



TEKLA® Structures



TEKLA STRUCTURES IN PRACTICE:
HOTEL HILTON
HELSINKI-VANTAA AIRPORT, FINLAND





TEKLA Structures

BIM INTEGRATES CONCRETE AND STEEL STRUCTURES AND IS OF USE IN HPAC PLANNING

- The newest Hotel Hilton in Finland is an addition to the service offering at Helsinki-Vantaa Airport. It serves gateway passengers in particular as well as ensures that Helsinki-Vantaa remains the leading medium-sized airport on a global scale. The hotel, which is part of the Hilton chain and has around 240 rooms, will be completed in summer 2007 next to the international terminal. The cost of the project is around EUR 40 million. Finnish engineering office A-Insinöörit Oy designed its building information model using the Tekla Structures program. Using the software in the project made it easier for other parties, such as the manufacturers of concrete elements and steel sections and plumbing designers, to visualize the structures.



COMPLYING WITH INTERNATIONAL STANDARDS

> The seven-storey *Hotel Hilton Helsinki-Vantaa Airport*, which completed at the end of the summer in 2007, will become one of the the airport's landmarks. The foundation stone was laid in February 2006. KVA Architects Ltd are responsible for the architectural design and the Swedish company Doos Arkitekter Ab for the interior design. The cost of the construction project is around EUR 40 million and includes the costs of both the hotel owner and hotel operator. 150–200 people have been employed during the construction, which has taken around twenty months.

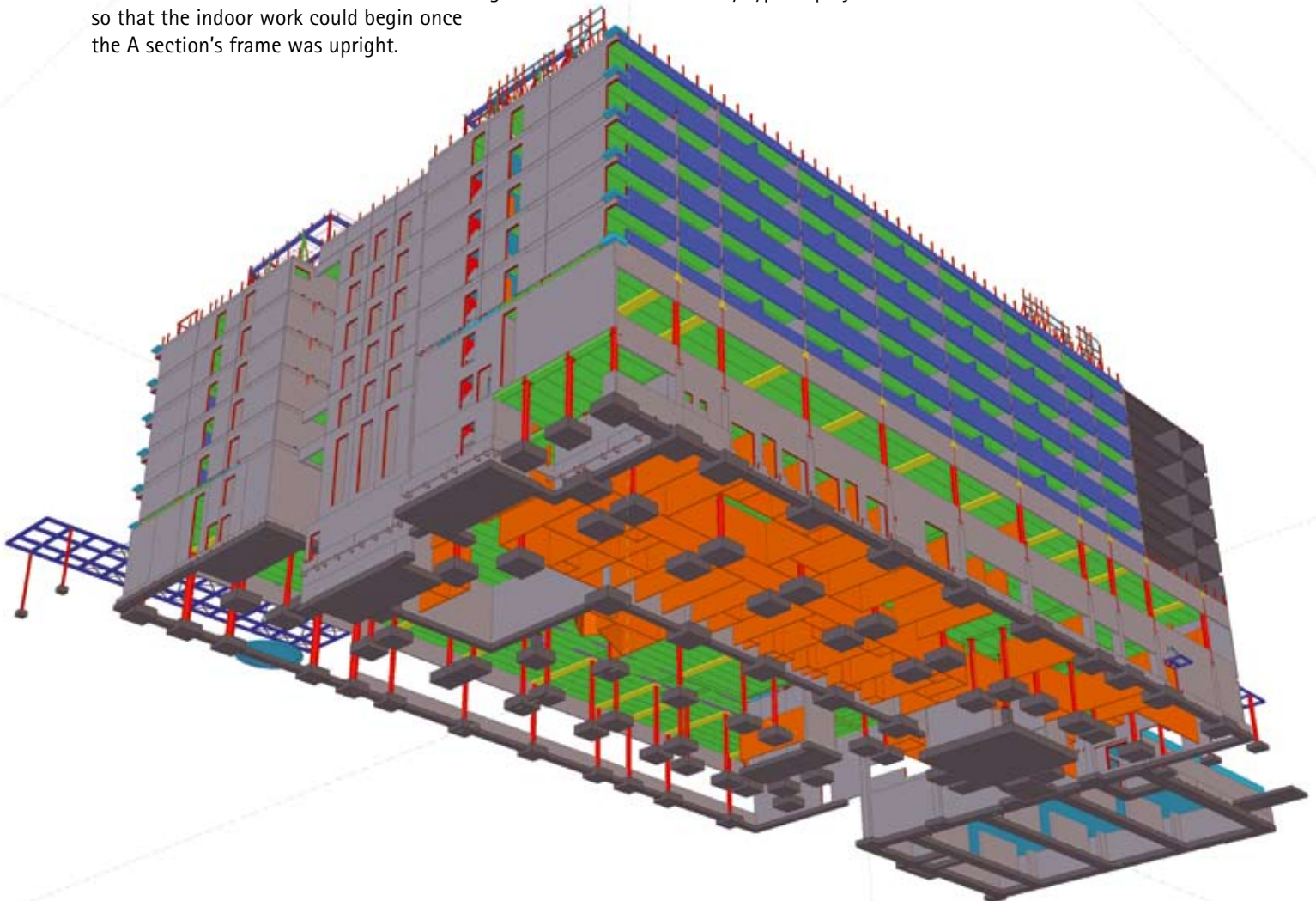
The new hotel has 246 hotel rooms, a restaurant with 220 seats together with a lobby bar, banquet hall for 350 people, adaptable meeting rooms and a gym. The building has a total of 17,000 gross square meters and car parking space for one hundred cars. The building's vertical frame consists of reinforced concrete and composite columns cast on-site and of load-bearing reinforced concrete walls. The horizontal structures are primarily hollow-core slabs. The frame rose in two stages so that the indoor work could begin once the A section's frame was upright.

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JUKKA OJA-LIPASTI, A-INSINÖÖRIT OY

COMBINING STRUCTURAL ELEMENTS IS EASY

> "The benefits of modeling came to the fore in the project especially in the design of the structural elements, where we achieved a significant benefit in the compatibility of the sections," says Design Manager **Jukka Oja-Lipasti** from A-Insinöörit. "The putting together of the various components was easy, which generally speeds up routines in any type of project."



According to the experience of A-Insinööri, modeling cast-in-place and precast walls worked well in the Hilton project, especially in the construction of joints. The fixing parts were successfully aligned in place. When modeling the steel sections, their drawings and listings came directly from the Tekla Structures model, as there were ready-to-use joint components to hand. Likewise, the drawings of the cast-in-place and precast walls, and the label drawings and lists for the hollow-core slabs were obtained directly from the building information model.

The Hilton project is a perfect example of how building information modeling (BIM) was put to use right from the design stage. All the essential elements could be included and derived from the model: the cast-in-place walls, implementation drawings for the precast walls, the label drawings for the hollow-core slabs, the steel frames for the plumbing and ventilation machine rooms, the steel structures to be joined, the putting together of the steel frame and the initial data for designing the elevation as a dgn file. "Starting the modeling at the design stage really helped the other parties in the project to conceptualize the structures," says Oja-Lipasti.

BUILDING INFORMATION MODELING IMPROVES THE QUALITY OF CONSTRUCTION

> Some of the hole and provision information for the building was transferred on a trial basis from the model created by the HPAC designer to the model created by the structural engineer, but the final provisions were transferred manually. In this way the correct provision information was transferred from the model to the various finished parts for manufacture. Oja-Lipasti believes that this way of operating in construction will be further developed, because "super-imposed" working and changing of models is, in his opinion, the only right way to mark the provisions in building services engineering reliably so that all the issues are taken into consideration and can be implemented in practice.



PROJECT PARTICIPANTS:

A-Insinööri Oy

Engineering office A-Insinööri Oy operates in Espoo and Tampere, Finland's second and third largest cities, and employs around a hundred professionals. They design concrete, steel and wood structures for building, bridge design, roadwork and traffic design projects in Finland.
www.a-insinoorit.fi

PPTH-Solutions Oy

PPTH-Solutions Oy, which provided the steel frame of the hotel, is a subsidiary of PPTH-Norden Oy and the leading Finnish contractor in the manufacture and erection of external claddings of glass and aluminium.
www.ruukki.fi

Skanska Talonrakennus Oy

Skanska is one of the world's leading construction groups with expertise in construction, development of commercial and residential projects and public-private partnerships. Skanska's operations in Finland and Estonia cover Construction Services and Residential Development. Construction Services includes building construction, civil and environmental construction and building services.
www.skanska.fi

Tekla Oyj

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.
www.tekla.com



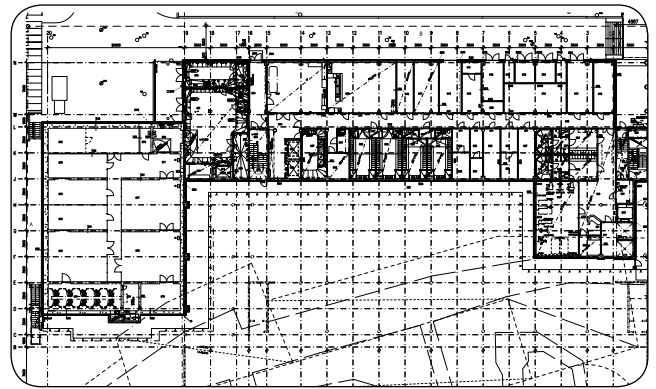
> "THE EXTRA INPUT DEFINITELY PAYS FOR ITSELF THROUGH MORE EFFECTIVE USE OF TIME."

JUKKA OJA-LIPASTI, A-INSINÖÖRIT OY

"According to A-Insinöörit Oy's building information modeling strategy, the most important constructions are always modeled. We design the models as comprehensively as possible, i.e. we model everything that we can. This makes it easier for the people on the construction site and everyone involved in the construction project to get the information they need, quickly and reliably," explains Jukka Oja-Lipasti.

The 3D representations and printouts created from the model facilitate and speed up decision-making at the design stage. Conceptualizing the structures is significantly easier than interpreting 2D plans. The 3D plans are likewise useful, as they can be appended to construction tender documents. Therefore, the modeling tool can be exploited extensively in the sales and management of projects, which makes its use especially productive.

"Everyone on the construction site has been happy with the 3D plans they have received, and the plans have always been well received. From the perspective of design, 3D visualization is additional work, which must be taken into account in the design fee," comments Oja-Lipasti. "I can nevertheless say from experience that the extra input definitely pays for itself through more effective use of time," he states.



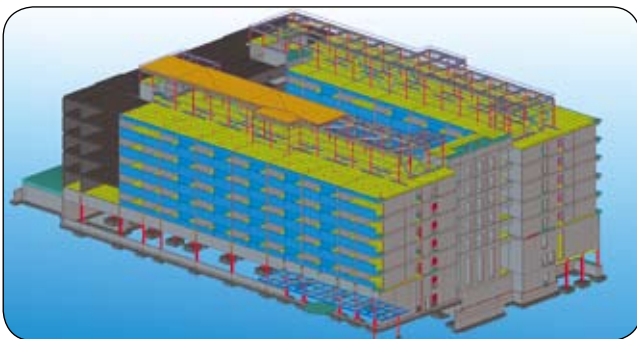
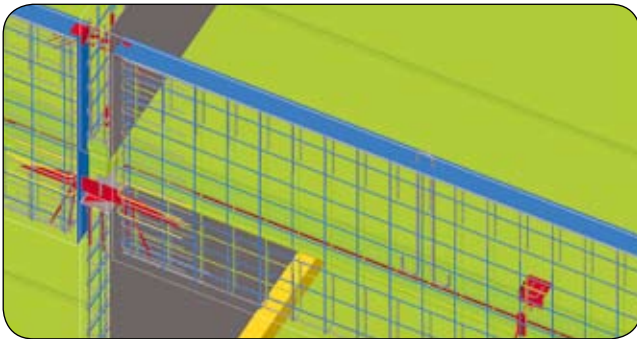
TEKLA STRUCTURES – AN INTELLIGENT AND INTEROPERABLE MODELING SOLUTION

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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