

The Center of Experiencing the Elements on the island of Sylt, in the German North Sea, shows its trust in GEA wind ventilators

Ventilation with natural power

***Herne, Germany, November 10th, 2009* – The operators of the Center of Experiencing the Elements on the German island of Sylt have, toward the goal of sustainability, relied on natural supply and exhaust of air for their building complex. Instead of a conventional HVAC system, a sophisticated system of opening flaps and wind-powered extraction fans assures effective air exchange. The Sylt system, using so-called wind ventilators, was developed on the basis of the CAIRplus air-handling system.**

In the Center of Experiencing the Elements on Sylt, guests have the opportunity to obtain informative as well as entertaining insights into polar and oceanic research, its results on climate change, and into the forces of nature experienced at the North Sea. The building itself is a good example of climate protection in action: during the planning process, conservation of resources enjoyed priority. As a result, the complex features natural supply and exhaust of air in all rooms. Air enters the building through electronically controlled flaps on the ground level. Vitiated air leaves the complex to the outside through GEA wind ventilators driven by wind power. Under optimal conditions, this system will completely exchange all the air in the buildings within three minutes.

Heating there is also on an environmentally conscious basis. On cool days, a heat pump covers the base heat load, and the gas-fired boiler kicks in only under peak loads. Heat is provided to the rooms by panel heating elements in walls, ceilings, and floors (pipe coils embedded in the concrete). The architectural concept created by the architects Johannsen und Fuchs, of Husum, Germany, enables this solution. The building units of this exhibition complex are almost entirely closed, and are fitted with insulation material 20 cm thick. They enclose and superimpose the glazed foyer and prevent heat losses in winter and excessive entry of heat during the summer. On cool summer nights, the wind-driven ventilation system reverses its direction of operation and draws in cooler air to moderate the storage masses of the exhibition rooms. As a result, no additional energy for cooling is required during the daytime. A thermal drive results from the difference in height between the supply and exhaust-air openings; it

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provides supporting power. The use of borehole heat exchangers, heat pumps, and concrete-core activation allows heating of the buildings with a low inlet temperature of below 25 °C.

“Thanks to the energy concept devised by the engineering office KApplus Ingenieurbüro Vollert, in Eckernförde, Germany, ecologic and economic benefits are not contradictory,” explains Dr. Matthias Strasser, CEO of the Center of Experiencing the Elements on Sylt. He continues: “We save EUR 5,600 a year alone by using the GEA wind ventilators, which makes an air conditioning system unnecessary.” Together with the borehole heat exchangers, optimized insulation, the gas-fired boiler with efficiency enhancement by panel heating, and further measures, annual savings at the Center of Experiencing the Elements add up to around EUR 24,000 annually. Reduction in energy consumption also has a positive effect on the climate: it prevents approx. 73 tons of CO₂ from entering the atmosphere, year after year.

[Text box]

The Center of Experiencing the Elements on Sylt, Germany, is a joint venture between the Community of List, Germany, the Alfred Wegener Institute for Polar and Oceanic Research in the Helmholtz Society, the National Park Administration of the Schleswig-Holstein Wadden Sea, and all nature and coast guard associations active on the island of Sylt, Germany. The Center of Experiencing the Elements on Sylt addresses issues involving the project themes “Living with Natural Elements,” “Forces in the North Sea,” and “Climate, Weather, and Climate Research.”

[Text box]

Participating companies

Architect:

Architekturbüro Johannsen und Fuchs, in Husum, Germany

Energy planning

KApplus Ingenieurbüro Vollert, in Eckernförde, Germany

Building systems and operations:

Ingenieurbüro Pahl und Jacobsen, in Heide, Germany

Builder of the facilities:

Bahnsen Breklum GmbH, in Heide, Germany

[GEA_Windluefter.jpg]



Thanks to GEA wind ventilators, the Center of Experiencing the Elements on Sylt, Germany, uses the natural resource of wind to supply and exhaust air for the entire building complex.

[Gebaeude_Naturgewalten.jpg]



The Center of Experiencing the Elements on Sylt, Germany, at List Harbor

[Lueftungsklappen.jpg]

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Sensor servosystems open and close the electronically controlled flaps to supply fresh air to the exhibition rooms on the upper level. The vitiated air leaves the building through wind-driven GEA wind ventilators.

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