



# Severely Rusted Load Zones & Transfer Chutes

## PROBLEM SUMMARY

A bulk handling terminal in the southern U.S. handles inbound shipments of salt, potash, and phosphate from ocean vessels and barges. The transfers involved in this project were on the inbound ship unloading conveyors and were part of a three-year-old section of the plant.

The transfer chutes were aging, requiring upgrades to achieve the following primary goals:

- Improved equipment life
- Corrosion reduction
- Dust and spillage reduction
- Reduction in labor for housekeeping
- Reduction in plant maintenance expenditures
- Reduction in plant Risk Profile based on excessive dust, spillage, and related safety concerns
- Improved belt life
- Employee morale
- Overall safety improvement

## THE BENETECH SOLUTION

Benetech's engineering team suggested a **properly designed load zone solution** that included: a belt enclosure; wear liner skirtboards for material containment; dust curtains to disrupt airflow streams and dust escaping the enclosure; and rubber skirting to prevent dust leakage along the sides of the conveyor.

It also included a **strong belt support system**. Adequate belt support in the loading area of a conveyor is critical to the performance of the containment system.

Benetech products included, but were not limited to:

1. **MaxZone® Load Zone System** — A belt enclosure system with easy-to-access, externally adjusted skirtboards;



**BEFORE**



**AFTER**

## IT PAYS TO IMPLEMENT BENETECH SOLUTIONS

- Eliminated up to 90% of spillage & dust issues
- Reduced clean-up time and simplified maintenance
- Cost savings in material loss and housekeeping efforts
- Improved air quality and lowered health risks
- Reduced risk for MSHA citations

internal wear liners; dust curtains designed to disrupt air flow streams and prevent dust escaping the enclosure; and rubber skirting to prevent dust leakage along the sides of the conveyor.

**2. Engineered Transfer Chutes & DEM** — Custom-designed transfer chutes using Discrete Element Method (DEM) Flow Analysis greatly minimize production problems, including pluggage or choked flows, eliminating spillage and airborne dust, reducing high-impact areas, optimizing belt life, and creating longer intervals between service and maintenance.

**3. Inspection Doors** — Stainless steel, rust-resistant, dust-tight doors that minimize airborne dust and spillage while also allowing access for service and maintenance.

## SUCCESSFUL RESULTS

Properly designed and maintained load zones will minimize spillage and dust, with reductions up to 90% if the systems are properly designed, installed, and maintained.

After installation, the operation saw significant improvements across multiple problem areas. Airborne dust levels dropped and salt water corrosion was greatly reduced.

Additionally, material spillage at the transfer points was virtually eliminated. Cleanup requirements were greatly reduced, allowing maintenance teams to focus on more critical tasks. Overall, the upgrades improved site safety, reduced labor demands, and enhanced system reliability.

