

Playing under energy-saving roofs

The “Anne Frank” nursery: a pilot project for energy-efficient renovations

For a good forty years now children have been attending the “Anne Frank” day-care centre in Wolgast, Mecklenburg-Vorpommern, in preparation for school. Unfortunately the building, in typical GDR prefabricated style, was in a poor condition in terms of its energy-efficiency and no longer fulfilled the guidelines that are applicable today. Thanks to the programmes that were started on 01.01.2007, “KfW-Kommalkredit” (Reconstruction Credit Institute Community Loan) and “Sozial Investieren” (Social Investments), a fund for energy-efficient building refurbishment has been made available. The building, which was refurbished from the foundations to the roof, is regarded as an exemplary pilot project of energy-efficient modernisation of old buildings for Mecklenburg-Vorpommern and the whole of Germany.

“In terms of figures, it has already been proven that the energy consumption is around 40% below the permitted energy consumption of a comparable new building” says Matthias Kühn, the architect responsible for the building. Apparently both the façade and the roof displayed considerable damages. “Furthermore, the ratio of the building shell to the heated building volume was extremely disadvantageous due to the nursery building’s geometry,” adds Kühn. In order to optimise the roof and the necessary sealing in an energy-efficient way, Kühn brought Bamberg flat roof specialist VEDAG GmbH on board. “We had already worked on several projects together and were always very satisfied with the manufacturers of flat roof sealing systems,” said Kühn.

All-round energy saving

“The property required several custom-made designs, which posed particular challenges for



us,” says Andreas Franik, responsible systems consultant of VEDAG GmbH. In order to save heat energy, all areas that face the outside were equipped with photovoltaic units, even the windows. “First of all, the old jamb-floor was demolished and a new roof truss made of wood was constructed,” explains Franik. “And then it was time for the warm roof construction. This means that the raw ceiling stayed as it was and the truss construction was completely insulated.”

The high quality waterproofing was carried out with an elastomeric bitumen sheet of the VEDATOP SU nail border variety, which was nailed down. The polymer bitumen sheeting VEDATOP DUO in dolomite grey was laid as a top layer. Its light grey granules reflect the incident sunlight a lot more than dark surfaces and therefore has an efficiency-enhancing effect on the output of the installed photovoltaic units. “On the roof additional lighting strips were laid and connected in two layers. This system was custom-made especially for the property,” continues Franik. The atriums created as a result of the building geometry even contribute to active energy generation. “We turned them into roofed atriums, which also contained solar lighting strips,” says Franik. Lighting strips in the form of saw-tooth roofs, into which the semi-transparent photovoltaic modules are integrated, provide the lighting of the internal space. Thanks to the

optimum sealing the resulting heat energy is reduced to a minimum. The remaining requirements are now completely covered by district heating with biogas. Through the use of regenerative energies in combination with the highly efficient insulation and roof sealing, as well as the ventilation system with heat recovery a total of around 121 tonnes of CO₂ will be saved.

Improved room climate

It is not only the district association of the German Red Cross, which actively supported the pioneering project in Mecklenburg-Vorpommern, that profits from these exemplary measures. Approximately 260 children, who play in the nursery on a daily basis, are also enjoying the benefits: the room climate in the group rooms as significantly improved, on the

one hand as a result of the high quality ventilation system, with which the circulation concept guarantees that the stale air is constantly replaced with clean air. On the other hand, the light grey surface of the new roof reduces the heat build-up of the entire roof structure, therefore ensuring a pleasant room temperature.

The building was refurbished between September 2009 and February this year. With the opening on 19 March 2010, the project was an example of energy-efficient and future-oriented way of dealing with properties in need of renovation. Together with engineering firm Kühn, Vedag GmbH is planning further pioneering projects, which take into account the strict requirements of the new German Energy Conservation



The dolomite-grey polymer bitumen sheeting VEDATOP DUO is welded on as a top layer. Photo: VEDAG

The old jamb-floor was demolished and a new roof truss made of wood was constructed. Photo: VEDAG



Lighting strips in the form of saw-tooth roofs, into which the semi-transparent photovoltaic modules are integrated, provide the lighting of the internal space. Photo: VEDAG



"Anne Frank" nursery in Wolgast / Mecklenburg Vorpommern after the energy-efficient building refurbishments. Photos: Holger Kummerow



Background information about VEDAG GmbH

VEDAG GmbH developed out of the book waterproofing business of the family C.F. Weber which was established in 1846 in the Nonnenmühle mill in Leipzig. The core competences of the VEDAG GmbH are the development, manufacturing and sales of roofing and waterproofing systems for structural and civil engineering. They offer a wide product range of high performance bitumen membranes, polyolefin membranes, building protection materials, bitumen shingles and specialist bitumen products. VEDAG GmbH employs a staff of approx. 260 at its two production and sales locations in Germany.

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