Case Study

AHLSTAR APP Pump, the Perfect Solution for Corrosive Liquid

Project Highlights
In the phosphoric fertilizer manufacturing process, fluorosilicic acid ($\text{H}_2\text{SiF}_6$) is a by-product. It is the end product of phosphoric acid production (reaction). The process requires pumping at different concentrations. The customer uses fluorosilicic acid in different departments such as fluorine salts manufacturing.

The Challenge
The biggest challenge in pumping is strong fluorosilicic acid (up to 20%). At this concentration, it is very corrosive. In addition, the liquid contains very fine solids ($\text{SiO}_2$ gel). This combination is a challenge for the material selection. The material should be both corrosion resistant and abrasion resistant.

The Solution
Avesta 654 SMO was proven to be the best material for this application. The elastomers for the seal should also be selected carefully, because they should withstand this liquid. The customer also required a reliable water supply system, so Thermosyphone AesSeal with a level switch was proposed.

Customer Benefits
The selected pump features minimized lifecycle costs and improved process reliability.

Pump Data
<table>
<thead>
<tr>
<th>Pump</th>
<th>AHLSTAR APP11-50, ser. no 100092935, double mechanical seal Burgmann</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>4U</td>
</tr>
<tr>
<td>Capacity</td>
<td>70 m$^3$/h</td>
</tr>
<tr>
<td>Head</td>
<td>50 m</td>
</tr>
<tr>
<td>Speed</td>
<td>3000 rpm</td>
</tr>
<tr>
<td>Motor power</td>
<td>30 kW</td>
</tr>
</tbody>
</table>

Process Data
<table>
<thead>
<tr>
<th>Fluorosilicic acid</th>
<th>$\text{H}_2\text{SiF}_6$</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>$30 \degree\text{C max}$</td>
<td></td>
</tr>
<tr>
<td>$\gamma$</td>
<td>$1180 \text{ kg/m}^3$</td>
<td></td>
</tr>
<tr>
<td>Solids</td>
<td>$10 \text{ g/l (SiO}_2\text{ gel}$</td>
<td></td>
</tr>
<tr>
<td>Solids size</td>
<td>$0.01 \text{ mm}$</td>
<td></td>
</tr>
</tbody>
</table>

The Sulzer Difference
The combination of correct material selection, seal selection and seal arrangement gave a perfect result and a satisfied customer.

Contact
merja.parssinen@sulzer.com
www.sulzer.com

Applicable Markets
Fertilizer Industry

Applicable Products
AHLSTAR Pumps

A10082 en (5.2013), Copyright © Sulzer Pumps
This study is a general product presentation. It does not provide a warranty or guarantee of any kind. Please, contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.