

AHLSTAR A pump with dynamic seal suits difficult liquids

One of the main targets in the phosphoric acid manufacturing process is fluorine removal. The process of fluorine removal is called absorption. Fluorine in the reaction stage goes into the outgoing gas and then mixes with water by spraying. It is quite difficult to pump this type of liquid because of both corrosion and abrasion.



The challenge

Fluorine is present in the phosphate raw material. When phosphates are treated, fluorine is converted into fluorosilicic acid (H₂SiF₆) and hydrofluoric acid (HF). Both of these acids are very corrosive. This acid mixture also has fine solids (Si containing). The solids are quite abrasive, so the pump material should be hard enough.

The solution

AHLSTAR A process pump in super duplex 4T material with dynamic seal (some pumps with gland packing) was proposed. Gland packings are for pumping liquids where the amount of solids is high. In this application several similar pumps provide circulation from one collector. The pumps operate constantly.

Customer benefits

The customer, one of the biggest phosphoric fertilizer manufacturers in Russia, is very satisfied with the pump material and the dynamic seal because it does not need any maintenance. Spare parts are not needed because the rate of corrosion of the selected material is low.

The Sulzer difference

The combination of correct selection of material and seal gave good results. The pumps have been in operation for more than five years without changing the wetted parts.

Pump data

Pump	AHLSTAR A42-150, dynamic seal, ser. no 100057314
Material	4T
Capacity	400 m ³ /h
Head	40 m
Speed	1'450 rpm
Motor	75 kW

Process data

Fluorosilicic acid	up to 2.3%
Temperature	70°C max
γ	1'024 kg/m ³
Solids	15 g/l
Solids size	100 mkm

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