

Temporary storage of waste water in an effluent pit

Storage of waste water on site with a very large storage capacity

Vecom has been carrying out boiler cleanings successfully for many years. When chemically cleaning, often large quantities of waste water are released that usually need to be stored quickly so that the following phase of the cleaning can start.

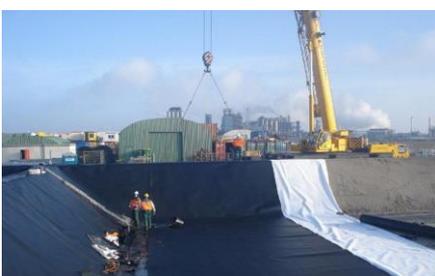
Waste water originating from chemical cleanings can be temporarily stored in different ways. Often IBC containers (1 m³ per item) are used for small cleaning projects and tank vehicles (approx. 25 m³) or temporary storage tanks (approx. 70 m³) are used with larger cleaning projects. The disadvantage of these storage methods is the limited capacity when very large volumes are released during boiler cleaning. Quantities of more than 1000 m³ are common with regard to boiler cleaning. Sometimes this waste water is temporarily stored in, for example, four temporary storage tanks (with a total of 280 m³). They must, therefore, be emptied quickly using tank vehicles during cleaning before the following waste stream is released by the cleaning. This mainly has logistics disadvantages.

Effluent pit

Another solution is an effluent pit. An effluent pit is constructed by creating a large pit with sand. Next, the inside and the sides are covered with foil. The foil can be rolled out manually or by using a crane (depending on the size of the pit and the available manpower). The foil is welded with a hot, round electrode and is, in a way, molten together. Since the welding seam is hollow inside, it is relatively easy to determine whether the welding seam leaks. To determine this, a thin needle is used to exert pressure on the welding seam. Next, a pressure gauge is used to determine whether the pressure remains constant for a specific period of time. When the pressure decreases, the welding seam leaks and it will be rejected. When welding an effluent pit, all welds are inspected and a record of this is also maintained. When the effluent pit is delivered, these certificates are also supplied.



An effluent pit after the earthworks (top) and the final result (bottom)



Applying foils using a crane: first the white protective foil, next, the black EPDM foil

Foil

The foil that will be used will depend on different factors such as, for example, resistance to chemicals, mechanical strength, flexibility, etc. EPDM is often used for the storage of chemical waste. The specific advantages of EPDM are:

- EPDM has a high elasticity (up to 400%) over a large temperature range (-40 °C to 120 °C);
- EPDM has a good chemical, thermal and UV resistance;
- EPDM has a long service life (> 20 years; this will, of course, depend on the conditions and application).

This makes EPDM extremely suitable as storage resource for chemical solutions when there are high temperatures temporarily.

Often a soft protective blanket is placed under the foil. This protects the EPDM foil against any stones or other sharp objects that may be present.

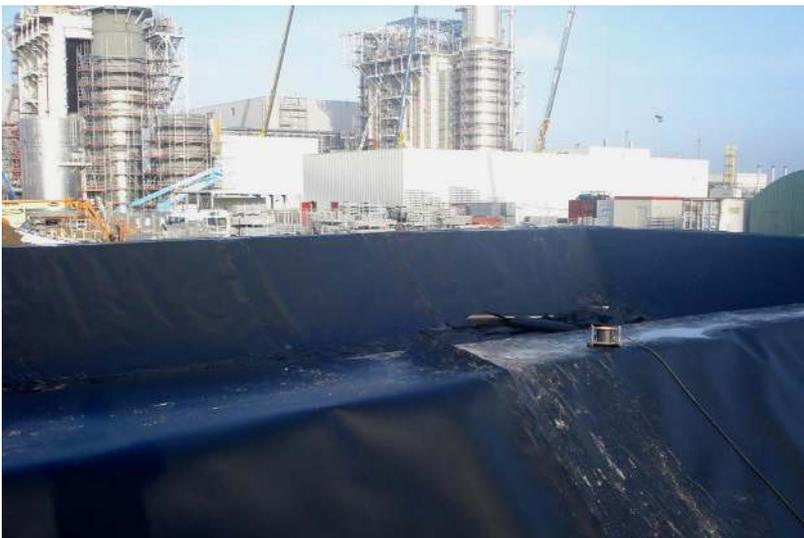
Advantages of an effluent pit:

- Very high storage capacity;
- Economically more favourable in many cases with a longer working life;
- An effluent pit is also extremely suitable to treat waste water on site as the only storage method that offers this option;
- It is installed in accordance with the Kiwa guidelines with a certificate.

Practice

When constructing a power plant in the Rotterdam industrial and port area of Europoort, the customer chose to chemically clean the plant itself and to process the waste water on site. For this, a large storage capacity for a longer period of time was required. Therefore, they decided to store the waste in the aforementioned effluent pit. Vecom constructed an effluent pit for this project with an intermediate dike so that two different streams could be stored without the streams mixing.

The effluent pit was constructed in approximately 1 to 2 weeks. Next, the heat recovery steam generator (HRSG) was cleaned by applying the EDTA method. The waste water that was released during this treatment has been stored in the effluent pit. Next, the waste water was treated on site after which the residue was taken to a recognised waste water treatment facility using tank vehicles. The effluent pit was dismantled after seven months. The foil was cut loose and removed using a crane and manually. To conclude, the foil was taken to a recognised waste treatment facility.



Foil with in the background the HRSGs that have now been cleaned that are still partly being built

Interested and want to know more?

For further information and/or questions about this subject or in case you have other questions, please contact one of our specialists via +31 10 59 30 212 or go to our website.