



StoraEnso

Tøyenbadet swimming pool Oslo, Norway

Partner of Stora Enso



WOODCON

Forest Bathing: Designing with mass timber for use in swimming pools

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Many Norwegians took their first swim strokes at Tøyenbadet, Oslo's largest and most famous bathing facility. But after thorough studies, it was decided to demolish and replace the 1976 structure with a modern, mass timber mixed-use, flexible/adaptable centre with indoor and outdoor pools and multipurpose hall.

After three years of foundation work, the new pool is starting to take shape with one of the most complex wood construction projects ever seen. It's stunning and has all the hallmarks of a new world standard for how leisure and aquatic centres are built forever.

Woodcon AS are delivering and installing the 5,000 m² of the 16,000 m² complex, including the technical floor and signature [viking ship roof](#) designed by [Asplan Viak](#) made with a prefabricated [Sylva™](#) by Stora Enso building kit.

There are several other beautiful examples now of how Sylva building kits are being applied in the design of aquatic centres around the world. Some large indoor examples like [GT3 architect's Spelthorne Leisure Centre](#) in the UK delivered by [B&K Structures](#), the RIBA award winning [Freemen's Pool](#) in London by [WiEHAG](#) and smaller outdoor pools like this eye catching community pool in [Werfen, Austria](#) beneath a castle.

More and more designers are turning to wood as a material in these settings because wood is a naturally hygroscopic material. Hygroscopic is fancy way of saying wood gains and absorbs moisture from the air based on the conditions of the surrounding environment. It is this quality, that makes mass timber a suitable construction material in several environments, including high relative humidity ones like swimming facilities.

Wood is also thermally insulating, corrosion-resistant, and requires little maintenance and allows for very long lightweight spans like we see here in Tøyenbadet with a 42-metre free-spanning roof with 3.5x16m elements.

Having said that, some durability considerations should be taken into account that we can break down for you here. To understand those durability considerations though, we first need to explain how water in wood gets measured.

Durability

The amount of water in wood is talked about in percentages of the weight of the water in relation to its dry weight.

Left to its own devices, wood will naturally dry and stabilize itself to a moisture level in balance with the surrounding moisture in the air. This is known as the point of **equilibrium moisture content**, or EMC for short. EMC fluctuates based on the temperature and relative humidity of the surrounding air.

Using wood within the acceptable EMC range ensures your building does not suffer from a case of Goldilocks syndrome, where the wood is either not too dry, and not too moist, both of which can lead to problems.

Now that we understand EMC, we can start to understand how wood works when applied to swimming pool designs.

How wood behaves

Typically, the indoor temperature of a swimming pool building is 30 degrees centigrade with a relative humidity of around 55-65%. When wood is in that level of moisture/ humidity, it absorbs the water in the atmosphere and will have around a 12% EMC. 12 % is considered a stable and safe level of moisture for construction.

Our Sylva™ building kits are designed for use in [service class 1 and 2](#), according to [Eurocode 5](#). This means that the moisture content should not exceed 20% for more than a few weeks per year. Our Sylva kits are manufactured at a moisture content of 8-12% and that range should be strived for to maintain during the service life of the building.

The Sylva building kits can be ordered with [add-on services such as protective coatings](#) to protect the wood during construction.

Of course, a proper assessment of the build-ups should always be undertaken by a competent designer. And regardless of what material you choose a robust ventilation system and moisture management plan will always be key in any swimming pool or high-moisture environment.



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But if we go back to Goldilocks, to keep things simple, we can see that for pools, mass timber fits 'just right.'

Read more about the design of [Tøyenbadet pool](#)

Watch [Benefits and Challenges of Wood in High Corrosive Surroundings at Tøyenbadet](#)



General

Delivery year

Under Construction

Building type

Health

Area (m²)

16000

Storeys

4



Photo credit: Asplan Viak/Kultur- og idrettsbygg Oslo KF



Products

Products

Sylva™ CLT Floors and Roofs, Sylva™ CLT Stairs

Product quality

NVI and INV with Wetguard and pre installed lifting devices

Product volume (m³)

1 740



Photo credit: Asplan Viak/Kultur- og idrettsbygg Oslo KF



Team

Partner of Stora Enso

Woodcon AS

Developer

Oslobygg KF

Architect

Asplan Viak AS

Main contractor

AF Gruppen
Project and construction
management: Sweco

Specialist Timber Subcontractor



Photo credit: Woodcon AS

The renewable materials company



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