

ConduFill® Water Absorption Case Study

CPCU | Paris, France



TEST I

A tank 50-cm long by 1-meter high was placed directly on top of a trench at the Alstom site in Paris, France. Holes were cut in the bottom of the tank so that ConduFill® would make its way up into the tank when the trench below it was injected. ConduFill® was injected on September 10, 2003 allowing it to rise into the empty tank. The tank was then filled with water to test water absorption.

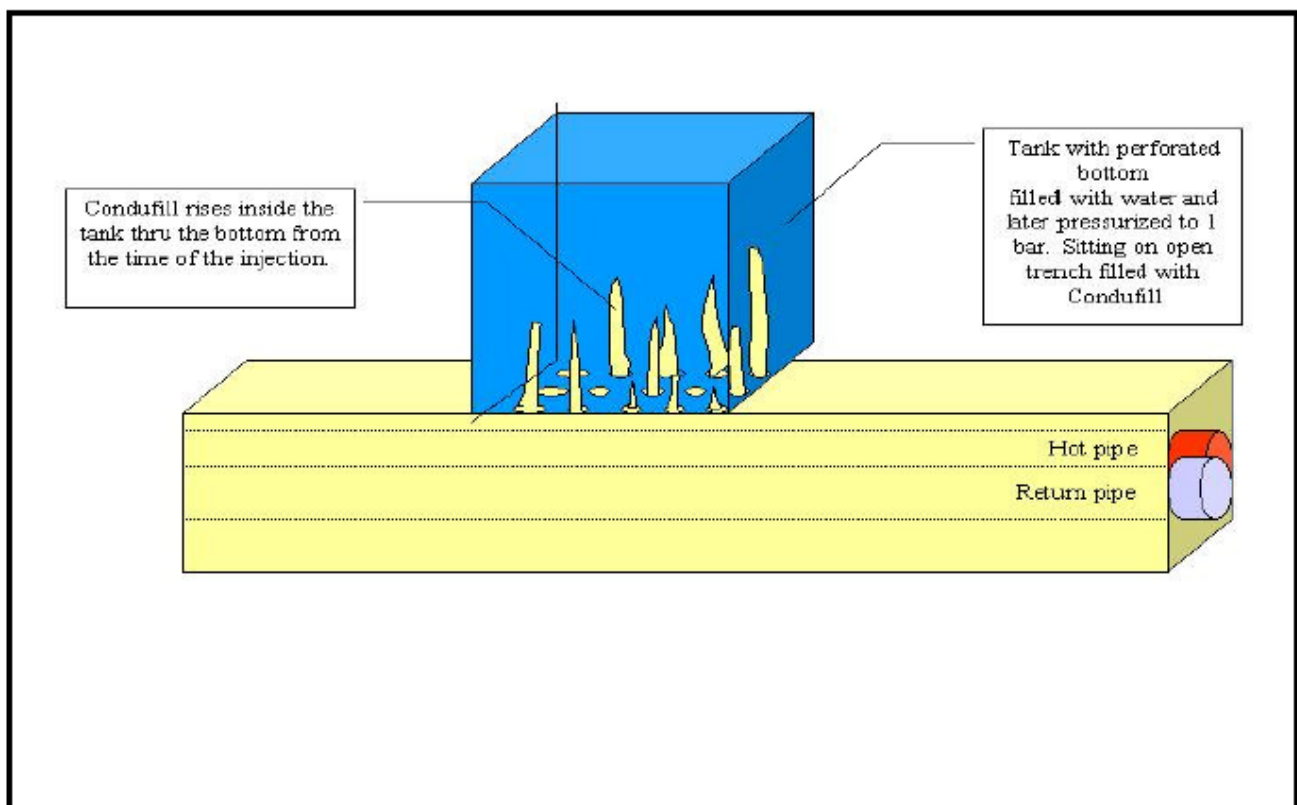


Fig. A – Tank testing set up

The first sample of foam insulation was extracted on December 10, 2003 and tested by an independent laboratory, KOSA Chemical Laboratory. The results were as follows:

Closed-cell Content 92.5%

Water Absorption (by weight) 1.6%

The same tank was then pressurized to one bar, while the ConduFill® located inside the tank was cut to expose open cells to the water. A new sample taken on March 10, 2004 revealed unchanged conditions of the insulation.



Fig. B – Test tank at the Alstom site, Paris, France.

TEST II

A second unprovoked field test was performed at a location where ConduFill® was previously installed. A water line began to leak between two areas as seen below:

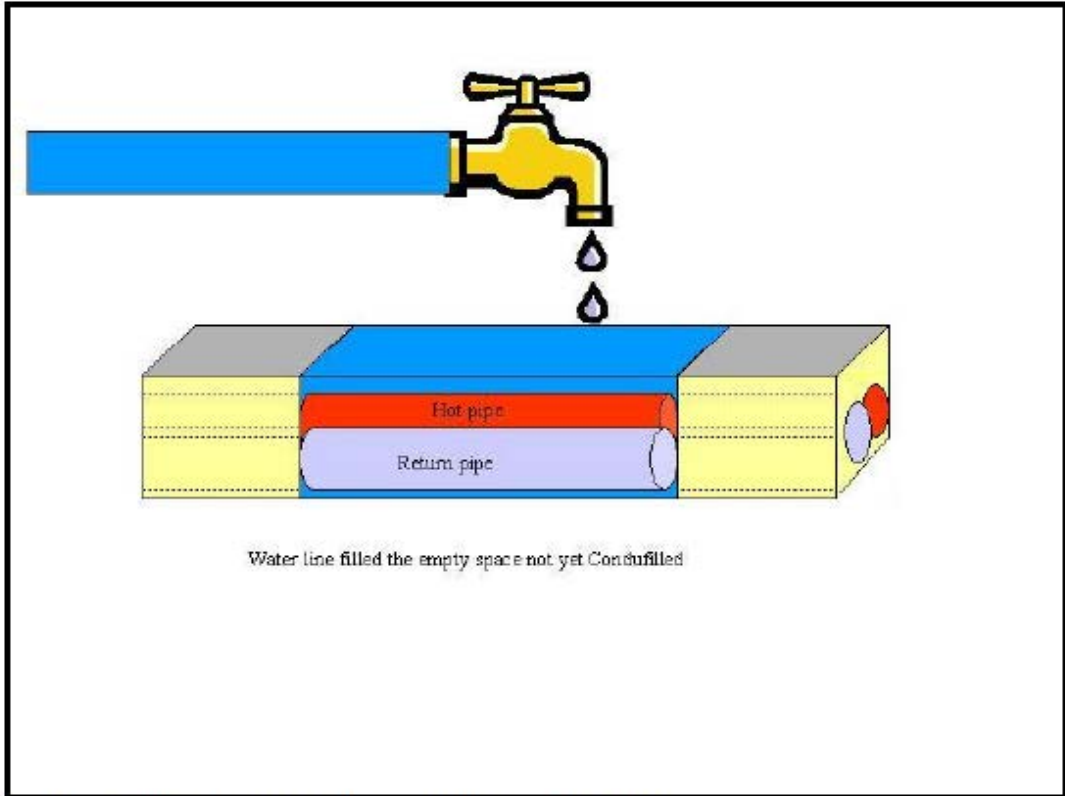


Fig. C – Water leak in between two ConduFillSM areas



Fig. D - Site leak area locator above the trench opening



Fig. E - Void in between two ConduFillSM areas (only one end can be seen)

The cold-water leak completely filled the trench void and generated vaporization solely in the area where ConduFill[®] was not present. The water boiled and remained in between the two areas. There was no evidence that water traveled down the trench into the manhole thus proving the concept that ConduFill[®] does have resistance to water intrusion as the insulation remained dry.

The foam in contact with the pipe and boiling water (100°C) deteriorated only about 10 cm (and more specifically the insulation located near the steam pipe at 204°C). No damage was noticeable beyond the 10 cm surface area that was removed.