CDM Systems, Inc.

a KMGlobal company

Potash Producer Successfully

Doubles Its Capacity With Help From CDM En-Masse Conveyors

THE SITUATION

A global Potash Producer was undergoing a major expansion at an existing facility in Saskatchewan, Canada – including a new adjacent processing plant.

THE EXPANSION AND NEW CONSTRUCTION WOULD DOUBLE ITS CAPACITY.

Nearly 100 individual conveyors for material transfer were needed to meet the increasing global demand for the potassium-based lot, used mainly in fertilizers. The company worked through an Engineering, Procurement and Construction (EPC) contractor with a list of requirements for the expansion.

THE CHALLENGE

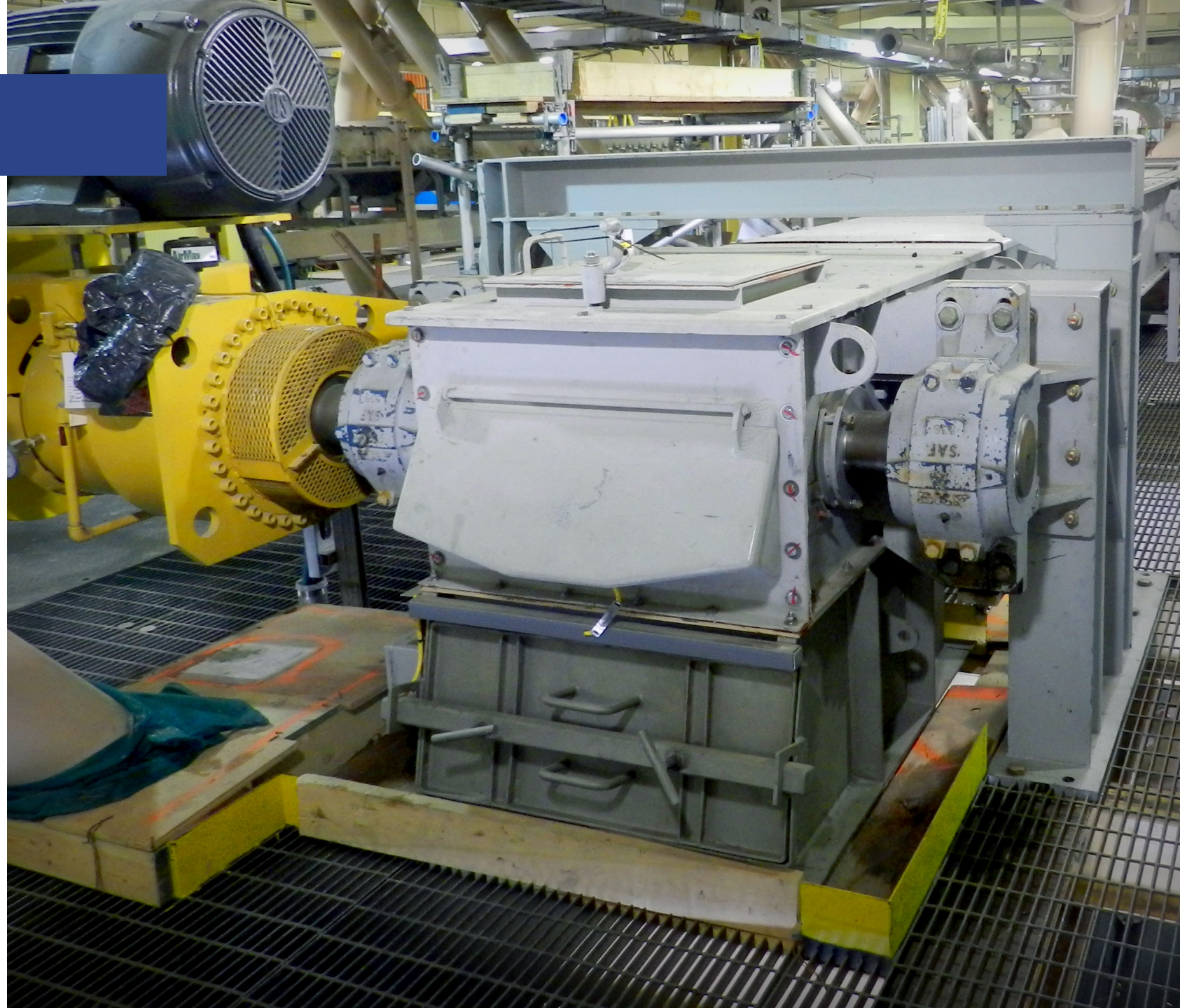
The cost of operations needed to remain low during the expansion. Potash's highly volatile, commodity-driven price required rigorous cost controls on the back end.

CAPITAL PURCHASES WERE BASED ON TOTAL COST OF OWNERSHIP (TCO).

The TCO requirements were complex because the project had a wide range of capacity and length specifications for the conveyors. CDM had to find an optimum design that addressed variance in application with commonality requirements to make spare parts universal and keep TCO low.

THE SOLUTION

CDM built the series of conveyors to handle the wide range of variances: capacities ranged from 20-1,475 MTPH and lengths were between 30-170 feet – all while ensuring conveyors could handle product that could reach up to 400°F.



PROJECT BY THE NUMBERS

1

Common Failure Mode Sensor

Universal sensor provided immediate alert and saved thousands of dollars in inventory/repair costs

2

Chain Series

Depended on conveyor length and speeds, hourly capacity, HP consumptions

5

Conveyor Sizes

Engineered for capacities ranging from 20-1,475 MTPH

6

Gear Reducers

HP ranges from 5-250 HP and speed ranges from 16-30 RPM

7

Bearing Sizes/ Shaft Selections

This commonality eliminated thousands of dollars from annual maintenance

Engineering Requirements	Elements of Design
Capacity requirement and bulk density	Used to calculate key conveyor components and establish ultimate performance
Distance to be conveyed	Necessary to determine chain pull and horse-power
Horsepower	Balanced energy consumption with optimum speed
Chain pull	Calculated for efficient operation with minimal wear on the motor
Abrasion/corrosion	Proper chain and housing design for longevity and minimalmaintenance requirement
Elevation	Important for flight selection to maintain required capacity rates and minimizing chain pull

THE RESULTS

CDM balanced the variety of conveyors with the necessary commonality to keep TCO down, and also worked with the Potash Producer's structural department to minimize the need for additional, owner supplied structural steel. CDM designed and supplied all conveyor supports to account for thermal expansion.

CDM'S TCO DESIGN APPROACH RESULTED IN QUANTIFIABLE SAVINGS FOR THE POTASH PRODUCER.

By working with CDM, the Potash Producer received custom-made, built-to-last conveyors to help with the rapid expansion.