

Case Study

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



SALOMIX® L140.G Agitator

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.

The Sulzer Difference

SALOMIX® L agitator with gear drive and cast blades meets the requirements of heavy duty use. The shaft design (two parts: upper part hollow, lower part solid) is optimum, providing straightness in long shafts. The agitator makes a vertical downflow, minimizes shaft vibrations and unloads the drive.

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 ₂ O ₅	37-39% (H ₃ PO ₄)
SO ₃	4% (H ₂ SO ₄)
F	2% (HF, H ₂ SiF ₆)
Temperature	100 °C
Solids	30%
Specific gravity	1600 kg/m ³

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Applicable Markets

Fertilizer Industry

Applicable Products

SALOMIX® Agitators