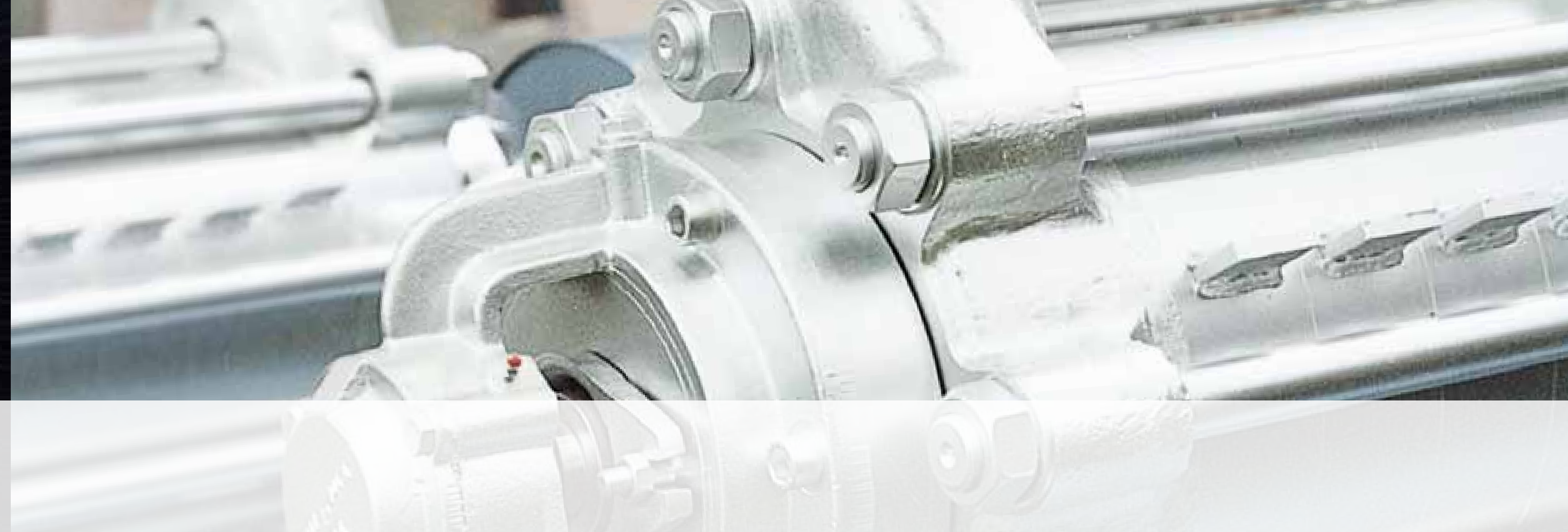
Modular multistage pumps SIHI[multi]

SIHI



SIHI^{multi} Reliable under Pressure ...

Design and manufacture of high quality multi-stage pumps for almost 100 years strengthens the ability of SIHI to provide customer centric solutions on a global scale.

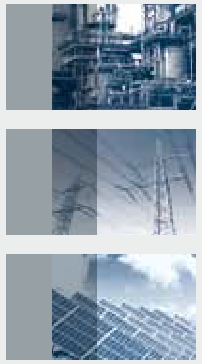
Application knowledge and consultation form the basis of optimized product selection, simple process integration, and long-term reliability.

Life-Cycle Cost understanding is fundamental to the optimization of: Power consumption; Integration; Reliability, and; Maintenance, throughout the concept-to-integration process.

Ongoing innovation underpins customer satisfaction, continual improvement, and ensures that the strong SIHI client base benefits from the latest proven technology.

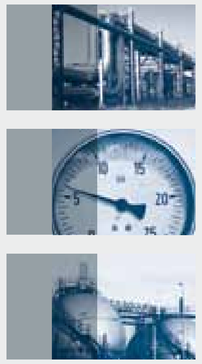
Senior-level project management, communication, and product excellence from the SIHI team results in simple and timely integration of any engineered systems.

Customised high-quality systems range from small boiler feed skids through to extensive power-station systems complete with onerous instrumentation, FAT testing, documentation, and site commissioning.



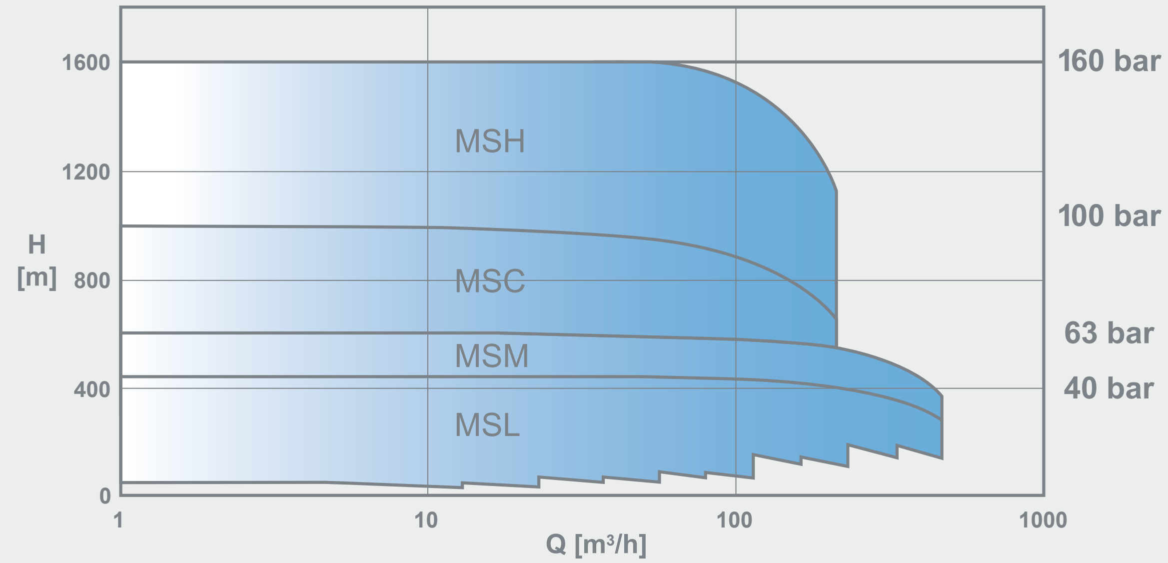
Industries/Markets

Bio-Energy
Power Generation
Water Distribution
Steel Production
Geo-Thermal
Solar Energy
Irrigation
Bio-Fuels
Oil Transfer
Chemical Processing



Applications

Boiler Feed
Pressure Boosting
Reverse Osmosis
Cleaning
De-scaling
Cooling
Vehicle washing
Drainage
District Heating
Condensate Systems



The SIHI^{multi} range of horizontal, ring-section multistage pumps have been designed for long-term reliability when pumping high pressure liquids.

Patented design features within this range of high pressure pumps, provide our customers with unique solutions to long term concerns about power consumption, efficiency, and reliability.

Meeting the technical requirements of ISO 5199/EN25199, they have a modular concept in order to reduce the number of parts, and consequently our customers' inventory.

Premium levels of efficiency are available by selecting an appropriate set of impellers and diffusers that give an ideal fit to the process requirement.

Unique to the multi-stage arena is the, SIHI patented drum-and-disc style of axial thrust balancing. The MSL, MSM, and MSC all employ a device that reduces the bypass flow to an absolute minimum, while not being susceptible to long(er) term wear-sensitive clearances.

With pressures up to 160 bar, the MSH range accommodates axial thrust by a design that combines a balance drum and disc. Lift-off device options are available for applications with frequent stop-starts.

Flexible options

+ Variable speed drive
+ Condition monitoring SIHI^{detect}
+ Interstage discharge
+ Mechanical sealing
+ High end sealant systems
+ Bypass valves
+ Distributed Control System (DCS)
+ ...

Reducing Life-Cycle Costs ...

Reduced Power Consumption

+ Enhanced hydraulic efficiency
+ innovative axial thrust balancing device

Improved Reliability

+ Minimised wear
+ Reduced inventory
+ Low NPSH
+ Low velocity sleeve bearing
+ High stage quantity vs diameter ratio

Easy Maintenance and Operation

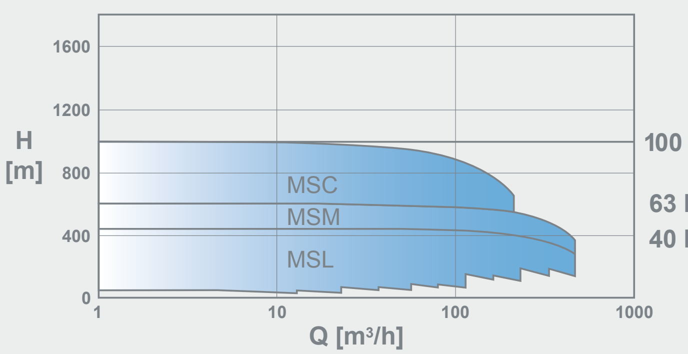
+ Simple dismantling and assembly
+ Only one shaft seal
+ Easy commissioning

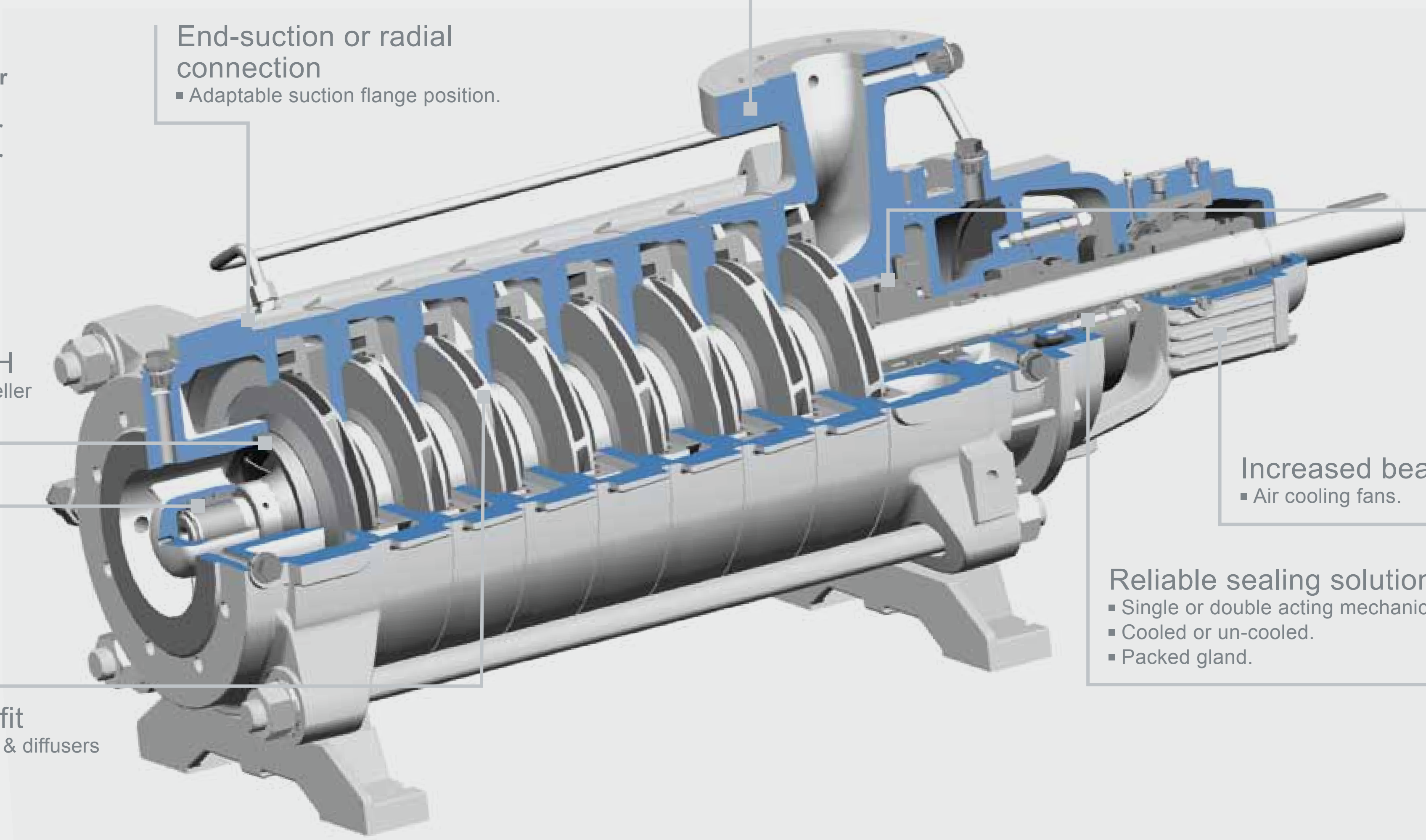
Global Support Network

+ Local Service Centres around the world

SIHI*multi* Type MSL, MSM, MSC

Performance Range

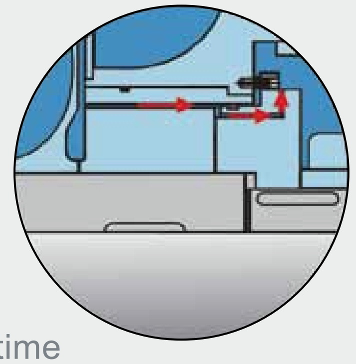




Adaptable discharge connection
- Varying radial flange positions.

End-suction or radial connection
- Adaptable suction flange position.

Long-term premium efficiency
- Patented drum-and-disc style of axial thrust balancing.
- Reduced internal bypass flow, and associated losses.
- Long-term bypass flow regulation.
- Eliminated tight wear-sensitive clearances.



Reliability with low NPSH
- Enhanced first stage suction impeller size and geometry.

Increased bearing life time
- Air cooling fans.

Only one shaft seal
- Self-adjusting sleeve bearing with forced product lubrication.

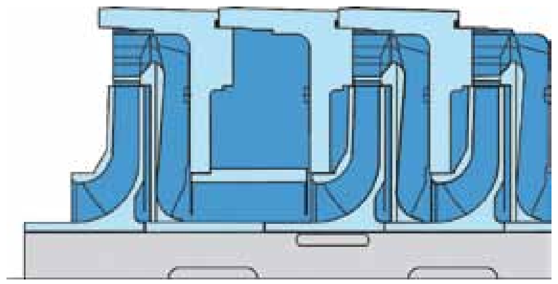
Reliable sealing solutions
- Single or double acting mechanical seals.
- Cooled or un-cooled.
- Packed gland.

Optimum process fit
- Modular sets of impellers & diffusers for perfect duty match.

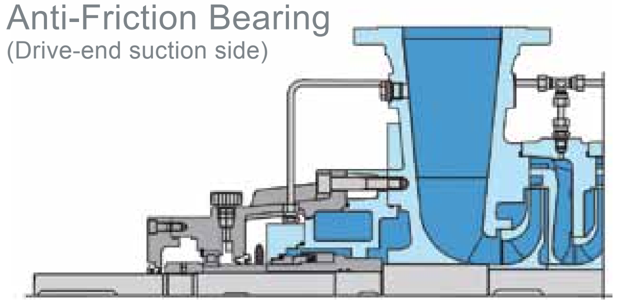
Combining the benefits of balance drum *and* disc… Patented by SIHI

Options

Blank Stage

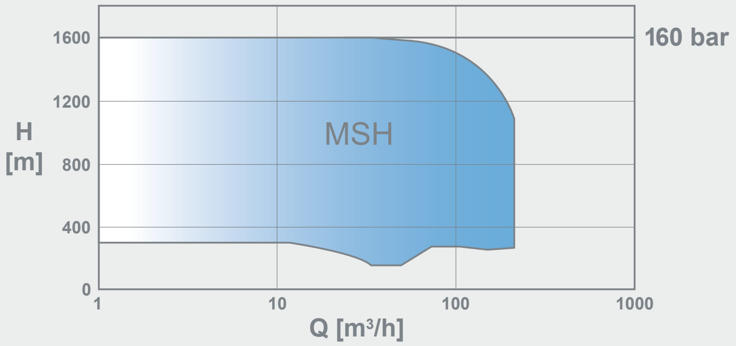


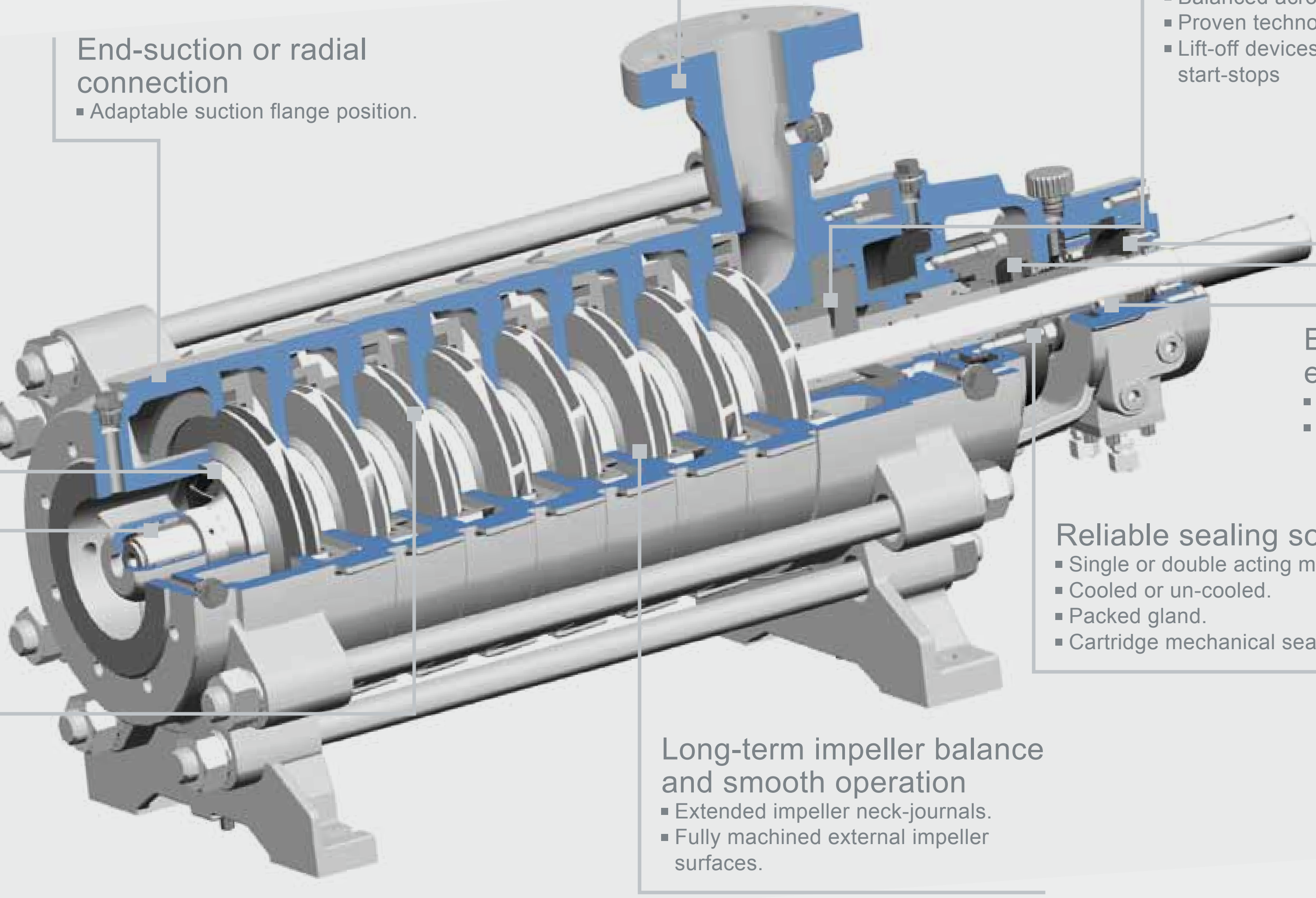
In-and-Outboard Anti-Friction Bearing
(Drive-end suction side)



SIHI*multi* Type MSH

Performance Range





Adaptable discharge connection
- Varying radial flange positions.

Long-term premium efficiency
- Combining drum and disc technology
- Balanced across the operating range
- Proven technology
- Lift-off devices available for frequent start-stops

End-suction or radial connection
- Adaptable suction flange position.

Labyrinth Seals
- Bearing protection for extended life.

Reliability with low NPSH
- Enhanced first stage suction impeller size and geometry.

Extended bearing life at elevated temperatures
- Oil lubricated roller bearing.
- Labyrinth seals.

Only one shaft seal
- Self-adjusting sleeve bearing with forced product lubrication.

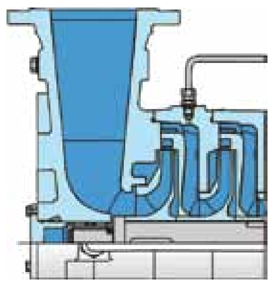
Reliable sealing solutions
- Single or double acting mechanical seals.
- Cooled or un-cooled.
- Packed gland.
- Cartridge mechanical seals.

Optimum process fit
- Modular sets of impellers & diffusers for perfect duty match.

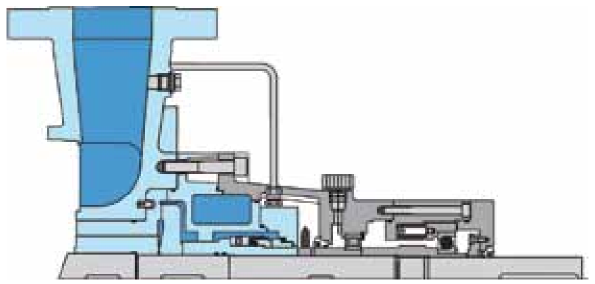
Long-term impeller balance and smooth operation
- Extended impeller neck-journals.
- Fully machined external impeller surfaces.

Options

Radial Inlet

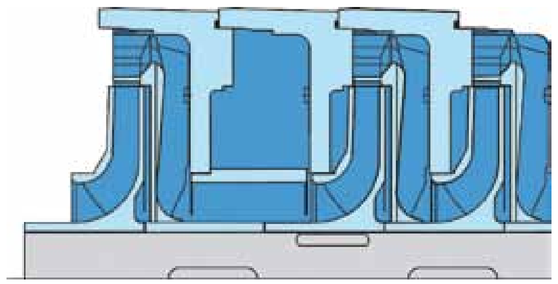


Balance Disc Lift-Off Device

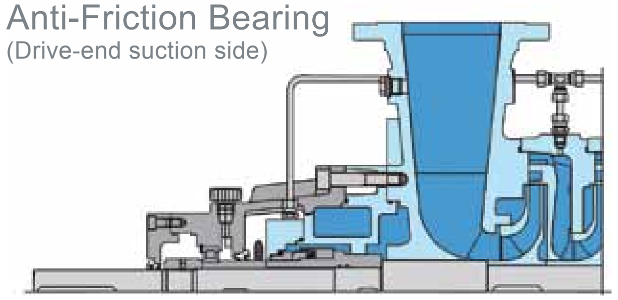


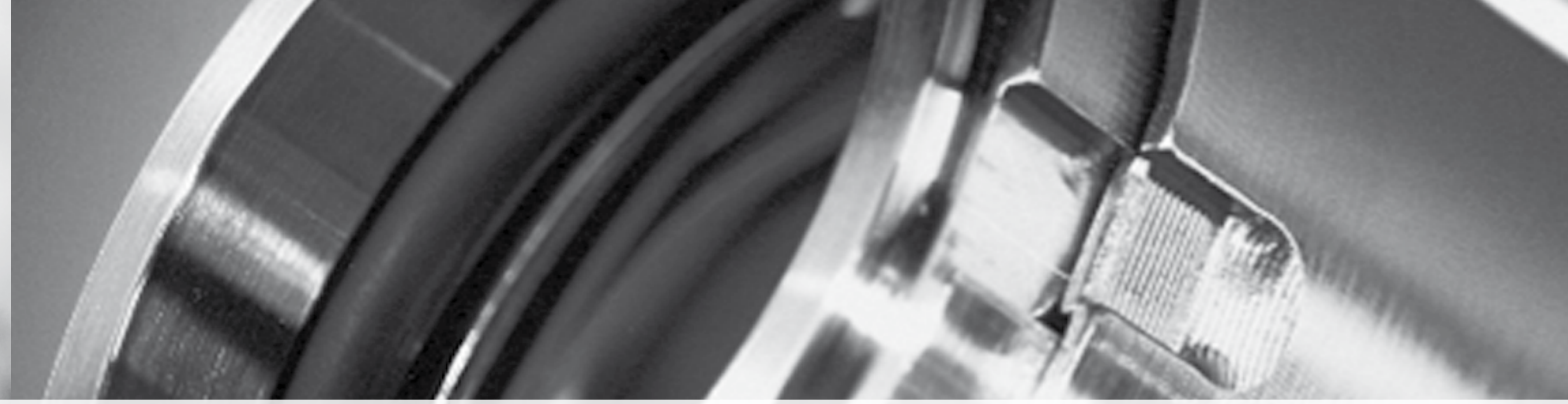
Interstage Discharge

Blank Stage



In-and-Outboard Anti-Friction Bearing
(Drive-end suction side)

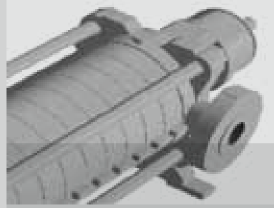


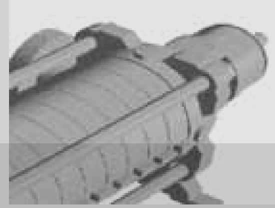
SIHI*multi* Options

Nozzle Position MSL, MSM, MSC, MSH (viewed from drive-end)

Discharge Casing


radial horizontal left


radial top


radial horizontal right

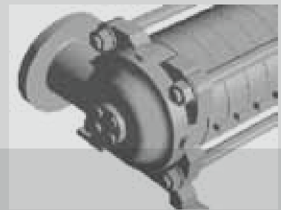
Every combination of suction and discharge casing is available

Suction Casing


axial

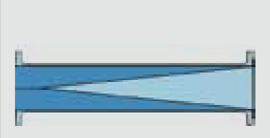

radial horizontal left


radial top

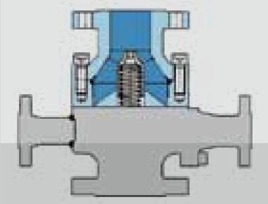

radial horizontal right

Special flow-harmonizing profile for stable NPSH

Ancillaries

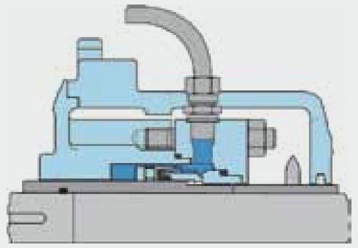

Low pressure-drop suction filter.

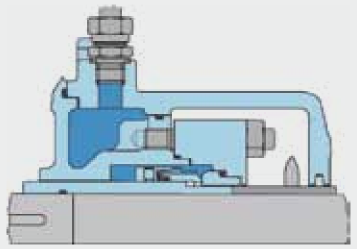
Stable NPSH

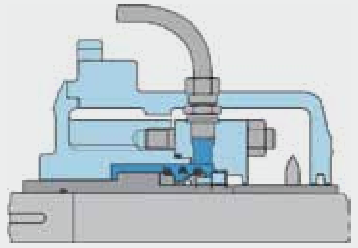

Minimum flow by-pass valve.

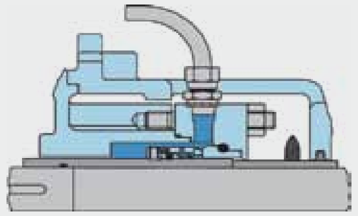
Mechanically operated without needing external energy

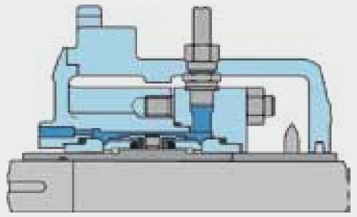
Shaft Sealing: Single and double cartridge seal

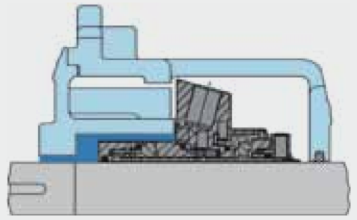

un-cooled, balanced

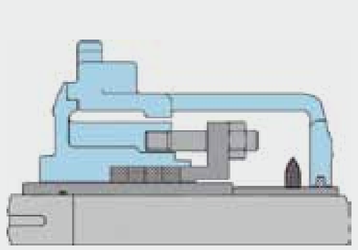

cooled, balanced

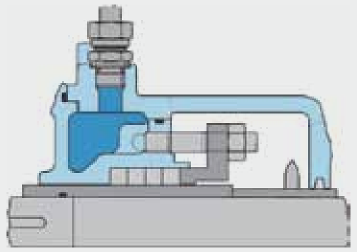

un-cooled, unbalanced

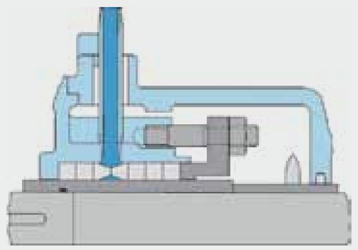

un-cooled, balanced
SIHI[GNZ] seal


un-cooled double back-to-back


Cartridge seal


un-cooled


with jacket-cooling


with external flushing

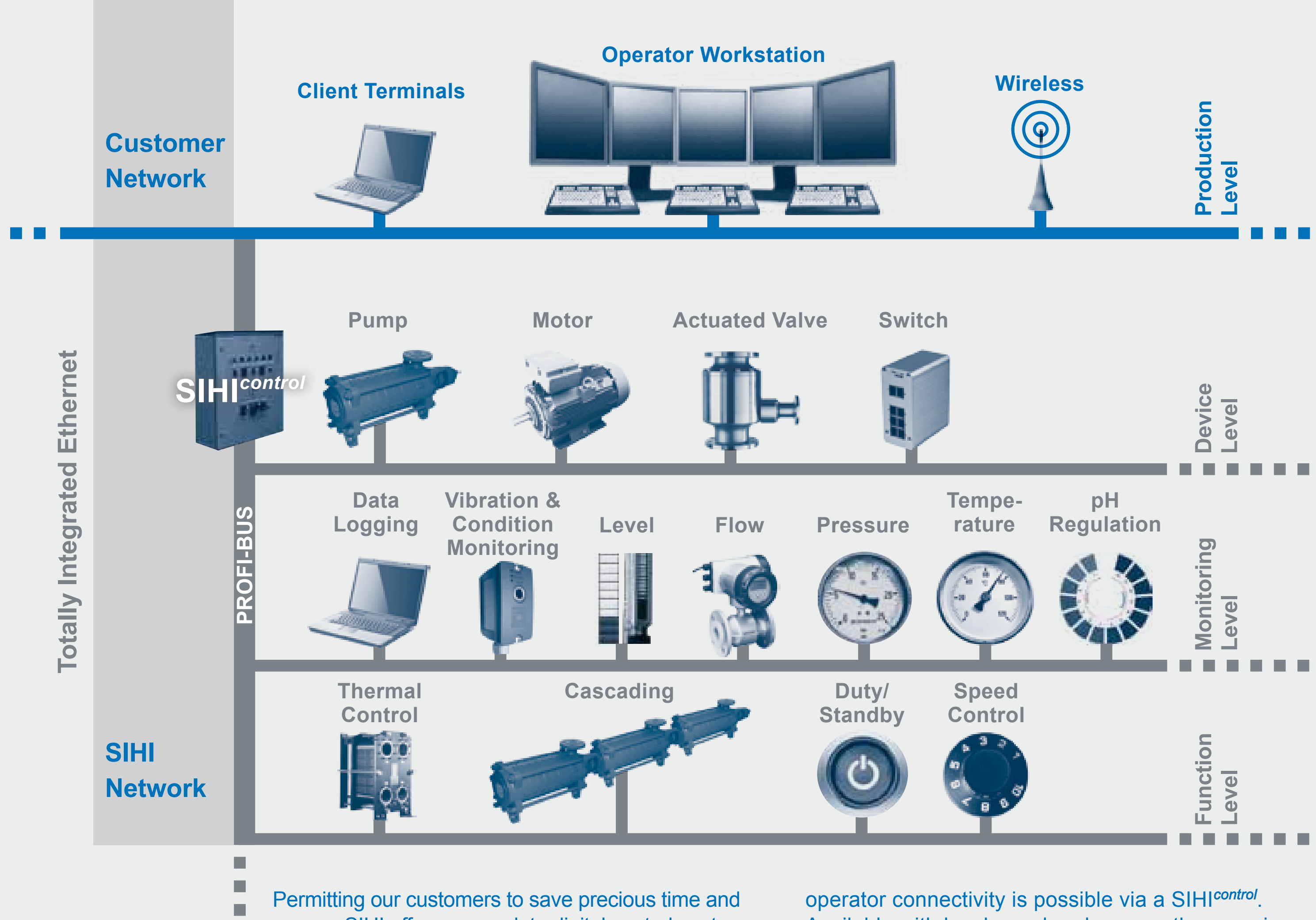
Performance Range

	MSL	MSM	MSC	MSH
Capacity	max. 450 m³/h	max. 450 m³/h	max. 250 m³/h	max. 250 m³/h
Head	max. 400 m	max. 630 m	max. 1000 m	max. 1600 m
Speed	max. 3600 rpm	max. 3600 rpm	max. 3600 rpm	max. 3600 rpm
Temperature	-10 °C to + 180 °C	-10 °C to + 180 °C	-10 °C to + 180 °C	-10 °C to + 180 °C
Pressure Rating	max. 40 bar	max. 63 bar	max. 100 bar	max. 160 bar

Materials

Suction Casing	Cast Iron, Ductile Iron, Stainless Steel, Chrome Steel
Stage Casing	Cast Iron, Ductile Iron, Stainless Steel, Chrome Steel
Discharge Casing	Cast Iron, Ductile Iron, Stainless Steel, Chrome Steel
Impeller, Diffuser	Cast Iron, Stainless Steel
Shaft	Chrome Steel, Duplex

From concept to integration



Permitting our customers to save precious time and money, SIHI offers a complete digital control system. Employing the Process Field-Bus standard communication platform, PROFI-BUS, simple operator connectivity is possible via a SIHI^{control}. Available with local panel and screen, the pumping system has pre-programmed logic control, monitoring, and data logging facilities.

Reduce Life Cycle Cost … … with SIHI

- Capital Cost
- Energy (Power)
- Installation & Alignment
- Maintenance & Operation
- Down time
- Environmental Cost

Your process partner Committed to engineering excellence

Understanding the process

- 100 years of experience
- Staff trained to communicate at all levels
- Deep application knowledge

… Solutions with minimal customer effort

Optimum product range

- Unique process can be treated with simplicity
- Reduced cost of design, manufacture, and documentation
- Predictable site testing and commissioning

… Customised solutions for standard capital costs

Design

- Advanced design tools
- Highest level of machine efficiency
- Long lasting reliability

… Reduced energy, maintenance, and environmental costs

Manufacturing

- Centre of excellence structure
- High level of skill and competence
- Ongoing people and process development

… Reduced integration costs

Testing & Documentation

- Factory and Site Acceptance Tests
- Certified documentation
- Witnessed customised testing

… Reduced validation and commissioning costs

Quality assurance

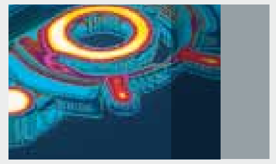
- Total Quality Management
- ISO9000
- Rigorous health and safety culture

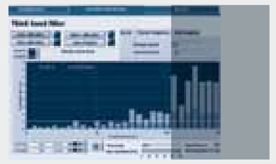
… Long term security

Aftermarket – a local approach

- Dedication to process uptime
- Locally positioned service & technical centres
- Easy access to support, on a worldwide level

… Highest level of customer care





SIHI^{detect} – Condition Based Monitoring

Detect wear before damage occurs

- Cavitation and process turbulence
- Simple to connect
- LED display
- Available Ex
- All rotating machinery
- DCS integration and continual monitoring

Noise *and* Vibration analysis allows this compact device to diagnose the (often hidden) symptoms of longer term damage *even* before vibration occurs.

For further address details please visit:
www.sterlingSIHI.com

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STERLING HALBERG LaBour DARWINS

Pumping Technology For A Better Future

SIHI