

## **AHLSTAR<sup>UP</sup> – Better Pumping Efficiency for Food, Metal and Fertilizer Industries**



# Unrivalled Experience in the Processing Industry

## Sulzer Pumps

Sulzer Pumps is a leading global supplier of reliable products and innovative pumping solutions for end users. Our active research and development, detailed process and application knowledge together with a comprehensive understanding of market demands keeps us consistently at the leading edge of technical development. Our global network of modern manufacturing and packaging facilities together with sales offices, service centers and representatives located close to major markets provide fast responses to customer needs.

Sulzer Pumps is active serving business partners in the following industries:

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

## Process Know-how

Sulzer Pumps' expertise in the food, metal and fertilizer industries has been acquired through long experience and recognition of our customer's needs and requirements. We offer a range of process pumps, special pumps, mixers and agitators for producers of sugar, starch, sweeteners, bioethanol, edible oil, copper, nickel, zinc, aluminium, steel, phosphoric acid, nitric acid, sulphuric acid and multinutrient fertilizers. By working in close co-operation with our customers, and by getting fully involved in the intricacies of the processes we are able to select and provide the correct solutions. By this we mean not only the right pump, but also the most suitable pump material, the correct seals, pumping efficiency and everything needed to ensure long working-life and reliability.

## Total Production Facilities

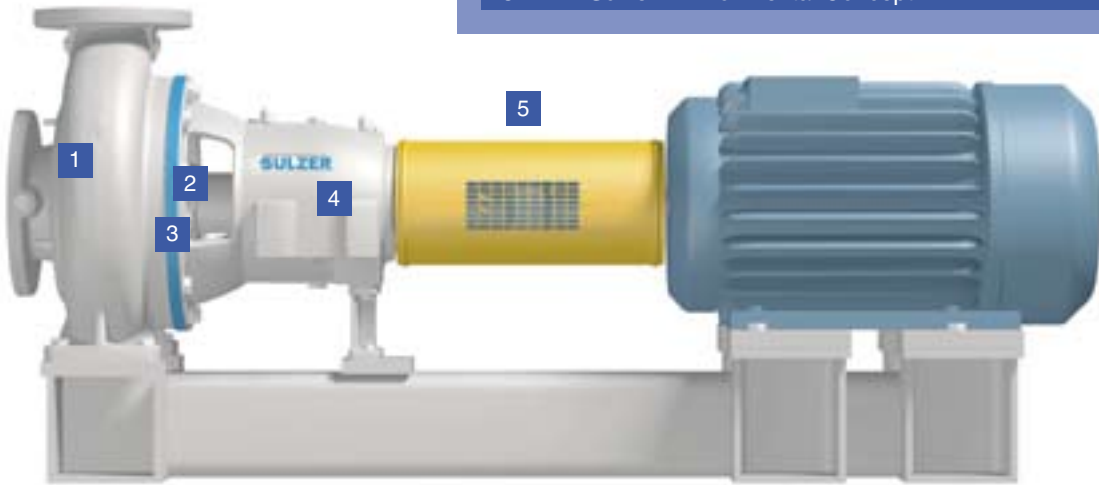
Sulzer Pumps has its own foundries giving us the capacity to develop and manufacture a range of different materials for protection against corrosion and wear. We specialize in producing different grades of corrosion-resistant cast steels, martensitic, austenitic and duplex. Our newest material, austenitic cast steel Avesta 654SMO demonstrates the high technical competence of our foundries. We also have the ability to manufacture pumps from special materials such as Hastelloy. We are total producers, designing and making everything ourselves.



# Real Innovations... True Benefits... Better Performance

The following concepts are innovations that have been developed and utilized to ensure optimal performance.

1. Sulzer EnerSave™ Impeller (A series)
2. Sulzer WaterLess™ Shaft Seal Concept
3. Sulzer Selfprime & Degas™ Concept
4. Sulzer Bearing Unit Concept
5. Sulzer Environmental Concept



## Sulzer EnerSave™ Impeller

New A Hydraulics. For the pumping of clean, abrasive and erosive liquids.

## Sulzer WaterLess™ Shaft Seal Concept

Shaft sealing without external sealing liquid. The pump can be fitted with two types of shaft seals which do not need sealing liquid: dynamic seal or single mechanical seal. The need for sealing liquid in a double mechanical seal has been minimized. Other sealing options are also available.

## Sulzer Selfprime & Degas™ Concept

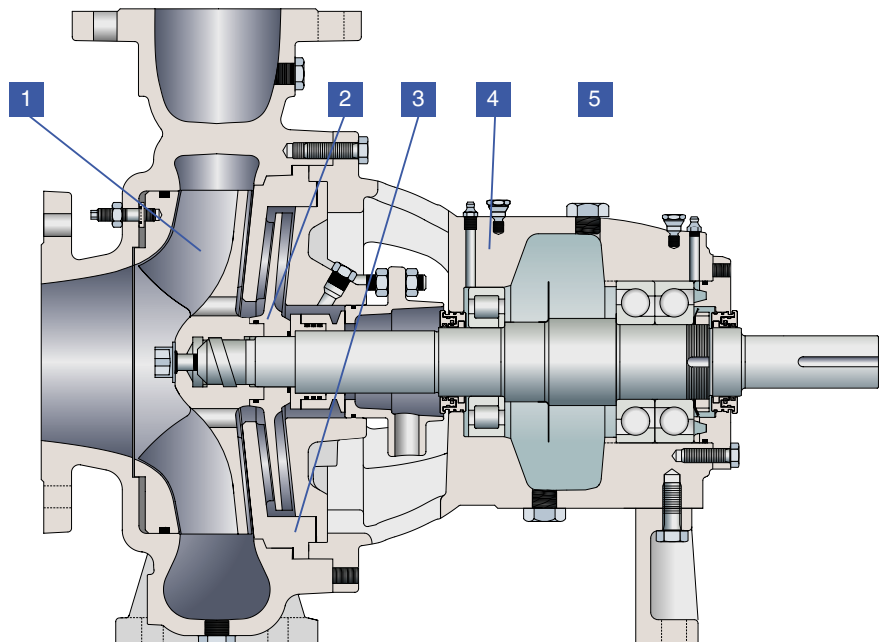
Degassing and self-priming pumps are designed for the pumping of liquids which contain much air or gas and for applications where the inlet pipe is occasionally empty.

## Sulzer Bearing Unit Concept

Grease lubrication - max. temperature of the pumped liquid 120° C.  
Oil lubrication - max. temperature of the pumped liquid 180° C.

## Sulzer Environmental Concept

Saving more than just money.

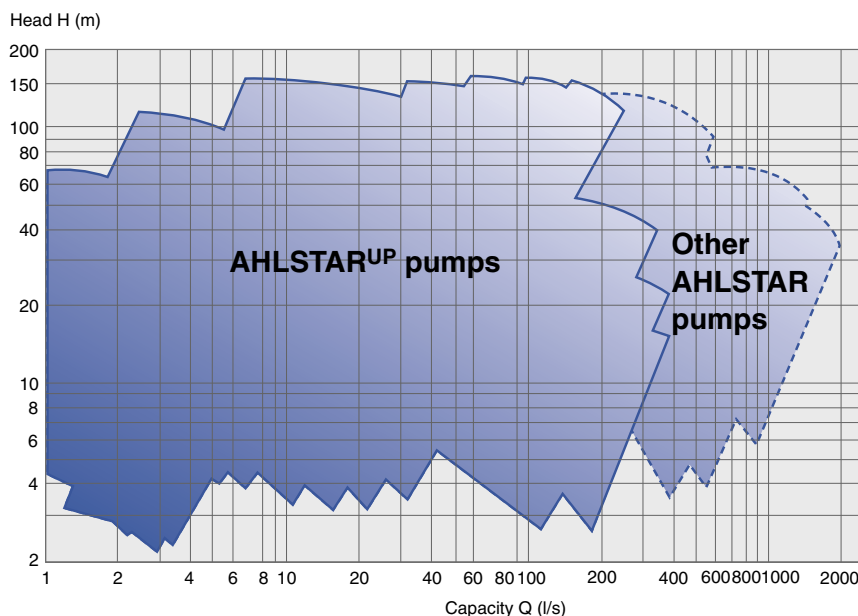


# Sulzer EnerSave™ Impeller

Sulzer Pumps' expertise in hydraulics is the result of years of pumping experience. We employ systematic and constant compilation and analysis of hydraulic data, and the very latest computing methods - all of which have been utilized in developing the pumping hydraulics for the AHLSTAR<sup>UP</sup> A-series.

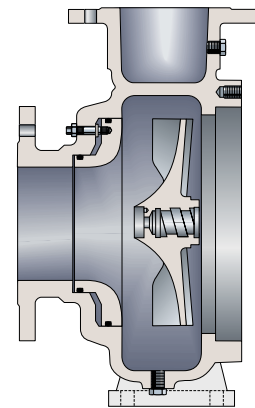
- High efficiency over a wide performance range results in lower energy consumption.
- Larger performance range and optimum hydraulic coverage means reduced total energy consumption.

- Externally adjustable side plate (pat. pending) maintains constant savings on energy consumption.
- Excellent suction capability and low NPSHr over a wide performance range means that the pump can be used at low inlet heads.
- The strong, rigid design and smooth hydraulic shape means reduced wear and longer working life.
- The self-locking ROTOKEY impeller mounting provides strong and reliable power transmission. It also facilitates the easy installation and removal of the impeller.



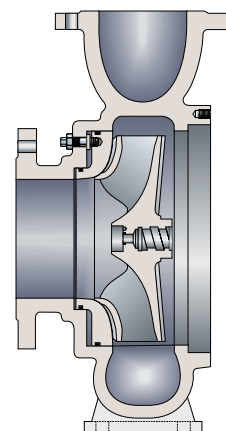
## N Hydraulics

The non-clogging AHLSTAR<sup>UP</sup> N-series pumps are intended for pumping liquids containing large or long solid particles. In applications where normal process pumps cannot operate in a reliable or stable manner because of abrasive particles and/or clogging problems, the N-series pumps provide an effective solution.



## W Hydraulics

The AHLSTAR<sup>UP</sup> W-series pumps feature specially designed wear-resistant hydraulics with materials that can withstand the most abrasive and erosive pumping applications. These include the pumping of lime milk and mud.



### The AHLSTAR<sup>UP</sup> series (A, N and W pumps)

Dimensions:	EN 22858:1993 (ISO 2858:1975)
Design:	EN ISO 5199:2002
Pressure:	to 1.6 MPa depending on material and size
Flange drilling:	several options according to valid standards
Frequency:	50 Hz and 60 Hz

# Sulzer WaterLess™ Shaft Seal Concept

It is estimated that the majority of pumping problems are due to shaft seal failures. This has a heavy impact on the lifetime costs of the pump.

In the new AHLSTAR<sup>UP</sup> series of pumps, these costs are minimized. To achieve this, particular attention has been paid to the shaft sealing and to the control of flow and

pressure in the sealing area (pat. pending). The result is a dependable shaft-sealing concept that is more reliable and stable throughout the entire performance range.

The concept includes the following shaft seal solutions, all of which save external sealing liquid:

- Dynamic seal – no external sealing liquid
- Single mechanical seal – no external sealing liquid
- Double mechanical seal – minimized need for external sealing liquid

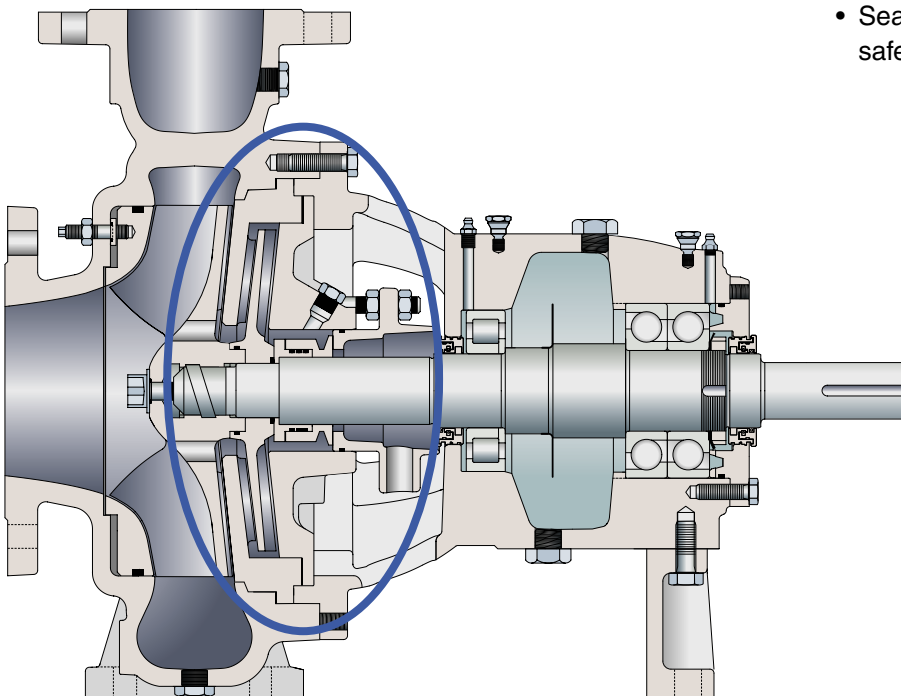
Also gland packing available for traditional applications.

## Sulzer Dynamic Seal

Sulzer Pumps has been developing and utilizing dynamic seals for almost 20 years. The dynamic seal employed in the AHLSTAR<sup>UP</sup> pumps is the culmination of this work and experience. This non-

contact seal solution is practically maintenance-free. It also features a new and innovative static seal that provides a level of reliability at standstill previously unattainable in dynamic seals (pat. pending).

- No external sealing liquid needed
- No sealing liquid piping or instruments required
- No leakage
- No sealing liquid treatment costs for clean water production and wastewater treatment
- Fast and easy installation with no measuring needed
- Seal guard provides greater safety



# Sulzer Selfprime & Degas™ Concept

Gas, in most cases air, is inevitably present in liquids being pumped and is a constant cause of pumping disturbances. Sulzer Pumps' extensive expertise and experience in pioneering solutions to these gas-related pumping problems, lies behind this new degassing concept.

The AHLSTAR<sup>UP</sup> pumps incorporate this concept and deal effectively with the pumping of liquids containing air or gas (Fig. 1 and 2), as well as with situations where

the inlet pipe is occasionally empty (Fig. 3). Conventional centrifugal pumps tend to fail in such applications because of the disturbance caused by gas bubbles accumulating at the impeller eye.

The AHLSTAR<sup>UP</sup> pumps have an internal or external vacuum pump to remove these gas bubbles, or they are removed as a result of sufficient inlet pressure. This effectively eliminates instability within the pumping system and process.

Gas removal pump eliminates pressure and flow fluctuations for stable operation

- The need for antifoaming agents is greatly reduced.

Internal vacuum pump provides self-priming and gas removing capability

- The pump can replace a maintenance-demanding vertical pump or submersible pump.
- Easy maintenance because of its dry mounted horizontal design.

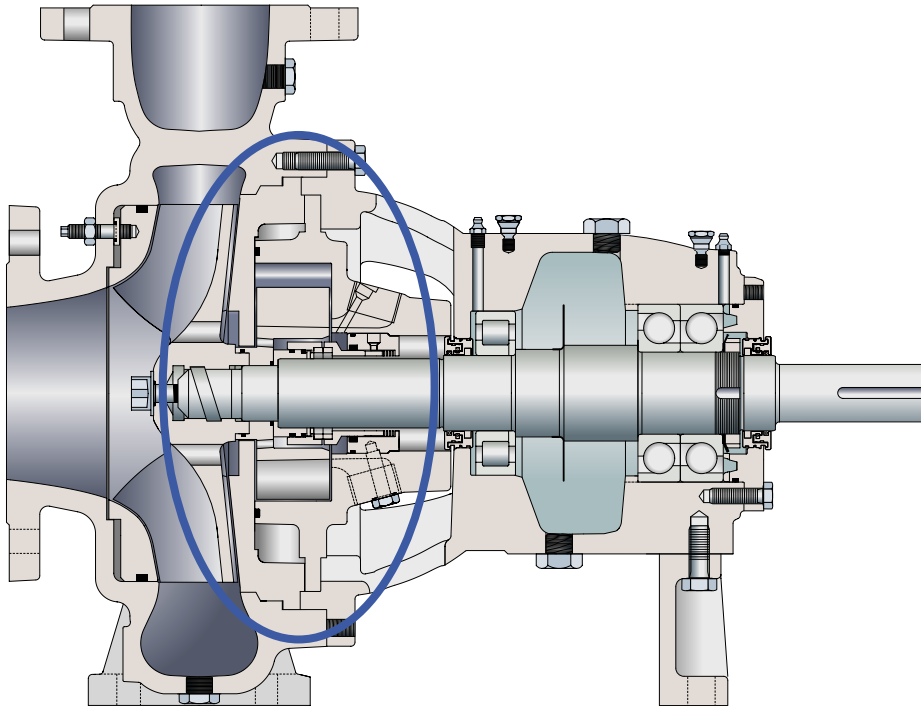


Fig. 1



Fig. 2



Fig. 3

## Sulzer Bearing Unit Concept

- Strong oversized bearing arrangement.
- Excellent sealing of the bearing housing covers prevents water from entering and eliminates the need for a separate deflector.
- No wear is applied to the shaft.
- Duplex stainless steel shaft provides rigidity and minimal deflection (less than 0.05 mm) at the shaft seal area.
- Sturdy bearing support foot provides solid mounting and prevents deviations in coupling alignment.
- Quick and easy installation minimizes downtime.

## Pump Materials

Stainless Steel Design		Sulzer Code
Duplex	ASTM A890 Grade 3A	41
	ASTM A890 Grade 1B	4L
	ASTM A890 Grade 5A	4T
Austenitic	AVESTA 654 SMO <sup>1)</sup>	4U
	ASTM A747 Grade CB7Cu-2	4E

Cast Iron Design		Sulzer Code
Cast iron	ASTM A48 CL 35 B	53
Chromium iron <sup>2)</sup>	A532 IIIA	5B

Other corrosion resistant cast steels available on special request.  
 1) AVESTA 654SMO is a trademark owned by Outokumpu Stainless which has granted Sulzer Pumps to produce this material.  
 2) For W hydraulics.

## Lifetime Service Solutions for the AHLSTAR<sup>UP</sup> Pump

The significant performance improvements featured in the new AHLSTAR<sup>UP</sup> series, together with the innovative design features, offer extended lifetime, higher availability and easy maintainability. Furthermore, the back pullout construction and highly modular structure of the AHLSTAR<sup>UP</sup> series mean that current pumps can be easily upgraded to achieve, for example, increased capacity or reduced energy consumption.

When maintenance of the AHLSTAR<sup>UP</sup> pump is necessary, the use of original spare parts ensure high availability and performance. Spare part needs for this series of pumps are low however, thanks to the compact but sturdy structure and the best-in-class interchangeability of the parts. This also provides easy optimization of spare part inventories.

We support our pump users with full range of pumping services, covering activities from installation services to troubleshooting and remote monitoring. Additionally, our innovative service concepts such as the Exchange Unit service program, Service Kits, and the Optimized Inventory Concept (InvO), together with our Extranet based PumpsOnline eBusiness solution, provide extra pump maintenance efficiencies.





Check our worldwide offices at  
[www.sulzerpumps.com](http://www.sulzerpumps.com)