration

Benefits...

- *Reduce time for surveys and operational down time*

- *Reduce the need for field trips in potentially hazardous environments*

- *Fewer unknowns and assumptions regarding existing constructions*

- *Instant availability of accurate dimensions and spatial geometries*

- *Scope of changes can be estimated quickly*

- *Lack of as-built documentation is no longer a concern*

3D Modelling

Document Generation

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Information Sharing that Boosts Your Business

At all stages of the project life cycle there is a great amount of information being produced and collected. It increases exponentially as the project progresses and evolves when the project status changes from concept to design and construction, asset management and maintenance. The CADMATIC Information Management solution provides a single access point to all project-related information with an easy-to-use web-based interface.

Project review tools – eGo for Windows tablets and eBrowser – visualize the project in 3D without complex CAD tools. Users can share comments and check details about any object in the model.

eShare
information management and visualization

eShare complements our design and engineering solutions by providing an innovative and easy way to utilize project information and optimize business processes. It allows organizations to combine, find, visualize and share project and asset information in a single and easily accessible web portal.

People in different roles can use eShare to access information created with specialized applications for design and other business functions, without having to use each application separately. With eShare the user can take full advantage of the visual power of digital assets such as 3D models, P&IDs and other drawings.

eShare makes all design information easily available for other related business processes such as project management, procurement, production, construction, operations and maintenance – and vice versa. By integrating eShare with other business solutions processes can be significantly optimized. Current ways of performing activities can be substituted with more efficient working practices.

eBrowser
the ultimate project review tool

eBrowser allows users to walk through the model, easily locate and check details of any objects, check dimensions, use maps and make markups.

The extremely small file size (about 10 Mb per project) that originates from the CADMATIC design application (or converted from another system using our eXchangers) can be reviewed in eBrowser without the need to use or have experience of the whole system. Project managers, owners and on-site construction staff can benefit from viewing the whole digital model in 3D. Details about each object can be retrieved and the visibility of areas and systems controlled. eBrowser can serve as a discussion board—everyone can store their markups with comments about the model or particular parts.

- Small file that can be sent via email; contains complete 3D model
- Virtually walk through the project, check all the details of any object
- Use markups for discussions with other project partners
- Load point clouds to compare new designs and existing structures.
- Free of charge light version available

eGo
3D project review for Windows tablets

Benefit from using eBrowser on the go – browse 3D models on your Windows tablet. eGo comes with almost all the familiar eBrowser functionalities. The user can navigate in 3D using the map, touch screen and zoom in and out. This makes on-site trips more effective and brings real mobility to design projects.

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Interfaces and Integrations for Greater Flexibility

CADMATIC software has been designed to be as open as possible and we have implemented numerous interoperability functions to allow cooperation with different technology suppliers. The openness of CADMATIC makes it possible to import existing 3D models from other software and export 3D models from CADMATIC.

Business benefits

Interoperability with other 3D design and engineering software allows the reuse of existing 3D models for retrofit and maintenance design of the plant. This saves time and money as there is no need to start from scratch, the user simply imports the existing model.

The converted models are drastically lighter than the original models and can therefore be shared via the Internet with ease.

By importing models from different sources and suppliers it is possible to combine them into a single model for efficient project review and communication and to use models for operations after the design and engineering phase. For example, if a complete project is done with CADMATIC software and several modules are e.g. in PDMS or PDS format – it allows the user to import these modules and have the complete project in one format.

CADMATIC eXchangers:
• 3D eXchanger for AutoCAD
• 3D eXchanger for PDS
• 3D eXchanger for PDMS
• 3D eXchanger for Smart 3D
• 3D eXchanger for Polytrans

Interfaces with design packages:
• Interface with Tekla® and support of IFC format
• Interface for E3.series® electric design package
• Interface with Caesar II pipe stress calculation software

eXchanger for AutoCAD®

eXchanger for AutoCAD® has a key role in cases where models that were originally created in mechanical CAD need to be imported and reused in CADMATIC. The same goes for exporting CADMATIC native models to the AutoCAD® format.

eXchanger for PDMS® and PDS®

eXchanger for PDMS® and eXchanger for PDS® converts models from PDMS format and PDS format respectively to eBrowser format and CADMATIC 3D models. The converted models are significantly smaller in size and contain the attributes and structures of PDMS or PDS files.

Benefits...

- *Reuse of existing 3D models saves time and money*

- *Effective design coordination with combined models*

- *Easy to use and share converted models*

eXchanger for Smart3D®

eXchanger for Smart3D® converts models from Smart3D® format respectively to eBrowser format and CADMATIC 3D models. The converted models are significantly smaller in size and contain the attributes and structures of Smart3D models.

eXchanger for PolyTrans®

eXchanger for PolyTrans® offers more alternatives in using mechanical CAD models. Users can now also take advantage of Okino conversion modules covering all of the most popular formats.

Tekla® interface

The Tekla interface enables model exchange with the Tekla civil engineering software. Model sharing and support for workflows between plant design and civil engineering disciplines ensures optimized project progress and communication. Design coordination, change and revision management during the project are easier than before: a single combined model can, for example, be used by users from all disciplines and clash check is easy and efficient.
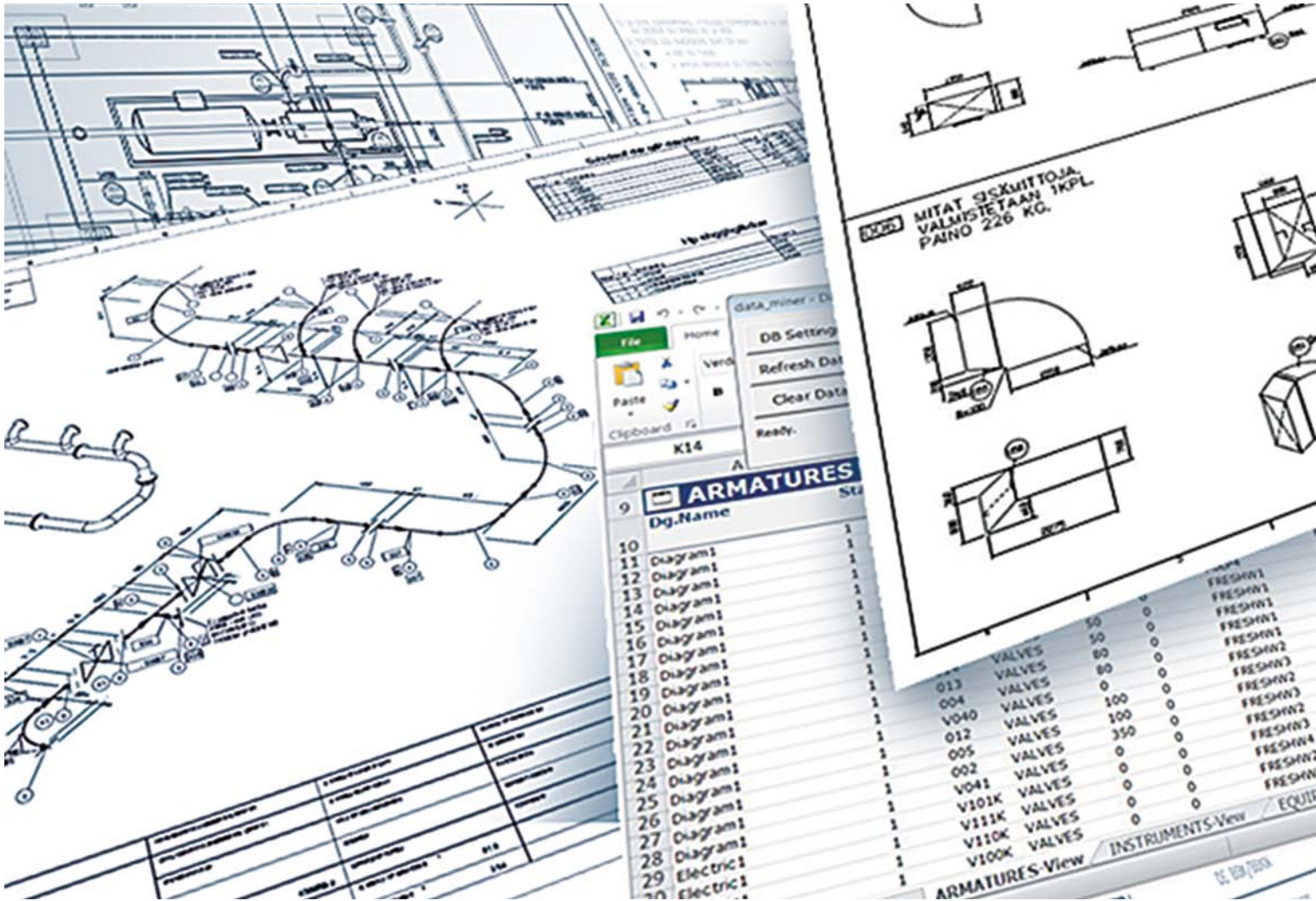
In addition a single model can be shared for project review and commenting which provides possibilities for efficient project communication and minimizes errors before the construction phase.

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Versatile and Comprehensive Document Generation

Documentation for construction and installation

At any stage of 3D modelling the user can generate a wide range of documents for construction including layout drawings, sketches, piping layouts, isometric drawings for pipes, duct spools, unit and structural parts drawings, and extract BOMs and MTOs.

The inbuilt AutoCad-like drafting tools allow fast and effective finishing of the drawings to be exported to DWG or PDF formats, or printed directly. Bills of materials and other construction data can be extracted in suitable formats: preliminary lists of materials, construction materials for zones, buildings and areas.

EQUIPMENT LAYOUT — DRW

PIPING LAYOUT — DRW

DUCT ARRANGEMENT — DRW

CABLE TRAY ARRANGEMENT — DRW

PIPING ISOMETRIC & SPOOL — DRW

Plant Design Software

|	
DUCT SPOOL	DRW
STRUCTURAL STEEL UNIT DRAWINGS OF LADDERS, STAIRS, PLATFORMS & RAILS	DRW
SUPPORT LOCATION PLANS & SUPPORT	DRW
CABLE ROUTE	DRW
BILLS OF MATERIAL	BOM
CONSTRUCTION DATA	DATA

Benefits...

- No limitations in type and size of drawings

- Fully customizable output templates

- Multi-user / multi-site access

- Intelligent export to AutoCad or PDF

- Effective project document handover with eShare
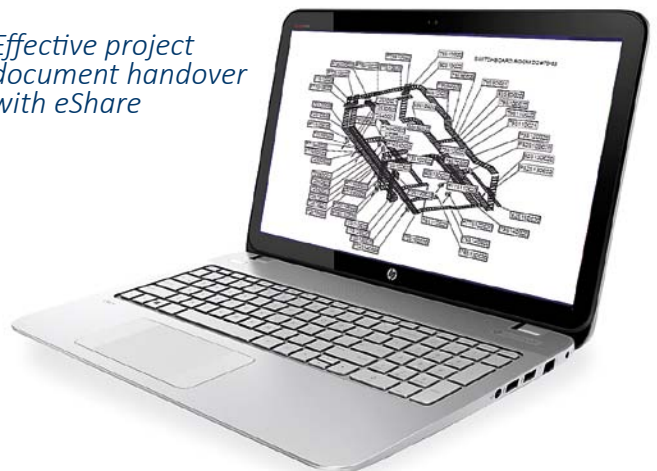
CADMATIC
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Software solutions that increase business efficiency

CADMATIC is an international developer and supplier of cutting edge engineering software for the marine and process plant industries. CADMATIC software is used in many leading shipyards, ship design, engineering, EPC, and Owner/Operator organizations worldwide. Our software has gained a good reputation of having one of the world's best money/performance ratios. The software solution for your engineering work is a carefully chosen combination of our software products and modules introduced below. Contact us and let us show you the CADMATIC way to boost your performance.

Plant Design Software

Information Management

Marine Design Software

CADMATIC Plant Design Software is an advanced software tool for engineering process intensive plants with their processes, instrumentation and constructions in 3D. CADMATIC Plant Design Software consists of several standalone modules which together form digital tools to design, construct, start and operate the process plant through its entire life cycle. The CADMATIC 3D model and data are the heart of all CADMATIC plant engineering.

CADMATIC Information Management consists of a range of 3D data sharing software tools for making the information flow more efficient between all parties during the engineering phase and beyond. The CADMATIC eBrowser and eGo tools are highly advanced 3D project and model reviewing tools. CADMATIC eShare makes all project information available for all related business processes by a single 3D access point with an easy-to-use web-based interface.

CADMATIC Marine Design Software is a versatile software tool for engineering ships of all sizes and complexity, offshore constructions, and machinery in 3D. CADMATIC Marine Design Software consists of various modules for Hull and Outfitting, but also includes special marine modules for creating shell plates, plate nesting and NC data for automated welding and profile cutting. The 3D model acts as an information database throughout the entire lifecycle of the marine investment.

■ Main offices in Finland and the Netherlands
● Personnel also in China, Hungary, India, Italy, Russia, Singapore and the United Arab Emirates

● Additionally we have certificated resellers and support partners in over 15 countries in Europe, Asia and America with 700 customer organizations in 55 countries

For CADMATIC worldwide offices see www.cadmatic.com/contacts

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