



ETI Aluminum Sludge Tank Rehabilitation



December 2021

ABOUT THIS PROJECT:

Project Type:
Repairs in an aluminum factory

Location:
Konya, Central Anatolia, Turkey

Products Used:
Xypex Patch'n Plug
Xypex Concentrate
Xypex Admix C-1000 NF

THE PROBLEM

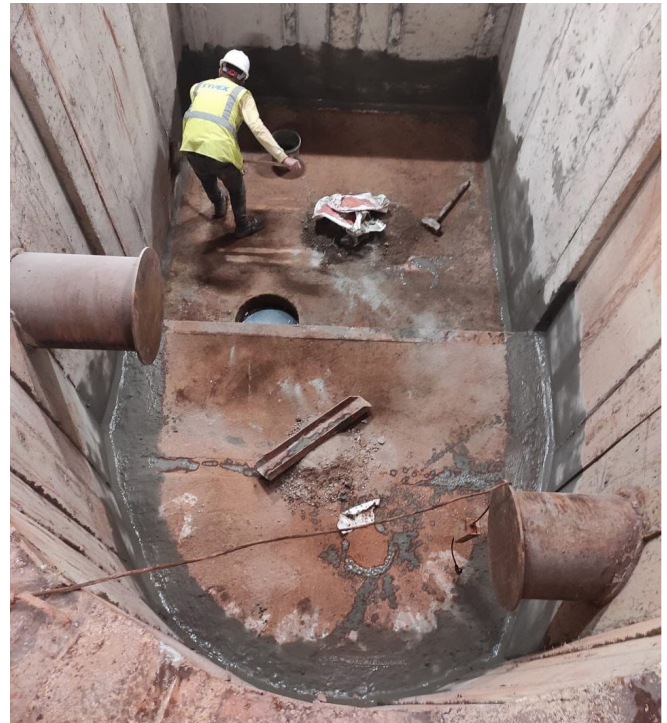
The ETI aluminum sludge settling tank has been used in aluminum production since the late 1970's, it was designed to handle a solution of caustic soda, sodium aluminate and other chemicals at high temperatures, which resulted in severe deterioration of the concrete, causing leaking.



THE XYPEX SOLUTION

A Xypex cast liner was chosen to permanently waterproof and rehabilitate the tank due to its resistance to aggressive chemicals and elevated temperatures.

For the concrete unsuitable for repairs, Xypex Admix C-1000 NF was placed to rehabilitate the tank by casting a new concrete layer over the pre-existent structure, corners were chamfered using Xypex Patch'n Plug.



Xypex C-Series admixtures are added during batching to incorporate crystalline technology into the concrete mix.

The Xypex chemical treatment reacts with cement and the byproducts of cement hydration to fill the capillaries in the internal structure of the concrete, creating a non-soluble crystalline matrix.

The result is concrete that prevents the infiltration and exfiltration of water and other liquids for the entire structure's service life.

PROJECT BIO

Located in Central Anatolia, south of Ankara, the capital of Turkey, ETI Aluminum represents one of the largest aluminum producers in the country, covering around 10% of the country's demand.

The production of aluminum is a multi-step process that requires highly aggressive chemicals such as caustic soda, which is mixed with crushed bauxite, heated, and pressure-cooked in digester structures for several hours.



The hot slurry, now a sodium aluminate solution, passes through a series of flash tanks that reduces the pressure and recovers heat that can be reused later in other processes. After this, the slurry is pumped into a sludge settling tank (repaired with Xypex). As the slurry rests in this tank, undissolved impurities in the caustic soda settle to the bottom of the vessel.

The residue (called "red mud") that accumulates in the bottom of the tank consists of fine sand, iron oxide, and oxides of trace elements like titanium.



Corners chamfered with Xypex Patch'n Plug.

Xypex products offered ETI Aluminum a No Equal solution, restoring a vital structure in factory operations, and ensuring its proper functioning by protecting concrete and reinforcing steel from the severe chemical environment they face daily, for years to come.



"Red mud" contains several oxide compounds, including the iron oxides which give its red colour.