Case Study

SALOMIX® L Vertical Agitator, a Perfect Solution for Tough Operating Conditions

Project Highlights
Many vertical agitators are used in the phosphoric acid manufacturing process. The reaction stage is one of the most important stages. In a reactor, several similar agitators are used. The target is to provide intensive mixing of the components (raw material, phosphoric acid, sulphuric acid) to prevent the solids from settling. The slurry contains about 30% of solids. The slurry is very aggressive because of the acid mixture and high temperatures.

The Challenge
The requirements for agitators in this application are strict. The wetted parts should be corrosion resistant, the blades should be abrasion resistant (the lifetime of the agitator blades should be as long as possible), the efficiency of the agitator should be high, and power consumption should be low. The basic agitator design should meet the requirements of heavy duty applications. The agitators previously used by the customers were three times heavier, less efficient, and had a shorter lifetime of the wetted parts.

The Solution
Sulzer Pumps offered an optimized solution – the L type agitator with two levels of MX3 blades. The drive is an SEW gear + ABB motor. The design allows blade angle adjustment. It was also used by the customer to achieve the best technological results.

Customer Benefits
The use of SALOMIX® L agitator with MX3 propellers provides long lasting trouble free operation. The lifetime of the blades is about 3-4 years, compared to one year previously. The customer got a reliable and low-maintenance product, low power consumption, and process efficiency.

Agitator Data
- Agitator: SALOMIX® L140.G vertical agitator, ser. no 100025185
- Material: 4U, Avesta 654 SMO
- Propeller: MX3, 2 levels, D=1250 mm
- Speed: 106 rpm
- Motor: 55 kW, SEW gear

Process Data
- Phosphoric acid slurry
- $P_2O_5$: 37-39% ($H_3PO_4$)
- $SO_3$: 4% ($H_2SO_4$)
- $F$: 2% ($HF, H_2SiF_6$)
- Temperature: 100 °C
- Solids: 30%
- Specific gravity: 1600 kg/m³

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

Applicable Markets
Fertilizer Industry

Applicable Products
SALOMIX® Agitators