

HYDRA-CELL SEAL-LESS DIAPHRAGM PUMPS INCREASE PRODUCTION AT A POTASH MINE

THE CHALLENGE

The customer is a potash producer whose sales are allocated based on the tonnage of potash produced and shipped in a specific timeframe requiring the entire facility to run at total capacity during the process to ensure maximum potash production. Operating at total capacity 24/7 was very hard on the equipment. One production run would typically involve 100 railcar load-outs and would usually take about a week to complete. The priority was to address any mechanical issues before each run or work through them if they arise during the run.

Part of the process involves coating the ore in an iron oxide oil dye—even immersed in oil, dye is incredibly abrasive. Due to the dye’s abrasiveness and the capacity required to complete the run, the gear pump used for dye coating would wear out at critical times. Some pumps became so fragile that they’d wear out after only filling a single rail car.

THE SOLUTION

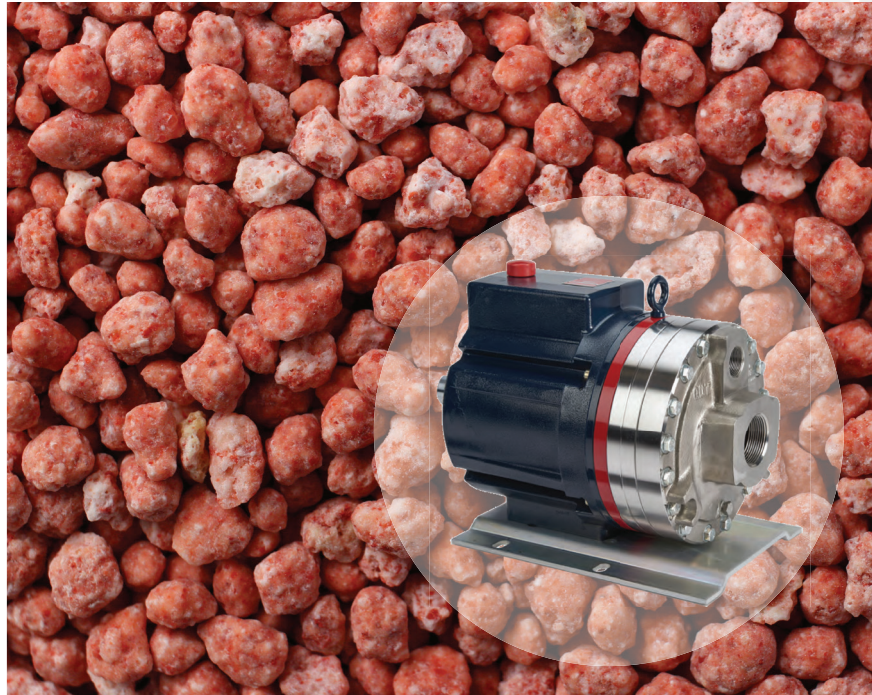
Our pump application expert recommended Wanner Hydra-Cell D35 diaphragm pumps to solve the customer’s gear pump challenges. The seal-less design and horizontal disk check valves enable the pumps to handle the abrasive dyes damaging the original gear pumps. The Hydra-Cell pumps tolerate non-ideal operating conditions, have run-dry and self-priming capabilities and can handle solids in emulsions up to 800 µm, outperforming gear pumps.

The Hydra-Cell pumps successfully withstood the intensity of the production runs. The inaugural run loaded over 100 railcars without failure. Since 2015 when they installed the first unit, they’ve only had to rebuild twice and get a new discharge head, a marked improvement over their original gear pumps, which struggled through each run.

THE RESULTS

- ▶ Increased Productivity
- ▶ Decrease in Maintenance & Replacement Costs
- ▶ Decrease in Downtime

For more information on this solution or if you have a fluid handling challenge of your own - Contact a John Brooks Company Application Expert today!



POTASH MINING | DYE COATING

HYDRA-CELL SEAL-LESS PUMPS OUT-PERFORM GEAR PUMPS FOR INTENSIVE PRODUCTION RUNS WITH TOUGH ABRASIVES

TECHNOLOGY UTILIZED

Wanner Hydracell D35 Pumps

- ▶ Max. Flow Rate: 36.5 gpm (138 L/min)
- ▶ Max. Discharge Pressure: 1500 psi (103 bar)
- ▶ Max. Inlet Pressure: 250 psi (17 bar)
- ▶ Max. Solids Size: 800 µm
- ▶ Simple Compact Design
- ▶ Operational Efficiency
- ▶ Dry Run Capability
- ▶ Tolerates Tough Operating Conditions
- ▶ No Mechanical Seals, Packing or Cups to Leak or Replace

HOW POSITIVE DISPLACEMENT PUMPS WORK

- As with any hydraulically driven diaphragm pump, oil moves the diaphragm forward to push water out of the liquid chambers.
- Within the pump, spring-loaded check valves prevent reverse flow, so a consistent forward flow continues based on pump speed. Pressure is not an issue because changing pressure conditions adjust the motor’s amp draw rather than affecting the flow.
- The pumps can handle higher pressure than the processing system can produce, so there is very little chance of overloading the Hydra-Cell.