

Challenge

Issue

Feed chutes handling grain experience significant wear after a flow of 7,200 metric ton. The chutes were fitted with 12mm of UHMWP sheeting bolted in place with stainless bolts. Every three months the bolts holding the poly sheeting had to be replaced and every 8 months the poly sheeting itself had to be replaced. Sheet delamination would block chute and suspend vessel loading or unloading causing port disruption.

Goals

Extend run time to over 8 months while reducing risk of delamination and blockage.

Root Cause

Abrasive wear to bolting and sheeting.



Grain chute system processes 900 Mt/month.

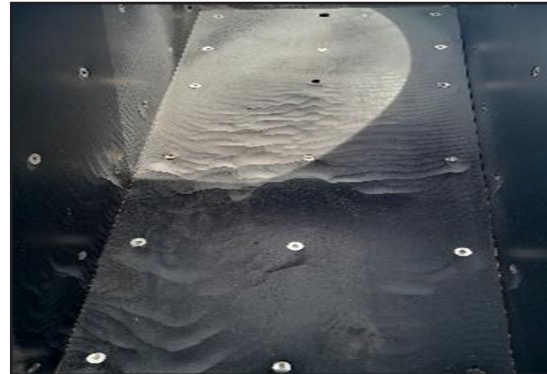
Solution

Preparation

Due to criticality of application, client elected to apply product to replaceable plate steel like how poly sheeting was installed. All steel surfaces to receive coating were abrasive grit blasted to Sa2.5 with a 75+ micron angular profile.

Application

6-8 mm of Chesterton® ARC MX FG coating was applied in a single monolithic coat to all plates. The steel plates were then bolted to chute walls with bolts countersunk down into the coating.



Severe wear to UHMWPE sheet after 8 months.

Results

Client Reported

After 4 months, coating thickness was measured to determine effective wear resistance. Less than 5% of coating thickness had been removed and all bolt heads were unaffected. After 8 months, less than 10% of coating thickness had been lost and bolt heads were still protected. This doubled the life of the sheet and eliminated two bolt replacement cycles and one sheet replacement. After three years, the system is still fully functional and there has been no maintenance required, saving over \$7,200.

- Annual cost of UHMWPE was \$2,400. Over three years, the total cost was \$7,200 .
- Cost of ARC repair was \$3,500. Over three years, the total cost was \$3,500.
- ROI was less than 6 months.



ARC MX FG coating has extended the chute life from 8 months to over 3 years.