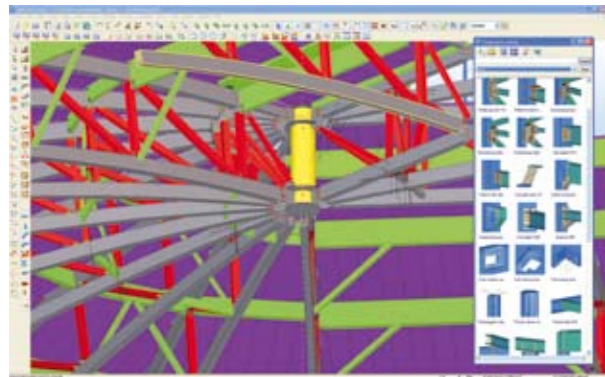
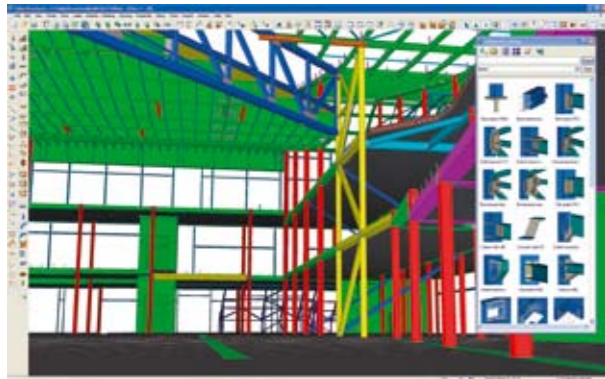


# TEKLA STRUCTURES – THERE'S ONE TOOL THAT DOES THE JOB



## TEKLA CORPORATION

> Tekla is a leading international software company whose innovative software solutions make customers' core businesses more effective. Tekla's software products and related services are used mostly in building and construction, but also in energy distribution and by municipalities. Tekla Corporation has area offices and partner organizations worldwide. International operations account for 75% of net sales. Founded in 1966, Tekla is one of the oldest software companies in Finland.



## TEKLA STRUCTURES

> Tekla Structures software is a building information modeling (BIM) tool that streamlines the delivery process of design, detailing, manufacture, and construction organizations. While integrating openly with architectural models, its strength lies in the contractor end of the process. Thousands of Tekla Structures software users in more than 80 countries have successfully delivered BIM-based projects across the world. Tekla Structures' ability to process extensive amounts of data enables the creation of detailed 3D models that apply to every stage of design and construction. From planning and design development thru to fabrication and installation, Tekla models naturally develop in parallel, representing the "as-built" condition of a building. Tekla Structures effectively integrates into any best-of-breed software driven workflow, while maintaining the highest levels of data integrity and accuracy. Such collaborative workflows are the cornerstone to minimizing errors and maximizing efficiency, resulting in high profitability and on-time project completion. Tekla Structures encompasses specialized configurations for structural engineers, steel detailers and fabricators, precast concrete detailers and manufacturers, as well as contractors.

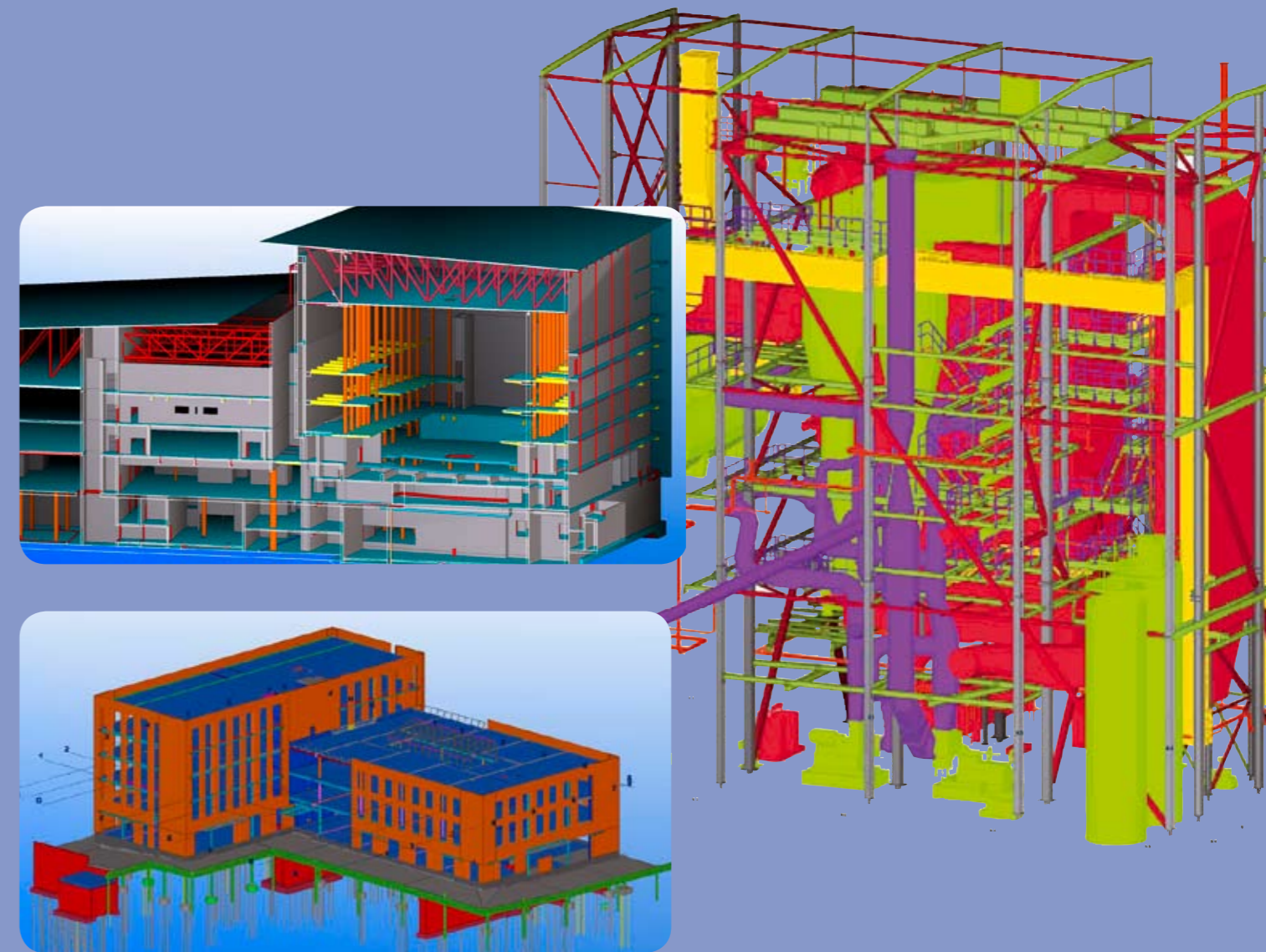
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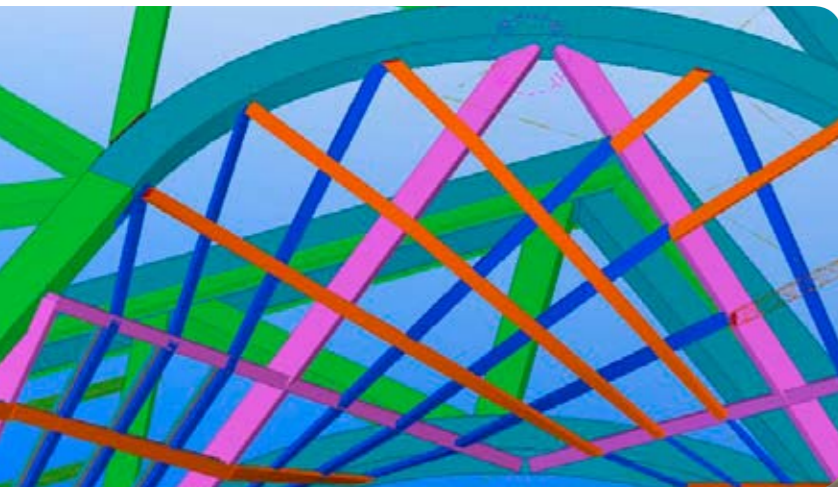
## TEKLA STRUCTURES IN PRACTICE: RAMBOLL GROUP [www.ramboll.com](http://www.ramboll.com)



# SUCCESSING BY FULL AND VERSATILE SOFTWARE IMPLEMENTATION

> The Ramboll Group is a leading Nordic company in engineering that has become an extensive Tekla Structures software user with hundreds of structural design projects delivered during recent years. Currently, there are close to 200 trained Tekla Structures users within the company in the Nordic region. Their secret of success in 3D building information modeling is thorough implementation of the software to serve the particular needs of the

Group as well as its versatile use in many different building projects, no matter how complex the design.

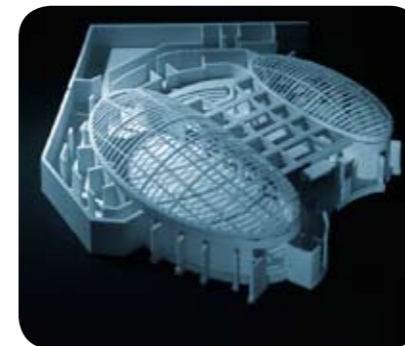
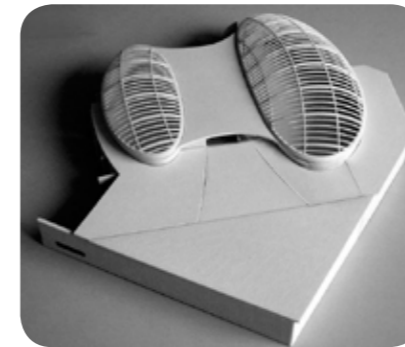


*Kuokkala Church roof structure, Finland*



## RAMBOLL DENMARK: GENERAL DESIGN AND PRECAST CONCRETE DETAILING

> Ramboll is one of the biggest engineering offices in the Nordic countries and the biggest Tekla Structures user in the area. There are more than 100 Tekla Structures users in Ramboll Denmark alone. All larger projects in the building divisions of Ramboll Denmark are being modeled with Tekla Structures. "Ramboll strongly invests in 3D tools," confirms **Troels Hoff**, Chief Consultant at Ramboll Denmark. "We have chosen Tekla Structures as our strategic tool for the general and structural design of steel and especially of concrete because the software greatly helps us in modeling complicated geometry."



*3D print of  
Elephant House model  
(Copenhagen Zoo,  
Denmark)*

"About 80% of our projects involve concrete detailing," adds **Bent Feddersen**, Chief of Expertise Development at Ramboll Denmark. "Using a proper 3D design tool ensures the consistency of the structure with technical models, such as the HVAC model, and greatly reduces errors caused by redundant data. The geometrical Tekla model can be exported to FEM software for structural analysis, and within Tekla Structures it is possible to create standard details, including structural calculations from MS Excel. This increases the effectiveness and the quality of the design."

Ramboll won the Icelandic National Concert & Conference Center project together with the architectural

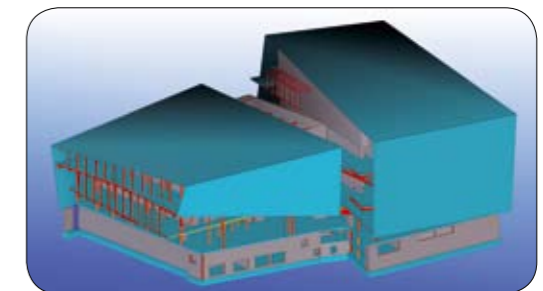
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firm Henning Larsen Architects in Reykjavik. Ramboll now uses the IFC (Industry Foundation Classes) 2x3 standard that enables communication between Tekla Structures software, MagiCAD software and different architectural software.

"Being able to produce accurate 3D prints and visualizations of the buildings is also important for us and our customers," Feddersen continues. "The benefits provided by the software mean that we can provide a better product and much more data – in terms of work drawings, amounts of material etc. – for our collaborators: contractors, precast concrete factories, steel manufacturers and others, who thus become Tekla customers as well. We have a close and productive cooperation with Tekla that continues in the shape of a framework agreement signed in 2007," he states.

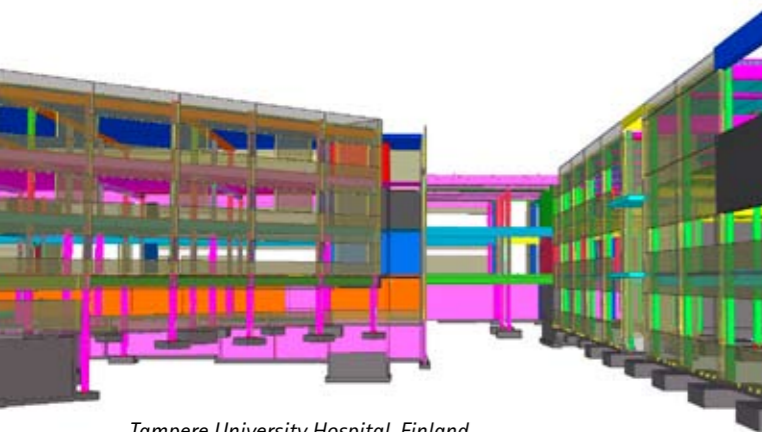


*National Concert & Conference Centre, Reykjavik, Iceland*

The Ramboll Group employs more than 6,500 dedicated specialists and is a leading Nordic company operating in a broad international context from 116 offices in the Nordic region and the UK and 24 permanent offices in the rest of the world. The company provides engineering, consultancy, product development and operation services within the areas of buildings, infrastructure, industrial processes, energy, water and environment, telecommunication, management and IT.

## RAMBOLL FINLAND: CONTINUOUS DEVELOPMENT FOR EFFICIENT IMPLEMENTATION

> Ramboll Finland has continuously developed its procedures in concrete design and does almost all workshop drawings of pre-fab concrete elements using Tekla Structures software. "Three years ago, Ramboll Finland was among the first users of Tekla Structures for General Design," says **Ismo Tawast**, Director of the Building Construction

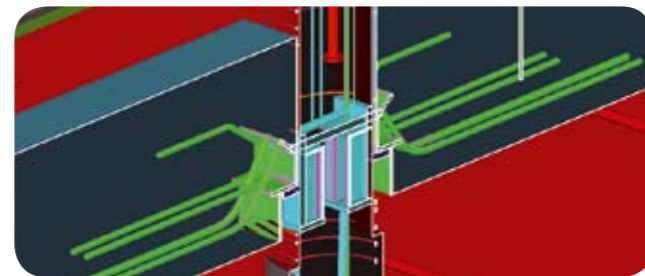


*Tampere University Hospital, Finland*



Division at Ramboll Finland. Since 2005, Ramboll Finland has purchased dozens of licenses and trained more than 50 designers to use the software. "Our target is to ensure that 100% of our design work is carried out with Tekla Structures over the next two years. Our designers are extremely motivated about using this kind of design method and we have been able to avoid design errors. This is very important not only for the structural design but also for the whole building process," Tawast emphasizes.

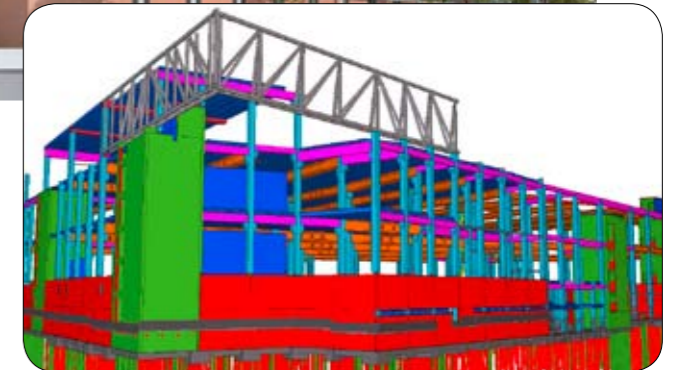
"Our seven structural design units in Finland employ approximately 120 engineers; each unit has a specific role and detailed customer segments. Some of our design units have already trained 100% of their personnel to use the software. We have learned how to pick out the most effective design group for each project. By using the Tekla Structures multi-user model, we have maintained a very successful design approach to industrial, commercial, public and residential projects, covering not only steel structures, but also concrete, precast concrete and timber structures," Tawast concludes.



*Column reinforcement and hidden corbel connection between a column and a prestressed concrete beam (Tampere University Hospital, Finland). The connection's console and beam shoes are products of Lujabetoni Oy, Finland.*



*Supermarket Prisma, Finland*



Ramboll Finland designs all its larger projects in 3D using Tekla Structures. The most recent projects include the steel structures of power plants in Finland, Japan and Scotland, a 20,000 m<sup>2</sup> enlargement of Tampere University Hospital, a wooden church with "unbalanced" geometry, and a 56,000 m<sup>2</sup> shopping mall in Helsinki (visualization by architects' office Max Tenhunen Oy). There are several noteworthy examples of office buildings under construction, too, such as Technopolis in the Ruoholahti district of Helsinki (visualization by architects' office Larkas&Laine Oy).

In addition to standard structural design tasks, Ramboll Finland has undertaken R&D tasks to develop Tekla Structures Custom Components for special details in steel structures or steel components within concrete structures.

A group of skilled modelers, one at each office, was formed to steer the company's internal implementation of the software. "We have taken the first steps in co-operation within the Ramboll group, but we still have challenges ahead," says **Teemu Anttila**, Development Manager at Ramboll Finland. "Structural engineering, for which we use Tekla Structures, is only one part of a construction project. The increasing trend of using models created by various parties throughout the procurement, manufacturing, transport and erection phases will keep us busy in the future," he says.

## SHARING BEST PRACTICES WITH RAMBOLL SWEDEN & NORWAY

> Human know-how and sharing it within the organization is a significant factor in successful businesses. Training new Tekla Structures users quickly and bringing their skills up to a sufficient level is important for the Ramboll Group, which aims to share the best practices created in Finland and Denmark with Ramboll Sweden and Norway, too. The thorough implementation of the software creates a solid basis for this principle.

Ramboll Sweden has close to 50 trained Tekla users spread out in 10 offices around the country. Tekla Structures software has been used regularly since 2005, most commonly in the Gothenburg office for plain steel structures in industrial building projects. Lately, the Stockholm office has started to use it in the earlier stages of projects, and also to create the shop drawings. Reference projects include digester and boiler houses in Indonesia and Norway, as well as part of the Toyota Camry factory in St. Petersburg, Russia.



Steel foundation that can support two floors of the building before casting the concrete for the foundation (Technopolis, Helsinki, Finland). Steel foundation is a new product concept of Finnish Rautaruukki Oyj, and piloted for the first time in Technopolis.

Technopolis, Helsinki, Finland

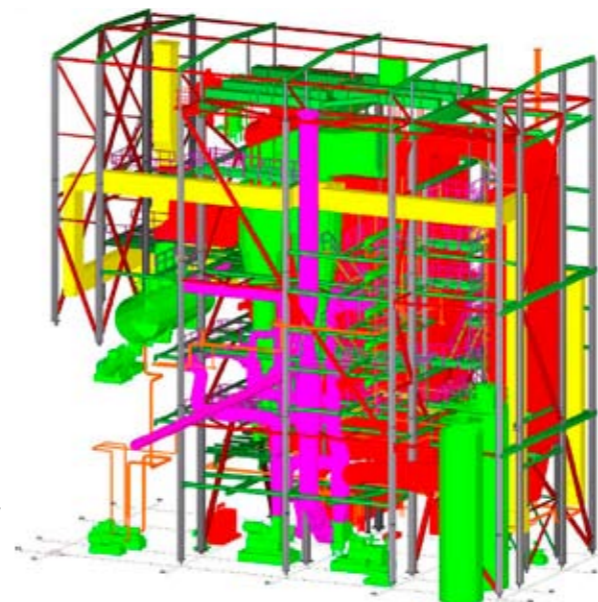
> "OUR TARGET IS TO ENSURE THAT 100% OF OUR DESIGN WORK IS CARRIED OUT WITH TEKLA STRUCTURES DURING THE NEXT TWO YEARS. OUR DESIGNERS ARE EXTREMELY MOTIVATED ABOUT USING THIS KIND OF DESIGN METHOD."

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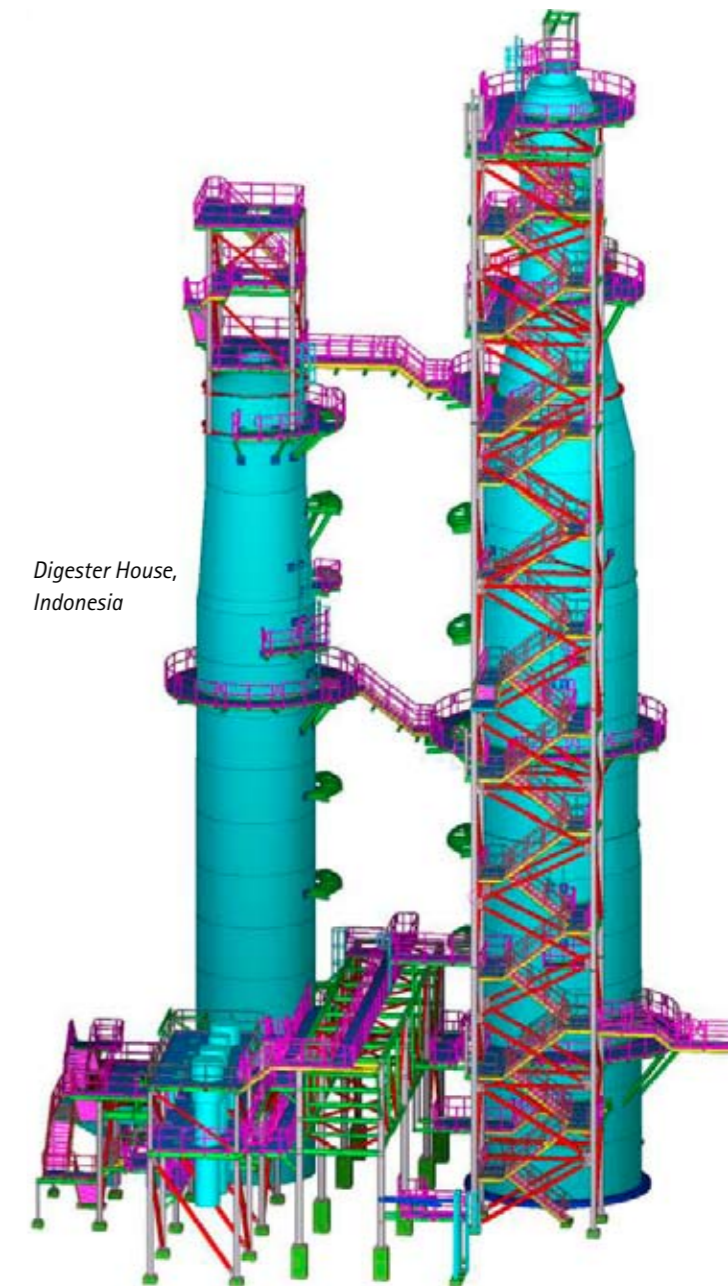


Currently, there are about 15 Tekla Structures users in Ramboll Norway. In the country's western region the software is used in industrial steelwork for onshore oil installations. In the Oslo region, it is used for modeling steel, and reinforced as well as precast concrete.

"Ramboll is a remarkable example of how we can efficiently serve engineering and general design offices," says **Thomas Grönholm**, Sales Manager at Tekla Building and Construction. "Although Tekla is mostly known as a steel detailing software developer, Ramboll actually started using Tekla Structures with concrete. Without the vision and support of Ramboll's Bent Feddersen, Ismo Tawast and those who have extensively used Tekla Structures the breakthrough could not have happened. It proves that our product meets the demands of industry and is a versatile enough solution to fulfill the needs of industry leaders such as Ramboll. We are very much looking forward to extensive cooperation with the users and future users in Sweden and Norway."



Boiler House, Gothenburg, Sweden



Digester House, Indonesia