

# VAS VERTICAL ACID PUMP

## Industrial applications :

- H<sub>2</sub>SO<sub>4</sub> production plants :
  - Absorption
  - Drying
- Engineered design for Heat Recovery System application

## Benefits :

- Long service life
- Easy installation and Maintenance



ISO 9001 CERTIFIED GROUP

 **Ensival Moret**  
A Moret Industries Company

The VAS pump is specially designed and manufactured to provide key product features for sulfuric acid pumping applications. Its proven reliable design offers both high corrosion resistance and mechanical performance.

Reliable pumping performance on sulfuric acid is critical to reduce plant down time and to improve operating efficiencies.

**Corrosion resistance and Efficiency**

Its engineered design minimize the effect of wear by corrosion while guaranteeing high efficiency over a long service life.

**Reliability**

With pumps operating flawlessly in several H2SO4 plants, Ensival Moret VAS pumps have demonstrated superior operational performance period with maintenance free operations from initial startup.

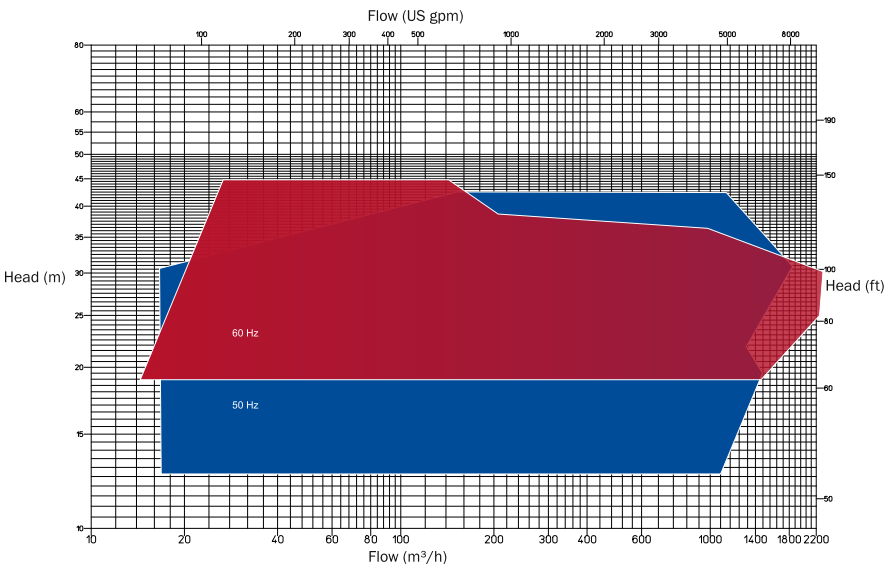
**Safety**

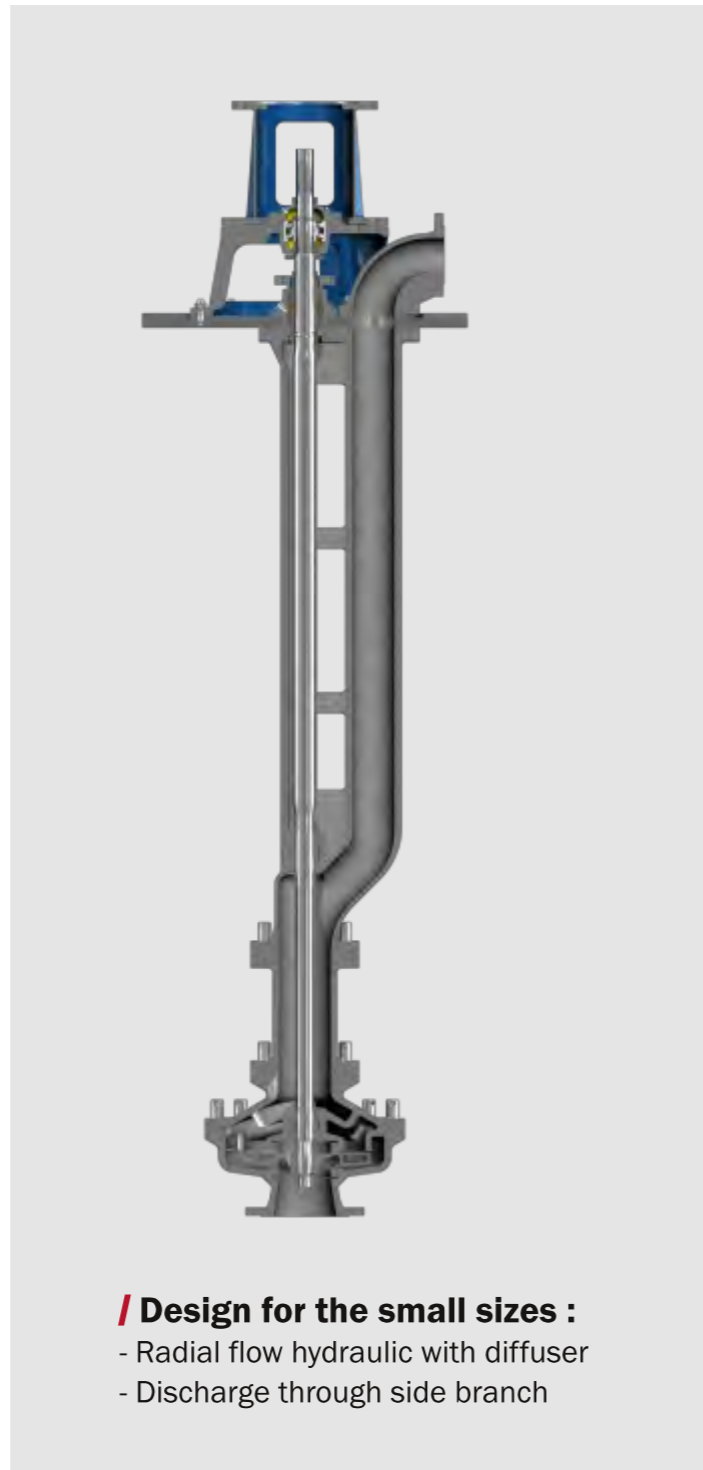
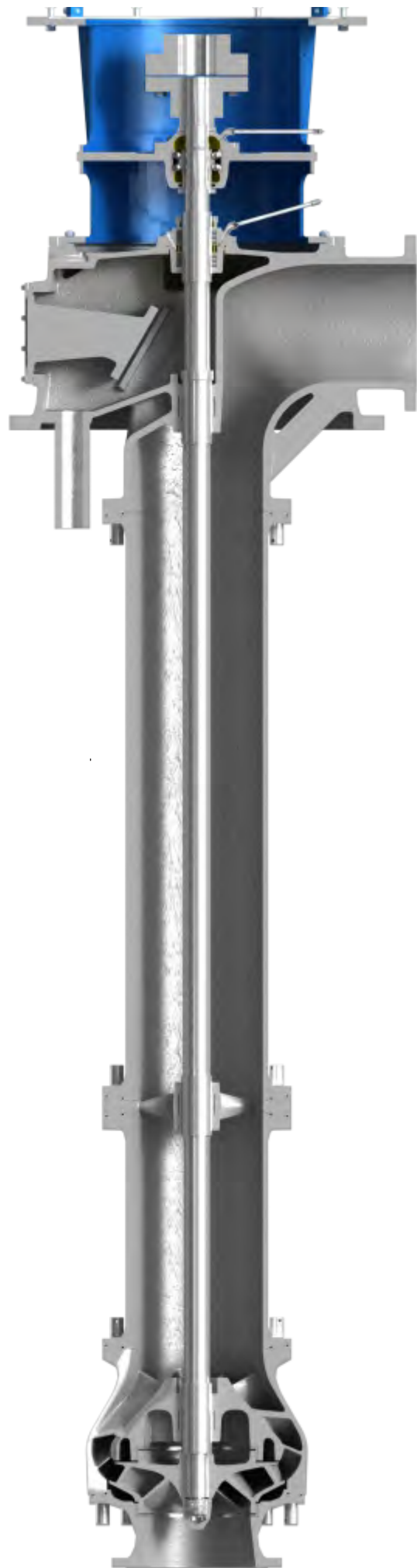
The VAS pump provides the highest standards of safety for your operations and for your staff as well as for the environment.

Thanks to our long experience, the proven and reliable design of the VAS combines unique key features for your operations.



- / Performances and operating range:**
- Capacity: up to 2500 m<sup>3</sup>/h (10,000 US gpm)
  - Total head: up to 45 m (148 ft)
  - Maximum operating pressure : 20 bar (290 PSI)
  - Operating temperature range : up to 140 °C (291 °F)  
(special model for high temperatures : heat recovery system service at 230 °C (450 °F))
  - Higher capacities and heads upon request





**/ Design for the small sizes :**  
 - Radial flow hydraulic with diffuser  
 - Discharge through side branch

**/ VAS 150 - 32**  
*pump range Discharge size (in mm) Impeller diameter (in cm)*

**/ General design :**  
 Vertical turbine pump with discharge through column

**/ Hydraulics :**  
 - Impeller : mixed flow hydraulic with diffuser  
 - Absence of radial loads on colum bearing thanks to the concentric discharge bowl  
 - Axial loads fully balanced by front and rear casing wear rings  
 - Multistage design available upon request

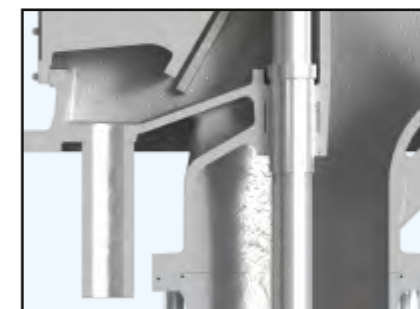
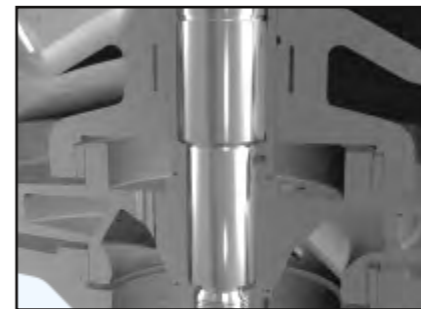
**/ Bearing :**  
 - Grease-lubricated ball bearings

**/ Lineshaft and shaft sealing :**  
 - Simple shaft sealing by throttle bush with liquid back to the tank  
 - Auxiliary packing rings to prevent acid vapors (for safety and maintenance)

- Mating surfaces are protected against acid corrosion for improved maintenance  
 - Threads protected by cap nuts and O-rings

**/ Standard materials of construction :**

Concentration range : 90 to 99,5%  
 Temperature range : up to 140 °C (291 ° F) :  
 - Pump casing in acid-proof cast iron or special stainless steel  
 - Sulfem® and special stainless steel for impeller, wear rings and shaft sleeves  
 - Sleeve bearings in ferro-silicium or special alloy  
 - Shaft made of duplex stainless steel, with FEP lining



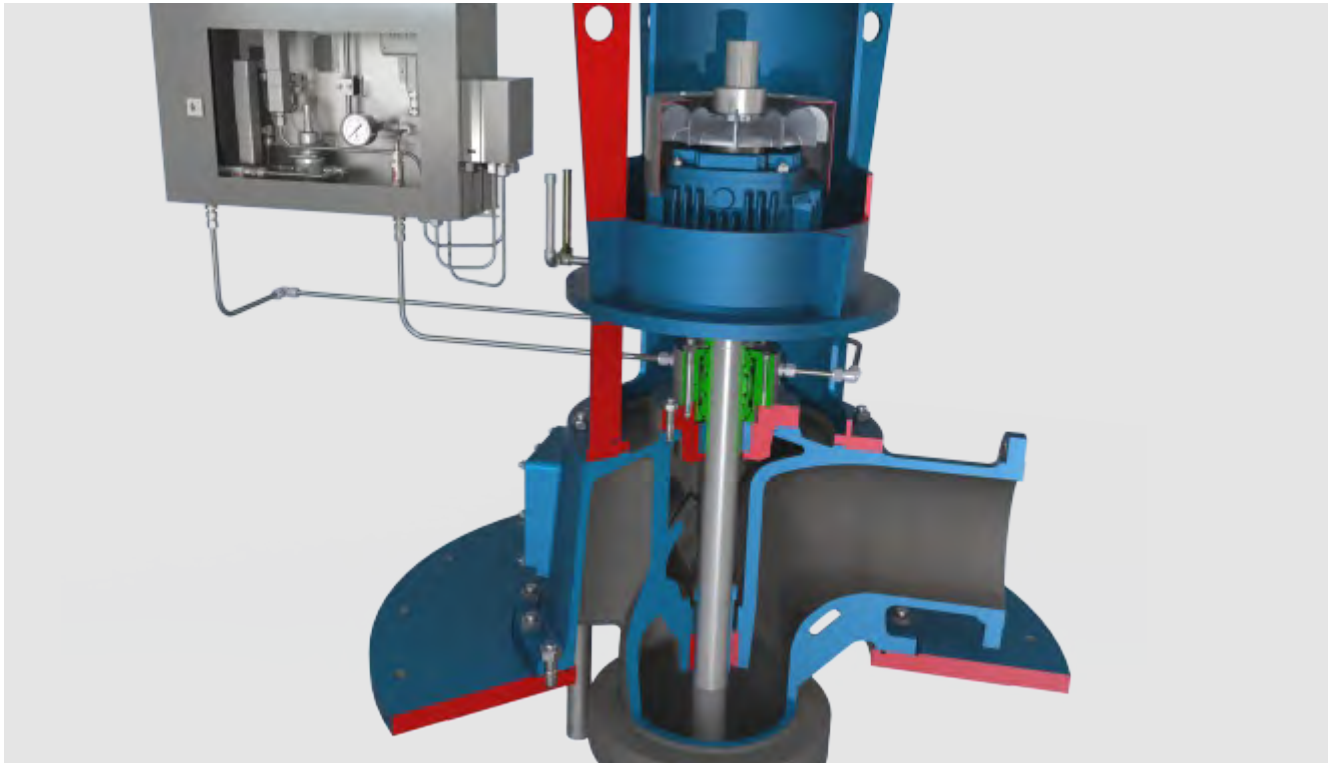
**/ Axial and radial balancing :**  
 Axial balancing by front and rear wear rings, radial balancing by multi-blade collector, minimising load on sleeve bearings.

**/ Return of the pumped fluid to the tank :** Acids leaks are collected and returned to tank. Thus avoiding contact with suspension pipes and consequently potential corosion.

**/ Protection of bolted assembly :** Mating faces fully protected against corrosion by three-fold sealing.

## VAS Pump for Heat Recovery System

Our engineered pump design for the Heat Recovery System applications offers the most reliable and safest pumping solutions for acids with high temperature up to 230°C and for the environment protection.



### / Key features of the VAS pumps for Heat Recovery System

#### / Sealing System :

Thanks our experience in severe oil and gas applications, Ensival Moret recommends two systems. Both systems ensure no contact between the pumped acid and the sealing system :

- **The safest solution with a double dry air pressurized mechanical seals**

This technology comes from compressors applications and provides maximum safety and reliability. The flow and the pressure are controlled in permanent way thanks to a monitoring panel.

- **Alternative solution with a cartridge mounted single mechanical seal with dry air pressurized lubrication**

For safety reasons, the minimum required system by Ensival Moret is a cartridge mounted single mechanical seal for easy maintenance and designed for a dry air pressurized lubrication as per API 32.

#### / Bearing :

- Oil lubricated bearing
- Air forced cooling system in order to avoid risks of overheating. The bearing is designed with efficient airfins and bearing fan to reduce temperature. In addition to a highly securised sealing system, the absence of water cooling set the VAS pump as the safest solutions for pumping acid with high temperatures.

#### / Materials of construction :

- Main parts in 310SS
- Sleeve bearings in high corrosion resistant materials





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