



Press release

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Energy company inaugurates Passive House as new headquarters

Presentation of the certificate in the Danish port city of Esbjerg



The new Passive House Headquarters in the Danish port city of Esbjerg. Photo: SE / Hoffmann A/S

Esbjerg/Darmstadt. The Danish regional energy company Syd Energi (SE) has inaugurated its new headquarters in the Danish port city of Esbjerg. One of the world's largest Passive House buildings and an architectural highlight, this four-storey rotunda with a sea view not only meets the requirements of the Passive House Standard, but will also produce more energy than is required for the building's mechanical systems. This 9000 square metre building will provide some 420 people with carbon neutral workplace. After a construction period of almost 18 months, the official inauguration of the building with presentation of the Passive House Certificate took place on Friday. The Danish Finance Minister, Bjarne Corydon, and the Mayor of Esbjerg, Johnny Søtrup, were also present and commended the exemplary character of this project.

A well-lit entrance area leads directly into the atrium in which a system of stairs and bridges cleverly connects the surrounding rooms. The slightly sloped roof is half covered with photovoltaic modules while the other half is designed as a roof garden for SE personnel and visitors, providing a view of the city as well as the North Sea. Among other things, a well-insulated building envelope, intelligent use of natural light, thermally activated floor slabs for heating and cooling and a passive cooling system with conduits over a total length of ten kilometres provide for a high level of energy efficiency. A special feature in the energy balance is the data centre that dominates the basement.

"Passive House is all about the overall approach", says Søren Pedersen, Director of the Danish certifier Passivhus.dk. "That is why we put the focus on the energy-intensive server system right from the very start." Utilisation of the computers is optimised by switching these off during decreased demand, which reduces the power requirement by around 75%. Cooling is optimised by indirect free cooling and the subsoil brine loop. On average, the server system should have a PUE factor, the measurement for a data centre's effectiveness in power usage, of between 1.10 and 1.15.

Certification criteria successfully fulfilled

Hot water provision and heating of all rooms in the building mainly takes place via the waste heat from the server system. But this is not the only reason why the building was able to achieve the certification criteria. "The thermal insulation is perfect, the glazing is optimal. And airtightness is excellent - all this matches ideally with the location of the building on the North Sea coast," explains Pedersen.

The actual building has a primary energy demand of 87 kWh/(m²a), including server system cooling. Another 130 kWh/(m²a) is necessary on account of the servers themselves. This is compensated by the 1800 m² solar heating system, which yields 247,000 kWh of electricity annually.



The atrium of the new SE headquarters in Esbjerg during its official inauguration on 21 June 2013. Photo: Passivhus.dk

The airtightness measurement resulted in an astounding n_{50} value of just 0.1, well below the Passive House requirement of 0.6. The energy demand for heating is 8.2 kWh/(m²a), which is even lower than the limit value of 15 kWh/(m²a) specified for Passive Houses. To better utilise natural light, the designers relied on a combination of light incidence through the centre of the atrium

as well as through the rows of windows arranged around the outside of the building on each floor. Attention was also given to the energy efficiency of the office equipment; only five conventional PCs are installed in the entire building, while all other workplaces are equipped with energy-saving notebooks and TFT screens.

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