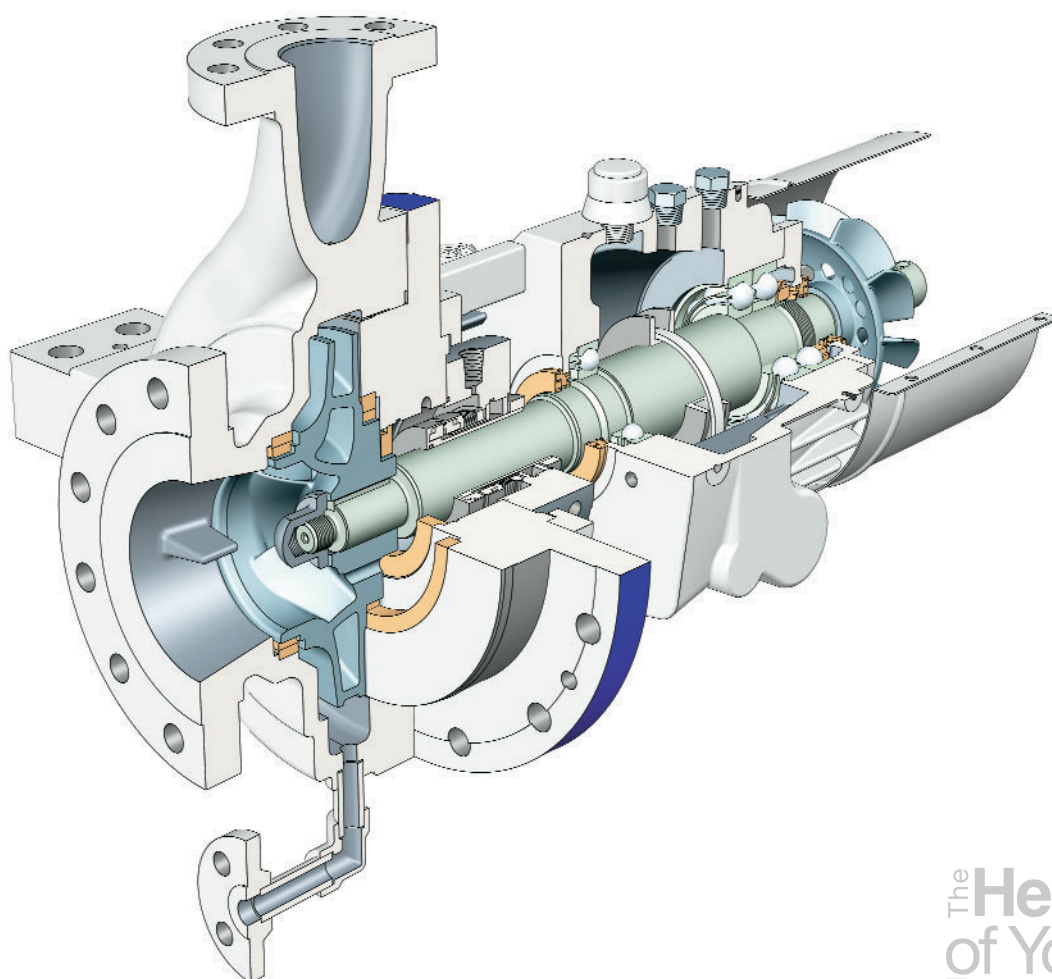


OHH Process Pump API 610 9th Edition (ISO 13709)



Sulzer Pumps

Sulzer Pumps combines more than 135 years of experience in pump development and manufacturing with a deep commitment to fully understand the needs of our customers.

Our detailed process and application knowledge has allowed us to develop innovative pumping solutions for our

focus segments including tailor made systems if required. Our active research & development supports the customer oriented approach.

Sulzer Pumps has sales and service facilities in all the major markets of the world to provide fast and flexible response and support.



Extensive Product Range

Sulzer Pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

- **Oil & Gas**
- **Hydrocarbon Processing**
- **Pulp and Paper**
- **Power Generation**
- **Food, Metals & Fertilizers**
- **Water and Wastewater**

Hydrocarbon Processing

Hydrocarbon extraction plants, refineries, petrochemical plants and gas plants operate sophisticated production processes requiring reliable pumping solutions. Continuous product innovations such as our new line of hermetically sealed, horizontal and vertical process pumps, are helping the industry improve its operational efficiency.

Sulzer Pumps, with its high-quality product line, is known for being able to consistently meet these expectations. All our pumps are engineered in line with the latest standards issued by API, ISO and ANSI in order to ensure reliable and safe operation at your site.

The Hydrocarbon Processing Industry is one of the core business segments within Sulzer Pumps. Following industry practice, we further subdivide the segment into:

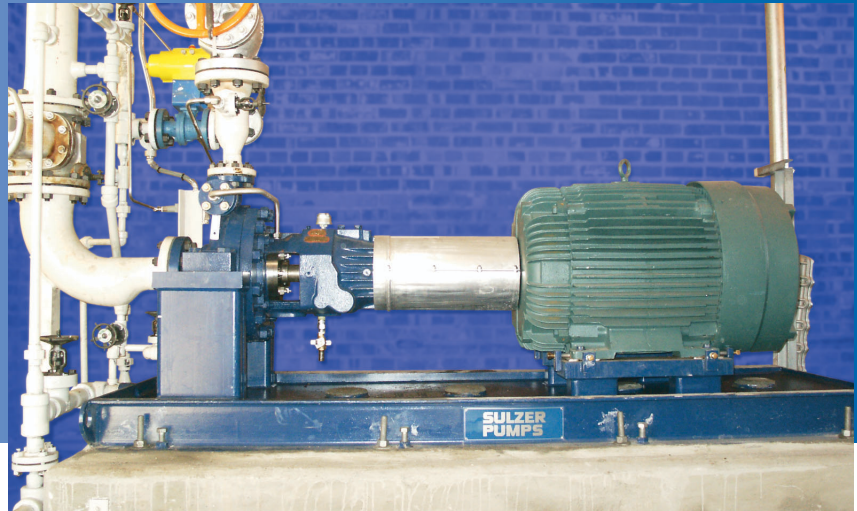
- Synfuels
- Refining
- Gas Processing
- Petrochemicals

The market and therefore our customers require speciality applications for each subsegment.



Product Development

Sulzer Pumps provides a broad range of API centrifugal pumps for the demanding applications of the Hydrocarbon Processing Industry. The OHH API 610 9th edition end suction process pump is a merger of the American designed CAP8 and the ZE/ZF, its European designed sister.



Evolving Industry Standards

The OHH takes the best features of the CAP8 and ZE to provide the largest proven hydraulic range in the industry – over 70 sizes. Standard impellers are 11,000 Nss or less. Most sizes have an option for lower NPSHr hydraulics. The existing world renowned bearing frame was further improved by fitting a low noise cooling fan and options such as magnetic oil seals and monitoring instrumentation. This makes the OHH the first API end suction process pump to fully comply with the API 8th and 9th edition / ISO 13709 standards.

The OHH overhung process pump includes the latest in mechanical seals technology and is used in heavy-duty refinery services, petrochemical plants, gas processing and offshore services. It is a horizontal, single-stage, radial-split, centerline mounted process pump. The mechanical seals and auxiliaries supplied are in full compliance with the requirements of API 682 1st and 2nd edition / ISO 21049.

The fluids pumped include sour water, gasoline, light hydrocarbons, and vacuum bottoms. The customers benefit from the robust construction, the versatility in application, and the long reliable service life.

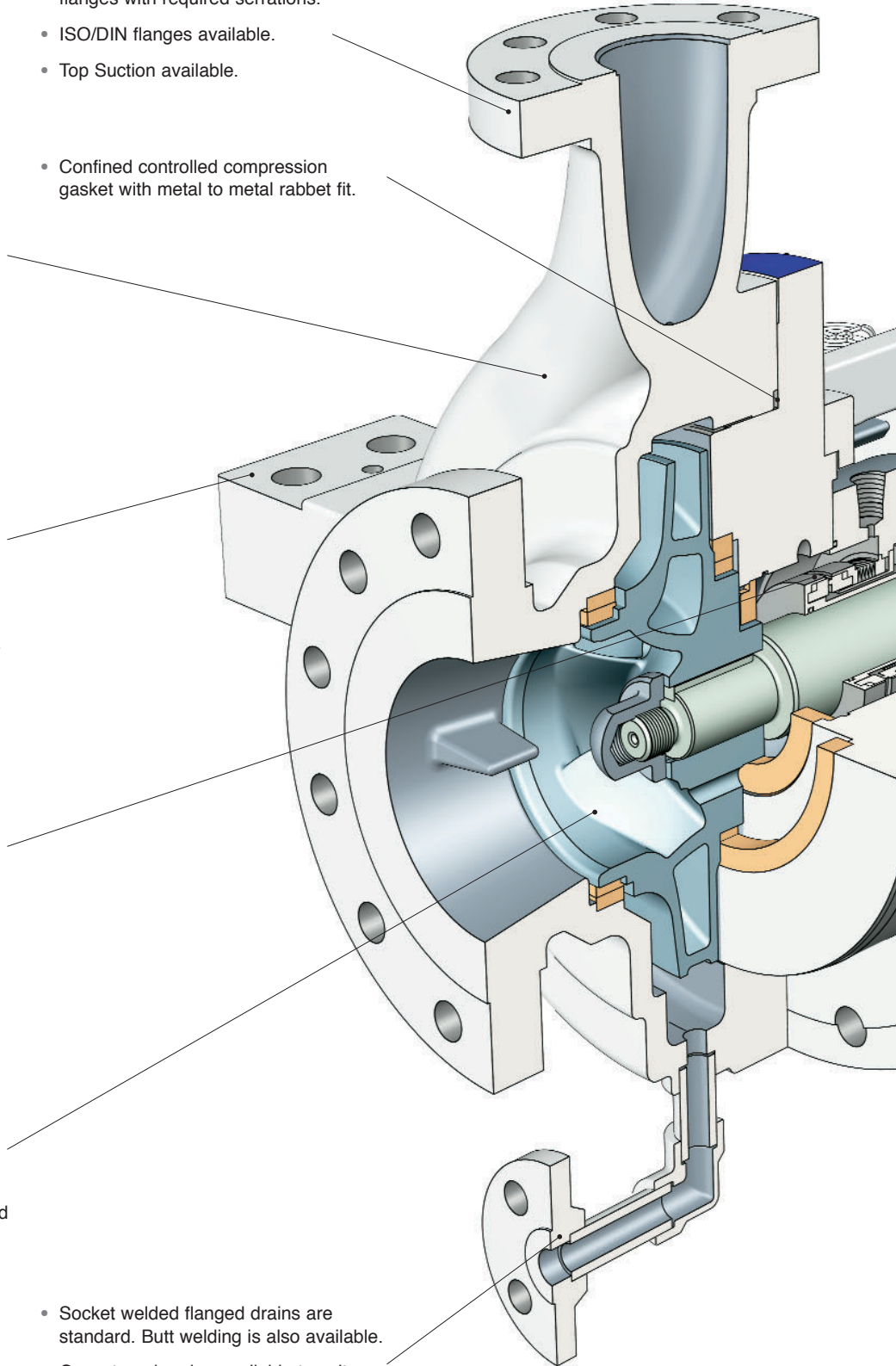
A wide performance range provides for an optimized hydraulic fit, thus ensuring operation within close proximity to the best efficiency point.

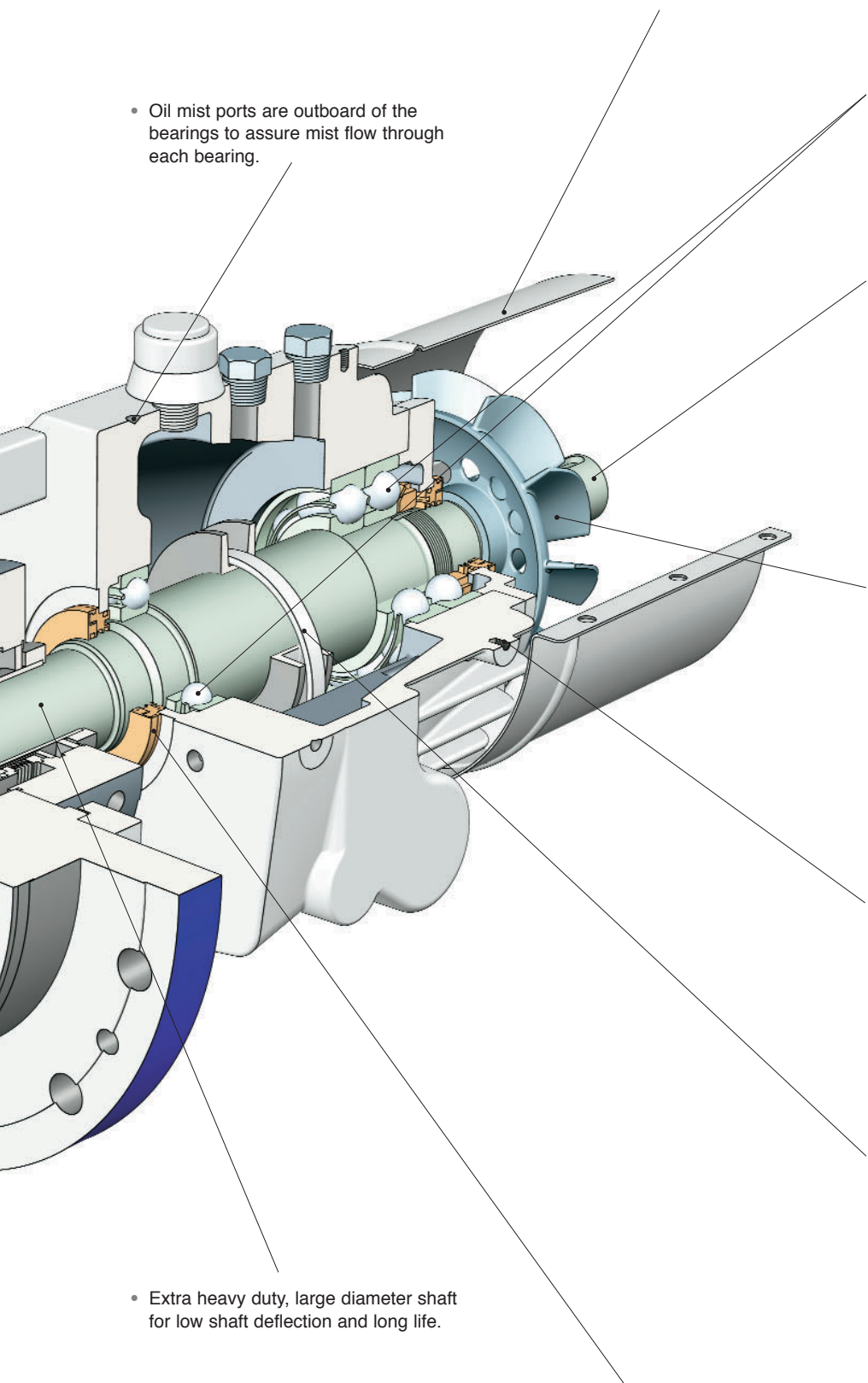
A fully integrated global supply chain is integral to the OHH range. A specialized manufacturing facility supplies “bare shaft” pumps into local packaging facilities. From there they are packaged on a baseplate including piping, instrumentation, drivers etc., prepared for final customer inspection and shipped to site. Consistently meeting customer requirements has earned Sulzer the confidence of the industry.



Design Features and Benefits

- Pressure boundary components designed to ASME Section VIII.
- 3mm (1/8") corrosion allowance.
- Self venting, centerline discharge.
- Double volutes for larger sizes.
- Casing mounting feet and baseplate designed to meet API 610 (ISO 13709) nozzle loads.
- 2 x API nozzle load option available depending on size.
- Non-grouted or pre-grouted baseplates available for motor or steam turbine drivers.
- API 610 defined baseplate dimensions are standard. Similar designs and standards are used where larger bases are required to accommodate oversized pumps or drivers.
- API 682 1st and 2nd edition (ISO 24109) seal chambers and flush piping for improved seal life.
- Single or dual cartridge type mechanical seals available to meet all process requirements.
- API 610 cooling water plans available.
- Over 110 different hydraulics.
- Enclosed impellers provided for increased efficiency.
- Optional impellers in most sizes for lower NPSHr.
- Dynamically balanced impeller.
- Wear rings and balance holes optimized to maximize seal and bearing life.
- Proven Coke Crusher available for coking applications.
- Backfaced ANSI B16.5 300#R.F. flanges with required serrations.
- ISO/DIN flanges available.
- Top Suction available.
- Confined controlled compression gasket with metal to metal rabbet fit.
- Socket welded flanged drains are standard. Butt welding is also available.
- Gussets or bracing available to suit customer specifications.





- The standard coupling guard meets API 610 and OSHA requirements. Other types of guards are available.

- Oil mist ports are outboard of the bearings to assure mist flow through each bearing.

- Thrust bearings are back to back, 7300 series, heavy duty 40 deg. angular contact with machined brass cages.

- Ball radial bearing has C3 clearance required by API 610.

- Variety of nonlubricated couplings available to comply with API 610 & customer requirements.

- 4 Sizes of bearing housing cover the entire product line for maximum interchangeability.

- For high ambient or operating temperatures, a low noise fan is added.

- For extremely high operating temperatures a predefined list of features is available to meet the most difficult conditions.

- For cryogenic or low ambient conditions, an oil sump heater is available.

- Carbon steel bearing housing is finned for added heat dissipation and API 610 compliance.

- A variety of instrumentation is available for condition monitoring.

- The oil ring is located in a deep groove retainer to assure it does not become displaced and rub the interior of bearing housing.

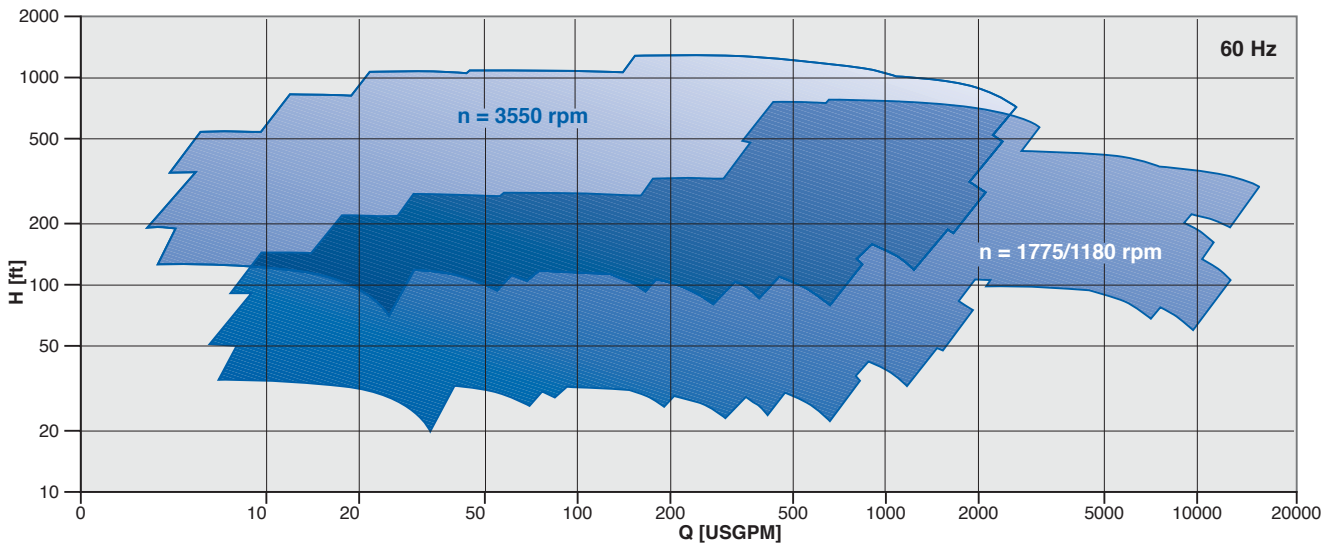
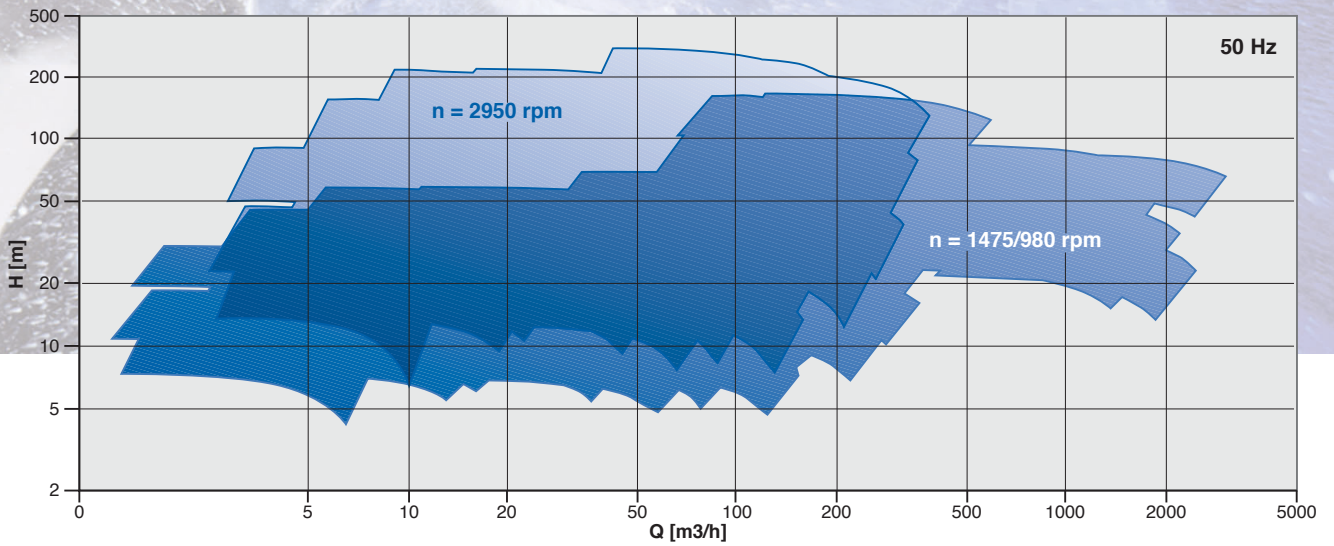
- Bearing housing oil channel routes lubricant to the rear of each bearing assuring adequate oiling under difficult operating conditions.

- Ports for purge mist and pure mist lubrication are standard.

- Extra heavy duty, large diameter shaft for low shaft deflection and long life.

- Nonmetallic, bronze, SS, INPRO™ or magnetic type oil seals are available to meet a variety of customer requirements.

OHH Performance Range



Operating Data

	OHH	
Pump Sizes	25mm to 400mm	1" to 16 inches
Capacities	up to 2,250 m³/h	up to 10,000 usgpm
Heads	up to 330 m	up to 1,100 feet
Operating pressures	up to 52 bar	up to 740 psi
Operating temperatures	-40°C 60 460°C	-40°F to 800°F



Quality and Environment

Reliability and availability of pumping applications and equipment depends on the quality of its design, technical consultancy and manufacture. To achieve these goals, a Quality Management System covering all operations is essential. This covers not only our internal operations but also our relationship with the customers. Our innovative products and services create high lifecycle value for our customers. We monitor our customer satisfaction in accordance with a planned procedure, and we utilize the feedback to improve our processes. In manufacturing operations Quality Assurance (QA) begins with contract review and continues throughout the process in a planned and controlled way.

Our globally recognized Quality Management System complies with national and international standards using ISO 9001:2000 as its basis. All our manufacturing locations are

certified in accordance with this international standard. Ongoing training and internal and external audits ensure that all standards and procedures are maintained by our companies around the world.

In today's highly competitive business environment, having products that fulfill our customers' expectations and specifications is fundamental. At Sulzer Pumps, we win the confidence of our clients by the quality of our products and services.

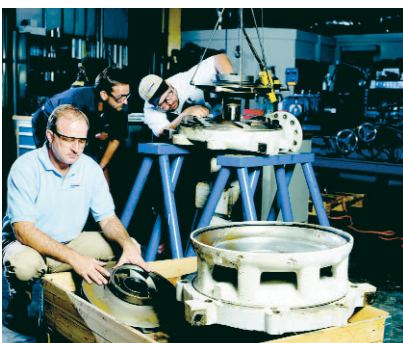
The environment as a strategic component

Sulzer Pumps aims for sustainable development; we intend to satisfy today's requirements without eroding the livelihood base of future generations. Total Quality means satisfying customer's requirements in the most economic way by using the fewest possible resources of every kind.

Our definition of Total Quality already embraces the concept of eco-efficiency:

- Reduce material intensity
- Reduce energy intensity
- Reduce emissions and waste
- Extend product durability
- Enhance material recyclability
- Maximize sustainable use of renewable resources

Sustainability is only achievable by integrating environmental aspects into product development as well as into day-to-day operations.





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