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## HUBER flood protection solution for Weltenburg Abbey successfully stands first crucial test



*Weltenburg Abbey during the heavy storm flood in June 2013 (image rights: Weltenburg Abbey)*

In 1999, Weltenburg Abbey suffered severe damage from exceptional heavy storm floods. Also in the following years they were repeatedly faced with flood problems. In 2002, when the Abbey was restored step by step, they therefore decided to buy a flood protection system.

The Abbey and the Water Management Office Landshut together with the architecture office Magerl and HUBER SE developed special flood protection elements. These elements should prevent the ingress of flood water through the nine basement windows and the 55 windows on the ground floor of the buildings along the Danube. This solution had to pass the first crucial test recently. Abbot Thomas finally was relieved to announce that the worst was over without any damage to the Abbey, thanks to all the helping hands and the new flood protection elements.

### **The many faces of flood protection**

Flood damage is no exceptional case at Weltenburg Abbey as the recent flood some weeks ago has shown. According to Spiegel Online the flood in June could have been the most expensive natural catastrophe in German history. The insurance group Munich Re estimates the total damage suffered in Europe at more than twelve billion Euros. The flood destroyed not only individual houses and complete streets of houses but also public utilities, such as pumping stations, sewage treatment plants, water catchment and water distribution plants. HUBER offers most reliable flood-proof manhole covers and doors to protect all these important facilities. The use of these products prevents the breakdown of important supply and disposal facilities for the protection of the population and avoids expensive cleaning up work.

### **No damage in Weltenburg**

The continuous rainfall in June this year led to a critical rise of the water level in the Danube Gorge at the "Weltenburg Narrows". But this time the Abbey was well prepared for the flood. Firemen and volunteers had installed the 55 mobile flood protection elements as a preventive measure. The flood level reached its top of 7.15 m on June 4, 2013.

The installation time was very short thanks to the low weight of the individual elements. The elements are made of combined materials,



Watertight HUBER Manhole Cover SD 5

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*HUBER Pressure-Tight Door TT7.Z with central lock*

namely aluminium and stainless steel. Even the biggest elements have therefore a weight of not more than 60 kg and can easily be placed in position by two persons (normally firemen). It turned out that it is absolutely uncomplicated and manageable for everyone to handle the elements. Thread rods were used to attach the elements to the window grates from inside. A round rod or screw driver served as pretensioning tools. When the flood water would rise up to the protection elements the water pressure would even increase the tightness of the elements as the sealing would be forced against the masonry walls. The firemen had received several training courses and exercised the installation of the elements several times before.

#### **Maximised efficiency of flood protection systems**

Water finds its path everywhere. Protection concepts must consider the rain water from above, rising levels in rivers and lakes but also the rising groundwater level.

Dykes, walls, retention tanks, mobile solutions and impounding reservoirs are other elements of flood protection systems. The HUBER product range for successful flood protection comprises far more solutions than those installed at Weltenburg Abbey. We develop overall concepts to meet the requirements of each individual project. Our concepts are characterised by economic efficiency and high quality. The main focus for all applications is on the ideal price performance ratio. Other important criteria are absolutely no maintenance requirements and the reliable protection from wilful vandalism.

#### **Special structures need special solutions**

For Weltenburg Abbey we manufactured four different types of protection elements for the differently high windows and marked them with big coloured signs. The elements are stored on stanchions. The storage system has been determined together with the fire brigade and the architecture office. These and other measures, such as underground sealing and stop log elements on the entrance gates, will in the future prevent the Abbey from serious damage caused by flood water and preserve this unique historical ensemble for the generations to come.

When we developed the flood protection solution for Weltenburg we had to keep in mind not to change anything on the facades of the listed heritage buildings. The facade itself consists of plaster which is not so plane and smooth. The sills and one jamb around the windows are made of natural stone and show tolerances of 25 to 30 mm. These tolerances could only be equalised by covering the whole window including the sill and the jamb. Due to our long experience in the manufacture of pressure doors and flood-proof doors tightness was no unsolvable problem for us. We had our prototype tested by the University of the Federal Armed Forces in Munich and they confirmed the absolute tightness of the core.

**Related Products:**

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