**SDU Campus Kolding**

**Frontrunner in low energy building**

SDU Campus Kolding is the first university building in Denmark to fulfill the strong demands for energy consumption desribed in the building regulations 2015. The energy consumption is 36 kWh/m2/year (114 Btu /ft2/year).

The sustainable strategy has been integrated in the architectural design. The geometry ensures the best utilization of every square meter and the skylight in the atrium ensures a fair distribution of daylight to the entire building.

The building has been part of a three-year development project which examines how thermal properties of concrete can be increased – and the energy consumption for heating and cooling thus reduced. In order to make optimal use of the thermal properties of concrete, the slabs are exposed where possible. This prevents large fluctuations in temperature and improves the indoor quality.

Additionally, a series of different initiatives have been implemented in order to ensure the low energy consumption:

**An innovative façade**

The daylight changes and varies during the course of the day and year. Thus, Kolding Campus is fitted with dynamic solar shading, which adjusts to the specific climate conditions and user patterns and provides optimal daylight and a comfortable indoor climate spaces along the facade.

The solar shading system consists of approx. 1,600 triangular shutters of perforated steel. They are mounted on the facade in a way which allows them to adjust to the changing daylight and desired inflow of light. When the shutters are closed, they lie flat along the facade, while they protrude from the facade when half-open or entirely open and provide the building with a very expressive appearance.

The solar shading system is fitted with sensors which continuously measure light and heat levels and regulate the shutters mechanically by means of a small motor.

**Lighting**

SDU Campus Kolding features needs-based lighting. Energy-efficient LED lighting has been applied in the entire building.

**Natural ventilation**

Low energy ventilation has been designed with air ducts and systems of large dimensions. Fresh air is blown in and down through the ceiling. The great atrium helps circulating the air.

**Ground water wells as cooling and heating system**

Two ground water wells, 25 meters (82 ft) deep, has been drilled. At the depth the ground water temperature is stabile and the ground water could either warm up or cool down the building according to the time of year and the needs. In summer where the need for cooling is high, warm water is stored in a depot in 25 meters (82 ft) depth. When need for heating arises, the stream of water is turned around and warm water from the depot is pumped up.

**Solar cell system**

A 400m2 (4,300 ft2) solar cell system and 20 m2 (215 ft2) of solar heating panels have been installed on the roof.

**Insulation**

Standard solutions such as three-layered glasses with high insulation property and thick insulation on the roof have been applied. Furthermore vacuum insulation has been applied to the window backs. Vacuum insulation performs 10 times better than traditional insulation. This has reduced the thickness of the window backs.