

Vahanen Oy

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Vahanen Group is one of the biggest Finnish owned technical consulting organizations in the construction and property branch.

We offer a wide scope of services in architecture, geotechnics, building services and structural engineering, in refurbishment and property management, expert services in building physics together with environmental consulting.

Our main focus is on developing sustainable constructions throughout our services. There are more than 400 professionals working in the Vahanen Group.

Our network extends from Finland to Russia, the Baltic States, Romania and the Gulf Area.

Our mission is to develop a safe, healthy, ecologically balanced built environment for generations to enjoy.

Kamppi Chapel of Silence - Helsinki, Finland

The Kamppi chapel of silence is located on the south side of the busy Narinkka square in central Helsinki. With its curved wood façade, the small sacral building flows into the cityscape. Simultaneously the chapel's gently shaped interior space embraces visitors and shields them from the bustling surrounding city life.

The actual chapel is located in a wooden volume. Secondary structures are located in a hall opening up towards the square. The entrance doubles as exhibition space.

The sacral space is a calm environment; the chapel's inner walls are made of thick oiled alder planks. The furniture is also made of solid wood.

The façades will be made out of sawn-to-order horizontal finger jointed pine wood planks, which will be treated with a micro-pro pressure treatment and surface finishing. The constructive frame consists of solid glulam elements.

Architect

The (award-winning) development was realised by K2S Architects in central Helsinki.

General description of the project

- Chapel, wooden frame: 104 m²
- Staffroom, concrete frame: 18 m²
- Public info and exhibition space, concrete frame: 80 m²
- Other spaces, concrete frame: 64 m²
- Apartment area: 266 m²
- Gross area: 320 m²

The acoustic demands placed upon the building are the most important factors that affect the structural design.

The design of the exterior wooden façade will be a challenge, because it has to be bent smoothly around the structural shell.

The surrounding buildings and car park ramp from the Forum shopping centre should be in normal use during the construction period, which means care should be taken during the designing and constructing stages to consider the site logistics, working schedule, work phasing and protective covering.

The source data included 2D vector files and Rhinoceros 3D surface models.

The only 3D source data came from the Rhinoceros file. Using these files as a starting point, all the construction and reinforcement modelling was made using Allplan Engineering.

All different kinds of drawings like plans, sections, reinforcements with steel schedule, demolition plans and details are made from this single Allplan project. End data can be produced as IFC, dwg, pdf and plt files which are sent to an internet based, common file bank for the project, where an authorized user can access them.

Solid Glulam columns are modelled with Allplan 3D modelling which is based on the architect's Rhinoceros 3D surface model.

The most challenging problem was to model the chapel's columns because both of the surface profiles are different.

Every column is individual and will be cut using a CNC machine, these CNC files will be exported from Allplan. The exterior wooden surface of the chapel is made like a wooden boat, handmade by a carpenter.

Also the chapel's foundation follows the shape of the walls, which made the task of reinforcement designing quite demanding.

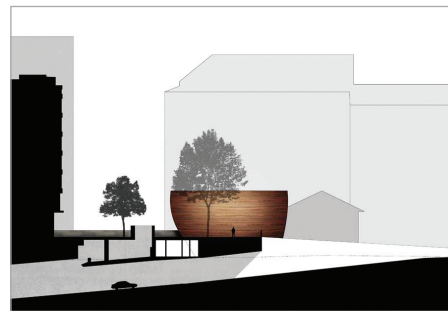
Reinforcement schedules are very helpful for the contractor, especially in this kind of multi-shaped project.

The shape and form of the chapel are rather complex and the acoustic demands very strict.

The wooden and concrete structures have been designed with the help of Allplan Engineering. It is hard to believe that someone could make construction drawings for this kind of building without a proper BIM program like Allplan.

The property of Allplan Engineering for reinforcing multi-formed structures is used in order to do the work fast, accurately and effectively.

Allplan Engineering is a powerful designing program in this kind of complex free-shape constructions. Its ability to import and export different kinds of 2D, 3D and IFC formats makes it easier to co-operate efficiently with other designers.



Kamppi Chapel of Silence Helsinki, Finland

Project information

Owner The Parish Union of Helsinki
Architect Arkkitehtitoimisto K2S Oy
General Contractor Pakrak Oy
Engineering Office Vahanen Oy
Construction Period From March 2011 to March 2012
Location Helsinki, Finland



Short project description

This project is about the Kamppi chapel of silence, located on the busy Narinkka square in central Helsinki. It offers a place to quiet down and compose oneself in one of Finland's most lively urban spaces. All the construction and reinforcement modelling was made using Allplan Engineering and BIM throughout the project. The ability to import and export different kinds of 2D, 3D and IFC formats makes it easy to cooperate efficiently with other designers.

