

Leading Specialty Chemical Manufacturer Chooses EnviroGear Seal-less Pump for Demanding Glycerin and Fatty Acid Railcar Unloading

Specialty Chemicals Manufacturer

Leading specialty chemical manufacturer chooses EnviroGear seal-less pump for demanding glycerin and fatty acid railcar unloading. The result is not only \$20,000 in annual maintenance cost savings with a 4-month payback (225% IIR) but also the elimination of environmental problems.

Challenge

A specialty chemicals manufacturer needed to replace a railroad unloading pump. The service was challenging because a very unusual setup of two positive displacement pumps in line was used to accommodate for varying suction lengths.

The service required the pump to be able to handle multiple fluids of varying viscosities. Some of the pumped fluids solidified easily at lower

temperatures. When fluids set up inside of the pump, the rotor shaft sometimes twisted, resulting in expensive repairs for the rotor and requiring replacement of a sophisticated seal. As the pump ran multiple cycles a day, solidified fluids in the pumping chamber often caused pump failures, especially in the winter. On average, there were eight pump maintenance incidents a year costing between \$550 and \$3,400 in parts and labor each time.

Additionally, nitrogen was blown through the system to clean hoses, hard piping and the pump from residual fluid. The process occasionally caused stainless steel pump components to gall and wear out prematurely.

Further, many of the fluids pumped posed an environmental hazard if leaked. The area where the pump is located is not diked, and spilt fatty acids could be “disastrous if not caught on time.”

Finally, operating and maintenance crews had to spend time connecting, using, cleaning and storing flexible hoses because the pump had to be moved between railroad cars for unloading. These hoses had three to four connection points, each with the potential to leak.

Solution

In order to dramatically improve reliability of the service, EnviroGear Pump proposed the following configuration for the pumping system:

- EnviroGear S1-69-SS pump with three large high-grade bushings to ensure that pump components run true to specified clearances even under high hydraulic loads and insufficient lubrication during cleaning cycles.
- Steam flush system equalizing pressure inside of the pump during nitrogen blowing to protect clearances.

- Emotron M20 shaft power monitor to detect abnormal motor loads and prevent pump failures.
- The pump was installed using hard piping which increased system reliability and reduced cycle time.

EnviroGear Pump offered technical support 24/7 and guaranteed immediate response in case of pump problems.

Results

The EnviroGear pump has been in service for a year with no bent shaft incidents. The pump has required no routine maintenance. Due to the seal-less design of the pump, there have been no leakage incidents.

Maintenance cost savings: \$20,000 per year. The payback period for the pump was 4 months, and internal rate of return is 225%.

The customer has budgeted funds to continue replacing his mechanically sealed pumps with EnviroGear seal-less pumps. Multiple subsequent orders have been placed both for worn-out pump replacements and for capital projects.

“Using EnviroGear pump allowed us to use a stationary pump for a wide variety of products with varying viscosities. We have been able to reduce the use of flexible hoses and use more hard piping, which both reduced cycle times for runs and improved reliability of the process. Using flexible hoses entailed three to four connections that could leak hazardous fluids on the ground. With EnviroGear pump, we have not had any maintenance or environmental problems for a whole year.”

- Project and Maintenance Engineer