



Users' Meeting 2006

1-2.11. in Bremen, Germany

The 8th Cadmatic Users' Meeting was held in the beautiful city of Bremen, Germany. The event took place at the Park Hotel Bremen from 1-2 November 2006. Over 200 participants from all over the world took part in the two-day meeting that covered both Cadmatic plant and Nupas-Cadmatic ship design software developments.

The principal theme of the meeting was the introduction to the latest version of the software, V5.2. All the latest features and news were covered. The program included workshops, presentations and discussions.

Version 5.2 coming soon!

Contact Cadmatic or your local representative for more information and for detailed demonstration

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APPOINTMENTS IN CADMATIC :



Sami Koponen
was promoted on the 1st of January 2006 to Manager, Sales



Jim Nyroos
was promoted on the 1st of January 2006 to Manager, Sales



Ludmila Orlova
was appointed as Customer Service Engineer on the 1st of September 2006



Marko Kuusela
was appointed as Customer Service Engineer on the 1st of September 2006



Vesa-Matti Honkanen
was appointed as Customer Service Engineer on the 1st of September 2006



Jorma Helin
was appointed as Project Engineer for Cadmatic Software Development on the 1st of September 2006



Johannes Häyry,
was appointed as Software Developer for Cadmatic Software Development on the 1st of January 2006



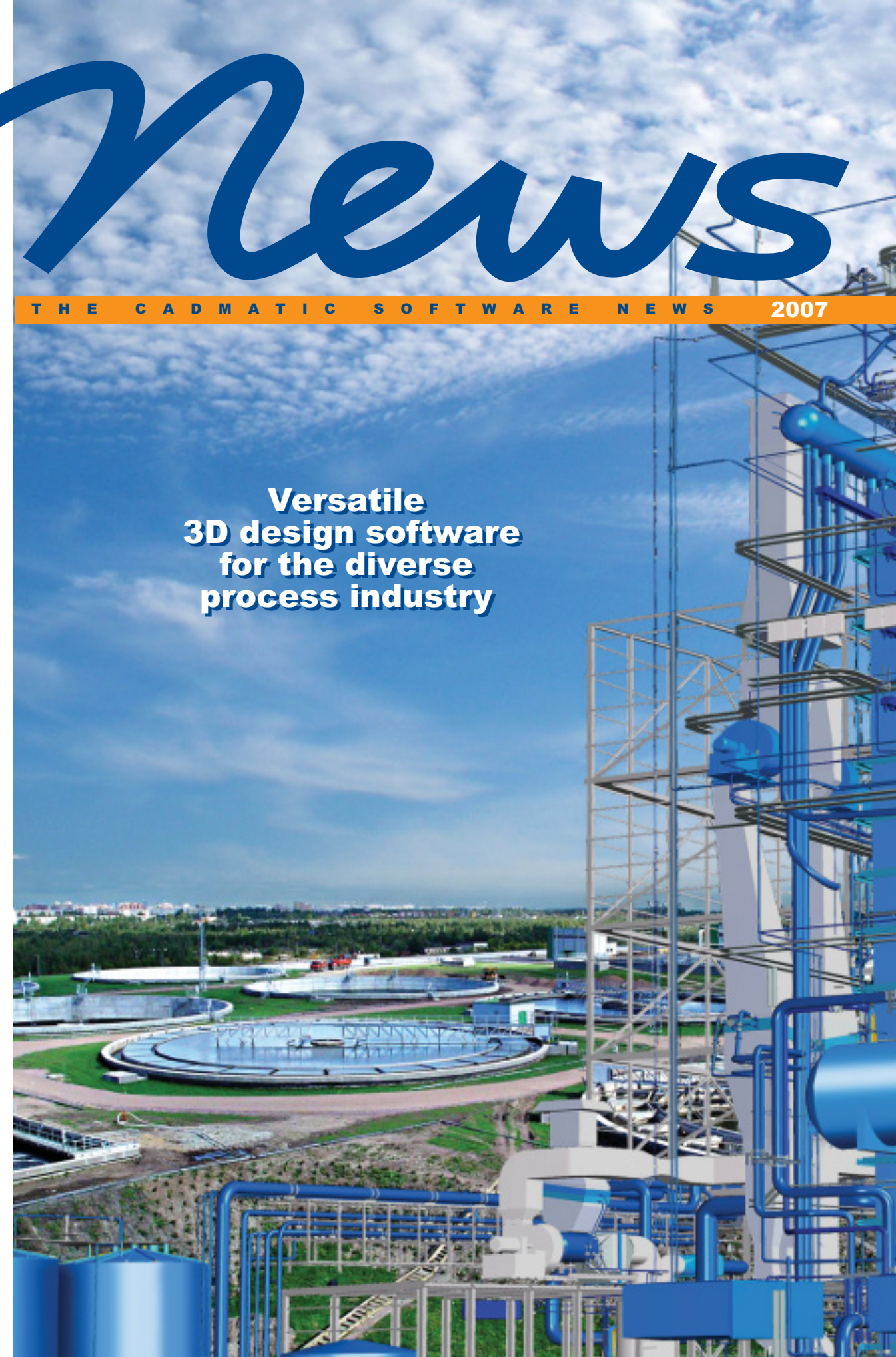
Jonatan Kronqvist,
was appointed as Software Developer for Cadmatic Software Development on the 1st of January 2006

CADMATIC

News

THE CADMATIC SOFTWARE NEWS 2007

Versatile
3D design software
for the diverse
process industry



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user of Cadmatic

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Piteå upgrades
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behind Cadmatic
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Engineering the future

You have in your hands the latest edition of CADMATIC News where we are happy to present new software developments and share the latest experiences of a number of our clients.

The year 2006 has been very busy both for us and for our clients; as a result we have had the most successful year ever. We have seen the boom in our core areas reflected by a record amount of new Cadmatic users and by record sales of new licenses to existing customers.

For our clients in high cost level areas, such as Western Europe, new features for real distributed design have greatly enhanced their ability to utilize plant design resources from all over the world. The number of software users in Eastern Europe is increasing steadily and in some areas Cadmatic is the clear market leader.

We have now opened doors in Asia and Latin America as well. There are growing activities in the most important emerging markets, for example in China, India and Brazil among others. Customers have noticed the effectiveness of the software as well as our capability to implement the software rapidly for utilization in real design projects. Our new customers' experiences prove again that Cadmatic has the shortest learning and implementation time of current 3D plant design software solutions on the market.

Our selected strategy is working well: We develop integrated software solutions that reduce costs in all phases of plant projects and cover the entire life cycles of plants. We aim to shorten lead-times of plant investment projects, improve quality, reduce human errors and improve change processes and engineering data management.

We understand that Cadmatic's success has been achieved through the efforts of very motivated, flexible and skilful people. Our experts and clients have together created the success story that is one of the most effective plant design software solutions on the market.

Thank you to all existing and new customers. We will continue to reward the trust you have placed in us.



JUKKA RANTALA
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At the moment our clients have good work loads for the future and we all have a positive outlook in the market. It is especially now, in these better times, that it is good to consider and prepare for periods of growth stagnation and higher competition for fewer contracts. Our goal is to assist our clients to be more competitive to build on the current positive business trends. We are continuing to spend even more time and money on the development of our software and organization in order to serve our clients. We will also put even more effort into communicating with our clients to guide us in the appropriate development of the business. These efforts are aimed at ensuring the satisfaction of both existing and new members of our software users group, and guaranteeing their continued benefit from their cooperation with us in the future.

We have seen that modern engineering software has immense potential to improve engineering efficiency, accuracy and transparency. Virtual plants can be build and the processes can be simulated and evaluated at a very early stage of a plant investment initiative. The earlier errors are identified and corrected in the engineering process, the larger are the cost savings. The data-base driven 3D technology has resulted in a revolution in engineering. Visibility and transparency has made it easier for non-professionals to understand what

the plant would look like when it is ready. This enables valuable comments to be made at a much earlier stage of the project, at a time when the errors are much easier and cheaper to correct.

Integrated system for multi discipline process and life cycle management

Engineering of complex plants is a multi-discipline process. To save money and to avoid mistakes the design and engineering is done concurrently with several disciplines involved. This requires software with a genuine philosophy of openness and flexibility. The trend in the software development today is towards more integrated data flows. It is not only integration between different engineering disciplines, but also integration between engineering systems and systems for managing documents, procurement, maintenance, process monitoring etc. This integration supports projects both vertically and horizontally. Data flows between design disciplines and design phases are integrated.

The Cadmatic Engineering Solution

Cadmatic is leading this development and offers a complete engineering solution which is suitable for the specific use of plant owners, EPC's and design and engineering

consultants. The Cadmatic solution consists of a comprehensive product portfolio with a flexible configuration of software modules. This is made possible by a uniform interface for communications between different modules. In disciplines that fall outside the core knowledge of Cadmatic, commercial and technical relationships with partners that are market leaders in their respective sectors has been established. This ensures that the Cadmatic Engineering Solution is competitive and reliable and clients benefit from the best applications on the market. In the Cadmatic Engineering Solution there is an in-built freedom of choice. Based on the preferences of the client, Cadmatic can modify the configuration and add or redraw modules to be incorporated into the Cadmatic Engineering Solution. The modules' individual functionality is maintained. The result is a perfect everyday engineering tool. The Cadmatic Engineering Solution, provides the ultimate solution for all parties and all phases in a plant investment. All parties are able to optimize their work and become more efficient, correct and profitable. The Cadmatic solution is not only a perfect solution at the engineering phase but one for the whole life cycle of a plant investment. It can be used from the early design phase through to detailed design and construction all the way up to maintenance and operation.

World Wide Engineering

Along with development of more integrated engineering systems, Cadmatic has also further developed the system for distributed design. This enables the use of remote office- and cooperation partner resources in concurrent engineering.

Data should be accessible and the working flow should be transparent. Cadmatic World Wide Engineering ensures smooth distributed engineering. With the latest major release, version 5, distributed engineering is as easy as if all designers were sitting together in the same room. Using the same procedures as the local designers, remote designers can use all features and commands. Cadmatic World Wide Engineering in version 5, has already been successfully utilized in large distributed projects.

Both our software and customer service organization and international sales and support centers are able to serve our global customer base and support our clients' international projects around the world.




TOMMY NORSTRÖM
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SCA Packaging Obbola - an efficient user of Cadmatic

SCA Packaging Obbola, near Umeå on the Baltic Sea coast of Sweden produces liner, which is a strong unbleachable paper type that is used as the external layer in corrugated cardboard. The mill uses both fresh wood fibres, produced at the mill, and recycled fibres as raw material. As is customary for paper mills, SCA Packaging Obbola operates on a continuous basis, 24 hours a day year round, producing paper primarily for exports. SCA Obbola AB is part of SCA Containerboard, a Packaging Division company of the Svenska Cellulosa Aktiebolaget SCA Group. SCA has operations in 25 countries and approximately 46,000 employees.

At the end of the 1990's SCA Packaging Obbola modernised its linerboard machine increasing its capacity to 425,000 tonnes  per year. With a wire width of 10.2 metres, the liner machine is among the widest and most modern on the market. A kraftboard mill at the same site has a production capacity of 240,000 tonnes per year. In 2000 the company also upgraded its recycle fibre preparation line.

New recovery boiler with entire auxiliary system designed with Cadmatic

Currently, the company is building a new recovery boiler, an investment in the range of 1 billion SEK. The recovery boiler in operation was built in 1965 and the new boiler will be in operation in the autumn of 2007. The recovery boiler uses strong black liquor, the remains of sulphate cooking, as fuel and supplies heat for steam generation and recovers inorganic cooking chemicals.

"The recovery boiler is the heart of the entire process," says Mr. Christer Björk, mechanical engineer and person in charge of the Cadmatic system at the paper mill. The recovery boiler, with a design pressure and temperature of 110 bar 505 degrees, has a capacity of 1,000 tonnes black liquor per day. The project also includes a new turbine and a new feeding water treatment plant. Electricity production from the turbine is 26 MW.

The recovery boiler is supplied as a complete turn-key package. The steel hall for the recovery boiler and the design and construction of all surrounding systems and

SCA Packaging Obbola, a major producer of linerboard in the world

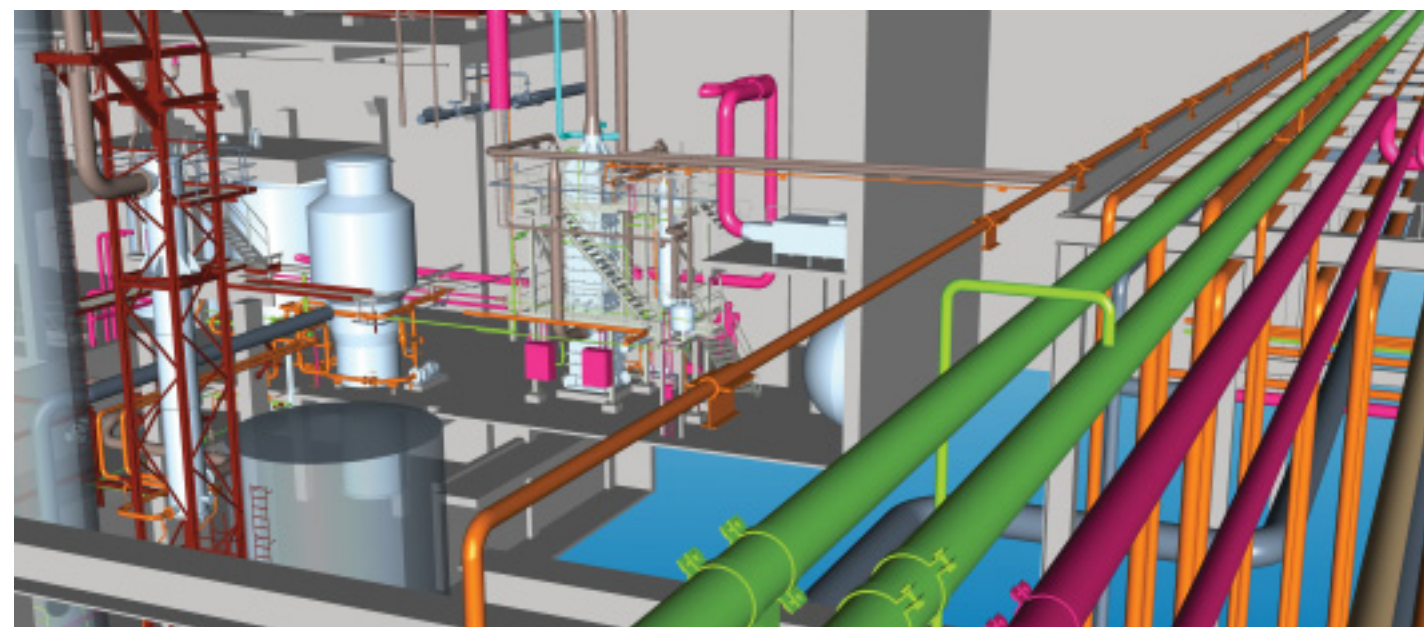


processes, including the turbine building and water treatment plant, is handled by the SCA Packaging Obbola technical department's external consultants. This includes process design, pipeline construction, instrumentation, and control systems. The steel hall for the recovery boiler and the concrete turbine hall are designed by suppliers using Tekla software, which is then incorporated into the Cadmatic 3D model.

Technical department uses Cadmatic as their design tool

The technical department of SCA Packaging Obbola comprises the piping, mechanical, automation, electrical and process functions. SCA Packaging Obbola has used Cadmatic as their main plant design software since 2001. Over the past five years all large conversions and changes at the mill have been planned with Cadmatic and the 3D model of the mill has been constantly upgraded. "We took Cadmatic version 5 into use at a very early stage," notes Mr. Björk. "This has really benefited us greatly". In the past we had to accommodate all consultants at the plant, in rented temporary facilities, which was not practical. With version 5 we gained efficient remote design capabilities."

"In this particular project we work with Jaakko Pöyry Group on the entire piping system design and with Sweco PIC on the entire steam system of the turbine hall. Both use Cadmatic in their daily work," Mr. Björk said. "Jaakko Pöyry also produced about 50 design drawings and schemes of all tie-in points from and to the new boiler and existing plant. Many of these tie-in points will be installed in October this year, after which the rest of the process construction can begin. According to Mr. Björk, the design work has taken up much of the capacity of the technical department this year. Decisions on the entire processes, temperatures, pumps etc. are part of this work. The new



A section of Cadmatic SCA mill 3D model

boiler will be in operation in a year, but will be ready by September next year, in order to be properly tested. "The entire newbuilding process is quite complicated, as we have to keep the existing recovery boiler in operation until the new boiler is ready," Mr. Björk said. The project started in December 2005.

Advanced distributed and concurrent design work

"We work with our Master database on-line, using a Virtual Private Network and Cadmatic's CoDesigner. The external consultants use Replica databases, but the project is constantly updated on our server. SCA Packaging Obbola creates the eBrowser models needed for the projects. They naturally check in to and out of their areas of responsibility, but we can follow everything they do. It is very efficient when suppliers have their own design environment and licenses." Mr. Björk said.

New way of working

"We have now developed our own way of working in projects like this," he reveals. "We first use Cadmatic to produce the complete flow diagrams with all system data, such as pipe and valve numbering in place, before we begin to produce the 3D model. A principal reason for choosing Cadmatic was its good integration capabilities of flow diagrams," he points out. "With big plants such as these, it is very important to have

a single code for each component. Proper marking of the real systems is nowadays required at paper mills by the authorities, which makes it even more important to have the documentation in order. The newbuilding data is stored as a 3D Cadmatic model, and handed over to the Operations and Service functions at the end of the newbuilding process. SCA Packaging Obbola uses SAP for working orders, financing and documentation but is planning to link this system, via eBrowser, to Cadmatic.

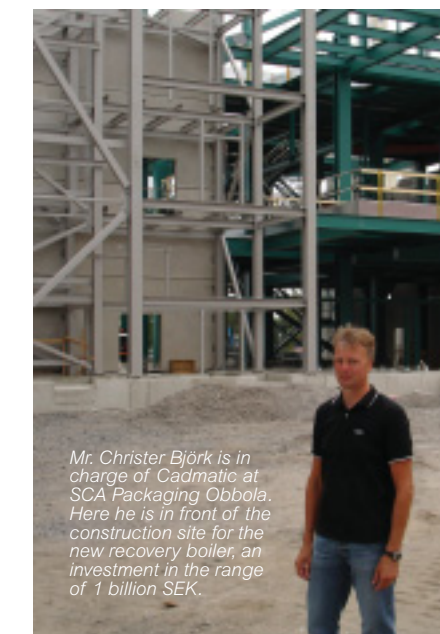
The eBrowser is in constant use by all involved in the project at SCA Packaging Obbola and by the subcontractors. "It has become routine to use it for project follow-up purposes," says Mr. Björk. "We want eBrowser to become the primary linking tool to for example SAP, maintenance systems and detail drawings."

Cadmatic provides on-line system maintenance and support

SCA Packaging Obbola is connected to Cadmatic Customer Support in Finland through another secure VPN line, for the purpose of system administration, support and upgrades. "This solution has been very positive, and has helped us a lot," notes Mr. Björk. "We now have three applications of Cadmatic, and these have to be up and running without interruptions. It is important that Cadmatic's support staff can log in on our system, perform maintenance, and when needed correct things," Mr. Björk notes.

New projects at SCA Packaging Obbola

Concurrently with the renewal of the Recovery boiler, the Pulp washing system is being renewed, also using Cadmatic. When this is completed, other projects are in the pipeline at SCA Packaging Obbola. Among these are the renewal projects of the Evaporator Plant and the Causticizing Plant, which will soon be on Mr. Björk and his colleagues' drawing boards - as Cadmatic flow and process diagrams and 3D models on their computer screens.



Mr. Christer Björk is in charge of Cadmatic at SCA Packaging Obbola. Here he is in front of the construction site for the new recovery boiler, an investment in the range of 1 billion SEK.

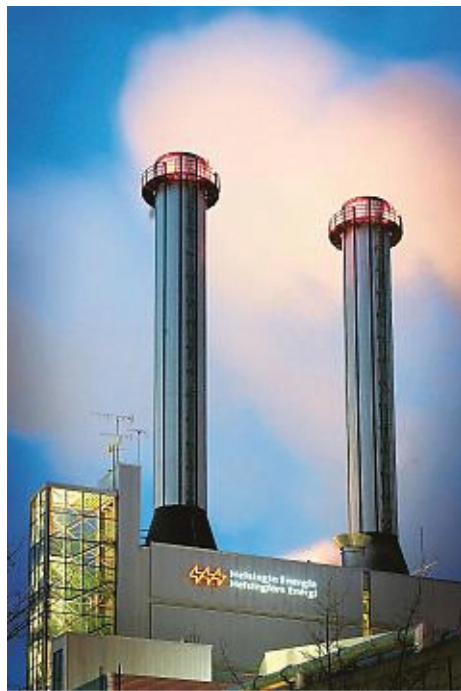


Helsinki Energy uses Cadmatic in power plant design and service

Helsinki Energy produces and distributes electricity and district heating and is one of the biggest energy companies in Finland. Its customers are industrial and business enterprises, energy companies, municipalities, real estate and private consumers of electricity and district heating. The energy is generated mainly in the company's own co-generation plants and is distributed to over 300,000 clients in Finland. It is the biggest producer, distributor and seller of district heating with annual sales of over 6,000 GWh, to 12,000 customer premises. The company also provides centralised production and distribution of cooling energy. The company is owned by the city of Helsinki.

Helsinki Energy has used Cadmatic as their design tool since the beginning of the 1990's, when the company decided to use Cadmatic for service and maintenance tasks for a major power plant project, designed using Cadmatic software by YIT Power Oy. "Before that all our design work was done with 2D design software," Mr. Harri Orko, project manager at HelenEngineering told Cadmatic News.

HelenEngineering designs and coordinates the construction projects of Helsinki Energy's production units. The unit also



Helsinki Energy

offers its energy-related design and construction services to external energy and industrial companies in Finland. The unit employs 74 people. "We use Cadmatic as a design tool for piping-related conversion projects and when making improvements to existing power plants. Since 2004, we have also used Cadmatic for the design of new power plants," Mr. Orko said.

A big underground pumping station for district heating and cooling energy was recently taken in operation in the centre of Helsinki. It was designed and built by HelenEngineering using Cadmatic software. The tunnel walls were first laserscanned for accurate 3D modelling work.

World's biggest heating pumping station designed with Cadmatic software

Cadmatic was used in a recent design and construction project of a new modern underground district water heating and cooling pumping station. Cadmatic was used to design the process piping and the entire layout of the processing facility. The Katri Vala park project is a good example of a modern production facility for district heating and district cooling. The circulating water in the district water system is heated with condensers, and the water is chilled with evaporators. Heated and chilled water is delivered via an underground pipeline to offices, industrial and residential buildings for heating purposes or to cool the indoor air of the buildings. "The process is very energy efficient," Mr. Orko points out.

Most of the design work was done in 2004 and 2005 and construction took place in 2006. The principal designer of the process was Mr. Veijo Noponen at HelenEngineering whereas Mr. Orko was in charge of the 3D modelling of the system piping and process areas. "The underground excavated space provided us with new

challenges in the design process," Mr. Orko noted. "After the excavation work, the space allocated for the station was laser-measured. This gave us a realistic 3D model, which provided an exact design space for the process piping and equipment."

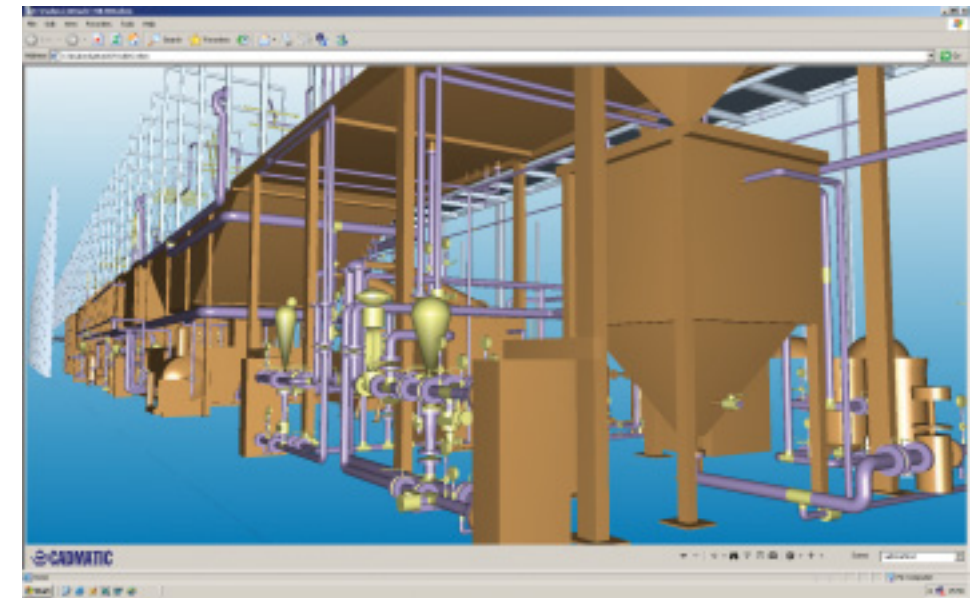
Cadmatic has also recently been used in designing the Suvilahti seawater pumping station, which is used in summer time to cool the heat generated at the station under the Katri Vala park.

Good experiences

"We have very good past experiences of using Cadmatic, and have received positive feedback from the people at the construction site regarding the documents produced especially regarding the efficiency of the eBrowser module. The 3D model has made it much easier to become acquainted with installation projects. Through the 3D model, we have been able to overcome collisions from the early design stages, although the allocated space was in some areas very limited," Mr. Orko said.

"The 3D models created with Cadmatic do not only help in design and installation work but are also useful in the operation and maintenance tasks of the plants. A particular valve can for example be located in the model using the valve code. This helps the maintenance staff as they do not have to physically look for the part at the plant - Cadmatic points it out directly in the 3D model," notes Mr. Orko, who currently heads the project management of another big central heating plant newbuilding project in Helsinki, at Hanasaari.

For the Katri Vala project, Cadmatic's staff built up the software design environment and also the component library. HelenEngineering's staff now do all library upgradings and other daily routine tasks related to the software.



3 continents joined together with Daimler Chrysler's painting facility project

Daimler-Chrysler's automobile painting facility newbuilding in Toledo, Ohio, USA, is a superb example of the efficiency of Cadmatic's Worldwide Engineering Concept. Three continents were seamlessly integrated in the design, review and construction of this plant.

Daimler-Chrysler placed the order for this newbuilding project with turn-key paint finishing specialists Haden International Group. Haden's US, UK and Indian offices were involved with this work. Haden India subcontracted the development of a detailed 3D model for their newly designed Paint Finishing Plant to SST India Pvt. Ltd.

SST India engineers developed the 3D model with Cadmatic's Plant Modeler and frequently sent the 3D models to Haden's UK office via the Internet for review and comments. With the help of the eBrowser the UK supervisors checked the modelling work and sent their comments to the Haden India office and SST India enabling them to make the required changes to the original model.

Haden UK sent these updated 3D models and the detailed drawings to the Daimler Chrysler Paint Finishing plant site in Toledo for assistance in construction activities. Haden USA used the eBrowser model to monitor the project status!





uses Cadmatic for Bahia Pulp mill enlargement in Brazil

Cadmatic has gained a major customer in the South American pulp & paper industry. Brazilian PEC-Tech do Brazil Engenharia has chosen Cadmatic software for the design of a new pulp line for the Bahia Pulp mill. The new line will produce 250 000 tons of pulp annually.

PEC-Tech provides turnkey services for the pulp & paper, oil & gas, and infrastructure sectors mainly in Asia. It has been responsible for the development, execution and EPC of RGM International's projects for over 35 years. PEC-Tech administers its operations from Singapore and also has offices in Indonesia, China and Brazil.

Large projects undertaken by PEC-Tech include pulp and paper mills, power and chemical plants, water and effluent treatment plants, wood panel factories, CPO mills, palm oil refineries, roads, ports, airports and power plants. The operation of this division is spread over several countries including Indonesia, China and Brazil.

Key factors; user friendliness, compatibility and efficient material data management

PEC-Tech do Brazil chose Cadmatic because of its user-friendliness and compatibility with other engineering software and PEC-Tech's own data systems. Another important factor is that the material data input which is entered into Cadmatic during the engineering process and received from the 3D model database can easily be transferred to integrated purchase and



project management tools. This enables flexibility, accuracy and rapidity to material delivery and management. Software installation and user training was conducted by Cadmatic and its Brazilian partner ProjNet Engenharia Ltd. The Bahia Pulp project is a result of Cadmatic's long-term focus on the global pulp & paper industry. Brazil is a growing market and Cadmatic is ready to take its share of investments in the rapidly developing market.



Italian process industry utilizes Cadmatic

Italy has always been one of the leading European process industry countries, especially in the oil & gas, chemical, food and pharmaceutical branches. Cadmatic has been present in Italy since the mid 90's and has been active in the region ever since. In recent years the Italian industry has very actively been implementing Cadmatic 3D Software to make their design and engineering processes more effective.

Mr Gianluca Rizzo who is in charge of the Italian Cadmatic sales and support services sees Cadmatic continuing the strong growth in the near future too. He provided Cadmatic News with some prominent Italian software users.

Farc Italia S.r.L. a Rome based engineering company and member of ICEA consortium - has used Cadmatic since 1995. The company provides services for detailed and piping engineering. The company has 15 years of experience in the use of 3D software for modelling activities on a large range of onshore or offshore plants: gas treatment, oil refining, petrochemicals, fertilizers, agro-industries and power generation. Farc Italia's customer list includes companies such as Snamprogetti, Tecnimont, and ABB which also utilizes Cadmatic software in their EPC projects.

ABB Process Solutions and Services SpA is a global supplier of power and automation technology. The company ordered the design of an oil treatment station and two gas compression stations for their petrochemical plant delivery projects. Cadmatic 3D software was chosen for the design of the project. Farc developed the 3D model which ABB utilizes in their project coordination and management.

Tecnimont is an international EPC company and is in charge of a new polymerization plant project. The basic project design and detailed design, including MTO is done with Cadmatic in 3D by Farc. Tecnimont follows the project work utilizing Cadmatic's review and project follow up functions.

Snamprogetti is an international E&C contractor which has contracted out the basic design of a rubber production plant with Cadmatic to Farc. eBrowser was used for the project communication between project parties.



Detail 3D view of oil treatment station by Farc for ABB Process Solutions and Services SpA

Oyster Progetti S.r.L. is a project management and engineering company that offers management, basic and detailed engineering as well as procurement and construction supervision services. The company works with various projects related to plant design for the oil and chemical industry. Its reference list includes 86 major projects in 32 countries. Recently concluded work includes the basic and detailed engineering, project management, and construction supervision of an oil and gas storage site for Sonangol in Angola, the piping design for a hydrocracker plant in Russia for Technip/KTI and the piping, civil works, mechanical, electrical, instrumentation, process control and construction supervision of a gasoline isomerization plant for Total's refinery in Rome. Currently the company is designing the piping, civil works, electrical, instrumentation and process control of a new SnamProgetti refinery project for the Kuwait Oil Company, and similar type of work for an oil sand project in Canada for Technip Italy. Oyster Progetti has used Cadmatic since 2004 as their plant modelling system.

Cartesar S.p.A. paper mill has special expertise in producing corrugated paper. The company also offers engineering services for the pulp and paper industry in Italy. Cartesar has modelled their mill in 3D using Cadmatic and users the model in their maintenance work and for refurbishments and upgrades.

Plant Engineering System SpA is an engineering company specialized in the engineering and construction of high-tech industrial plants, building factories as turn-key projects, technical and economic feasibility studies, basic and process engineering, construction and plant start-ups. The company is specialized in realizing industrial plants and production units in several fields and in the realization of storage systems. The engineering company acquired the Cadmatic 3D software in 2005.

ENEA, the Italian National Agency for New Technologies, Energy and the Environment is a public organization operating in the fields of energy, the environment and new technologies to support competitiveness and sustainable development. ENEA's 3000 experts promote and carry out basic and applied research and innovation technology activities, also through prototypes and product industrialization. It disseminates and transfers technologies, encouraging their use in productive and social sectors, and provides high-tech services, studies, tests and evaluations to both public and private bodies and enterprises. ENEA operates some 12 research centres around Italy. ENEA acquired Cadmatic 3D design software for these tasks in 2006.



Twenty years' experience of using Cadmatic in water and environmental engineering

Finnish Consulting Group is a leading consulting company in Finland in its own operation area. It specializes in a number of consulting, engineering, architecture and planning projects in Finland and abroad. With more than 50 years in operation the company can boast with references from projects in more than 60 countries. About 40% of the net sales of EUR 70 million is generated abroad. The company has a staff of more than 500 experts and has branch offices in the provincial capitals in Finland and many project offices in Eastern Europe, Africa and Asia. Finnish Consulting Group works in the fields of urban and regional planning, architecture, civil and structural engineering, soil, mechanical and HEPAC engineering, road and traffic planning, water and environmental engineering, socio-economic analysis, health planning, public and business administration and management, training, tourism, etc.

Cadmatic News talked to Mr. Pekka Sarkkinen, Team leader at Plancenter Ltd, part of the Finnish Consulting Group. "I think we were the first external client to use Cadmatic's 3D CAD-based plant design software. At that time,

St. Petersburg's Southwestern Waste Water Treatment Plant is one the biggest in the world. It was designed with Cadmatic Plant Design software. Finnish Consulting Group acted as the main designer in this 175 million euro project. The big plant covers an area of 1.5 km x 0.5 km.

Pictures: Matti Rantala



back in 1987-88, the software was still called PMS, Plant Modelling System. Our management has always been interested in new ways to improve working efficiency. This is why the company started using 3D design at such an early stage. Back then, when personal computers became more common, our team wanted to utilize the benefits the new technology could offer," he said. Mr. Sarkkinen told Cadmatic News that the implementation process of the CAD

software in the beginning "had its obstacles, but customer support has always been very efficient at Cadmatic, so all problems have always been solved."

Important feedback in both directions

The cooperation between Plancenter and Cadmatic has been very good and also rewarding. Plancenter has over the years given much constructive feedback to Cadmatic, which then has been implemented in software improvements. "My experience is that Cadmatic certainly listens to their clients. The feedback from the regular users'



meetings is very important. "The possibility to utilize the open source code for producing our macro applications is also very useful for us."

Expert in Waste and Environmental Engineering

The wide scope of activities of Finnish Consulting Group also covers Waste and Environmental Engineering, which includes projects related to water supply, wastewater collection, treatment and disposal, solid and hazardous waste management, water treatment processes and automation and instrumentation. Since the late 1980's, Cadmatic has been in use for the design of several wastewater treatment plants, both in Finland and in other countries. Big long-term wastewater treatment plant projects



President Vladimir Putin of the Russian federation, President Tarja Halonen of Finland and Swedish Prime Minister Göran Persson participated in the inauguration of the new St. Petersburg Southwestern waste water treatment plant.

Picture: Pekka Sarkkinen.

completed by the company include the one in Viikki in Helsinki, which started back in 1989. Plancenter has built and updated the 3D Cadmatic model of the plant since then. Other similar projects include those in the Finnish cities of Turku and Tampere, and some ten smaller projects in Finland. Mr. Sarkkinen said. "We use Plant Modeller and some of its modules, including Piping, in our daily work. We typically do the wastewater treatment plant and process system layout, machinery design and piping design."

The St. Petersburg Southwestern Wastewater Treatment Plant

One of the biggest newbuilding projects recently for Finnish Consulting Group was the design of St. Petersburg's Southwestern Wastewater Treatment Plant, the whole project valued at EUR 175 million. In the St. Petersburg area in Russia, there are three wastewater treatment plants. Finnish Consulting Group has participated in the construction of them all. The other two projects covered enlargements of existing plants.

The design work started at the beginning of 2003. On September 15th, 2005, the plant was inaugurated. The total project included



The new St. Petersburg Southwestern Waste Water Treatment Plant will reduce the degree of pollution in the Baltic Sea substantially, which is important for all countries around the Baltic Sea.

some 44,000 man hours of design work. This wastewater treatment plant is dimensioned for the waste of 750,000 people, and our work included project management of the design and construction of the wastewater treatment plant needed for nutrient and phosphor deletion as well as the incinerations plant. Finnish Consulting Group headed the project as main consultant, and the scope of work included process design, piping, machinery and HVAC design. There were also other parties involved doing Electrical and automation

design, architectural design and constructional design. The construction of the plant was carried out by SWTP Construction Ltd., a consortium of three Nordic construction companies YIT, Skanska and NCC.

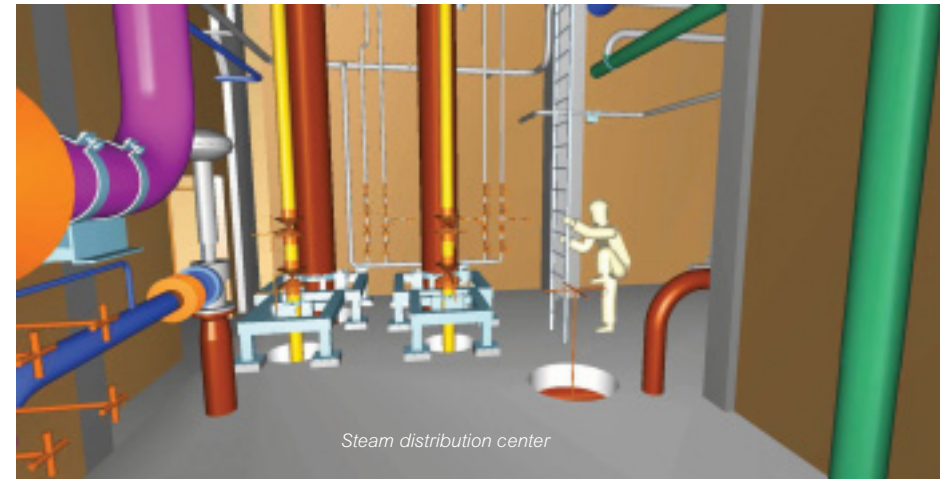
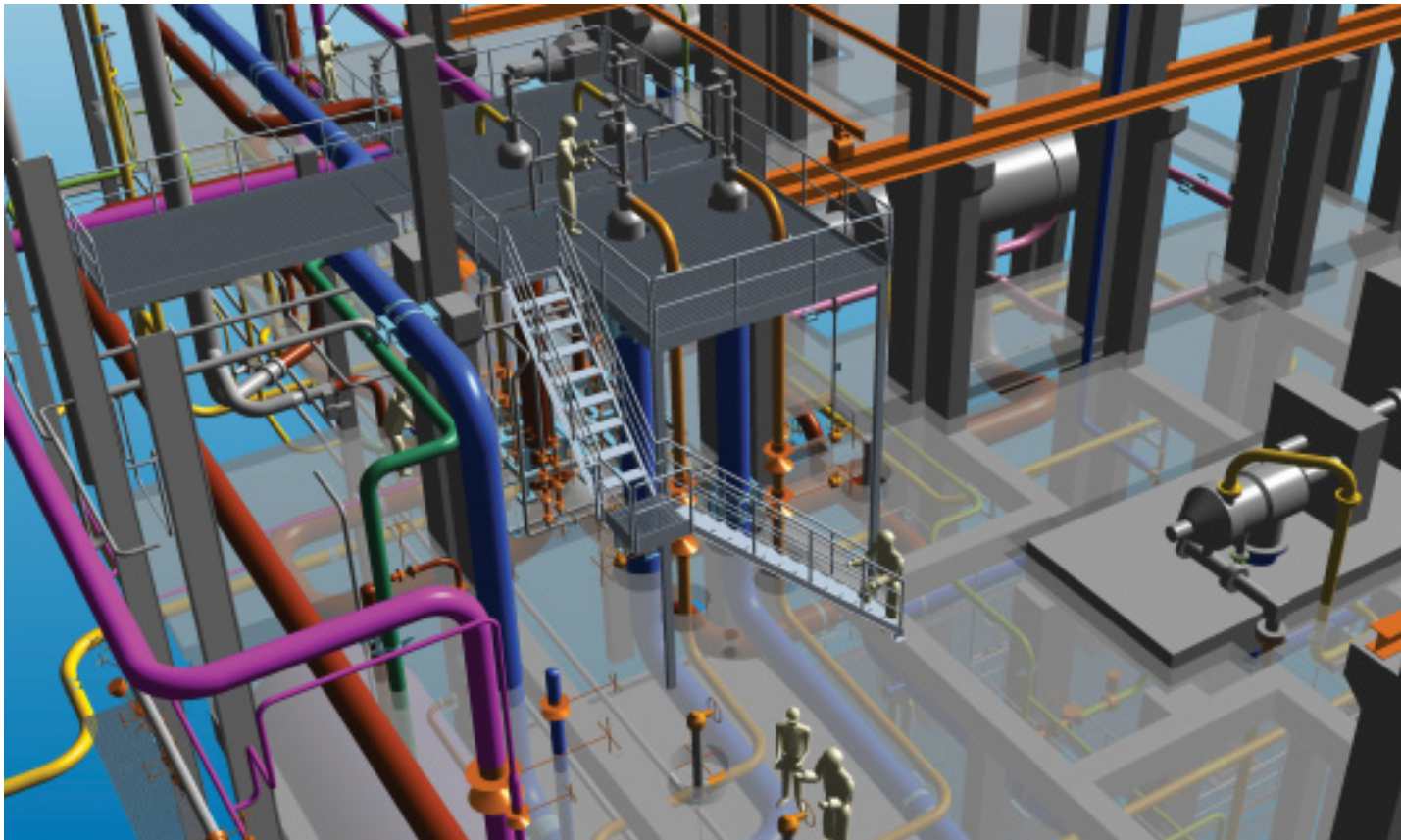
"At project management meetings with the client, the eBrowser was a very practical tool," Mr. Sarkkinen said. "Its walk-around feature is very practical, and saves time in project management. In projects like this, AutoCAD is commonly used, which does not create a problem as AutoCAD 3D and 2D models can be directly imported and exported to and from Cadmatic," he noted. "In this project there were also other consultants using Cadmatic."

Existing plant model in 3D useful in conversions

"This was one of our biggest recent projects, but we also use Cadmatic daily in small projects, as well as when updating existing plants. In this work, we typically start by converting the 3D model to the latest Cadmatic software version in use. Some of these 3D models were produced back in the 1980's. It is very practical to have them, as one does not have to do physical measurements at the plant, when beginning the design of the new parts," Mr. Sarkkinen concludes.



With a mechanical engineer education background, Mr. Pekka Sarkkinen came to Plancenter Ltd. as a designer back in 1983. He acted as team leader in the St. Petersburg Southwestern Waste Water Treatment Plant Project.



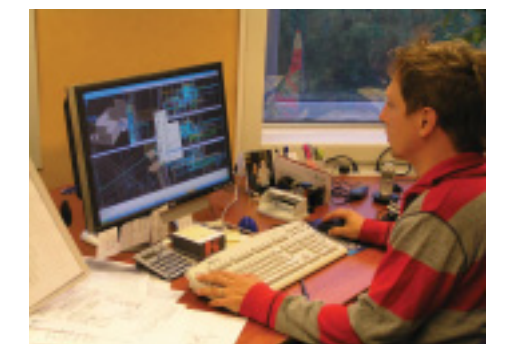
using the Cadmatic Plant Modeller. The time schedule for the entire project was tight. We did the detailed design of the new systems, including strength calculations, isometrics, plan and section drawings etc..

"KI-konsult has used Cadmatic for various projects for three years now," Mr. Kaarle notes. "This is our biggest project so far, with about 100 tie-in points in total. This project is also very advanced with steam pressures up to 120 bar and 520 degrees, which puts very high requirements on materials. Together with Mecal, we have done a lot of work on system strength and elasticity calculations, and everything has been designed according to EU's new Pressure Equipment Directive standards," Mr. Kaarle said.

KI-konsult has worked on this project since June 2005. The work has also included the production of all material and piping specifications, all done using Cadmatic.

Cadmatic speeds up design work

"Cadmatic makes design work much faster than before," Mr. Kaarle adds, "as one can automatically generate isometrics and piping drawings. It is also much easier to present the project work to the client using a 3D model where you can virtually walk around in the model. I believe the project management, operations and maintenance staff have found this very useful. I also believe that this type of project work will be done entirely in 3D in the future. So much time is saved in the design phase, and the 3D model can then be utilized throughout the lifetime of the mill," he concludes.



KI-konsult created the Cadmatic 3D model of the systems connecting the biomass boiler to the mill, and together with Mecal, the detailed design of the new piping installations. Mr. Fredrik Nilsson, Cadmatic operator at KI-konsult.

The Smurfit Kappa Group is a packaging supplier with sales in excess of 7 billion euros with over 40,000 employees. It has operations in close to 400 locations, in twenty European and nine Latin American countries, as well as in Canada, Singapore, USA and South Africa. It has a key position in containerboard, solid board, graphic board, corrugated and solid board packaging and in several other packaging and paper market segments.

Smurfit Kappa Kraftliner Piteå is Europe's biggest kraftliner producer with an annual output of about 750 000 tonnes. Kraftliner is a base paper made out of fresh fiber for production of high quality corrugated board and corrugated board packages. It forms the outer ply in corrugated board. The Piteå mill has two paper machines, one producing brown kraftliner and the other producing white toplineer.

A new biomass boiler is currently being built at the Piteå mill. The project includes a completely new bio-fuelled boiler, with a thermal boiler capacity of 132MW. The steam drives a new 25 MW steam turbine. The boiler is a turn-key delivery by



Peder Ögren (left) is project manager of the new biomass boiler and Per Johansson is project manager of the steam systems in the newbuilding project at SmurfitKappa Kraftliner Piteå

AkerKvaerner, whereas the rest of the design, including systems, bio-fuel handling, steam piping, steam central, new turbine hall extension, control systems, new biomass boiler building etc. are handled by Smurfit Kappa Piteå's project department and their suppliers. The steam turbine is delivered by Siemens. The steam systems have been



designed and modelled using Cadmatic.

The mill's first recovery boiler was built in 1962. It was converted for running on oil in 1972, and on bark powder in 1979, and is now being replaced. In addition to the new biomass boiler the Piteå mill operates another 270MW recovery boiler for converting black liquor to green liquor.

Mr. Peder Ögren is project manager of the biomass boiler and Mr. Per Johansson is project manager of the entire steam system in the project. "This is a major upgrading for us," notes Mr. Ögren. "We started preliminary studies in 2000. In 2004 the project was initiated with tenders and the construction project was started in May 2005. The entire construction project is valued at about 750 million SEK."

The erection of the boiler building started in January 2006. The test pressurizing successfully took place on 11 September 2006 and the first system testing will take place on December 1st. The new biomass boiler will be up and running by April 4th, 2007.

"In the project department, we are eight engineers in charge of the different disciplines; electricity, automation, mechanical, piping and construction," says Mr. Ögren. "We are a part of the technical organisation of Smurfit Kappa Kraftliner Piteå, and we manage the newbuilding and conversion work at the mill."

Steam Piping System 3D design using Cadmatic

For a kraftliner mill of this size, roughly 70-80,000 drawings are typically needed. To reduce the amount of 2D drawings the Smurfit Kappa engineers decided to start converting the plant documentation with Cadmatic into a 3D model. Cadmatic has already partly been used at Smurfit Kappa Kraftliner Piteå. "We have now converted the entire steam central to 3D with Cadmatic," notes Mr. Johansson. "We are now evaluating different work methods how to go forward with this process," he said.

The 3D conversion of the existing steam piping system as well as much of the work on the new system has been done by KI-konsult together with Mecal.

Mr. Johansson and his colleagues at Smurfit Kappa Piteå supervise the work to a large extent using the eBrowser. "We have also used it for risk analyses and analysing the safety of the planned working environment. For these types of tasks it is a very practical tool," Mr. Ögren said. "Typically we also use the eBrowser for checking the proposed system types, valves, materials and specification for example. It is very good that system data is required when building the 3D model," Mr. Johansson noted.

"Doing the dimension calculations is a big job on this type of a project. By using a 3D model when designing the layout, misunderstandings and collisions are avoided," Mr. Johansson said. "The model data of the new project has been used by several parties involved at the mill, including those in charge of operations and maintenance.

"In the future, it would be very useful to have the entire plant modelled in 3D by using laserscanning," Mr. Johansson remarked.

KI-konsult built the Cadmatic 3D model of the mill's steam system

The project started with the process system design and flow diagrams, done by Smurfit Kappa Piteå. KI-konsult did the 3D model using Cadmatic, and together with Mecal, the detailed design of the new piping installations.

Mr. Peter Kaarle heads the project work for Smurfit Kappa Kraftliner Piteå at KI-konsult.

"We have cooperated with another engineering company Mecal, on the design of the entire, low, medium and high pressure steam piping system outside the biomass boiler. A long pipe bridge goes between the biomass boiler and the new steam distribution center and big changes are also made to the old steam distribution center. A new turbine hall is also being built. We firstly produced a 3D CAD model of the existing steam system and the buildings

Long-term consistent R&D work behind Cadmatic success

Cadmatic News talked to Mr. Teuvo Hokuni, Software Development Manager at Cadmatic, about the Research and Development work done over the years on the Cadmatic 3D plant design software and how this work has resulted in the advanced and widely accepted 3D plant design CAD/CAE/CAM software solution.

The Finnish engineering company Elomatic was founded in 1970. From the beginning, much effort was directed at using innovative tools in the design work. At that time plastic models of 1:15 scale were used when designing processing plants and ship engine rooms. 3D design was found to be useful already then.



At the beginning of the 1980's Elomatic looked at all existing ship and plant 3D design software, but could not find any design software that was technically and cost wise suitable as a design tool for an engineering company. Thus, the decision was made to produce a 3D CAD software suitable for ship engine room design and plant design. A separate pilot development project for this purpose was started in 1985, which consisted of the design of a partial engine room of a methanol tanker.

In the beginning of the 1990's, the development and sales of the 3D CAD/CAE/CAM software was transferred to a separate company established for this purpose, Cadmatic Oy. Sales and marketing of the software was now also directed at direct competitors of Elomatic. In order to

also cover the design needs within shipbuilding, cooperation was established with the Dutch company Numeriek Centrum Groningen, who was developing their NUPAS software for ship hull construction design and production. As a result of this a joint development and marketing venture was formed to introduce the shipbuilding industry to the versatile and powerful Nupas-Cadmatic 3D ship design CAD/CAE/CAM software product.

"In the beginning, the CAD software ran on Hewlett Packard Unix-computers," remembers, Mr. Teuvo Hokuni, Software Development Manager at Cadmatic. "Later also SUN Microsystems and Prime technology was supported. In the mid 1990's the most common platform was based on IBM compatible PCs and SCO Unix technology. In late 1990's the Cadmatic software was ported to Windows and the support for Unix ended," said Mr. Hokuni, who came to Elomatic as a designer in October 1980, and moved over to Cadmatic in 1985. Today he leads and administers the work of an advanced core team of software developers at the company.

Changes in the way designers work

Already at the end of the 1990's one could see the design environment increasingly moving towards concurrent design through networking. At Elomatic, a research project named "Global Engineering Network, (GEN)" was established to look into this trend. As a result of this research project, a separate development programme was initiated within Cadmatic directed at developing the Cadmatic software. During the development phase, the design environment continued to change - local networks changed rapidly to global networks, where different parts of the design work of a ship/plant project could be conducted from anywhere in the world.

3D design software tools have traditionally been relatively complicated to



Mr. Teuvo Hokuni, Software Development Manager at Cadmatic Oy, has participated in the design team of Cadmatic since 1985. "I think one reason for our success is that we originate from an engineering company, where only tools that work in practice can be accepted," he told Cadmatic News. Mr. Hokuni has a mechanical engineer and computer software developer education.

administer. The database structures have not been suitable for concurrent distributed design. In addition, the same design tool is hardly ever used in all disciplines of engineering in a project.

It was soon noted that the changes of the real-world design environment required new 3D design features. The common 3D model of the distributed project must be simple to administer, and the required IT solutions should be commercially viable for the users in the design network.

need it, regardless of which 3D design software they use, and even to those not using any 3D software at all.

The design software has to be capable of importing and exporting the required 3D geometry and related product information to other systems, also when they are intended for a different discipline or design task, such as designing buildings or pipings.



The solution - software for today's distributed design needs

At the end of 2001, Cadmatic introduced the eBrowser, as the first practical solution for the new information distribution requirements. This very simple to use internet-based application which could efficiently distribute both 3D geometry and product information was an immediate success.

As a next step, the eXchanger product was published in 2004. Most CAD software have 3D import/export capabilities with AutoCAD®. The approach of Cadmatic was to develop one good import/export link with AutoCAD. This can then be used also as a channel to many other softwares. When there has been a obvious need, direct links to other softwares have also been built.

In Autumn 2005, version 5 of the Cadmatic software was published. Through the biggest structural change of the architecture of the software in its entire development history, it received an entirely new core database structure for storing and administering 3D design data produced remotely at several locations. It also included many features and tools for simplifying administration and use.

Where does the R&D go from here?

"The development of Cadmatic will continue in the direction of supporting the changed design practices of the clients," says Mr.

Hokuni. "We believe that with the possibility of concurrent distributed design, a big part of detail design in projects will move to countries with cheap labour costs. At the same time, organizations want to keep initial and basic design to themselves, or at least very close, as this is their core know-how."

This means in practice that Cadmatic will direct more resources towards developing tools for initial and basic design. The use of 3D also has clear benefits in the initial design phases of a project. The main reason why 3D design has not become common at the initial and basic design phases, such as it has in detailed design, is the very strict time schedule demand in this phase, which has not been met by current design software. "The biggest challenge is to find out how a 3D model can be produced rapidly enough," Mr. Hokuni notes.

At Cadmatic the software developers are now working on this, and have found possible solutions to building a new 3D model faster than is possible today. One way to accomplish this is to re-use design work from earlier projects. The work done on Design Modules will also greatly benefit traditional detailed design projects. "Here lies the spearhead of our R&D work in the next years," concludes Mr. Hokuni, but he adds; "it is extremely important also to keep serving our current clients in their everyday work. While doing new things we must not forget working on making the current toolset even more efficient."