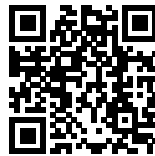




POWERHOUSE TELEMARK: DECARBONIZING NEW CONSTRUCTION

Posted on December 30, 2020 by martabuges



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Powerhouse Telemark: Decarbonizing New Construction

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Situated in the historic industrial city of Porsgrunn in the county of Vestfold and Telemark, the new 11-story building marks a symbolic continuation of the district's proud history as Telemark is home to one of the largest hydropower plants of the early 19th century. Powerhouse Telemark indicates the area's growing investment in the green economy, positioning the county as a leader in decarbonizing new construction. The southeast-facing façade and roof of Powerhouse Telemark will generate 256,000 kWh each year, approximately 20 times the annual energy use of an average Norwegian household, and surplus energy will be sold back to the energy grid.



The skewed and slightly conical building features a clearly defined 45° tilting notch on the east-

ISSN : 2575-5374

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facing façade, giving it a clearly identifiable expression that stands out in the industrial context of the surrounding Herøya industry park. Inside, the building features a “barception”, office space, including two stories of coworking spaces, a shared staff restaurant, penthouse meeting spaces and a roof terrace overlooking the fjord. Two large staircases connect the building's ground and top floors, from the reception area and all the way up to the staff restaurant and penthouse meeting rooms. A distinctive straight wooden staircase emerges at the ninth floor, visually tying the staff canteen and penthouse meeting room area together and leading visitors to the building's roof terrace.



In obtaining the BREEAM Excellent** certification as proof of their bold sustainability ambitions, Powerhouses stand as beacons of sustainable design not only in their local communities, but as

ISSN : 2575-5374

models for how the world can embrace sustainable architecture and design in the future.

An Energy-Producing Façade and Roof

The building's striking 24° tilted roof gently slopes to surpass the extremities of the building's volume, expanding the roof's surface and ensuring that a maximum amount of solar energy can be harvested both from the photovoltaic canopy and the building's PV-cell-clad south-facing façade.



To the west, northwest and northeast, the building is clad with wooden balusters providing natural shading on the most sun-exposed façade. Behind the wooden balusters the building is covered with

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Steni façade panels which give the building a unified expression. Functioning just as a passive house, the building is super insulated and features triple-isolated windows throughout. The concrete slabs lend the building a density akin to that of a stone structure, storing thermal heat during the day and slowly emitting heat during the evening. A LowEx system, with water loops in the border zones of each floor, ensures that the building is efficiently cooled and heated through geothermal wells dug 350 meters below ground.



Powerhouse Telemark also utilizes a series of low-tech solutions to ensure that tenant comfort is prioritized, allowing the office building to be used to its full potential. The building's gently skewed west-facing and southeast-facing façades allow for a maximum of daylight and shading while also

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generating views and flexible indoor spaces. To the northeast, the building is leveled to accommodate for more traditional workspaces with enclosed offices. Throughout the building, small, secluded spaces are strategically moved away from sun-exposed façades to reduce the need for cooling while also ensuring that these spaces keep a comfortable temperature.



A Flexible and Environmentally Conscious Interior Solution

The interior design of the building is built on a principle of standardization to reduce unnecessary waste as new tenants move into the building. The flooring, glass walls, office dividers, kitchenettes, lighting and bathrooms have been given the same design, color and materiality across all floors.

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Indeed, the flexibility of the interior solution of the building, combined with the building's two story coworking space, allows for the client and future tenants to easily reprogram the building and expand or downsize their businesses without needing to relocate. This means that the office space can transition from desk space to resource space, allowing for maximum utility of the space, even when remote work scenarios change the traditional office layout demands.



The material palette of Powerhouse Telemark is chosen for its environmentally sustainable qualities. Throughout, the building features sturdy materials known for resilience and low-embodied energy. This means using materials such as local wood, gypsum and environmental concrete which is left exposed and untreated. Everything from the kitchens to the carpet tiles and loose furniture are made from durable and high-quality materials. The carpet tiles are composed of 70% recycled

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fishing nets, and the wooden flooring is made from industrial parquet of ash from wooden debris. Moreover, a specially designed foliating signage system allows for a certain amount of flexibility in tailoring the visual expression of the different office spaces without creating unnecessary waste that may be generated when brand specific signage is removed or produced.



To reduce the need for artificial lighting to an absolute minimum, the building has a conservative but efficient lighting system. The building's roof also features vertical glass slots, allowing for daylight penetration on the three top floors. Moreover, the choice of loose furniture with light surfaces provides a subtle complement to the interior lighting.

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