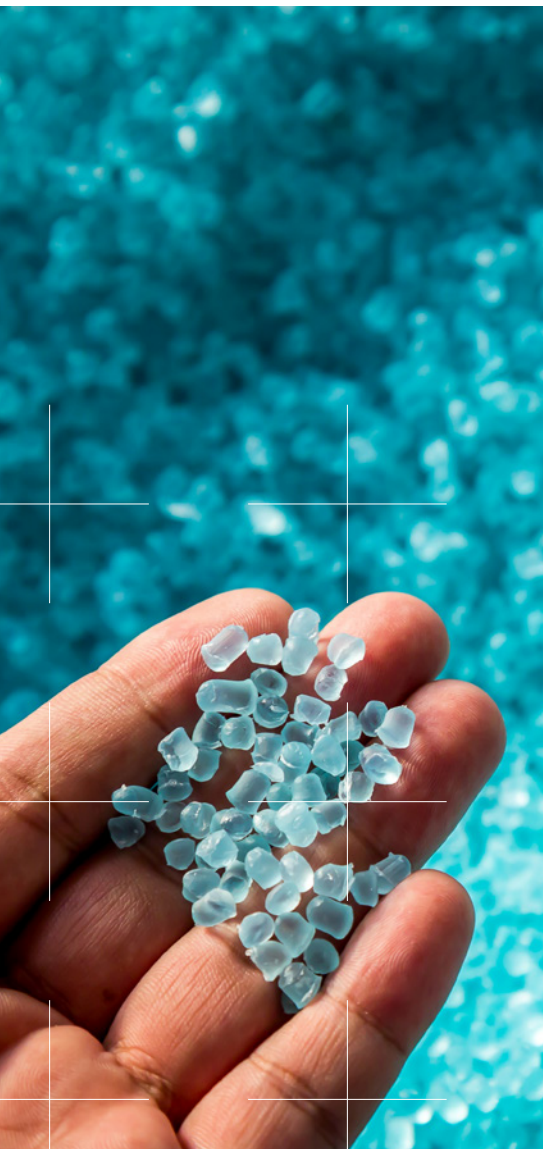


SULZER

Flow Equipment

Sulzer Ensival Moret
model AH axial flow
polyolefin loop reactor
pump



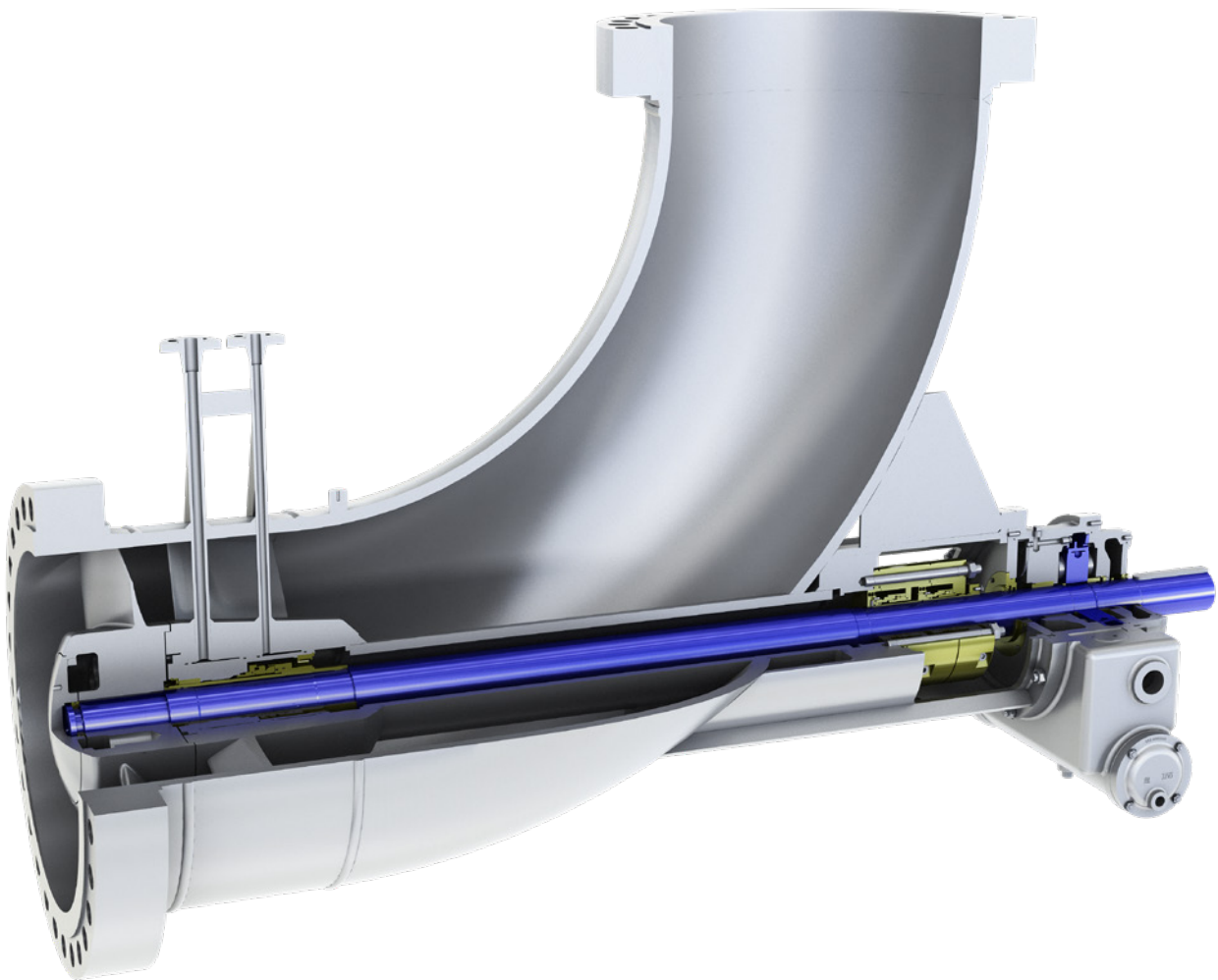
Main industries and applications

Sulzer Ensival Moret model AH high pressure pumps are designed for polyolefin loop reactor service. They are extensively installed in polyethylene and polypropylene loop reactors the world over.



Features and benefits

- API 610 design principles
- Flanged casing with optional weld neck design
- Oil lubricated antifriction bearings on smaller pumps with pivot shoe thrust bearing and integral cooler on larger pumps
- Two-vane high efficiency propeller supported by extra heavy-duty shaft
- Precision tolerances and clearances for reliable service
- Hand polished propeller and elbow passageways
- API610 seal chamber as standard with enhanced dimensions for special sealing systems
- Dual or triple seals with API32+52 or 32+52+53 seal support systems
- Spring mounted baseplate or optional mounting directly on reactor loop piping
- Nozzle load capacity exceeds API 610 Table 5
- API610 materials with additional special materials to suit process specifications



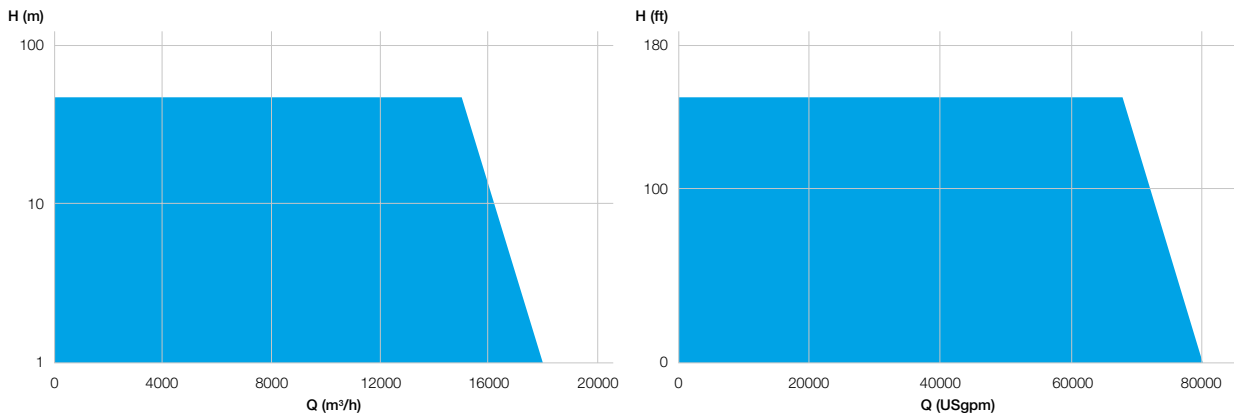
Materials

Material code	Material
LCB	Low temperature carbon steel casing and propeller with chrome moly, 304L or duplex stainless steel shaft
304L	304L stainless steel casing, propeller and 304L or duplex stainless steel shaft
316L	316L stainless steel casing, propeller and 316 or duplex stainless steel shaft
Options	Other materials available to meet specifications

Operating data

	SI	US
Flange sizes	up to 900 mm	up to 36 in.
Pump capacity	up to 18'000 m ³ /h	up to 80'000 USgpm
Head	up to 45 m	up to 150 ft.
Pressure	up to 100 bar	up to 1'450 psi
Temperature	-45°C to +200°C	-50°F to +400°F

Performance ranges



Reliability for low total cost of ownership

Our priority is customer satisfaction

Our state-of-the-art engineering and hydraulic design tools, together with quality manufacturing, and global customer support lead to minimum pump life cycle cost, high efficiency and reliability.

Sulzer continually invests on improving our product lines with strong focus on innovation, and research and development.

CFD analysis ensures optimum hydraulic performance and reliability

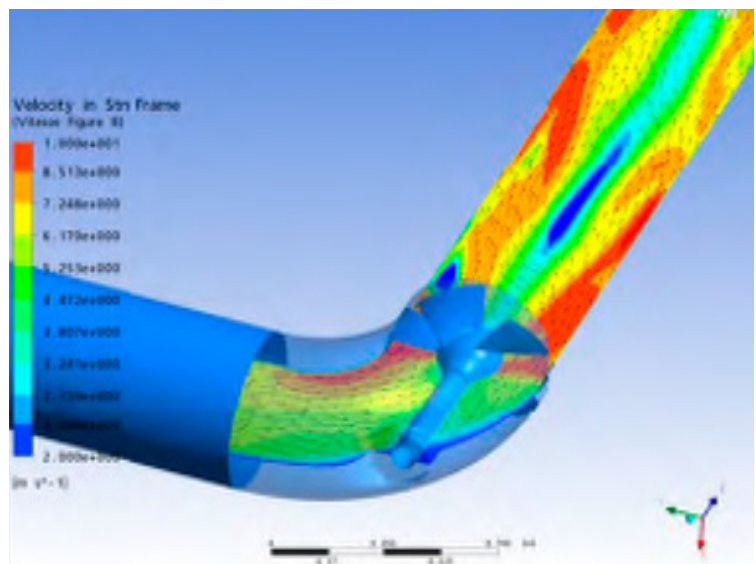
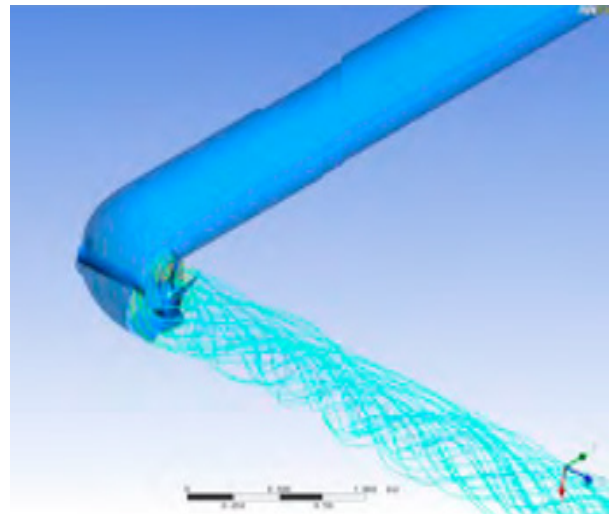
The high pressure AH loop reactor circulation pump is specifically designed for the loop reactor in polyolefin slurry processes.

These critical pumps are well suited to the circulation of slurry due to the large free passage between two adjacent blades.

The influence of solids content on the pump performance is also reduced in comparison with conventional centrifugal pumps.

Our pumps are designed and built to last

Sulzer engineers know that your process needs to be in a constant state of efficiency. As these pumps are critical items in the process and spares cannot easily be installed, we provide axial flow pumps achieving an expected maintenance interval of five years even in severe working conditions.



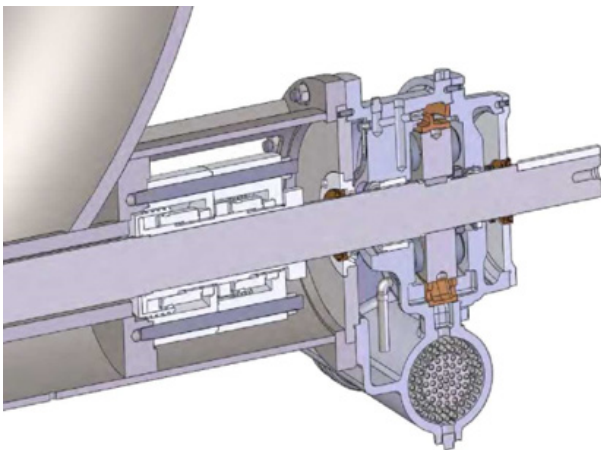
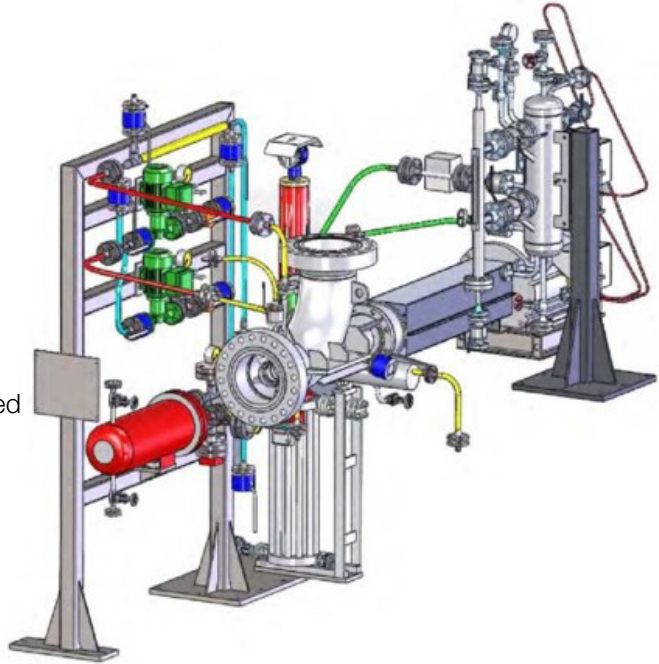
Proven designs for long meantime between maintenance

Sealing solutions

Due to the pressure fluctuations that may occur in the pump, it is essential that the design of the mechanical seal is optimized in order to ensure long term reliability. Sulzer works closely with its suppliers to target minimum service requirements and a five year life expectancy.

The seal configuration is designed in order to provide a high safety level, double or triple mechanical seal design are available with all constructions. All our sealing solutions are designed to handle the system pressure in the event of primary seal failure.

As the pumps are critical items in the process and spares cannot easily be installed, we provide axial flow pumps achieving an expected maintenance interval of five years even in severe working conditions.



Bearing construction

- Ball bearings for pump size < 12 inches
- Thrust bearing by tilting pads with integrated heat exchanger

The thrust bearing includes a bush bearing lined with babbitt (antifriction metal) supporting the shaft radially and a thrust disk rotating between the two sets of babbitt lined tilting pads positioning the pump rotor axially and taking up the high axial thrust.

Illustrated thrust bearing is fitted with an autonomous oil pump, the rotor of which is the thrust disk, while the ring surrounding this thrust disk acts as the stator.

The integrated heat exchanger ensures that the lubricating oil is maintained at the optimum operating temperature.

Sulzer's engineering and application expertise

Sulzer is one of the world leaders in state-of-the-art pumping solutions. Combining engineering and application expertise, our solutions add value and strengthen the competitive position of our customers.

Thanks to a global network of manufacturing facilities, sales offices, service centers and representatives, we can provide fast responses to customer needs.

With over 180 years of pump design and manufacturing experience, Sulzer has become a global supplier of choice in the centrifugal pump market, well respected among customers for its skilled support and expertise in specific pumps and pumping systems.

Constant collaboration with our customers and ability to draw from both Sulzer and Ensival Moret product and process experience, we are able to provide tailor made, high quality, reliable pumping solutions.

Together we are a full-line centrifugal pump supplier and are considered by our customers as a key partner in one of the most critical components in the polyolefin process.

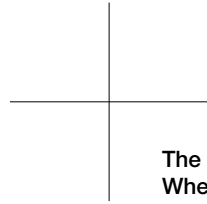
For customers with existing Sulzer HLTE pumps installed, we offer the options of maintenance and repair or complete replacement and upgrade to the latest AH pump design.



The axial flow circulator pumps for loop reactor



AH product manufacturing and testing plant in Leeds, UK



The Sulzer Flow Equipment division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.

The Flow Equipment division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.

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