

Excursion Friday 28.9.2017

9:00 Start at symposium venue Paasitorni.

9:30 Sweco Finland office premises

11:00 PuuMera wooden apartment building

13:00 End of excursion at the Helsinki-Vantaa Airport and then Paasitorni.

Sweco Finland office premises

Ilmalanrinne 1, Helsinki



Picture source: Sweco

The office house entity, owned by Sponda Oyj, consists of three separate buildings with a total floor area of ca. 18 000 m². The construction work started in spring 2014 and was completed at the end of 2015. The buildings have six office floors and two parking floors.

The Sweco building was built as a low-energy building aiming for the gold level of the international LEED environment certification. Energy-efficiency and sustainability guided building design and construction, where Sweco itself acted as the developer consultant, structure designer, energy consultant and environment consultant. The fulfilment of set energy-efficiency goals were verified by energy calculations and simulations during all design phases. The energy consumption of the building is minimized by demand-based lighting and ventilation, well insulated windows with solar protection and effective heat recovery from the exhaust air. The building is connected to a district cooling network. It is also possible to install a photovoltaic system in the future.

The excursion presents also Cave-virtual models of the Sweco house and the terminal building of the Helsinki-Vantaa airport. The Cave-virtual space includes real-size 3D-models which have been utilized in different phases of building space and furniture design of the Sweco building in co-operation with the future building users. The southern terminal building of the Helsinki-Vantaa airport, completed this summer 2017, was also modelled in the Cave-virtual space. Sweco and Finavia utilized the Cave model for developing the design for over 10 different user groups, collection of

user feedback and to support decision making. Over 150 people ranging from security personnel to maintenance staff visited the Cave.

PuuMera wooden apartment building

Rubiinikehä 1, Vantaa



Picture source: www.puumera.fi

PuuMera building is the largest wooden apartment building in Europe. It was completed as a social rental housing project in 2015 by Rakennusliike Reponen Oy, Suomen Vuokradit Oy, TA-Asumisoikeus Oy, and the City of Vantaa. The building was introduced to visitors at the Vantaa Housing Fair in summer 2015. The wooden building has a total of 186 apartments, of which 107 are rental and 79 are right-of-occupancy apartments. With a total floor area of 10 120 m², the highest sections of the building have 7 floors.

The external walls are of laminated timber stud construction (270 mm, 600 c/c), fitted with facade panels and boarding at the factory. Windows and balcony doors were also installed at the factory and all metal flashings are complete. Only one horizontal panel with its corner battens was installed on site, in the joints between the elements. The intermediate floors were finished wooden elements that were screeded on site. The frame of the intermediate floor elements is made of split laminated timber with connector plates in the deck to take care of the adhesion of the screed.

The combustibility of wood limits its use as a construction material, according to building regulations in most countries. Finland's national building regulations permit the construction of three- to eight-story wood-frame residential buildings as long as an automatic sprinkler system is installed throughout. The stairs are in fire-proofed laminated timber, of surface class B, which is approved by both the fire authorities and the building control authorities. VTT has defined the building as a passive house building in terms of energy. It has an air-leakage factor of less than 0.6. The U-value of the walls is 0.12 W/m²K and of the roof 0.08 W/m²K. The building uses solar panels for electricity generation. Measurements show that the sound insulation of the building is excellent.

Sources and links: <http://www.marioff.com/references/buildings/kivisto-wooden-residential-building-vantaa-finland>
<https://www.sweco.fi/en/our-offer/structural-engineering/services/wooden-structures/puumera/>
https://www.vallox.com/en/references/the_largest_wooden_apartment_building_in_europe.html
<http://www.woodarchitecture.fi/projects/apartment-block-puumera>