

SALOMIX™ vertical agitator, the perfect choice for a storage tank in phosphoric acid production

In the manufacturing process of wet phosphoric acid (WPA), storage tanks are used in every plant. After reaction and filtration, the phosphoric acid is pumped into a storage unit. The filtrated phosphoric acid contains some chemical impurities (e.g. sulphuric acid, chlorides and fluorine) that make it aggressive. It also contains particles such as gypsum that tends to settle in the storage tanks. To avoid settling and possible plugging issues, agitation is needed in the tanks. Mixing also ensures homogeneous properties of the acid.



The challenge

An agitator is required in the phosphoric acid storage tank to perform effective mixing and to prevent sedimentation. Ideally, the agitator should be designed with a free-hanging shaft without a bottom bearing, it should be efficient with low power consumption, and have a low rotational speed to increase the lifetime. It is important to select a suitable material of construction depending on the process type. Frequently used materials are austenitic SS904L, super duplex 1.4410 (4T), 654 SMO (4U).

The solution

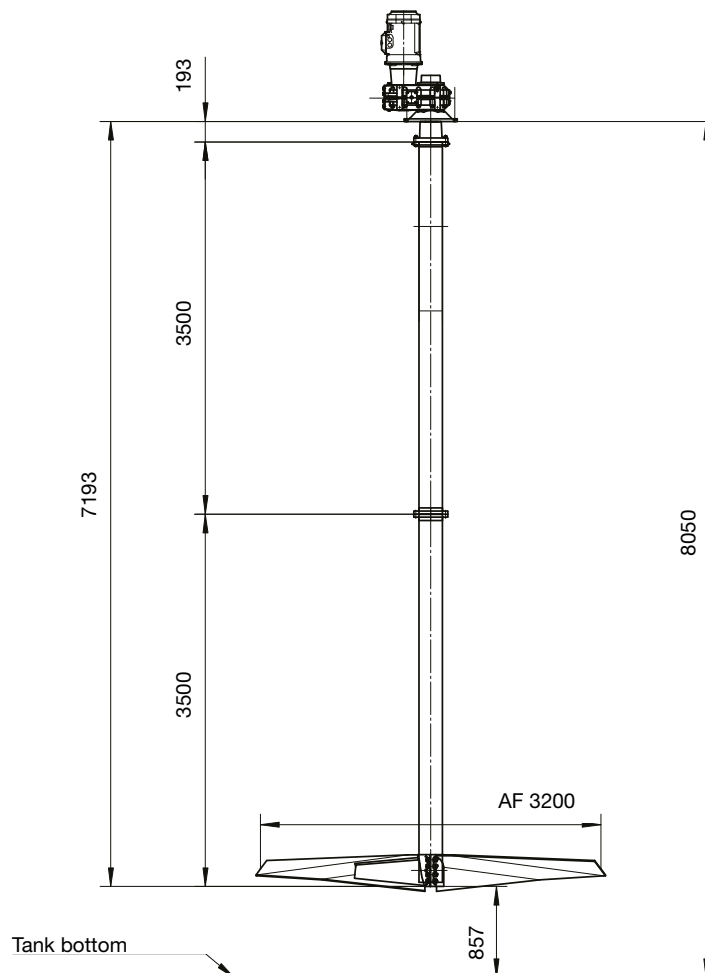
The SALOMIX LV agitator with a paddle of AF type at one level meets all the customer requirements. In this particular case, the paddle has a large impeller diameter of 3'200 mm. The rotational speed is low, which reduces the wear and ensures a smooth operation. The paddle is located close to the bottom, which enables agitation also at a low level. This allows the customer to pump out all acid without sedimentation.

Customer benefits

Sulzer's SALOMIX LV agitators with AF paddles are very reliable and do not require frequent maintenance. The shaft is constructed as a robust hollow shaft that handles the torque and provides straightness. The agitator is equipped with a strong gearbox that is selected to handle all agitator loads, including axial and radial forces, as well as the torque with a high gearbox service factor. Thanks to the durable agitator design and correct selection of the wetted parts, the SALOMIX LV has proven to be a reliable and long-lasting solution.

Agitator data

Agitator	SALOMIX LV-11/71 vertical agitator, ser. no. 100026055
Material	Avesta 654 SMO
Propeller	AF, 1 level, D=3'200 mm
Speed	21 rpm
Motor	11 kW, Kumera gear



Process data

Phosphoric acid slurry	
P2O5	37-39% (H ₃ PO ₄)
SO3	2% (H ₂ SO ₄)
F	2% (HF, H ₂ SiF ₆)
Temperature	90°C
Solids	1.5%
Specific gravity	1'430 kg/m ³

The Sulzer difference

The SALOMIX LV agitator is well suited for storage applications. A good agitation with a vertical flow provides correct agitation intensity that fulfills the process requirements for good mixing and keeps the solids in suspension. The agitator operates smoothly with low vibrations. It is of reliable design with a sturdy shaft and a strong gearbox. The correct material of construction withstands the particular chemical composition at the site. The paddle is fixed on the hollow shaft with a reliable system, and the position of the paddle is adjustable axially. The agitator is easy to assemble, and the general agitator design provides low power consumption, decreasing the customer's operating costs.



SALOMIX LV-11/71 agitator

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