

# AHLSTAR WKP cantilever pump, a proper solution for the chemical industry

In the reaction stage of the phosphoric acid manufacturing process, the cantilever slurry pump is used very often for pumping phosphoric acid slurry to filtration. Phosphoric acid slurry is quite corrosive and abrasive. It contains many solids which are partly sand ( $\text{SiO}_2$ ). The amount of sand can vary and depends on the raw material quality. To minimize the wear of the wetted parts, AHLSTAR WKP wear resistant cantilever pump with a maximum impeller diameter is used. The use of Variable Speed Drive (VFD) minimizes the pump speed.



AHLSTAR WKP32-125-15 pump

## The Sulzer difference

AHLSTAR WKP wear resistant cantilever pump has a robust construction, it is designed for pumping slurries, and has no seal or bearing under the base frame. It has all the necessary features for heavy duty applications in the chemical industry.

**NOTE:** For new deliveries, we select the upgraded VA/VAP vertical cantilever sump pumps.

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## The challenge

In the hemihydrate process, the requirements for the pump material are strict because it should be both corrosion resistant and abrasion resistant. In addition, phosphoric acid slurry contains gypsum that can crystallize inside the pump. For this reason the pump should rotate constantly, with a VFD.

## The solution

In order to get the longest possible lifetime of all pump elements, several improvements in pump design were made: additional stiffening ribs in the pump column, bigger holes for flushing in the pipe column, and cast pipe bend in the discharge pipe to minimize wear.

## Customer benefits

Many customers in the phosphoric fertilizer industry use AHLSTAR WKP wear resistant cantilever pumps. Its design suits their needs very well because it has no bearings under the pump foundation frame.

## Pump data

Pump	AHLSTAR WKP32-125-15
Material	4U, Avesta 654 SMO
Capacity	250 m <sup>3</sup> /h
Head	22 m
Speed	1'350 rpm
Motor	45 kW, VFD

## Process data

Phosphoric acid slurry	
P <sub>2</sub> O <sub>5</sub>	37-39% (H <sub>3</sub> PO <sub>4</sub> )
SO <sub>3</sub>	4% (H <sub>2</sub> SO <sub>4</sub> )
F	2% (HF, H <sub>2</sub> SiF <sub>6</sub> )
Temperature	100°C
Solids	30%
Specific gravity	1'600 kg/m <sup>3</sup>