Product Program Pumps:

- **Pumps with Magnet Drive**
  - Centrifugal Pumps acc. to DIN EN ISO 2858, SLM NV
  - Centrifugal Pumps acc. to ANSI B73.1, SLM AVO
  - Centrifugal Pumps for Petrochemical Applications acc. to API 685, SLM AVP
  - Centrifugal Pumps for High Pressure Applications, SLM SV, SLM GV
  - Centrifugal Pumps for High Temperature Applications, SLM NHG
  - Centrifugal Pumps for Liquids Containing Solids, SLM NV
  - Self-Priming Centrifugal Pumps, SLM SV
  - Multistage Centrifugal Pumps, Tension-Rod or Barrel-Type Design, SLM GV
  - Submerged Centrifugal Pumps, SLM NVT
  - Double-Suction Centrifugal Pumps, SLM ZV

- **Pumps with Shaft Sealing**
  - Twin Screw Pumps, DSP
  - Centrifugal Pumps acc. to DIN EN ISO 2858, NOV
  - Multistage Centrifugal Pumps, Tension-Rod or Barrel-Type Design, G0V / GOVT
  - Horizontal and Vertical Propeller Pumps, P
  - Bottom-Flange Propeller Pumps, UP
  - Submerged Centrifugal Pumps, TP NO
  - Double Suction Centrifugal Pumps, NZ

Product Program Valves:

- **Valves, T-Pattern**
- **Valves, Y-Pattern**
- **Gate Valves, Isomorphous Construction Series**
- **Gate Valves, Wedge or Wedge Plates**
- **Relief Valves**
- **Check Valves**
- **Sight Glasses**
- **Strainers**
- **Reducers**
- **Bottom Valves**

Klaus Union Service Performance:

- **Workshop / On-Site Repairs**
- **Genuine Spare Part Delivery Worldwide**
- **Spares Parts Storage**
- **Customized Spare Parts Management**
- **On-Site Maintenance**
- **Installation**
- **Retrofitting**
- **On-Site Testing / Monitoring**
- **Customer Advisory Service**
- **Start Up & Commissioning**
- **Individual 24/7-Service**
- **Trouble-Shooting**
- **In-House & On-Site Training**
- **On-Site Assembly and Disassembly**
- **Long-Term Maintenance Contracts**
- **Maintenance Planning and Consulting**
- **Diagnostics**

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Klaus Union Pumps & Systems

Founded in 1946 in Bochum, Germany, Klaus Union is today a market leader for the production and supply of pump systems and valves. The company keeps numerous patents and offers a comprehensive product portfolio of centrifugal and screw pumps. Since many of the global operators of Klaus Union Pump Systems & Valves are from the oil & gas, chemical and petrochemical industry, particularly high requirements are placed on all related products. Transport of aggressive, toxic and/or explosive fluids does not allow any compromise on quality, service life and safety. Klaus Union failure-free products guarantee constant operation and protection of both, people and environment.

Klaus Union Innovation for Your Safety

In the early 1950s, Klaus Union had already developed the world’s first magnet drive, which was introduced to industries at the ACHEMA in Frankfurt in 1955. Further trendsetting developments followed, such as the first titanium pump manufactured in Europe or entire new magnet systems. Due to safety and service reasons, sealless pumping systems are today’s focus for all kinds of industries.

Advanced Material – Highest Quality

Klaus Union’s product program covers pump systems and valves for every kind of industry. They are used e.g. in temperature sensitive applications (refrigeration, heat treatment), in power stations, liquid gas plants or in galvanic processes. Beside steel and stainless steel, corrosion-resistant materials, such as nickel- and titanium-based alloys, are forming today’s basis of all Klaus Union products. A state of the art quality management system guarantees the highest degree of safety. Operators around the world trust in Klaus Union products. Their reliability is supported by comprehensive factory service, provided on-site 24/7. Klaus Union offers worldwide services by Klaus Union Service GmbH, an affiliate of the Klaus Union Group.

www.klaus-union.de

Quality Assurance

A major component of the Klaus Union ethos is to ensure highest product qualities. Existing quality assurance procedures with Klaus Union suppliers are constantly monitored from order placement to goods receipt and final assembly. This quality assurance system, developed on latest technologies, complies with the requirements of international regulations. Klaus Union products and processes are certified according to:

- DIN EN ISO 9001
- EC Pressure Equipment Directive RL97/23EC
- Machinery Directive RL2006/42/EC
- GOST R, Russia
- Rostekhnadzor, Russia
- Gospromnadzor, Belarus
**Product Portfolio**

**Sealless Pump Systems**

- **SLM NV**
  - Magnet Drive
  - Single-Stage Centrifugal Pump according to DIN EN ISO 2858 and DIN EN ISO 15783

- **SLM AVP**
  - Magnet Drive
  - Single-Stage Centrifugal Pump according to API 685

- **SLM GV**
  - Magnet Drive
  - Multi-Stage Centrifugal Pump based on DIN EN ISO 15783

- **SLM NVT**
  - Magnet Drive
  - Single-Stage Submerged Pump according to DIN EN ISO 15783

**Mechanically Sealed Pump Systems**

- **NOV**
  - Single-Stage Centrifugal Pump with Shaft Sealing according to DIN EN ISO 5199

- **GOV**
  - Multi-Stage Centrifugal Pump with Shaft Sealing according to DIN EN ISO 5199

- **SLM AV**
  - Magnet Drive
  - Single-Stage Centrifugal Pump according to ASME B73.3

- **SLM SV**
  - Multi-Stage Side Channel Pump based on DIN EN ISO 15783

- **DSP**
  - Double Volute Twin Screw Pump with Shaft Sealing

- **TP NO**
  - Single-Stage Submerged Pump with Shaft Sealing according to DIN EN ISO 5199

- **P**
  - Single-Stage Propeller Pump with Shaft Sealing
The Modular System

Klaus Union’s modular pump system is consisting of three different elements: The combination of these elements allows a large operating envelope with less different parts. By usage of over 100 different pump sizes and magnet drives, operation parameters up to 3,500 m³/h and 400 bar are realized. Interchangeability, stock size and services become easy subjects.
Magnet Drive Single-Stage Centrifugal Pump SLM NV
according to DIN EN ISO 2858 and DIN EN ISO 15783

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Oil & Gas
- Power

Products
- Acids
- Lyes
- Hydrocarbons
- Heat Transfer Liquids
- Coolants
- Liquid Gases
- Aggressive, Explosive and Toxic Liquids
- Liquids Containing Solids
- High-Viscosity Liquids

Operating Data
- Flow Rate: max. 3,500 m³/h
- Delivery Head: max. 220 m L.C.
- Temperature Range: -120 °C to +450 °C
- Pressure Rating: max. PN 400

Design
- Single-Stage, Horizontal Centrifugal Pump in Process Design
- Hydraulic Performance and Dimensions according to DIN EN ISO 2858
- Technical Design based on DIN EN ISO 15783
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
  - Slipless Power Transfer
- Materials: Steel, Stainless Steel, Nickel-Based Materials, Titanium
- Bearing Bracket with Oil- or Grease-Lubricated Anti-Friction Bearings; Optional: Close-Coupled Block Design
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SSiC) or Customized Materials
Magnet Drive Centrifugal Pump SLM AV according to ASME B73.3

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Power
- Oil & Gas
- Refrigeration and Heat Treatment

Products
- Acids
- Lyes
- Hydrocarbons
- Aggressive, Explosive and Toxic Liquids
- Liquid Gases
- Heat Transfer Liquids
- Coolants
- Liquids Containing Solids
- High-Viscosity Liquids

Operating Data
- Flow Rate: max. 3,500 m³/h
- Delivery Head: max. 220 m L.C.
- Temperature Range: -120 °C to +450 °C
- Pressure Rating: max. PN 400

Design
- Single-Stage, Horizontal Centrifugal Pump in Process Design
- Hydraulic Performance and Dimensions according to ASME B73.3
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
  - Slipless Power Transfer
- Materials: Steel, Stainless Steel, Nickel-Based Materials, Titanium
- Bearing Bracket with Oil- or Grease-Lubricated Anti-Friction Bearings; Optional: Close-Coupled Block Design
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SiC) or Customized Materials
Magnet Drive Centrifugal Pump SLM AVP
according to API 685

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Oil & Gas
- Power
- On- /Offshore Plants

Products
- Hydrocarbons
- Liquid Gases
- Aggressive, Explosive and Toxic Liquids
- Heat Transfer Liquids
- Coolants
- Acids
- Lyes

Operating Data
- Flow Rate: max. 3,500 m³/h
- Delivery Head: max. 220 m L.C.
- Temperature Range: -120 °C to +450 °C

Design
- Single-Stage, Horizontal Centrifugal Pump in Process Design, Heavy-Duty Design
- Hydraulic Performance and Dimensions according to ASME B73.3
- Technical Design according to API 685
- Flanges according to ANSI / ASME B16.5, Class 150 (PN 20), Class 300 (PN 50)
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
  - Slipless Power Transfer
- Materials: Steel, Stainless Steel, Nickel-Based Material, Titanium
- Bearing Bracket with Oil-Lubricated Anti-Friction Bearings
- Centreline Support
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SiC) or Customized Materials
Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration Engineering
- Oil & Gas
- Vacuum Technology

Products
- Acids
- Lyes
- Hydrocarbons
- Solvents
- Liquid Gases
- Refrigerants

Operating Data
- Flow Rate: max. 42 m³/h
- Delivery Head: max. 470 m L.C.
- Temperature Range: -120 °C to +250 °C
- Pressure Rating: max. PN 400

Design
- Multi-Stage, Horizontal Side Channel Pump in Process Design
- Technical Design based on DIN EN ISO 15783
- Maximum Number of Stages: 8
- Self-Priming
- Barrel-Housing Design with just Two Gaskets
- Gas Handling
- First Low-NPSH Stage for Improved Suction Performance
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
  - Slipless Power Transfer
- Material: Stainless Steel
- Bearing Bracket with Oil- or Grease-Lubricated Anti-Friction Bearings; Optional: Close-Coupled Block Design
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SSiC) or Customized Materials
Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Oil & Gas
- Power

Products
- Acids
- Lyes
- Hydrocarbons
- Hot Water
- Heat Transfer Liquids
- Liquid Gases
- Aggressive, Explosive and Toxic Liquids

Operating Data
- Flow Rate: max. 350 m³/h
- Delivery Head: max. 700 m L.C.
- Temperature Range: -120 °C to +350 °C
- Pressure Rating: max. PN 200

Design
- Multi-Stage, Horizontal Centrifugal Pump in Process Design
- Technical Design based on DIN EN ISO 15783
- Impeller Arrangement in Series; Maximum Number of Stages: 6
- First Low-NPSH Stage for Improved Suction Performance
- Barrel-Housing Design with just Two Gaskets
- Centrline Support
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
- Slipless Power Transfer
- Materials: Steel, Stainless Steel
- Bearing Bracket with Oil- or Grease-Lubricated Anti-Friction Bearings; Optional: Close-Coupled Block Design
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SSiC) or Customized Materials
- Designs: Barrel-Housing Design or Sectional Design
Magnet Drive Submerged Pump SLM NVT

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Power

Products
- Acids
- Lyes
- Hydrocarbons
- Heat Transfer Liquids
- Aggressive, Explosive and Toxic Liquids
- Industrial Effluent

Operating Data
- Flow Rate: max. 900 m³/h
- Delivery Head: max. 200 m L.C.
- Temperature Range: -50 °C to +200 °C
- Pressure Rating: max. PN 40
- Immersion Depth: 10,000 mm

Design
- Single-Stage Submerged Pump
- Hydraulic Performance according to DIN EN ISO 2858
- Technical Design based on DIN EN ISO 15783
- Permanent Magnet Drive
  - Maintenance-Free
  - Separation of Liquid Chamber to Atmosphere by Means of Isolation Shell
  - Slipless Power Transfer
- Materials: Steel, Stainless Steel, Nickel-Based Material, Titanium
- Drive Shaft with Permanently Grease-Lubricated Anti-Friction Bearings
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SSIC) or Customized Materials
**Screw Pump DSP**

Double Volute Twin Screw Pump with Shaft Sealing

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**Fields of Application**

- **Industries**
  - Oil & Gas
  - Shipbuilding
  - Chemical Industry
  - Power
  - Sugar Industry
  - Paints

- **Products**
  - Viscous Liquids Containing Considerable Amount of Solids
  - Lube, Crude or Fuel Oils
  - Bitumen
  - Tar
  - Asphalt
  - Fats
  - Resins
  - Residues
  - Multigase Products Containing Liquids, Gas and Solids

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**Operating Data**

- Flow Rate: max. 5,000 m³/h
- Differential Pressure: max. 100 bar
- Temperature Range: -120 °C to +350 °C
- Viscosity: max. 100,000 mPas

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**Design**

- Horizontal Twin Screw Pump, Double Volute Design
- Drive Torque Transfer by Timing Gear located outside of Pumping Chamber
- Four Shaft Seals
- Materials: Steel, Stainless Steel
- Rotors Manufactured from Single Piece Bar Stock
- Bearings located outside of Pumping Chamber
- Design with separate Liner
Centrifugal Pump NOV
with Shaft Sealing

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Oil & Gas
- Paper and Cellulose Plants
- Power
- Sugar Industry
- Coking Plants

Products
- Acids
- Lyes
- Hydrocarbons
- Heat Transfer Liquids
- Coolants
- Liquid Gases
- Sewage
- Colouring Matters
- Salt Solutions
- Pulp

Operating Data
- Flow Rate: max. 3,500 m³/h
- Delivery Head: max. 220 m L.C.
- Temperature Range: -120 °C to +450 °C
- Pressure Rating: max. PN 100

Design
- Single-Stage, Horizontal Centrifugal Pump
- Hydraulic Performance and Dimensions according to DIN EN ISO 2858
- Technical Design based on DIN EN ISO 5199
- Shaft Sealing Space for Installation of Mechanical Seals according to DIN EN 12756 or Stuffing Box Packings
- Materials: Steel, Stainless Steel, Nickel-Based Material, Titanium
- Bearing Bracket with Oil-Lubricated Anti-Friction Bearings
Multi-Stage Centrifugal Pump GOV with Shaft Sealing

Fields of Application

Industries
- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Oil & Gas
- Power

Products
- Liquid Gases
- Acids
- Lyes
- Hydrocarbons
- Hot Water
- Heat Transfer Liquids

Operating Data
- Flow Rate: max. 350 m³/h
- Delivery Head: max. 700 m L.C.
- Temperature Range: -120 °C to +350 °C
- Pressure Rating: max. PN 100

Design
- Multi-Stage, Horizontal Centrifugal Pump in Process Design
- Technical Design based on DIN EN ISO 5199
- Impeller Arrangement in Series, Maximum Number of Stages: 6
- First Low-NPSH Stage for Improved Suction Performance
- Shaft Sealing Space for Installation of Mechanical Seals according to DIN EN 12756 or Stuffing Box Packings
- Materials: Steel, Stainless Steel
- Bearing Bracket with Oil-Lubricated Anti-Friction Bearings
- Designs: Barrel-Housing Design or Sectional Design
Submerged Pump TP NO with Shaft Sealing

Fields of Application

- Chemical Industry
- Petrochemical Industry
- Refrigeration and Heat Treatment
- Power
- Coking Plants

Products

- Acids
- Lyes
- Hydrocarbons
- Heat Transfer Liquids
- Liquid Gases

Operating Data

- Flow Rate: max. 1,600 m³/h
- Delivery Head: max. 200 m L.C.
- Temperature Range: -50 °C to +250 °C
- Pressure Rating: max. PN 40
- Immersion Depth: 10,000 mm

Design

- Single-Stage Submerged Pump
- Hydraulic Performance according to DIN EN ISO 2858
- Technical Design based on DIN EN ISO 5199
- Shaft Sealing Space for Installation of Mechanical Seals according to DIN EN 12756 or Stuffing Box Packings
- Materials: Steel, Stainless Steel, Nickel-Based Material, Titanium
- Product-Lubricated Journal Bearings; made of Silicon Carbide (SSiC) or Customized Materials
Propeller Pump P
with Shaft Sealing

Fields of Application

Industries
- Power
- Chemical Industry
- Petrochemical Industry
- Paper and Cellulose Industry
- Cooling Water Plants
- Sea Water Treatments

Products
- Acids
- Lyes
- Paper and Cellulose Mash
- Brine (Evaporation Plants)
- Mineral Fertilisers (Liquid)
- Sea Water
- Cooling Water
- Dyes

Operating Data
- Flow Rate: max. 12,000 m³/h
- Delivery Head: max. 12 m L.C.
- Temperature Range: -120 °C to +250 °C
- Pressure Rating: max. PN 100

Design
- Horizontal Axial Flow Pump
- Pump Casing in Cast or Welding Construction
- Shaft Sealing Space for Installation of Mechanical Seals according to DIN EN 12756 or Stuffing Box Packings
- Materials: Steel, Stainless Steel
- Bearing Bracket with Oil- or Grease-Lubricated Anti-Friction Bearings
- Pumping Direction Freely Selectable
- Modification of Service Data Possible by Means of Adjusting Propeller Blades
### Customized Solutions
- Double-Flow Radial Centrifugal Pump with Magnet Drive SLM ZVO
- Magnet Drives adapted to Individual Applications
- Self-Priming Pumps with Magnet Drive SLM DV
- Multi-Stage Centrifugal Pump for Delivery Heads of up to 1,000 m SLM HV/H
- Multi-Stage Submerged Pump with Magnet Drive SLM GV TT
- Multi-Stage Submerged Pump with Stuffing Box Packing TP GOT
- Mobile Pump Units
- Vertical Pumps with Magnet Drive
- Pipe Elbow Propeller Pumps PK
- Multiphase Systems

### Stainless Steel

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### Steel

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### Nickel-Based Materials

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### Titanium

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<td>3.7031 G-Ti2</td>
<td>3.7035 Ti2</td>
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<td>3.7032 G-Ti2Pd</td>
<td>3.7165 Ti6Al4V</td>
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Further materials upon request
Klaus Union – More Than Just Technology

The importance of a global service management initiated Klaus Union to set up an own company, concentrating on after sales and service performance only. Klaus Union Service GmbH started in 2006. The service team developed Klaus Union’s after sales portfolio from simple genuine spare part delivery up to highly complicated diagnostics on site, which are today possible by using latest instrumentation systems. Local stock management reduces down times significantly. Spare parts are additionally available through Klaus Union’s webshop, which allows a 24/7-service.

Commissioning, start up, maintenance and repair are upon operator-requests, which will be performed either from Klaus Union headquarter in Bochum or by one of the 15 service centers worldwide. Klaus Union supports locally with training courses, seminars, consulting services, failure analysis and spare parts management. Klaus Union runs service with experience, competence, responsibility and passion!