Roof panels

Ecological considerations played an important part in the design of the D4 Business Center in Lucerne. Emphasis was placed on sustainability and careful use of natural resources in areas ranging from choice of materials and waste disposal through to energy supply and water management. The aim is to eventually cover 50% of the building's energy requirements from renewable sources. As part of this system, the centre has what is Switzerland's largest geothermal diffusion well. Another key part of the energy concept, alongside the exploitation of geothermal energy, is the solar roof. Thermal energy from the 660 square metres of roof-mounted solar collectors feeds into the water and heating systems, and, in summer, is also used to top up the temperature in the wells.

The solar roof combines the features of a high-performance solar collector with those of a conventional roof covering: it is fully sealed, weather-resistant and highly durable. The collectors consist of two 0.6 mm sheets of stainless steel that are deep drawn and electric welded around the edges. The resulting cross-section guarantees an even flow of water through the panels. Overall the solar roof construction, together with the corrugated plastic subframe, has a thickness of just 25 mm. The volume between the outer skin and the corrugated sheets can be used either for ventilation or, when appropriately sealed with rubber, for insulation. The collectors used in the D4 Business Center are not enclosed in glass, and because of the selective coating with black chrome they have high absorption and low emission properties. The incident solar radiation is therefore not impaired or reflected at collector level by a layer of glass.

D4 Business Center, Lucerne, Switzerland
Client: SUVA, Lucerne, Switzerland
Architects: Fischer Architekten, Zürich, Switzerland
Photo: Marsch & Company, Hamburg, Germany

The absorbers, selectively coated in black chrome, are not encased in glass and therefore have minimum radiation losses.

Photos: Energie Solaire SA, Sierre, Switzerland (middle, bottom)

The solar collectors are joined together by means of flexible stainless steel pipes which are also coated in black chrome.