



A HIGHLY ELASTIC SURFACE SEALING SYSTEM



Repairing a contaminated leak-catchment area is always problematic. It mostly involves concrete areas which cannot be coated without partial replacement. To compound matters, connections must also be established to geometrical details like pipeline penetrations which also require an elastic design.

KTW Kunststoff-Technik Weimar has been active in sealing bunds and leak-catchment areas required under the German Water Resources Act in order to ensure soil and water conservation among other activities since 1990. This work started with sealing joints at petrol/gas stations and other filling locations. Since then, more than 1,000 projects have been performed, also including leak-catchment areas covering up to 12,000 m².

TERMS OF REFERENCE

While the design of large-surface bunds or leak-catchment areas often provides for laying and welding prefabricated sheeting on site, this sheeting does not allow gluing to steel or concrete substrates.

This makes it extremely complicated to integrate elements with a difficult geometry such as:

- Pump foundations
- Pipework
- Manholes
- Cable suspenders
- Columns and supports and many other elements



Figure 1: Highly-elastic surface lining on a tank island



Figure 2: Highly-elastic pipe penetrations subjected to dynamic loads

Applying liquid film to coat a contaminated or strongly cracked surface is also excluded as these films are very hard in general and cannot be applied unless on a 'neatly' finished substrate.

SOLUTION VARIANT

The KTW Sealtex (Z-59.31.-403) sealing system received the approval of Deutsches Institut für Bautechnik (DIBt) in July 2015, and now provides the industry with a highly-elastic surface sealing system which allows the seemingly effortless integration of the limitations mentioned above. To achieve this, a polysulphide layer is applied onto a non-woven polypropylene carrier during prefabrication, and only needs to be secured to the substrate but does not require gluing over an entire surface. To prevent any liquid from entering the system from behind, securing and gluing is only necessary over a 40 mm wide section in the edge region and at rising structural components.

After installing the first prefabricated layer, a second and final layer made of polysulphide is placed on.

Apart from its elasticity, the system is also highly UV-resistant, conductive, and very durable.

It allows complete and continuous surface lining, e.g., on a 250 m large tank island (figure 1) but can also be used to just seal specific details like pipeline penetrations (figure 2).

HIGHLY-ELASTIC TANK FOOT APRONS

To improve corrosion protection at the critical weld seams between the outer shells and bottom plates of large-size tanks, there has been a rising



Figure 3: Highly-elastic tank foot apron glued to outer shell and foundation



Figure 4: Fold-up tank foot apron with dimpled membranes to allow inspection & ventilation

demand for highly-elastic tank foot aprons since the middle of the 1990s.

Initially, these aprons were glued both to tank outer shells and to foundation bases (see figure 3). For the approximate number of 500 systems implemented by KTW over recent years, the design mostly used provided for a tank foot apron that could be folded up to allow inspection at any time. This enables owners to always check the situation at the weld between outer shell and base. To improve rear ventilation, dimpled membranes are also installed frequently today (see figure 4). The largest developments (widths) of tank foot aprons add up to 2.50 m for a tank diameter of up to 72 m.

Contrary to leak-catchment areas, tank foot aprons require complete preproduction up to the second final layer. Templates are used for cutting, and gluing is performed on the tank after this.

BOTTOM LINE AND PROSPECTS

KTW Sealtex has been tested to flammability rating B2, and is thus normally flammable in the same way as every highly-elastic polysulphide sealing system. To improve fire prevention, an elastic fire prevention solution can be applied in addition in order to extend fire resistance by another 30 minutes.

The two-layer fire prevention solution basically consists of mineral components.

FOR MORE INFORMATION

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