Case Study

Nine Years' Trouble-Free Pumping

Eka Nobel, Sweden

Eka Nobel AB, one of the leading manufacturers of paper and bleaching chemicals worldwide, has successfully employed the Discflo disc pump technology at several of its plants in Sweden. Here, we review the applications where disc pumps have been installed and the problems they have solved.

Eka purchased its first disc pumps in the summer of 1992. The pumps were installed in the company's most difficult applications at its meta silicate plant, where the existing pumps suffered significance wear and operational problems.

Sand and sodium hydroxide

In one part of the process, a pump was required to move silica sand mixed with NaOH. The fluid had a sand content of 39-52%, mixed with 40% NaOH, making it extremely abrasive and dense as well as alkaline. The batch operation required a flow rate of 40 m^3/h [176 GPM] at 18m [60 ft] of head, and a pump that could tolerate temperatures up to 155^{0}C [311^{0}F].

A Discflo model 402-14"-3D in Maxalloy 700 was chosen. It replaced a hard chrome centrifugal slurry unit that suffered extreme wear problems and needed a change in packing once a week. The Discflo pump was an immediate success. The first maintenance of the Discflo pump was after 14 months of trouble-free operation. Plus the Discflo pump cut processing time by approximately 50%.

Water glass with sand

The second application at the meta silicate plant was pumping water glass mixed with sand. For this 24 hour/day process, Eka installed a disc pump model 2015-8"-2HHD in AISI 316 L. The pump ran at 2-5 m^3/h [9-22 GPM] at 2.5-4.8 bar [36-70 psi], with its speed controlled by VFD. The water glass was hot, dense, alkaline and abrasive, reaching a temperature of 155^{0}C [311^{0}F] weekly.

The Discflo unit supplanted an external gear pump which required maintenance every second month. Except for an initial seal problem, there were no maintenance or operational problems with the Discflo pump throughout its working life at the meta silicate plant.

Next, the Swedish company purchased disc pumps for its perborate plant, a site for producing chemicals used in washing powder. The first disc pump was installed in March 1994 and pumped perborate slurry in a 24 hours/day circulation service. The model 302-10"-2HHD disc pump had a capacity of 10-15 m3/h [44-66 GPM] at 15m [50 ft] of head, using a VFD to control speed.

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The Challenge

Pumping range of difficult fluids:

+ Sand content up to 52%

+ Alkaline fluid to pH 14

+ Thixotropic slurry

+ Filter press feed

+ Very abrasive fluid

+ High viscosity fluid

The Discflo Solution

No close tolerance design good for high solids to 80%

Laminar, pulsation-free flow does not damage shear sensitive fluid

Very low maintenance and wear due to unique pump action

DISCFLO Disc Pumps

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