LOVING NATURE IN THE CASTLE´S SHADOW

How did a castle from 1425 inspire 15,000 volunteers to build Germany's largest timber framed building with straw bale insulation? For the answer, we must go back almost 100 years, when a young German man called Enno Narten had an idea in Hessen. Today, that idea has grown to become a centre for Germany's Youth Movement, and Purmo radiators are an integral part of a building that has been honoured by UNESCO as a model project for the UN decade of education for sustainable development.

Enno Narten inspired generations of young Germans to explore the joys of nature. His pivotal role as a Wandervogel ("wandering bird") and member of the Jugendbewegung (German Youth Movement) in the early 20th century has had a lasting impact, almost 100 years later. In 1920, Otto worked with the Wandervogels and Jugendbewegung members to organise the purchase of a ruined 15th Century castle in Ludwigstein, Hessen. Together, they founded the predecessor of today´s Ludwigstein Youth Castle organisation, which operates on principles of respect for nature, and serves as a youth education centre and Jugendbewegung archive.

FOR THE LOVE OF NATURE AND THE GREAT OUTDOORS

Along the outer perimeter of the castle there is a new building, still in keeping with the architecture of the castle, but entirely modern in its approach to ecology and sustainability. Dedicated to the memory of the man who loved nature and the environment, the Enno Narten building was designed and constructed to comply with the Youth Castle's ecological principles. Funded by the youth foundation "Stiftung Deutsche Jugendmarke" as well as the federal and state governments, the building covers 330 sq m and was constructed in just 6 months.

RENEWABLE ENERGY + DEGRADABLE MATERIALS = ENVIRONMENTAL MASTERPIECE

The long two-storey building faces south, and features floor-level three-pane windows to make best use of the sun's warmth, while the north side features only a few skylights and smaller windows. All construction materials were chosen for their degradability: sandstone, wood, clay, and the straw that gives the building its 'Straw Bale House' status. Timber boards for walls are filled with straw bales for insulation, then plastered with clay. The tiled roof is also insulated with straw, and supported by crossed wooden beams.

Planner Meike Pilsl and construction engineer Gunthard H. A. Stübiger managed the project, offering their services without charge. It was their decision to specify Purmo radiators for the project, choosing a combination of Plan Compact, Horizontal Compact and Vertical Narbonne. In the classrooms beneath the roof, Horizontal Compact radiators were installed below the likewise horizontal windows. In workshops and bathrooms with floor level windows, Vertical Narbonne radiators are used. These radiators consist of vertical flat pipes and offer a lot of flexibility. By linking the flat pipes, 20 different unit lengths can be created. The height of the Narbonne can be adapted to the architectural situation: where space for radiators is limited, such as between two high windows, it makes full use of the available wall space with an installation height of up to 2200 mm. Furthermore, the radiator is very easy to clean thoroughly, useful especially in the workshops, where activities can create dust.

Because of its construction, the Enno Narten building offers a healthy indoor climate: in the winter, the warmth is stored in the straw-insulated walls, while in the summer the heat stays outside and the rooms are comfortably cool. Comfort and healthy warmth are also provided by the low temperature radiators. They respond quickly to indoor temperature changes from free heat gains, for example when the temperature rises because of people in the room or the use of electrical appliances. This is especially important in low energy buildings, as hardly any warmth is released outside because of the low transmission heat loss.

LOW ENERGY INSPIRATION

The energy supply for the straw bale building as well as for the entire castle buildings is based exclusively on renewable fuels. For water and indoor heating, pellet heating in the cellar as well as a solar and photovoltaic installation on the building's roof are used. At low heating load levels, heat from the thermal power station in the castle's main buildings is transmitted to the straw bale house. Thanks to its special construction and the excellent insulation qualities of the materials used, the building's transmission heat loss (HT') is low: at 0.35 W/m²K it is way below the maximum value prescribed by EnEV 2009 for low energy buildings, which is 0.49 W/m²K. Equally low is the heating demand: only 29 W/m² are required.

If Enno Narten could see the legacy he left behind, and the people he still inspires there is no doubt he would approve of the way the castle that so enthused him has helped instigate the creation of another inspirational building. ■