



SUGAR MILLS
LG MOLASSES
VACUUM TOP PANS

SUMMARY

Industry: Sugar Industry

Product: Chesterton® ARC S4+

Plant: Sugar Mills

Location: North Queensland, Australia

Summary: Lining of mild steel LG Molasses Vacuum Top Pans for long term protection from corrosive attack.

ROI: No chemical attack/corrosion or lining deterioration after two seasons.



PROBLEM DESCRIPTION

Previously, Imatech was requested by two Northern Queensland Sugar Mills to provide a suitable lining for long term protection against corrosion attack occurring in low grade vacuum pans. Volatile organic acids in vapour condensates typically attack the mild steel walls and vapour pipes in the pans.

The corrosive nature of this vapour/condensate at elevated temperatures works its way through 12mm boiler plates and attacks weld seams dramatically.



PROBLEM DESCRIPTION

There is evidence of corrosion of the internal surfaces where the vapour condensate streams down the contours of the walls and fittings.



PROBLEM DESCRIPTION

Investigations into previously applied epoxy coatings at the two Sugar Mills concerned showed little success.

With assistance from Mill Engineers Imatech had a sample of the condensate analysed to determine the concentrations of specific organic compounds known to be involved. This allowed us to identify a compatible long term lining solution.

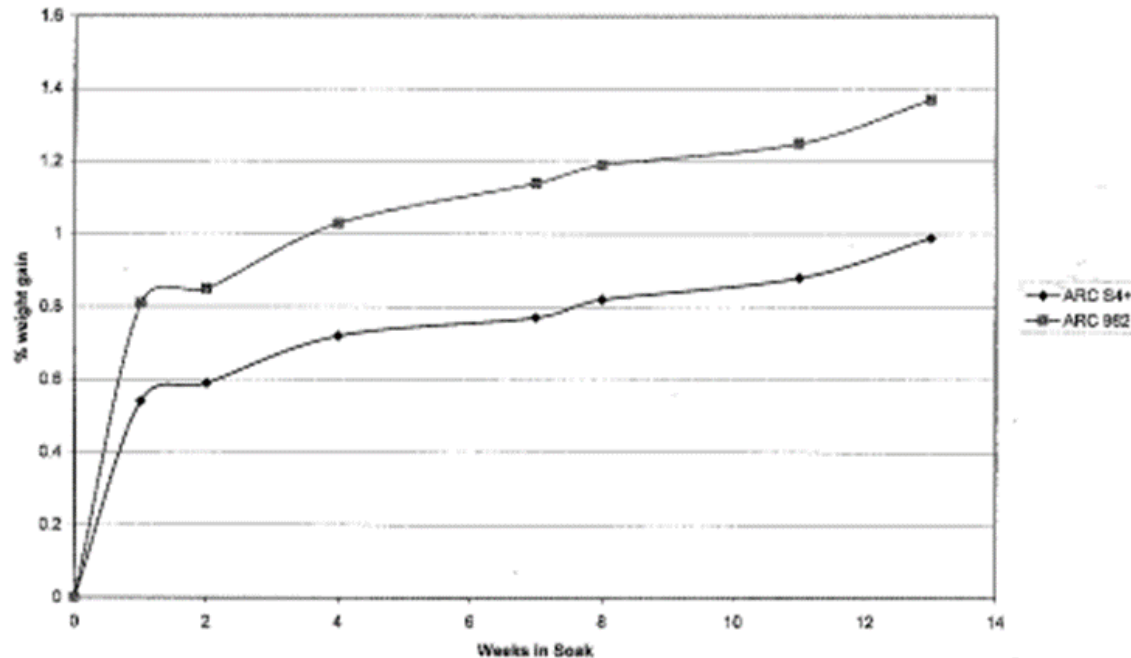


The manufacturer's two part epoxy coating is pictured here after three seasons in service. The degree of corrosion under the coating suggests failure possibly during the first season.

SOLUTION

- In addition to chemical analysis of the condensate, Imatech transported a second batch to our Boston, U.S.A. laboratory facilities for controlled soak testing. Two selected linings were exposed to the condensate in an environment designed to accelerate potential coating failure.

Soak test in Imatech Condensate



- The results displayed in this graph show a percentage weight gain as low as 1% after 13 weeks. Although this result suggests that Chesterton® ARC S4+ was suitable for long term continuous immersion service the samples were tested for a much longer period with a resulting gradual decrease in the rate of weight gain.

SOLUTION

In addition to the laboratory testing this exposed section of an LG Top Pan manway hatch was prepared and coated with two Imatech linings identified as being suitable.



After the first and second season, the lining is in great condition with no blistering, cracking or deterioration.

First Season



Second Season



RESULTS



Based on the laboratory and manway hatch results, a LG Vacuum Top Pan was prepared and lined by Imatech applicators with Chesterton® ARC S4+ at the beginning of the next season.

RESULTS



After one year, the inspection of this Pan has shown very good results. The coating is in great condition and the mild steel surface will be protected from corrosion for more seasons to come. A further three Pans at these Sugar Mills will now be coated with Chesterton® ARC S4+.



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