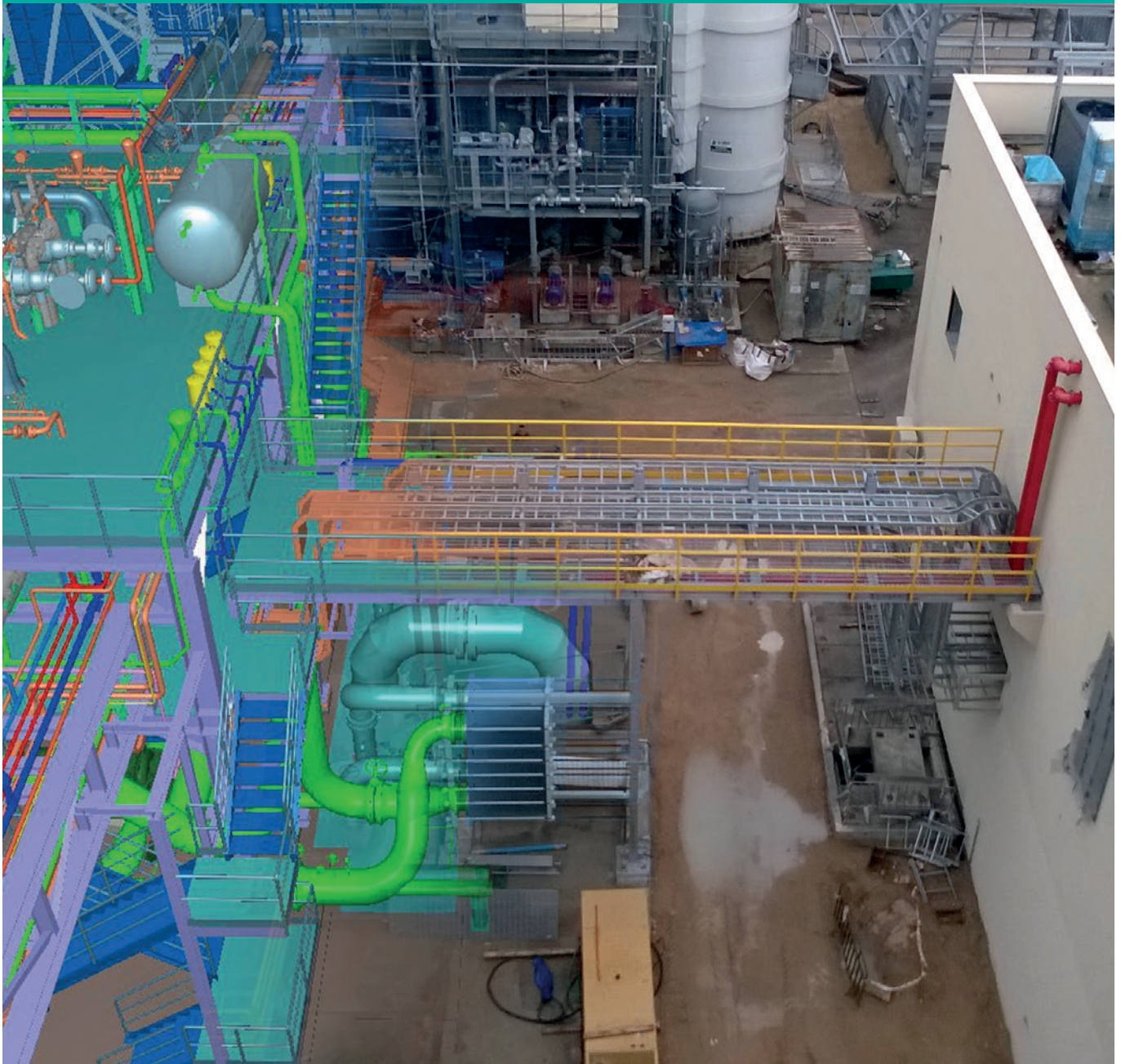


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2021

# eXperience **No 05**

Process & Industry



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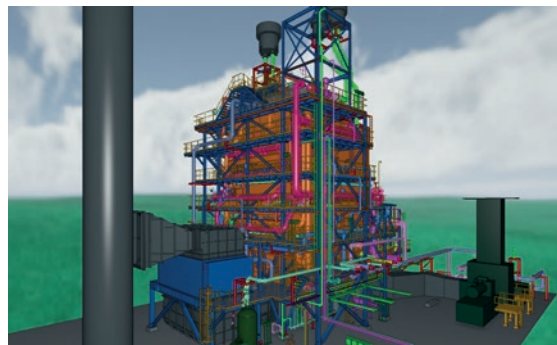
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**CADMATIC Process & Industry eXperience 05**

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# Going the extra mile for our EPC customers

You are reading our special EPC company-focused edition of our eXperience magazine. Many topics that are important to consulting and engineering companies are equally important to EPCs. EPCs have an additional focus on procurement and construction, and from our perspective, this requires greater functionality and integration from the CADMATIC solution to assist them to efficiently manage these critical project phases.

We have listened carefully to our growing base of EPC customers to gather a thorough understanding of their special challenges and needs and have gone the extra mile to implement tools and functionalities in our software that empower them to be the best in their respective fields.

This focused development and cooperation over many years is paying off and I am excited about the solutions we are providing and strong growth we are showing in the EPC sector. In this magazine, we showcase a selection of recent successful customer references. I note with interest how the use of Virtual Reality-based technologies and Mixed Reality (MR) solutions is growing. Our EPC customers are keen to use technological advancements to drive project efficiency.

We take a deep dive into CADMATIC CoDesigner, a work sharing solution that is included with all software licenses. It efficiently manages work sharing



between global engineering teams working on the same project. I am proud to say that our work sharing solution is the best in its class!

The efficiency of our CoDesigner was an important driver in global power, energy storage and environmental technologies provider Sumitomo SHI FW's recent decision to switch to CADMATIC. Sumitomo's decision shows that we are on a right track, we are an attractive alternative and can create added value for our customers with our own technologies. Read the Sumitomo press release [here](#).

We also have an article that delves into how CADMATIC's powerful copying tools are assisting process industry customers to avoid wasting time on re-design during plant engineering. We support parallel work in sister projects that comes with great tools for

flexible change management.

Digital transformation and data-driven construction have the potential to take the efficiency and quality of industrial investment projects to new levels. Take the leap with us and read more about this on page 18. Finally, I am also happy that CADMATIC is one of the first plant design solutions to support Lisega's new generation LICAD® V11 pipe support system. Read more about that on page 23.

I trust that you will enjoy this special EPC edition of our magazine and welcome your feedback.

Sami Koponen  
Vice President, Process & Industry



# CMBernardini

*VR-based technologies and design reviews deliver vast efficiency gains*

CMBernardini, a leading international designer and manufacturer of technologies for the oil & fats, oleochemicals and biodiesel industries, has gained vast efficiencies with the use of VR technologies. It reports that the use of VR translates to an over 70% reduction in the probability of design errors and a similar reduction in the time needed for analysis, inspections, and tests.

CADMATIC software was implemented at CMBernardini in late 2019 and is used for VR-based design reviews and piping design integrated with P&ID.

#### **Error probability reduced by over 70%**

Rigorous inspections and testing are required before any oil & fats refinery or biodiesel production plant can start operation. Tailor-made systems and plants carry a higher risk of errors due to the unique designs and any errors picked up after or during construction can lead to costly delays and repair work.

*"Such delays would not only*

*waste time and money, but you would also have a dissatisfied customer. We estimate that the use of VR-based technology reduces the possibility of errors by over 70%. With VR, you can do all the required inspections and tests long before even a single pipe has been built,"* says CMBernardini Engineering Manager Gianluca Coccato.

#### **What used to take 3-4 days, now takes 1 day**

CMBernardini indicates that they have also achieved significant time savings with the help of VR. Analyses, inspections, and tests that used to require 3-4 days of work,

now take only one! This allows the company to do more inspections at each stage of the design, which improves quality and reduces material waste.

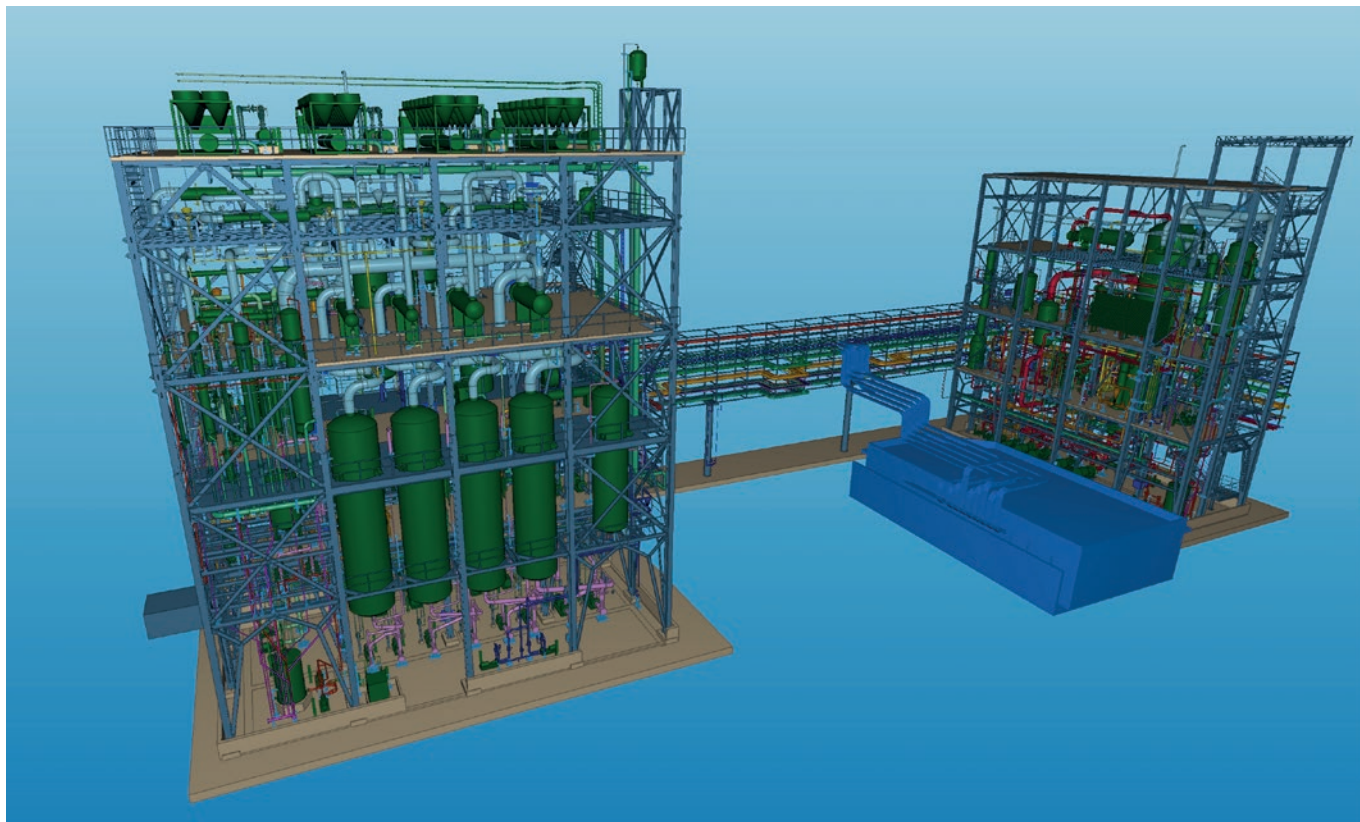
The use of VR also vastly improves the customer experience. Customers can take part in the design phase and comment on design solutions while really seeing what the result will be in VR.

*"We use CADMATIC eBrowser with a VR headset in design reviews. It helps to see with your own eyes what the solution will look like in the real world. The review process is smoother and faster this way,"* Gianluca explains.





*"We estimate that the use of VR-based technology reduces the possibility of errors by over 70%."*



### Engineers literally travel inside pipes

VR technologies allow CMBernardini engineers to literally travel inside pipes, electrical systems, metal structures and tanks.

The engineers can verify that every single piece is assembled exactly in the correct way. Other engineers and the customer can follow the navigator's interactions with the system on a separate screen, which means they can comment on and participate in the inspection.

CMBernardini have also included augmented reality (AR) elements in project reviews leading to more in-depth analysis and verification.

During pipe analysis they can, for example, view all dimensional and material data of pipes.

The use of VR and AR technologies assists CMBernardini to keep to promised project time schedules and costs.

### Construction of 3 plants underway in Italy

CMBernardini is currently building three plants in Italy: a glycerine distillation plant, an esterification and deacidification plant, and a biodiesel distillation plant. CADMATIC has been used in these projects for piping design and P&ID as well as project reviews with customers.

In addition to project review with VR, Gianluca adds that a great benefit of CADMATIC in these projects has been the integration of P&IDs with modelling, which he says helps designers to double-check line elements, instruments, and routing.





*Introducing Emanuele Stillitani:  
Italian Application Specialist with  
eShare focus*





***Who is Emanuele Stillitani?***

I graduated in aerospace engineering and then chose a slightly different path to start working in the process industry. Since then, I have explored many different areas in this field, ranging from piping materials to QA/QC inspections, up to welding. I worked as a consultant for leading multinational engineering companies for more than ten years, and thanks to this experience, I have gained a good understanding of the whole plant life cycle.

I grew up and lived most of my life in Rome, but a few months ago I decided to step out of my comfort zone and move to Milan to work for CADMATIC. I think change is important. It is good to face new challenges, broaden one's perspective, and learn new things. In my free time, I like to read, go to the cinema, and travel.

***How and when did you end up at CADMATIC?***

I used CADMATIC software at a previous job. I still remember how fascinated I was in the beginning by how easy it was to run pipes with the software. One week after being introduced to CADMATIC, I was already laying pipes around the plant. Three years ago, my current manager at CADMATIC, Gianluca Ricozzi, proposed that I start collaborating with him in promoting eShare. As part of this, I visited many companies and instructed a lot of people in the use of eShare. I enjoyed putting my plant engineering experience to work in these situations. In September 2021, I was hired as a full-time CADMATIC employee.

***What is your current position and what are your most important tasks?***

I am an Application Specialist. My most important task is supporting our customers in post-sale activities. Often, I think of myself as a bridge between customers and the development team, or as a link in a chain, easing the process of communication. Thanks to my previous work experience, I can easily intercept our customers' problems and needs. I also train customers in how to use eShare. This gives me the opportunity to get to know different companies, broaden my knowledge, and expand our network of happy customers.

***What do you like the most about your work?***

I like being close to our customers, to understand their needs, and to let them feel that I can really help them and solve their technical problems. Of course, to do that you must be very patient and be able to connect with people on a psychological level. Moreover, working for a multicultural company is challenging and interesting, I'm sure this experience will enrich me both at a technical and human level.

***What do you think are some of the biggest challenges EPC companies face?***

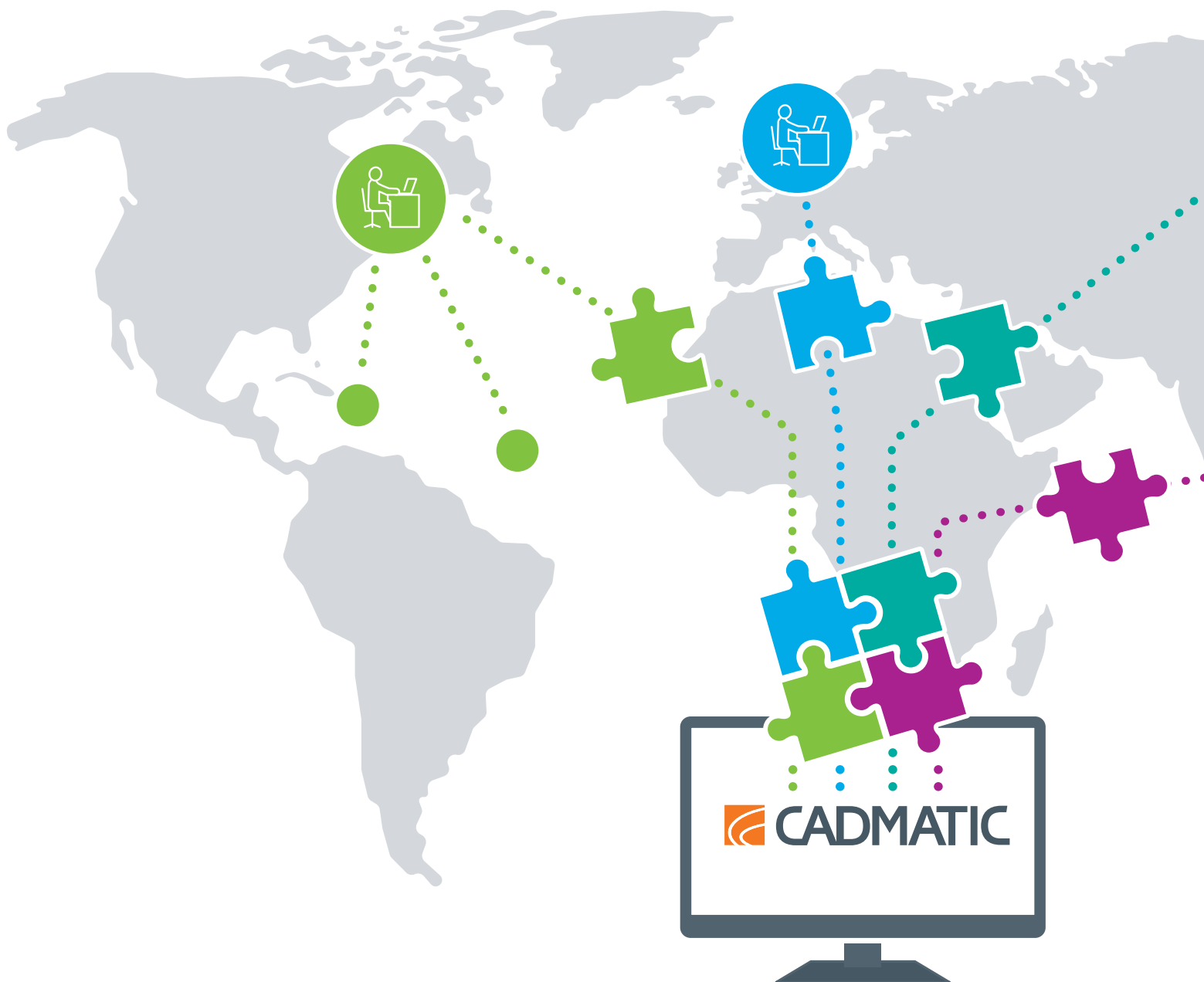
Climate change is one of the biggest issues. There is a great need to decarbonize the way energy is produced. Deliveries are becoming increasingly stringent, so it is critical for EPCs to control all plant processes to optimize the time used. Digitalization is another big challenge. Companies need to learn to think digitally, and this mentality shift needs to happen as soon as possible.

***What does CADMATIC offer EPC companies?***

I think CADMATIC can play a major role in helping our customers to face the afore-mentioned challenges. We help them to continuously improve their businesses, to reach their goals, and solve their problems. Thanks to the strong supportive relationship we have with our customers, we can exceed their expectations and delight them.

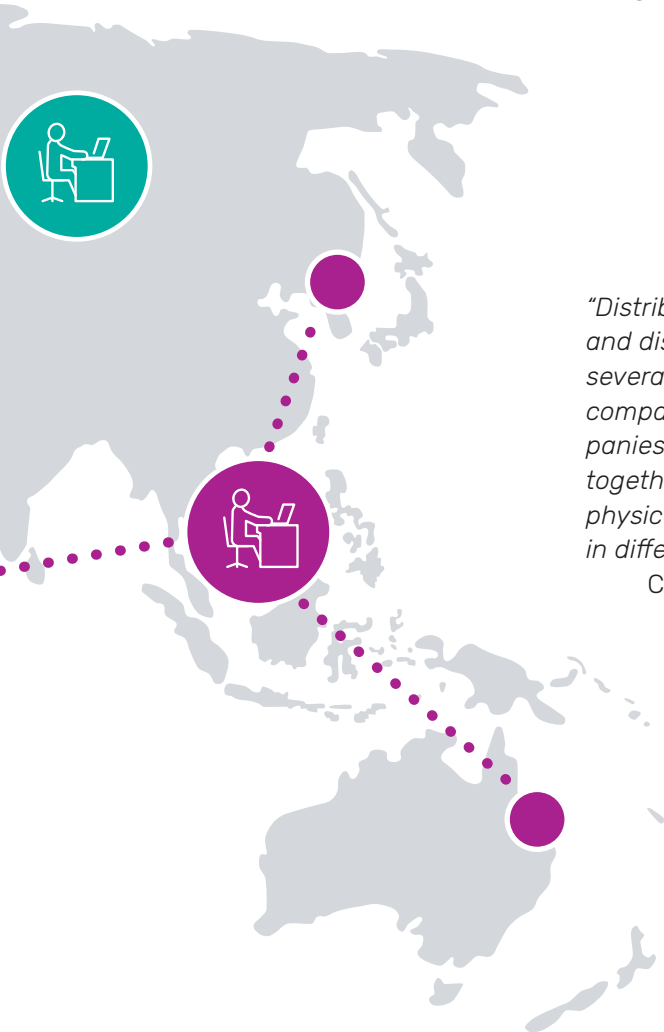
# Distributed design and engineering 24/7

*Free of charge and with just a few clicks*





Distributed design and engineering ensure the use of the best experts and resources whenever necessary – around the world 24/7. CADMATIC CoDesigner is an easy-to-use and effective tool for distributed design and engineering, and it is available free of charge with any CADMATIC design software. It enables the sharing of design information in real time, quickly and reliably.



*"Distributed work means sharing and distributing tasks between several employees within one company or between many companies. Employers can design together in one project, whether physically in the same location or in different parts the world," says*

CADMATIC's Vice President  
for Customer Services  
Matti Siltanen.

Thanks to distributed design and engineering, the best experts and resources are always available despite their geographical location, and it is more efficient to utilize subcontractors. The software licenses acquired for design and engineering can be used more effectively when used throughout the day in different time zones. This may save up to 60% in license expenses.

*"In order to manage distributed design successfully, it is essential that people working on the same project are able to use and share the same up-to-date design information. In addition, the designers must have access to the same design model and 3D environment."*

**Included free of charge with  
CADMATIC software**

There are plenty of tools available for distributed working, but they can be a major expense for a company and use plenty of installation resources and server capacity. CADMATIC differs from most design software providers in that it offers an easy-to-use and effective management system for distributed design and engineering projects, free of charge included in its design software products.

*"Everybody deserves to use a proper software tool. That is why we include the CoDesigner functionality in our design software."*



*CoDesigner, an effective system for distributed design and engineering, is included free of charge with any other CADMATIC software, say Tommy Norström (left) and Vice President of Customer Services Matti Siltanen.*

*It is the core of a distributed design and engineering project, much like its gear box. Thanks to CoDesigner, all project-related information and updates are always up to date and accessible to all project participants,” says Business Development Director for CADMATIC’s Process & Industry unit Tommy Norström.*

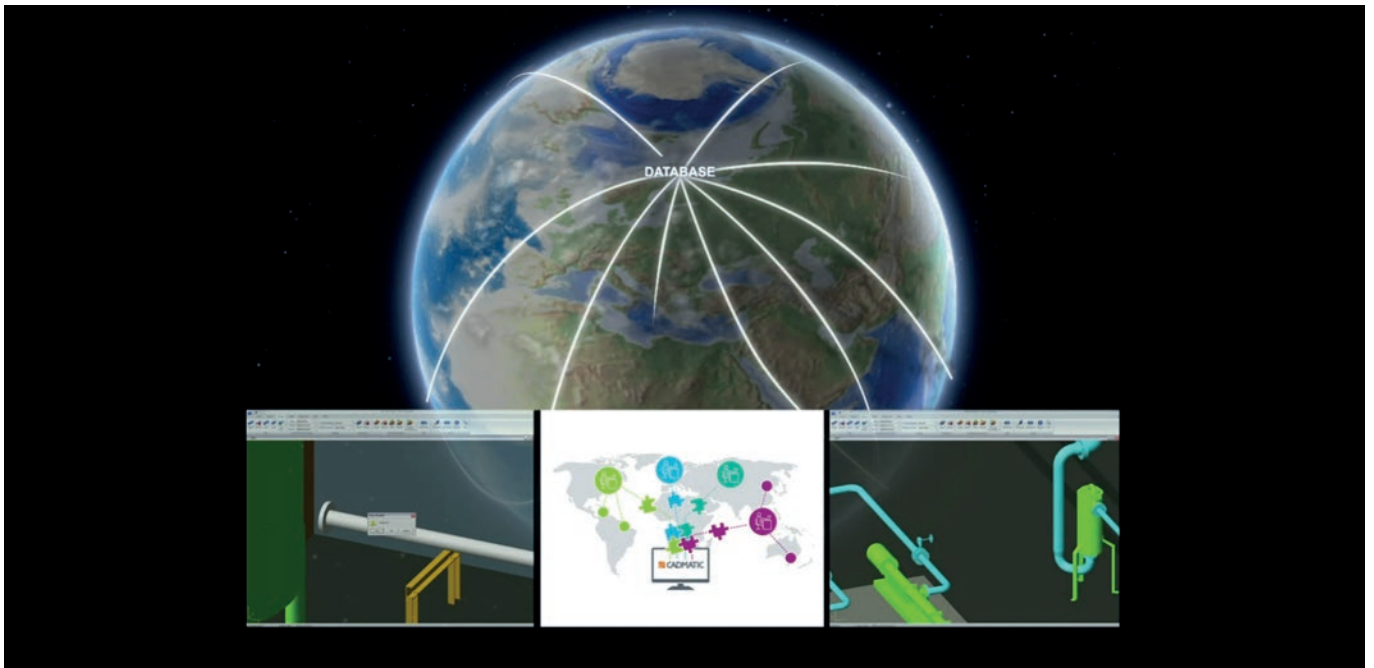
The development of CoDesigner’s first version started already 15 years ago. Since the very beginning, it was designed as an effective technology based on modern data management for distributed design and engineering. The system and its development have remained under the control of CADMATIC.

#### **Start use with just a few clicks**

CoDesigner is easy to implement and use.

*“Implementation only requires installation permission and the correct gate opened by the IT department, that is all. You can establish a new project team in the system with a few mouse clicks. Initiating the replication for a new*





*"CADMATIC's system for distributed design is included free of charge with its design software products."*

site takes about ten minutes in a smaller project environment and an hour for a larger project. In many other similar systems, connecting a new site to a large design project can easily take days, even weeks, while requiring demanding database operations and significant IT expertise," says Siltanen.

#### **Optimized replication**

CoDesigner can run very large projects that include large amounts of data. In other similar systems, after editing a document, the entire

document and all the objects contained in it are always replicated one at a time, which requires a lot from the system.

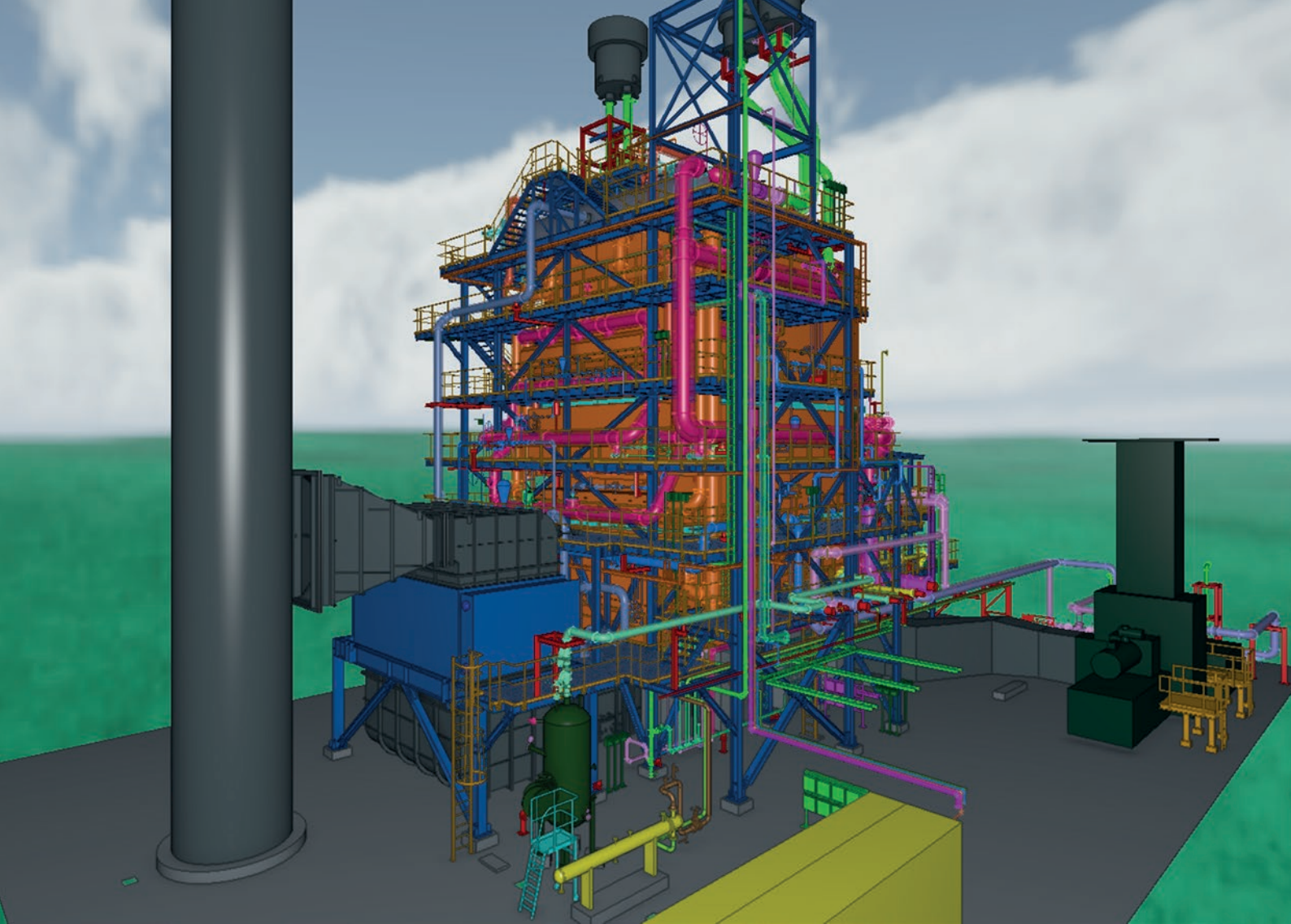
"In CoDesigner, each object is independent, and when you edit an individual object, only that object is replicated, not the entire document and all objects," Norström explains.

CoDesigner can be used of-line, too. In that case, the files are synchronized when the system is back online. When working online, the synchronization frequency between two sites can be adjusted to serve the project.

*"Based on customer feedback, CoDesigner has by far the best functionality on the market."*

#### **Safe to use without conflicts**

The biggest advantage of CoDesigner comes to those who use many subcontractors or have plenty of design projects going on at the same time. The system allows export and import of data from other systems in case design and engineering suppliers and their subcontractors do not use the same software.



# Global boiler supplier Macchi gains speed with CADMATIC

*Starts investigating use of Mixed Reality  
solutions*



Macchi is a leading global supplier of industrial boilers for the oil & gas industry and heat recovery steam generators for cogeneration plants. The company, which is part of SOFINTER Spa, implemented CADMATIC in 2018 and uses the software for plant layout, piping design and the generation of prefabrication materials of industrial boilers. The company is also investigating the use of Mixed Reality (MR) as an approach to enhance control during the construction phase.

Macchi Technical Director Marzio Ferrara says they implemented CADMATIC to improve the level of accuracy of detail engineering, respecting stringent and complex piping design rules, maintenance spaces and, last but not least, ergonomics and safety for plant operators. According to him, all these aspects are crucial for industrial plants.

#### **5 plants already designed with CADMATIC**

Since the CADMATIC implementation and associated training in 2018, they have completed the

piping design and prefabrication of 5 plants with CADMATIC. They have also developed an internal object library to complement the CADMATIC library and to speed up design work, increase accuracy, and for more comprehensive integration.

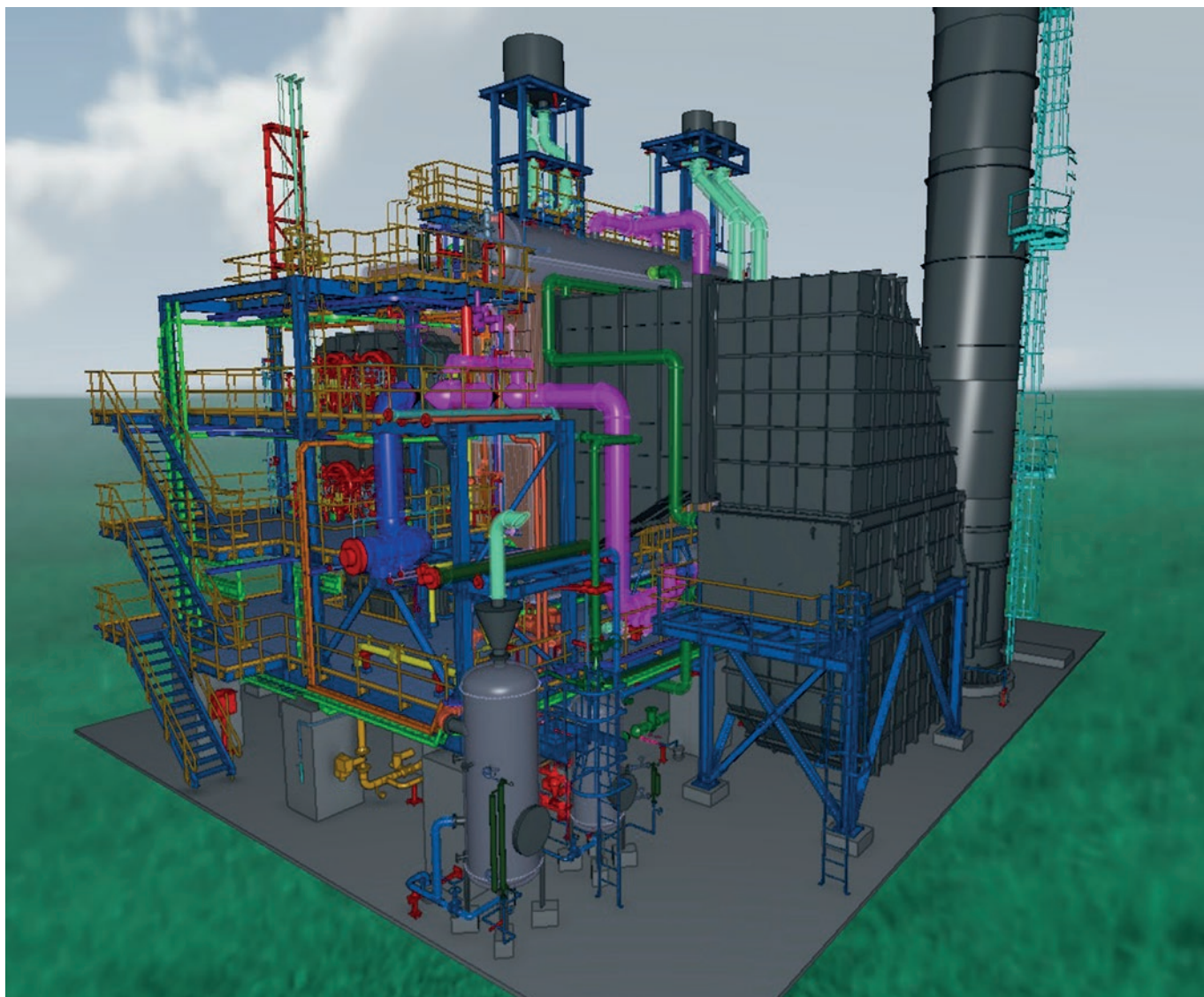
*"We have used CADMATIC extensively with satisfactory results. I am particularly happy with how easy it is to manage the 3D model and the speed and accuracy of modelling, as well as the ease with which you can move around in the 3D model. The extraction of material lists and isometrics is also fast*

*and efficient,"* says Marsilio Resente, Head of the Mechanical and Structural Engineering Department.

#### **MR (Mixed Reality) for enhanced construction control**

According to Luca Galmarini, 3D Piping Team Leader at Macchi, they have been investigating the use of CADMATIC's Mixed Reality capabilities to boost control during construction at their workshop in Marghera close to Venice.

*"We are looking at the possibility of using the 3D model to verify construction during and after the mounting phase at our workshop.*



*We would like to be among the first to develop and bring these new technologies to plant engineering and the world,” says Luca.*

In the first testing phase, eShare for HoloLens will be used on a tablet and, after that, tests will also be conducted with CADMATIC eGo. The idea is to optimize the construction phase by simplifying access to documents, easing access to asset information, and by allowing direct

reporting and commenting regarding any changes that may be required in engineering and the 3D model.

Gianluca Riconzi, CADMATIC regional manager in Italy is excited about the use of MR solutions at Macchi.

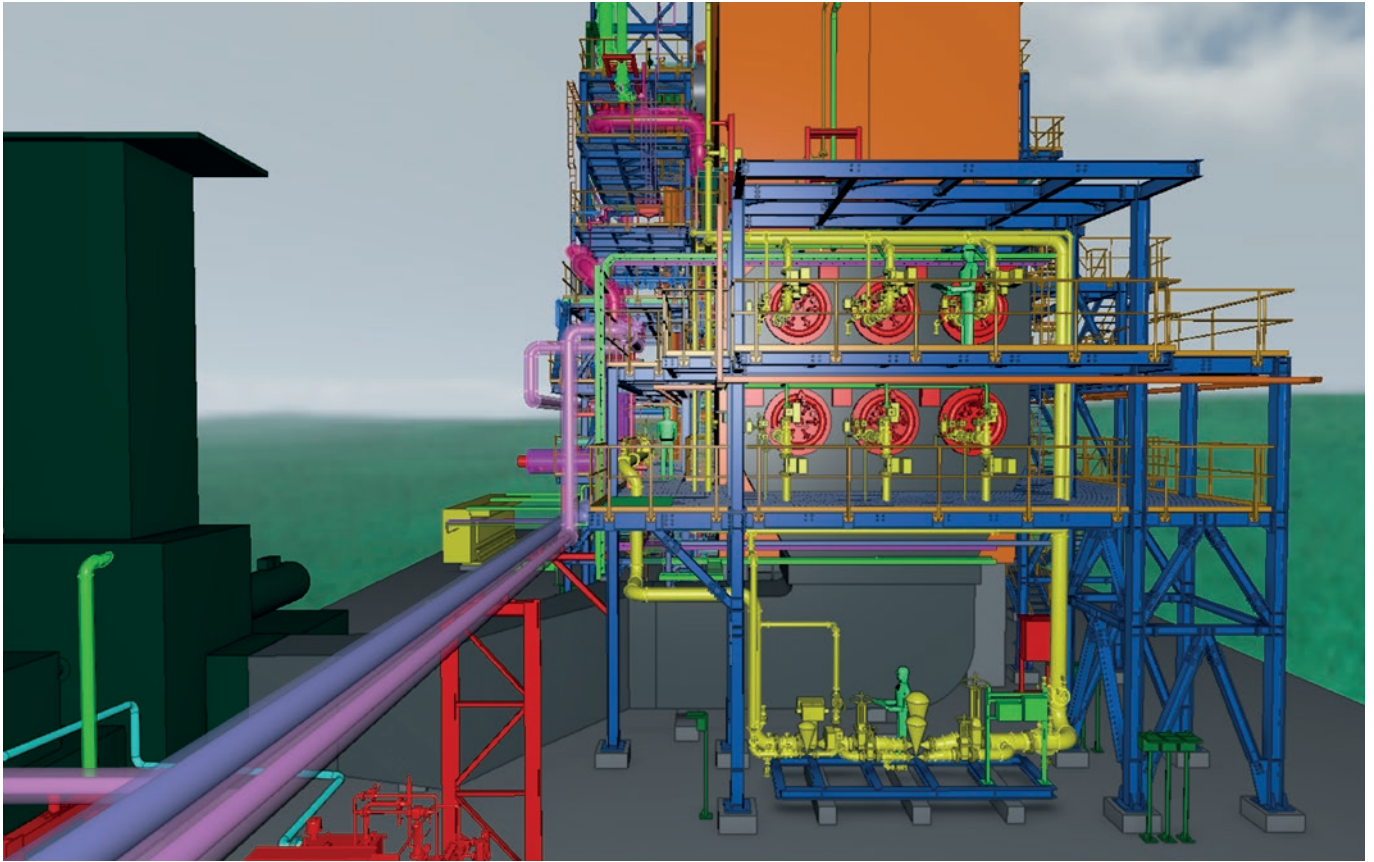
*“This is a very interesting case for the use of our information management tools to optimize construction. There is increased interest in using AR/VR/MR and AI*

*tools in general in the oil and gas and other sectors to gain efficiencies. We are working closely with Macchi to ensure they get the best out of these new technologies,” says Gianluca.*

#### **Smooth integration with other engineering software programs**

Marzio Ferrara says that the smooth integrations with other software packages is a significant plus of CADMATIC software.





*"Macchi implemented CADMATIC to improve the accuracy of detail engineering."*

*"Macchi and our partners use several other engineering programs. The CADMATIC interfaces to programs such as Tekla®, Inventor®, Solidworks®, and PDMS® are very effective."*

Macchi is currently using CADMATIC on four projects including a plug and play TITAN M™ boiler and an MRD™ Macchi Radiant high-pressure boiler. In these projects, CADMATIC is

used to define plant layout and to design foundations, walkways, and maintenance accessibility. Defining the routing of pipelines and their supports is one of the main CADMATIC features used. It is also utilized to establish routes for cable trays and to position instruments.

More CADMATIC projects are being planned at Macchi, with at least three projects scheduled for next year.

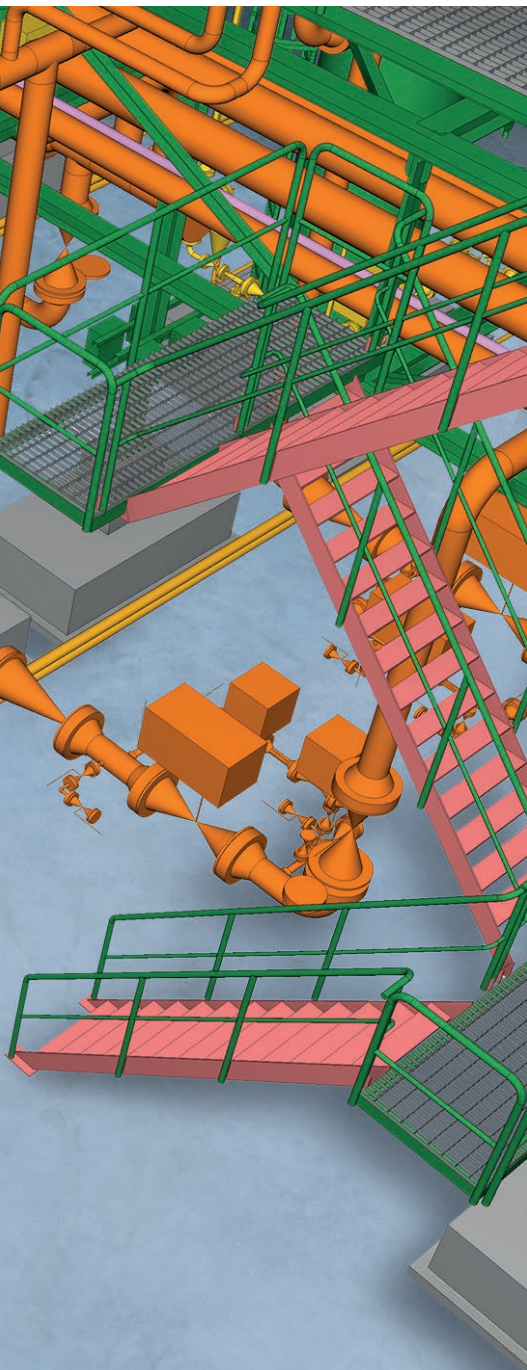
**MACCHI**  
STEAM & POWER GENERATION  
a division of **Sofinter**

# Take a leap forward with data-driven construction





*The 3D model and integrated data from other systems and project phases represents the single source of truth.*



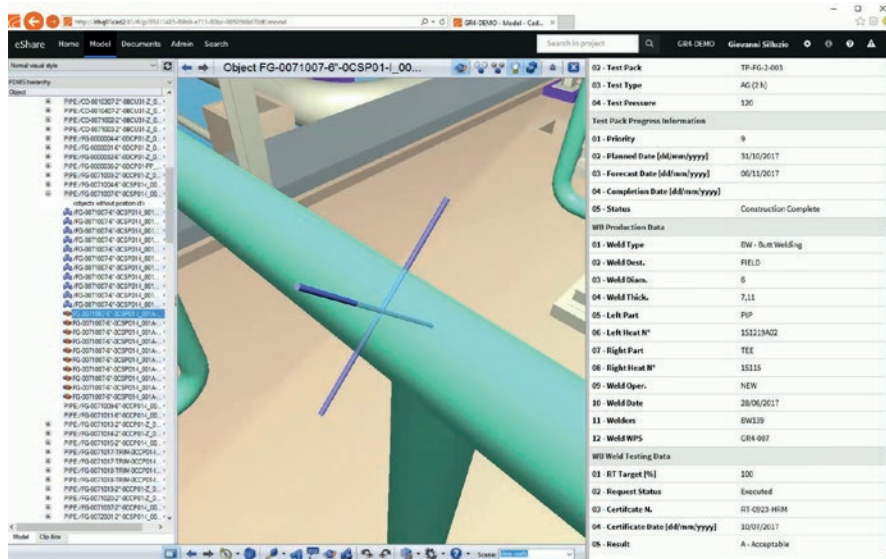
Data-driven engineering and construction have the potential to take the efficiency and quality of industrial investment projects to new levels. By embracing the opportunities offered by digital transformation, EPC companies are well placed to reap efficiency rewards in their engineering and construction projects.

But what does data-driven mean and how can we implement this approach in projects? In this article, we discuss what a data-driven project looks like, how it relates to digital twins, and illustrate how Italian oil & gas general contractor Bonatti is optimizing its construction projects with the help of a digital twin platform.

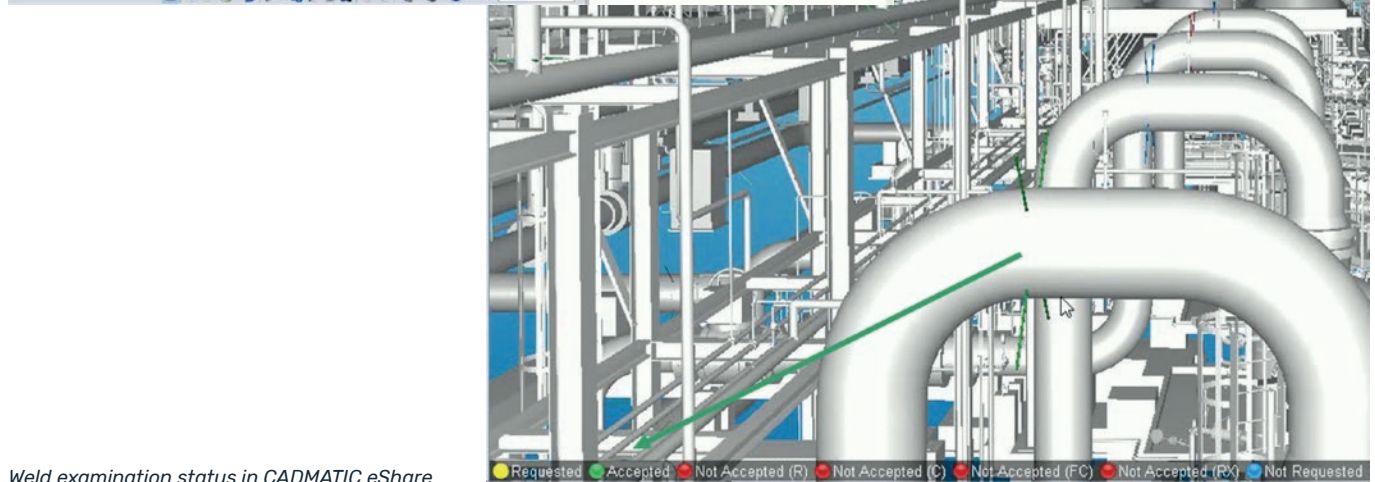
#### **What does data-driven mean?**

A vast amount of data is generated during the life cycle of an industrial investment project. In data-driven projects, all project data is interconnected and drives the entire process, from engineering and procurement to construction. Critically, the manual handling of data is minimized or eliminated





Weld execution data in CADMATIC eShare



Weld examination status in CADMATIC eShare

completely in such projects to safeguard data integrity and avoid errors. When we minimize manual data handling, personal competence becomes less critical.

It is, however, not enough for data to be of high quality, consistent, and reliable. To benefit optimally, it needs to be easily accessible and understandable. In addition to a high level of data interconnectivity, it is critical to minimize the number of points where data is accessed. This comes with its own challenges considering the

myriad of different systems and file formats typically used in EPC projects.

### 3D model as access point to all project data

One solution to the challenge is the use of the 3D engineering model as the only access point to all project data stored in different systems. In this scenario, the 3D model and integrated data from other systems and project phases represents the single source of truth, preventing silos of disconnected information.

At the end of the construction project, it also enables the handover of all released technical information for operation.

The 3D model with all its engineering information is augmented with information from procurement and construction as the project progresses, in essence, incrementally building a digital twin of the investment target.

Modern digital twin platforms should have import capabilities from different systems using different standard formats, such as IFC.

In preparation for handover, as-built changes should be imported back to the digital twin before it is handed over to the end customer. This applies equally to brownfield and retrofit projects, where laser-scanned point clouds provide an extra layer of “as is” information to use as reference information for new designs. Sophisticated conversion tools can convert point clouds into smart information-rich native models, speeding up the creation of new designs and their digital twins.

The more data and details are included in the digital twin of a physical asset, the more accurate and reliable the physical asset connected to it becomes. Eventually,

the physical asset could be used and managed digitally throughout its entire lifecycle.

### Digital twins in EPC projects

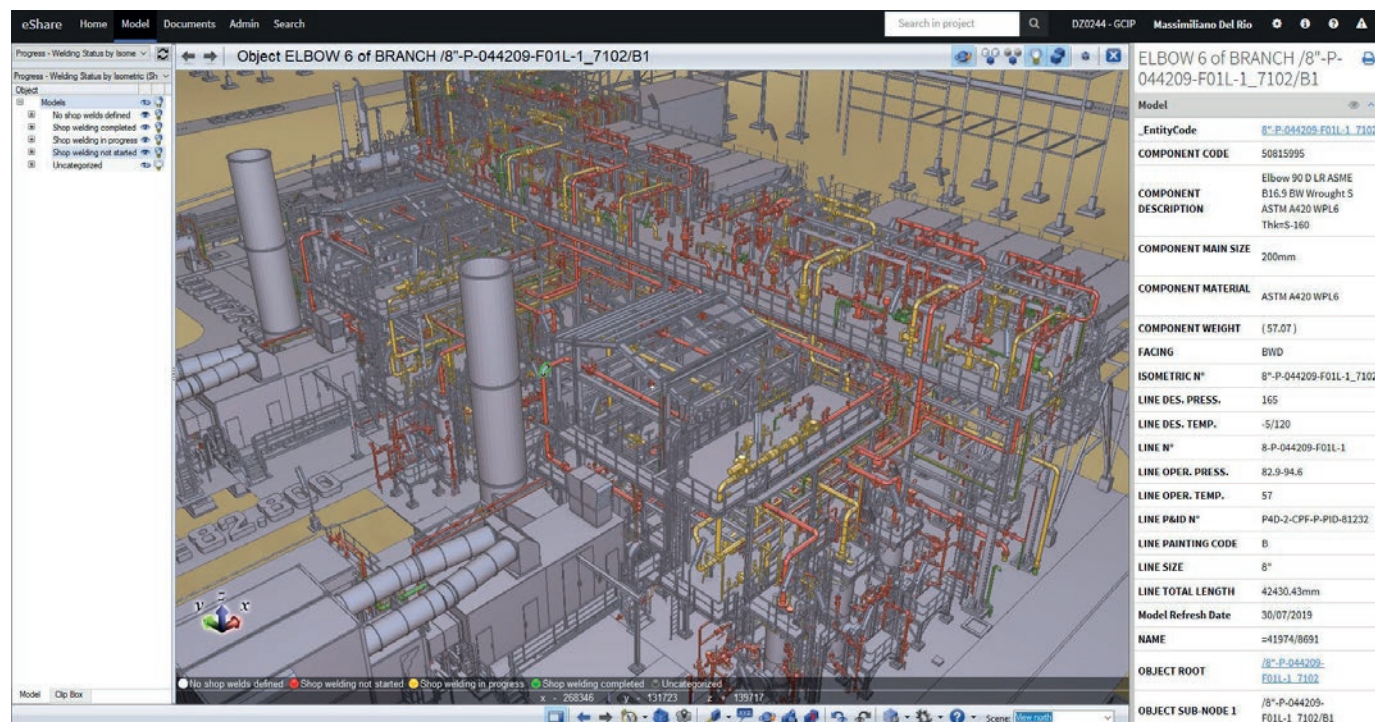
We can define three different phases for the digital-twin life cycle: digital twin for engineering, digital twin for construction, and digital twin for operations, which includes decommissioning.

For EPC companies, the engineering and construction phases are the most important. Cost savings and improved project margins can be achieved in these phases by taking advantage of digitalization to achieve better team collaboration, faster decision-making, and more efficient

and accurate construction site management.

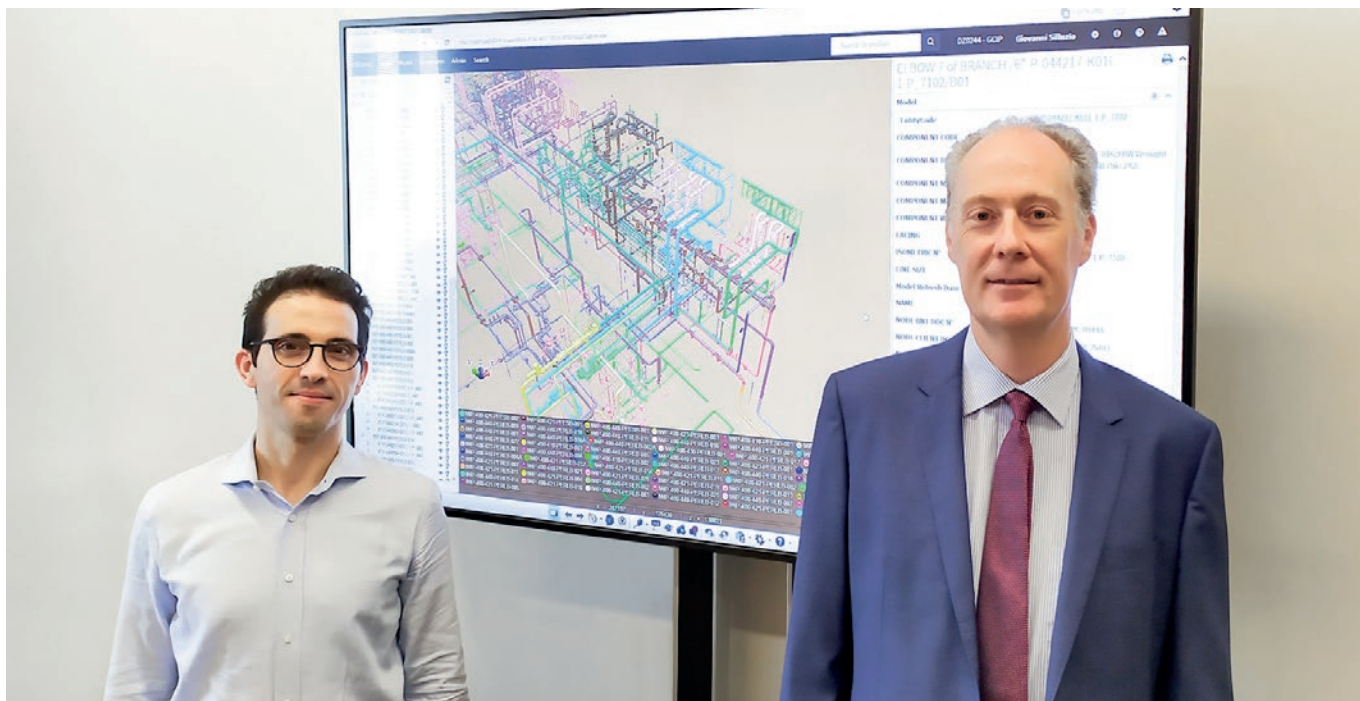
In an EPC project, the digital twin acts as a project collaboration and information sharing portal, including engineering data, scheduling and construction site management. Having the project’s digital information available and visible in one system creates added value and allows more efficient performance for EPC companies during the various project phases.

At CADMATIC, we adhered to this philosophy when developing our eShare information management solution, which integrates, visualizes, and shares engineering, design, construction, and operation information in a web portal.



Piping fabrication feasibility in CADMATIC eShare





Construction Methodologies and Systems Manager Massimiliano Del Rio and Construction Methodologies and Systems Senior Engineer Giovanni Silluzio have been key persons in the implementation of eShare at Bonatti.

### Visualizing status of construction projects in 3D model – CASE Bonatti

International oil & gas general contractor Bonatti is a good example of an EPC company that is benefiting from digital transformation and digital twin platforms.

Bonatti acquired CADMATIC's eShare information management system in early 2018 to boost the efficiency of its constructability and construction project phases. There was particular interest in optimizing their processes by visualizing the status of construction projects in the 3D model.

In this regard, an important goal was to support the construction site in managing and tracking specific activities. One such activity is workforce planning, a process aimed at improving the productivity of the construction workforce

by removing execution constraints. It ensures that the required installation inputs, such as drawings, materials, procedures, permits and equipment, have been monitored and are promptly available to the crew assigned to the work package.

### Constructability is vital for project success

Ensuring constructability is a core element in the successful implementation of Bonatti's projects. It allows the company to analyze all project processes with the aim of optimizing construction sequences and practices. Interferences and possible schedule impacts are identified before starting construction, thereby preventing errors, delays, or cost overruns. The effective integration of construction knowledge with planning activities,

design and field operations allows Bonatti to achieve their overall project objectives in compliance with time, accuracy, and HS&E requirements.

According to Bonatti Construction Methodologies and Systems Manager Massimiliano Del Rio, effective data visualization via eShare is a key factor in optimizing their processes.

*"When you visualize data in a realistic digital image of the plant, it dramatically improves the quality of information conveyed to the user. It gives the site management a much greater amount of information in a single screenshot than can be achieved with traditional forms of reporting such as reports, tables, and graphs. This assists the site management to take more effective operational decisions."*



# CADMATIC among first plant design solutions to support LICAD® V11

In early 2021, CADMATIC was one of the first plant design software solutions to provide support for the new LICAD® V11 version in the 2021T2 release. In the 2021T3 release, the integration is boosted with enhanced functionality. The interface to LICAD® V11 enables the smooth and automatic transfer of pipe support data between CADMATIC and Licad®.

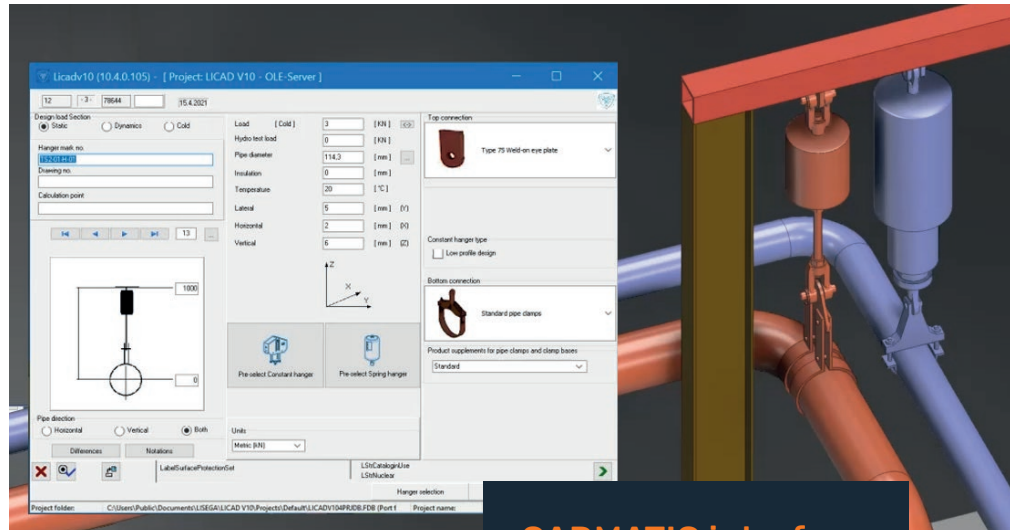
LICAD® is a global software leader for industrial pipe support design that can reduce the time used for support design significantly, as much as 50%.

## 3D geometries of supports directly from LICAD® – saves time and reduces errors

According to Matti Siltanen, CADMATIC Vice President, Customer Services, it is significant that in CADMATIC the 3D geometries of supports in the interface come directly from LICAD®.

The 3D geometries are not based on software-related component libraries that need to be updated separately. As the geometries come directly from LICAD®, it guarantees that the latest LICAD® support geometries are always in use,” Siltanen explains.

In practice, all piping and support data between CADMATIC and LICAD® are exchanged in the back-ground without any inputs from the user. Without this kind of interface, the user would have to manually type in the support data, which can result in errors. The automatic change detection feature also ensures that LICAD® supports are checked when modifications



are made to pipes that have supports.

Sami Koponen, CADMATIC Vice President – Process & Industry stresses the importance of interoperability for EPC companies.

*“We understand that our EPC clients want to use the best available software programs for different tasks to be as efficient as possible. For this reason, we make it our priority to ensure that they can seamlessly use our solutions together with specialized software like LICAD®,”* says Koponen.

## What's new in LICAD® 11?

LICAD® 11 includes revised load tables for clamps considering the angularity of the off-set, which can contribute to significant cost savings. Besides significantly improved intuitive handling, the new version offers the user further intelligent functional tools. New products were also added and access to standardized surface protection was adapted.

## CADMATIC interface to LICAD® V11 in a nutshell

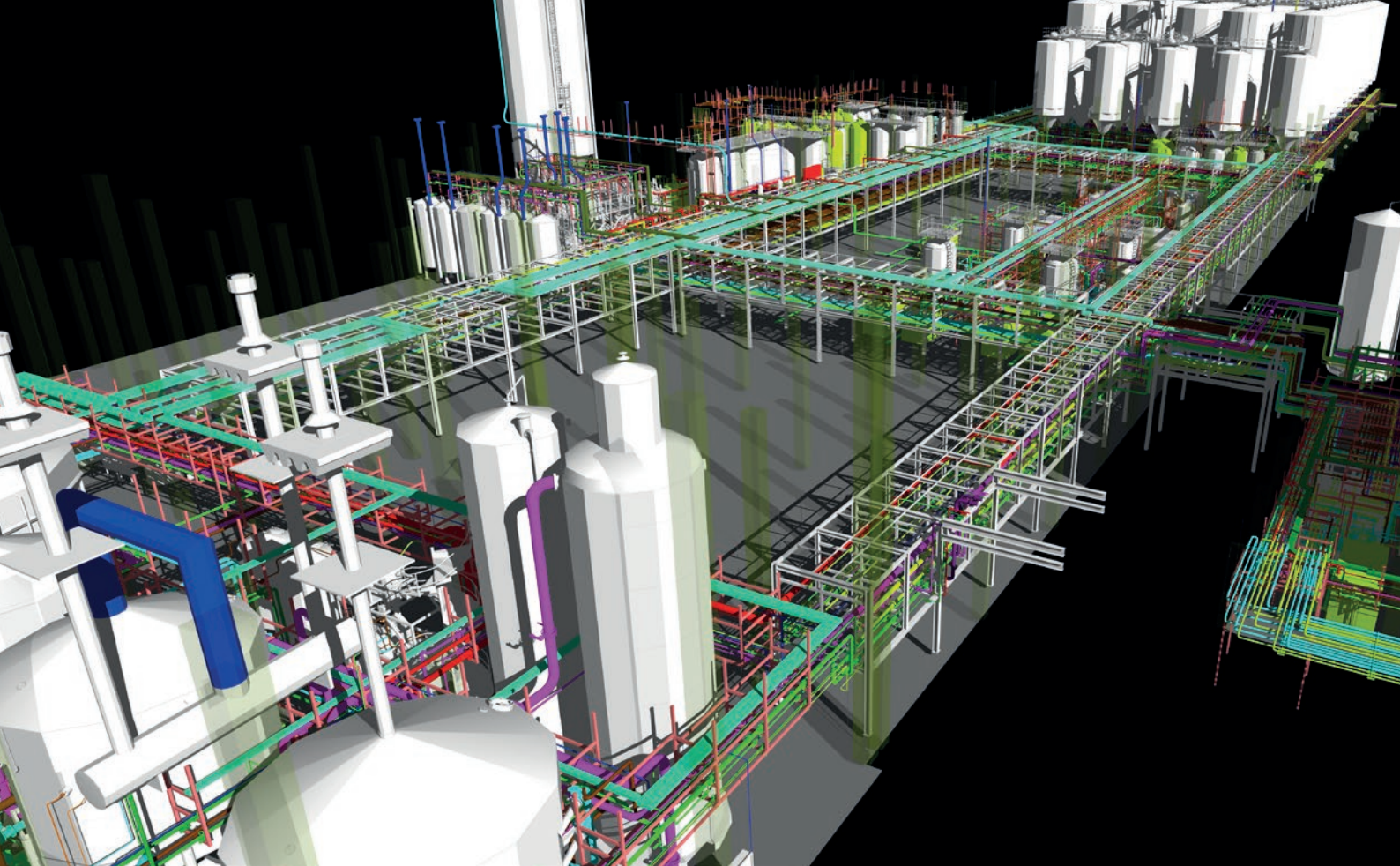
CADMATIC interface to LICAD® V11 supports among others:

- ✓ Instance parameters
- ✓ Design parameters from the CADMATIC model into LICAD®
- ✓ 3D model and BOM of primary support from LICAD®

Supported LICAD® primary types:

- ✓ Simple suspension for horizontal pipes
- ✓ Clamp base / pipe shoe for horizontal pipes
- ✓ Single beam trapeze for horizontal pipes
- ✓ Double beam trapeze for horizontal pipes

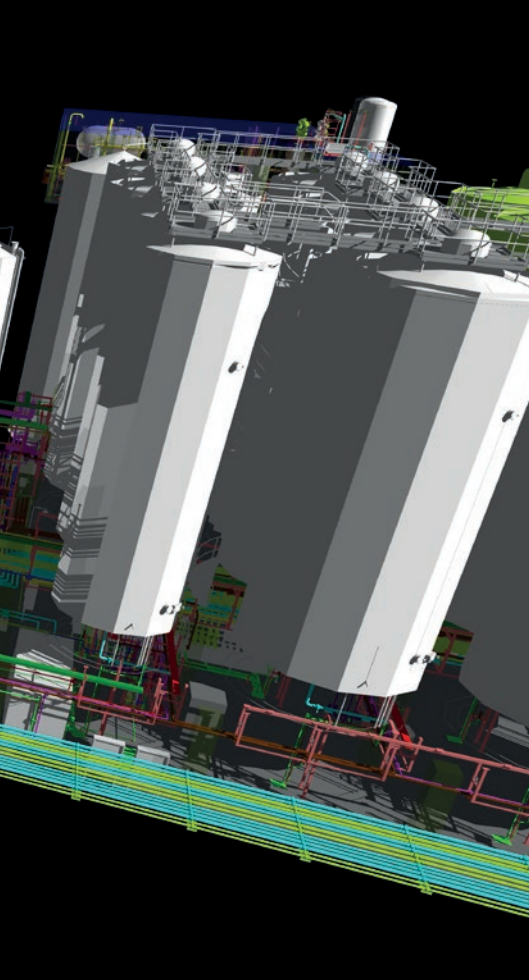




# Intelligent engineering with smart 3D models

*CES celebrates 20 years of success*

In 2020, CES Complete Engineering Solutions from Romania is celebrating 20 years of successful engineering and consulting. The Cluj-Napoca-based company offers smart plant and process engineering in domains like the food industry (breweries, dairies, and juices), chemical industry (detergents, cosmetics), and pharmaceutical industry.



*"CADMATIC offers everything we need to conduct our work and more... It proved to be much more efficient than our previous software."*

A key factor behind CES' accomplishments over the years has been its ability to optimize resource allocation for its customers, which it defines as the intelligent use of time, space, materials, and human resources. Smart CADMATIC models have assisted the company in its optimization quest by saving time and improving the accuracy of design projects.

### **Smart 3D models**

CADMATIC was implemented at CES in 2014. At the time, CES were looking to replace software that had limited compatibility with other CAD tools.

*"We also had an increasing need for more accurate and fast 3D models and a 3D modeling*

*software that could help us to deliver a quality product with greater efficiency. As with any new software implementation, there were challenges, but we can safely say that it was worth it. CADMATIC proved to be much more efficient than our previous software,"* says Stefan Molnar, CES Deputy Manager.

Stefan indicates that CADMATIC smart 3D models are highly appreciated at CES.

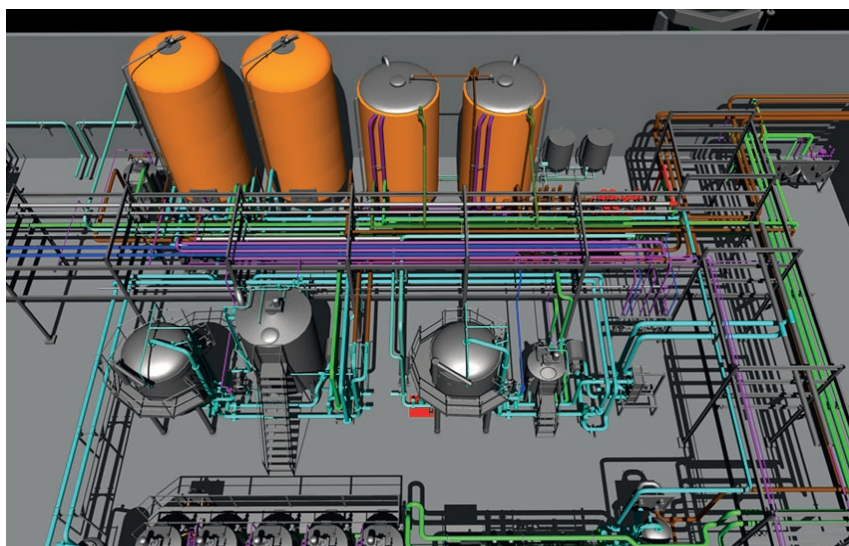
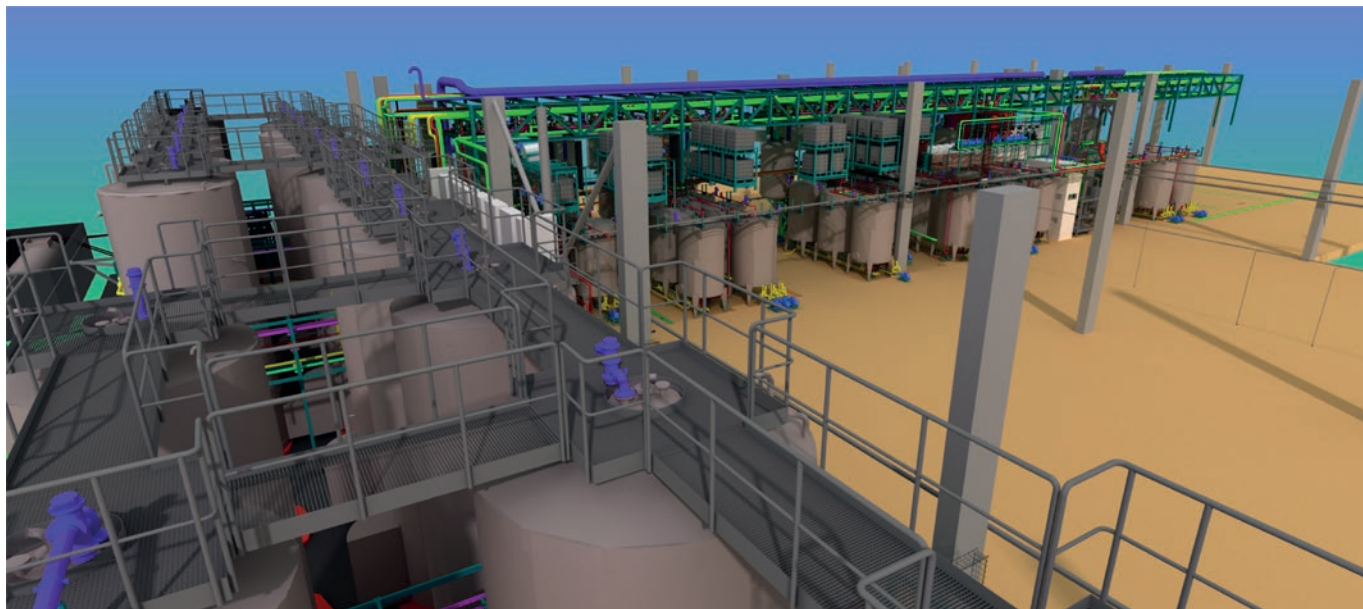
*"A neat trick in CADMATIC is that it can export smart 3D models in multiple formats. We call them smart as they can convey a large amount of information to the viewer. We can generate models with any information needed. For pipes, for example,*

*we can input the pipeline name, material, insulation, medium inside, weight and others,"* Stefan adds.

For Stefan, the greatest benefits CES has achieved by using CADMATIC is the time savings and high accuracy. He estimates that CES saves on average 15% in design hours on projects via CADMATIC's compatibility with other CAD tools, which has eliminated the need to manually insert different parts of the plant in the 3D model, e.g., building & HVAC.

*"Once we got used to the software, piping design has been running smoothly and most modifications and additions are made with ease, thanks to the many smart CADMATIC features."*





*CES Detergent Plant and 3D model*

### **Diverse references**

CES references include projects from all around the world and across a wide range of industries. In the 20 years since it was founded, CES has completed hundreds of projects, both big and small. Their design projects have ranged from compact process units to whole plants such

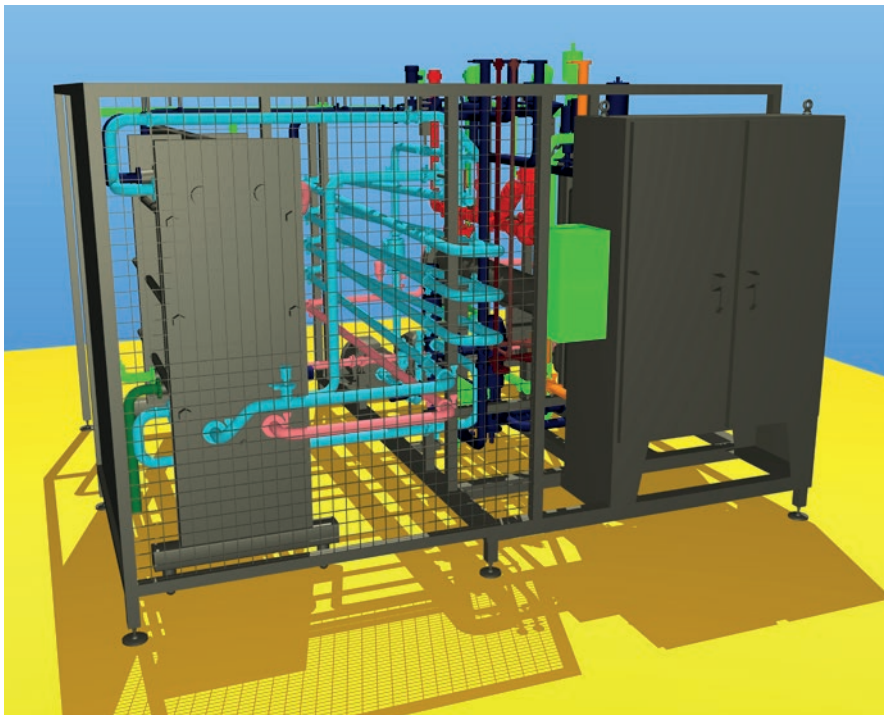
as complete breweries. CADMATIC was used for two of these more recent large brewery projects, one located in Asia, and the other in North America with initial production capacity of 2 million hectoliters per year.

Also, the major expansion of a liquid detergent plant a few years ago stands out for Stefan as an

example of a challenging project completed with CADMATIC. The project spanned two years during which CES designed the entire liquid detergent production from scratch in CADMATIC, including process engineering, concept design and eventually very detailed engineering for all equipment and piping.

## High interoperability helps engineering & consulting company to reduce design time by 15%

Customer challenge	CADMATIC solution
Software has limited compatibility with other CAD tools and files.	Compatible with wide range of CAD tools and files.
Need to manually insert different parts of the plant in the 3D model, e.g., building & HVAC.	Compatibility with other CAD tools means no need to manually insert different parts. 15% time saving compared to previous software.
Big projects with large amounts of information could lead to crashes or require vast resources to work properly.	Handles large projects without crashing. Runs on standard PCs and networks, no special hardware investments required



*CES model of a sterilizer skid*



**ces**

We think. We engineer.  
We solve.





*Easy integration allows you to choose the best software for each task and seamless cooperation and data transfer, says CADMATIC Business Development Director Kari Manner.*



# The freedom to choose the best software for each task

*EPCs demanding openness and are keen to avoid the single-supplier trap*

CADMATIC Business Development Director Kari Manner has experienced developments in industrial investment projects first-hand over the last 20 years. Currently, he sees the increasing demand for technologies and systems compatibility as a growing trend. Software openness and compatibility with other systems are changing from nice-to-haves to key drivers of efficiency.

Commonly, companies, their partners, and the various units in a company all use different software programs. It is common that the chosen software products for sales, materials and project management, and construction, for example, do not communicate. File formats, too, vary from 3D models to spreadsheets, images, text documents and databases.

*"For decades, almost everyone who has ever participated in a project as a designer, has wondered why information cannot be exchanged more fluently between project parties. Time and resources are lost, mistakes are made, and bottlenecks unclogged the hard way," says Manner.*

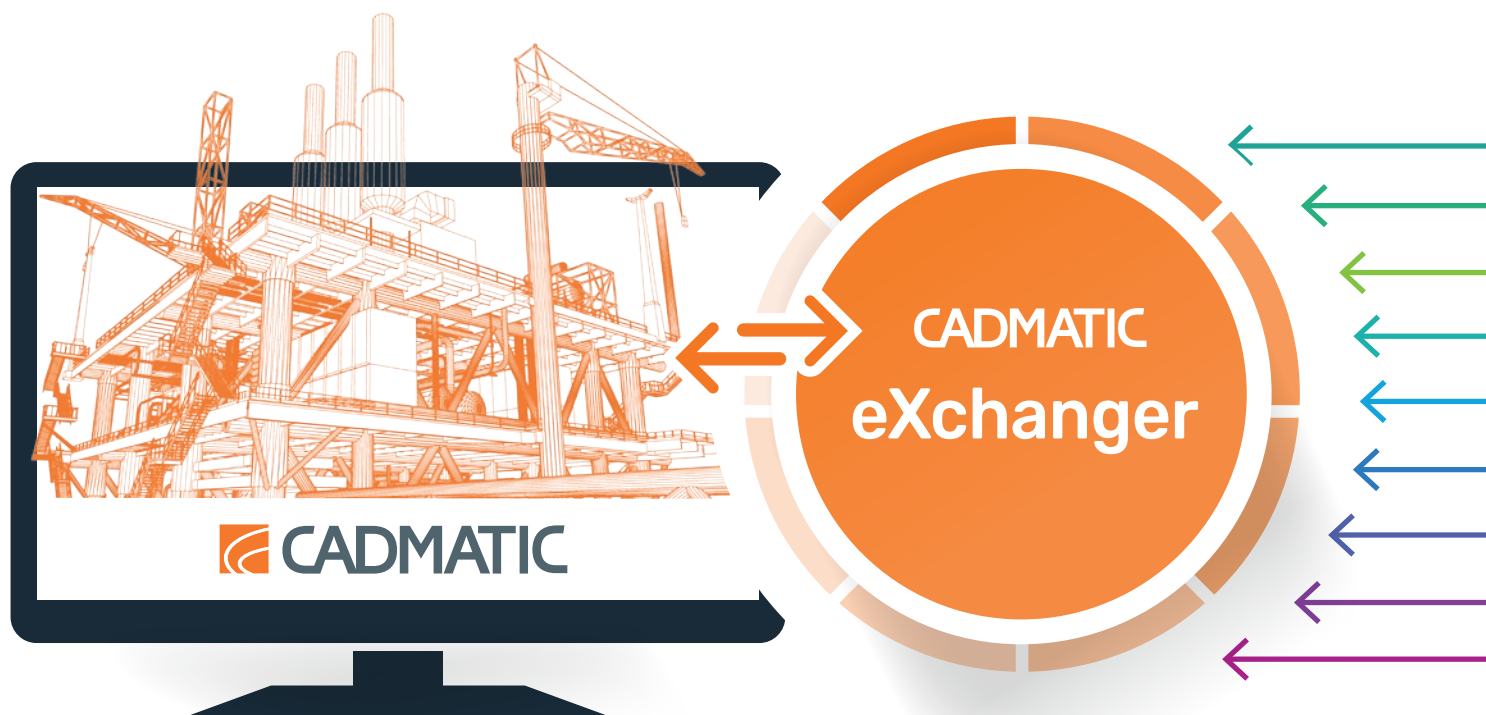
He stresses that CAD software should be easily integrable with other systems so that companies

can choose which software to use for which purpose and avoid the single-supplier trap.

## **A growing demand for openness – the best software product for each task**

Many design software products integrate poorly with other software and systems. However, the demand for open software and easy data exchange has grown. Companies are willing to develop common standards to make it easier to start using another software product and implement new technologies.

*"Many of our clients want to keep their software solution options open and not to get stuck with single-supplier solutions. Our products serve all the areas of a design project, and information is*



*transferred from one phase to another seamlessly without manual processing. We strive to help our clients and solve their problems – not dictate or limit how they work,” Manner says.*

Once software is easy to integrate, the client can choose from the best possible tools for their business-critical tasks and avoid committing to just one provider.

*“This is the core of our approach. We think that one software cannot be the best solution for every job or phase. Since the beginning of our journey, we have focused on certain application areas and developed our solutions to be as practical, effective, and open as possible. Our software’s ability to communicate with software of*

*other providers is at the highest possible level,” Manner notes.*

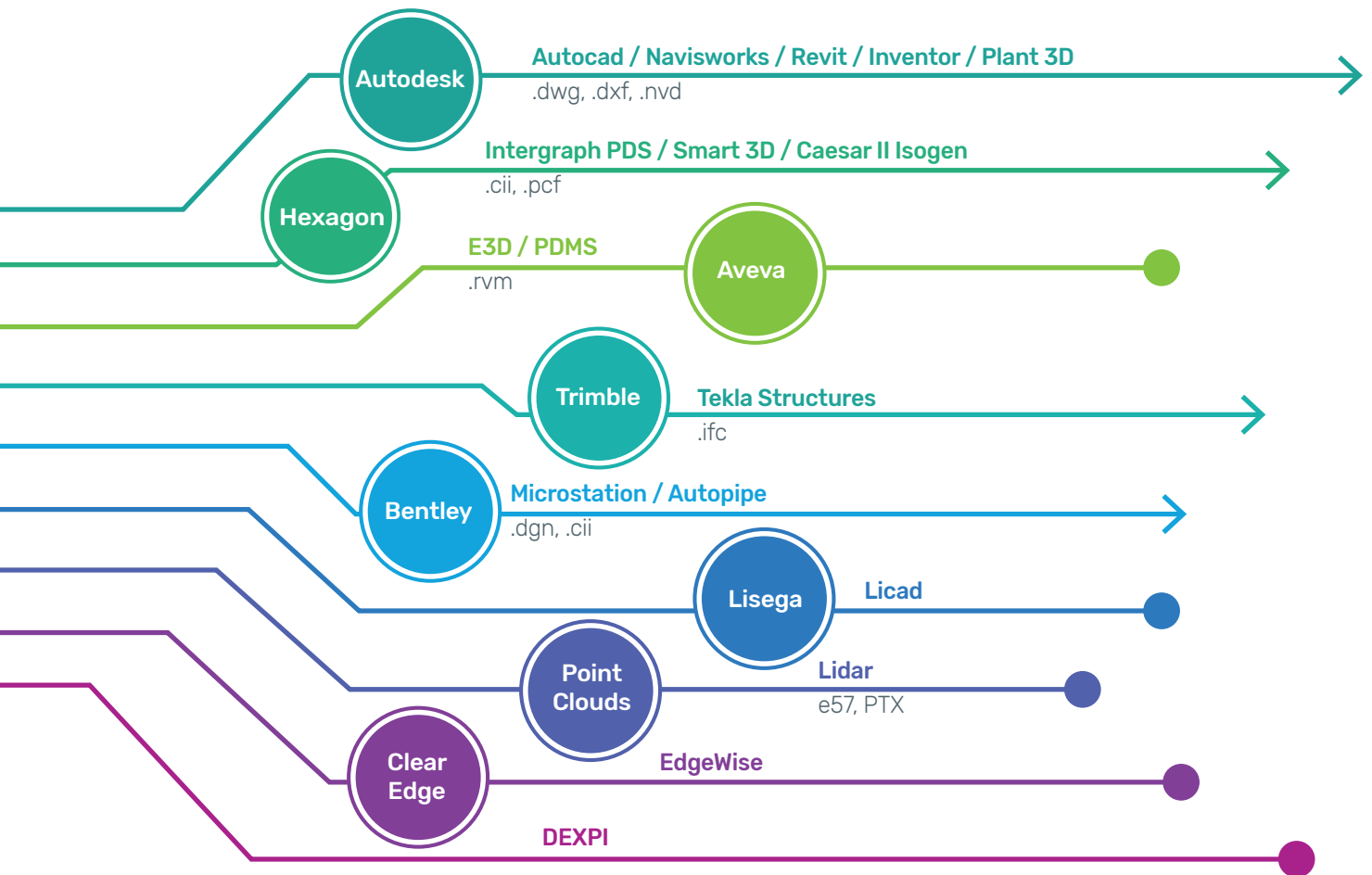
#### **Fluent flow of information boosts construction project and reduces errors**

In a construction project, it is of utmost importance to exchange information between partners, designers, builders, and the project owner. Communication aims at finishing the project on time, within the budget, and without faults. Running late or delivering bad quality usually means there will be a financial loss, too. The bigger the project, the greater the risk of poor information exchange.

*“Construction schedules and efficiency requirements have become tighter in recent years, and*

*the sooner the potential conflicts are spotted, the better. An open system with easy integration can save up to 15% in design hours. However, more important than saving time in an individual task is the overall success of the project,” Manner says.*

Easy integration enables operating in a multi-supplier environment and finding the best experts regardless of their or the project’s location. Technology also helps create new business models with better margins between the project parties, such as as-is information models or digital twin services. The real-time nature of these virtual models enables faster project follow-through during the plant’s life cycle and lower operating costs.



## CADMATIC interoperability solutions – eXchanger and WebApi

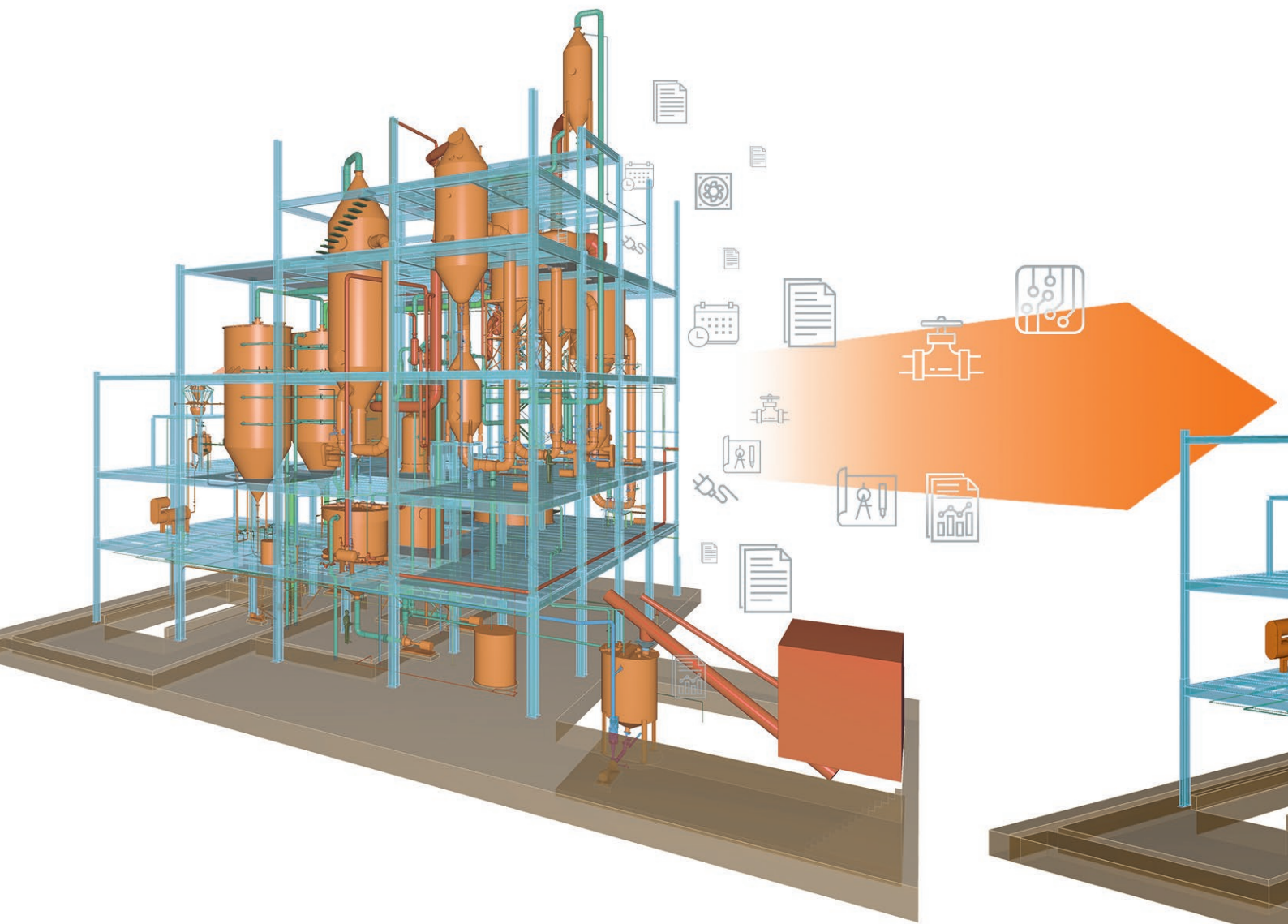
CADMATIC's solutions to easy software integration are CADMATIC eXchanger and CADMATIC WebApi.

eXchanger is a package with which data can be transferred between software programs. With the help of eXchanger, 3D models, schemes and drawings can be imported to and exported from CADMATIC software to other systems. For example, 3D models from various suppliers can easily be combined into one coordination model.

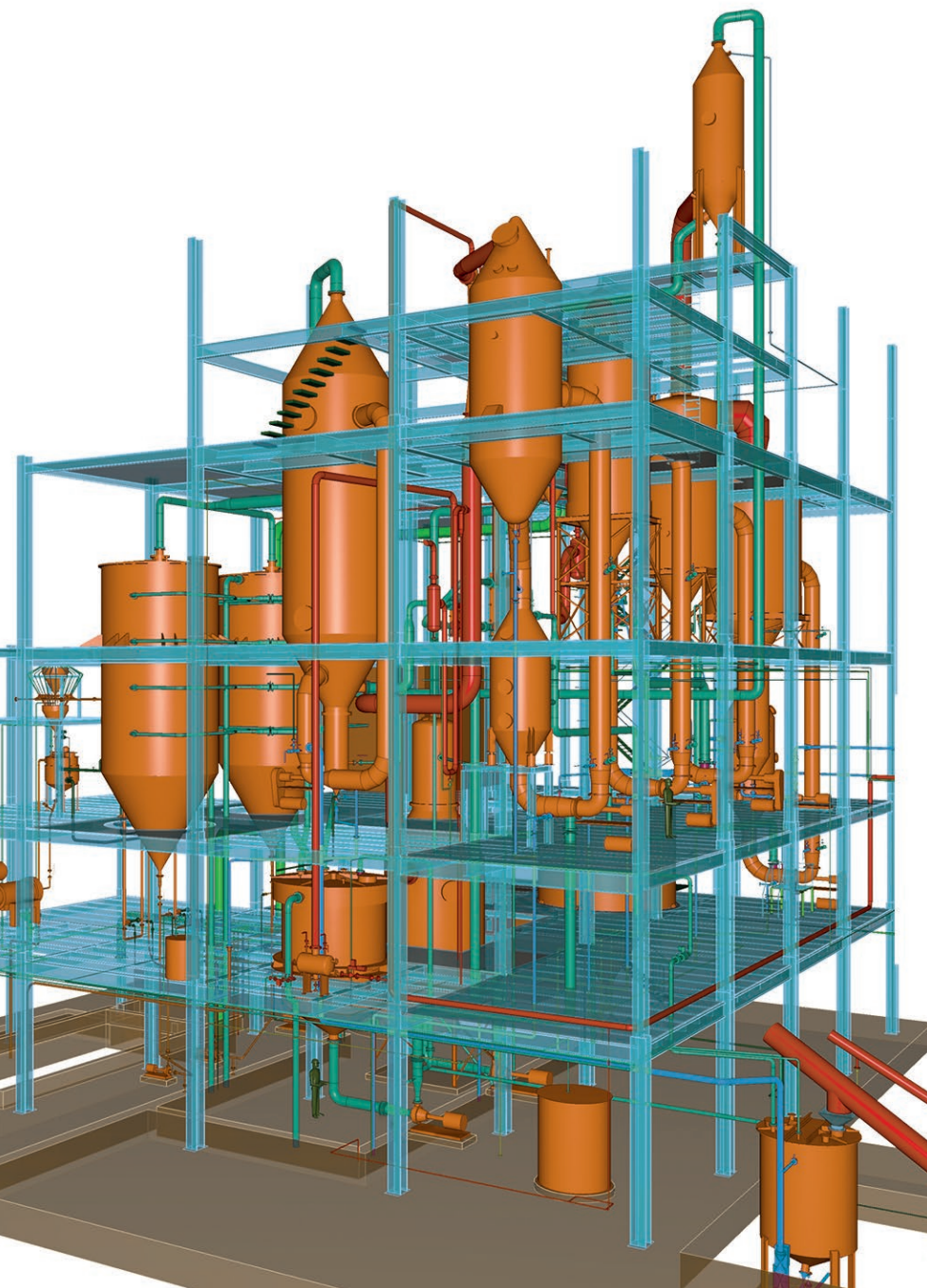
For file formats other than CAD formats, the CADMATIC WebApi can be used to transfer from one system to another. This WebApi is typically used when CADMATIC software is integrated to an ERP, maintenance, or production control system.



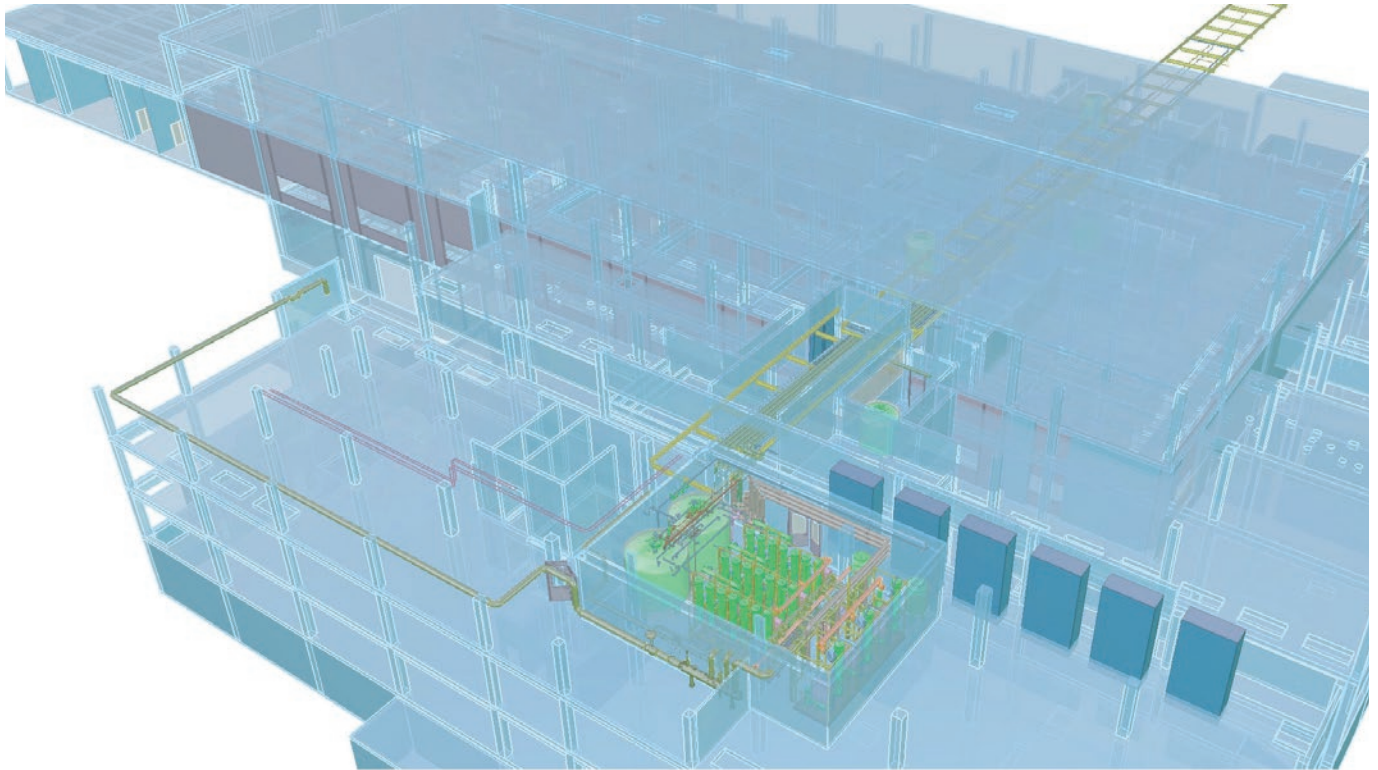
# The power of copying in process industry projects



*Don't waste time on re-design in industrial design projects, copying is an excellent way to achieve more and improve efficiency.*



Increasing efficiency and getting the most out of limited resources is an eternal challenge. In industrial design projects, copying is an excellent way to achieve more and improve efficiency. CADMATIC's sister project management supports parallel work in sister projects with flexible change management.



### **Benefit from work that has already been done**

Copying is widely used in large industrial projects to build factories or ships. Ideally, sister projects should be implemented as they allow leveraging significant amounts of work that was done before; the unknowns are known while the resources, manning and all other operations are understood and balanced.

The time and cost savings associated with sister projects are the major drivers behind their use. The savings make sister projects desirable, but also very challenging. Project size, complexity, financial pressures, and strict delivery deadlines contribute to making sister projects a significant challenge.

### **Efficient change management a key success factor**

Efficient change management is a key success factor in sister projects. With multiple sister projects and a longer project timeframe, the challenges increase exponentially. Copying would be easy if the projects involved were identical, but this is rarely the case. Different types of equipment might be chosen to match updated performance specifications while different part suppliers or materials can cause changes in layout and construction requirements. Updated work processes at subcontractors also require updated output documentation.

It is challenging to manage the construction of sister projects in an

industry where change is the only constant and design is increasingly complex. Projects commonly follow each other on a continuous production line and schedules usually overlap.

### **Improvements can be implemented downstream**

Despite the afore-mentioned challenges, the use of sister projects does allow possible design flaws identified on a project to be corrected in the following projects. Better or more cost-efficient solutions may similarly be identified and implemented. Changes in legislation, specifications, or standards may also necessitate changes from project to project.

The simplest possible scenario



is when project schedules follow each other with no overlap. In such cases, the design of the parent project can be copied in full to the next project, after which the necessary changes can be made to the copied project. The first project may already be in operational phase, but still require modifications due to problem areas. This, in turn, means that the modifications also need to be made to the ongoing sister projects.

Designing sister projects in a synchronized schedule brings additional savings in time and costs while adding complexity in management. The benefits depend mainly on how well the design phase can manage changes. Without sister project management, the same changes have to be made several times in sister projects.

### Similar, but not identical

Sister projects are similar, but not identical. In CADMATIC, sister projects are set up so that when something needs to be changed in the target project, the links to the parts in question can be removed, after which target project-specific planning can start for the unlinked parts. Parts and drawings can be copied independently. At the end of the process, unique and up to date 3D models and documentation exist for each project.

Several sister projects can be created from the same parent project, or a sister project can be designated as the source of the following project. Projects can also be combined and different parts from several sources can be copied to one target project. This way, one part of a project can come from the original parent and another from an earlier sister.

It is also possible to visualize differences in projects by loading sister projects to CADMATIC eBrowser to compare the 3D models and meta-data of all 3D parts in the model.

### Conclusion

Reusing experience, 3D models, and documentation from previous projects helps to reduce design hours and the needed support from CAD tools. CADMATIC's flexible approach facilitates the process for users and provides the required tools and the possibility to link with PDM/PLM or ERP systems for efficient execution of EPC projects of any complexity.

The greatest efficiency can be achieved by using 3D plant design tools together with available interfaces and information management.

*The time and cost savings associated with sister projects are the major drivers behind their use.*

## Benefits of using sister projects

- Avoid errors with better coordination by utilizing previous design work
- Quality improvement due to fewer errors
- Agility – mother project changes can immediately be seen in sister projects
- Reduce working hours when project or part of project is copied

CADMATIC is a leading 3D design and information management software developer and supplier for the marine, process, energy and construction industries.

● CADMATIC'S headquarters are located in Turku, Finland.

● We have staff in Australia, China, Estonia, Hungary, India, Italy, the Netherlands, Poland, Russia, Singapore, South Africa, South Korea, Spain, Sweden, and the UAE.

● We have certified resellers and support partners in 15 countries in Europe, Asia, America and Africa. Our growing customer base includes over 6000 customer organizations in 60 countries.



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