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Magnetic Drive Sealless Pump Smooths Caustic Unloading Operation

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The Ethyl Corp., Petroleum Additives Div., Suaget, Ill., plant receives 50% caustic (sodium hydroxide) raw material by tank trucks. The caustic was formerly unloaded from truck to storage tank by using nitrogen to pressurize the tank truck, providing a flow rate of 40 gpm. Their objective was to install a pump to increase the unloading rate from 40 to 200 gpm, and to enhance operating efficiency and decrease demurrage costs.

Ethyl's engineers wanted assurance that the pump would minimize exposure of the caustic to the operator, maintenance personnel and the environment—whether in vapor, liquid or solid form. The 50% caustic solution to be pumped has a relatively high freezing point of 50°F. Experience with similar fluids in similar applications (i.e., intermittent service) revealed that pumps with conventional mechanical seals were being repaired approximately once every four months.

Workers at The Ethyl Corp.'s Suaget, Ill., plant prepare to unload 50% sodium hydroxide

In January 1988, the plant installed a magnetic drive sealless pump. To date, no maintenance has been required. In 1990 or 1991, the plant intends to inspect the internal silicon carbide bearing system in order to determine the need for replacement of wear parts. Beyond the inspection, Ethyl's engineers anticipate a major reduction in maintenance dollars for the pump.

The installation is atypical in that engineers specified additional protection for the pump. A thermocouple was installed in contact with the containment can/shell, thereby providing continuous monitoring of the pump temperature. A temperature switch located in series with the power supply to the pump motor is set several degrees above normal operating temperature of the pump. If and when the pump temperature exceeds the preset switch setting, the pump is automatically shut down in order to prevent bearing system failure.

The cost to purchase and install the magnetic drive sealless pump was approximately twice that of a mechanically sealed centrifugal pump (using a standard single mechanical seal). The Ethyl Corp. estimated that the additional project costs to install the pump would be recovered by the plant after one year of maintenance-free service. Since the pump's service life has already exceeded the one-year period, the plant is very satisfied with the economical results. As operators have had no caustic leak or vapor emission, they are gratified that the objectives of environmental and personnel protection have been met as well. ■

Model MXP-8516 magnetic drive sealless pump—Magnatex Pumps Inc., PO Box 770845, Houston, TX 77215.