Decades of experience in hydraulic machine manufacturing and complete process know-how form the basis for our pumps' high performance.

Professional expertise and our understanding of customer requirements make us a valuable partner. We offer innovative and targeted solutions with pumps and complete pumping stations.

From development to model tests, design, manufacturing, project management and installation, to service and training – all from a single source.

Customers around the world trust us. They value our many years of experience throughout the value chain.

**Vertical line shaft pumps**
- e.g. for irrigation pumping stations

**Process pumps**
- to convey water and suspensions for various industries, such as sugar, pulp and paper, or for water supply

**Double-flow axial split case pumps**
- for pumping water and suspensions
Intensive research and development
Our commitment to research and development forms the basis for our advances in hydraulic machine manufacturing. We are currently developing and testing our pumps and turbines at five locations in Austria, Germany, Switzerland, and China. By networking these research and development centers, we provide a continuous transfer of know-how within the ANDRITZ GROUP for the benefit of our customers.

Global quality management
We ensure the high technical standard of our pumps with top manufacturing standards, systematic organization, clearly defined processes, and well-trained employees. Quality assurance and process requirements, as well as the quality of the pumps, are defined uniformly and implemented worldwide.

Close to our customers
Service and maintenance is key to our corporate philosophy, and is a traditional strength at ANDRITZ. Our goals are to provide first-class service and to secure sustained customer satisfaction and the reliability of our products. We are supported by the experience and know-how of our service employees as well as our service and production sites around the world.

R&D, quality, and service
# Products (Part 1)

<table>
<thead>
<tr>
<th>Page</th>
<th>Category</th>
<th>Description</th>
<th>DN</th>
<th>Q</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>09</td>
<td>Single-stage centrifugal pumps</td>
<td>EN 733, ISO 2858/5193</td>
<td>32 to 150</td>
<td>up to 2,600 usgpm</td>
<td>up to 530 ft</td>
</tr>
<tr>
<td>10</td>
<td>Single-stage centrifugal pumps</td>
<td>Closed, semi-open, and open impeller</td>
<td>65 to 800</td>
<td>up to 26,500 usgpm</td>
<td>up to 530 ft</td>
</tr>
<tr>
<td>10</td>
<td>Double-flow axial split case pumps</td>
<td>Single-stage, double-flow, closed impeller</td>
<td>150 to 1,200</td>
<td>up to 88,100 usgpm (customized up to 158,500 usgpm)</td>
<td>up to 720 ft</td>
</tr>
<tr>
<td>11</td>
<td>Multi-stage axial split case pumps</td>
<td>Various impeller arrangements in single or double flow design</td>
<td>150 to 1600</td>
<td>up to 132,000 usgpm</td>
<td>up to 2,600 ft</td>
</tr>
<tr>
<td>11</td>
<td>High-pressure pumps</td>
<td>Multi-stage, closed impellers</td>
<td>25 to 250</td>
<td>up to 3,500 usgpm</td>
<td>up to 2,600 ft</td>
</tr>
<tr>
<td>12</td>
<td>Self-priming centrifugal pumps</td>
<td>Single-stage, single-flow open impeller</td>
<td>80 to 250</td>
<td>up to 8,800 usgpm</td>
<td>up to 250 ft</td>
</tr>
<tr>
<td>12</td>
<td>Vertical submerged pumps</td>
<td>Single-stage, single-flow open impeller</td>
<td>80 to 200</td>
<td>up to 3,500 usgpm</td>
<td>up to 150 ft</td>
</tr>
<tr>
<td>21</td>
<td>Medium-consistency pumps</td>
<td>Single-stage, single-flow semi-open impeller, with fluidizer</td>
<td>80 to 400</td>
<td>up to 13,000 admt/d</td>
<td>up to 620 ft</td>
</tr>
</tbody>
</table>
Products (Part 2)

**Sewage pumps, dry**
Single-stage, vortex impeller
DN 65 to 700
Q up to 44,000 usgpm
H up to 330 ft

**Sewage pumps, wet**
Single-stage, submersible
DN 65 to 400
Q up to 11,500 usgpm
H up to 260 ft

**Single-flow submersible motor pumps**
Multi-stage
Ø from 6" upwards
Q up to 4,000 usgpm
H up to 2,600 ft

**Double-flow submersible motor pumps**
Multi-stage
Ø from 20" upwards
Q up to 26,500 usgpm
H up to 4,900 ft

**Submersible motors**
Water-filled and water-cooled three-phase asynchronous motor
Ø from 8" upwards
Q up to 6,700 hp
V up to 14,000 V

**Vertical line shaft pumps**
Pull-out or non pull-out
Q up to 310,000 usgpm
H up to 260 ft
P up to 13,400 hp

**Vertical volute pumps**
Metal or concrete volute with or without guide vane mechanism
Q up to 790,000 usgpm
H up to 130 ft (concrete volute); up to 820 ft (metal volute)
P up to 40,200 hp (concrete volute); up to 67,000 hp (metal volute)

**Pumps as turbines**
Q up to 95,100 usgpm
H up to 980 ft
P up to 2 MW
# Product portfolio and applications

<table>
<thead>
<tr>
<th>Products</th>
<th>Water</th>
<th>Waste water</th>
<th>Pulp &amp; paper</th>
<th>Mining</th>
<th>Sugar</th>
<th>Thermal power</th>
<th>Other industries*</th>
<th>Small hydropower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-stage centrifugal pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EN733, ISO 2858/5193</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-stage centrifugal pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed, semi-open, open impeller</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-flow axial split case pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-stage axial split case pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-pressure pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-priming centrifugal pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical submerged pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium-consistency pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewage pumps, dry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewage pumps, wet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single-flow submersible motor pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Double-flow submersible motor pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submersible motors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical line shaft pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vertical volute pumps</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pumps as turbines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* e.g. desalination, offshore, bioethanol (second generation), starch, food, chemical, and steel industries
Water & wastewater 09
Pulp & paper 18
Mining 22
Sugar 26
Thermal power 29
Other industries 33
Small hydropower 42
The ANDRITZ GROUP at a glance

International technology Group ANDRITZ is based in Graz, Austria. It operates more than 200 production, service, and sales sites around the world, and is one of the leading suppliers of systems, equipment and services for:

<table>
<thead>
<tr>
<th>Hydropower plants</th>
<th>Pulp and paper industry</th>
<th>Metalworking and steel industries</th>
<th>Municipal and industrial solid/liquid separation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANDRITZ HYDRO</td>
<td>ANDRITZ PULP &amp; PAPER</td>
<td>ANDRITZ METALS</td>
<td>ANDRITZ SEPARATION</td>
</tr>
</tbody>
</table>
Do you manage water supply or waste water facilities, or are you the project manager for a large infrastructure project for irrigation, drinking water and industrial water supply, or for flood control? Here you will find an overview of our product portfolio in the water and waste water sectors.

- **Drinking water and industrial water supply**
  The water circuit is completed with ANDRITZ. Our proven pump range is used for pumping water from wells and springs, as well as for water treatment, water transport, and water distribution.

- **Irrigation and drainage**
  Whether irrigating open and industrial areas, or forming part of huge irrigation projects for agricultural areas, ANDRITZ pumps offer efficient and cost-effective solutions.

- **Wastewater disposal**
  ANDRITZ pumps cover the requirements for municipal and for industrial wastewater disposal. We are one of the few pump manufacturers offering sewage pumps for both dry and wet installation.

- **Flood protection (including polder drainage)**
  Quick action is important in times of rising water levels and persistent rain causing rivers to burst their banks. ANDRITZ pumps help to dry out areas which are threatened by high water levels, or those that are already flooded.

- **Pumps for desalination plants**
  Readily available sea water can be used in order to cover the need for clean drinking water in dry regions and in metropolitan areas. ANDRITZ provides the system components to respond to the challenges in successful desalination systems.

### Single-stage centrifugal pumps
**EN 733, ISO 2858/5193**

- **Nominal diameter (DN)**: 32 to 150
- **Flow rate**: up to 2,600 usgpm
- **Head**: up to 530 ft
- **Pressure**: up to 230 psi
- **Temperature**: up to 285 °F

**Design:** Single-stage centrifugal pumps – main dimensions and performance grid also available according to EN 733, ISO 2858 and 5193

**Media:** Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5,8 ft²/h without abrasive and solids content

**Special benefits:** Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing; low energy consumption

**Materials:** Cast iron, bronze, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Closed impeller, radial impeller, vortex impeller, and two-channel impeller available in some cases

**Applications:** Water, pulp and paper, sugar, thermal power, other industries, small hydropower
### Single-stage centrifugal pumps

From closed to open impellers

**Nominal diameter (DN) 65 to 600**

- **Flow rate**: up to 26,500 usgpm
- **Head**: up to 530 ft
- **Pressure**: up to 360 psi
- **Temperature**: up to 390 °F

**Design**: Single-stage centrifugal pumps

**Media**: Depending on the impeller design: water, slightly contaminated, and contaminated media with some solids content; consistencies up to 6%

**Special benefits**: Easy to maintain; the modular system is easy to access, uses tested components, and reduces the number of spare parts to be kept on stock; efficiency up to 90%; can be delivered with a degassing unit if the medium has a high gas content (ARE version)

**Materials**: Cast iron; stainless steel; highly wear-resistant, hardened stainless steel

**Shaft seal**: Gland packing, mechanical seal

**Impeller design**: Closed, semi-open, or open impeller, also available in highly wear-resistant design

**Applications**: Water, pulp and paper, mining, sugar, thermal power, other industries, small hydropower

---

### Double-flow axial split case pumps

**Nominal diameter (DN) 150 to 1,200**

- **Flow rate**: up to 88,100 usgpm
- **Head**: customized up to 158,500 usgpm
- **Pressure**: up to 720 ft
- **Temperature**: up to 230 °F

**Design**: Single-stage, double-flow axial split case pumps

**Media**: Pure, slightly contaminated, and aggressive liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content; consistency up to 2%

**Special benefits**: In-line casing design; horizontal or vertical installation; with horizontal installation, the motor can be placed on the left or right; efficiencies over 90%; low pulsation

**Materials**: Cast iron, stainless steel

**Shaft seal**: Gland packing, mechanical seal

**Impeller design**: Double-flow radial impeller with optimum suction behavior and very good NPSH values

**Applications**: Water, pulp and paper, sugar, thermal power, other industries, small hydropower
**Multi-stage axial split case pumps**

Nominal diameter (DN) 150 to 1600
Flow rate up to 132,000 usgpm
Head up to 2,600 ft
Power up to 20 MW
Efficiency up to 91%

**Design:** Multi-stage axial split case pumps with various impeller arrangements in single or double flow design

**Media:** Pure, slightly contaminated

**Special benefits:** In-line casing design; horizontal installation, the motor can be placed on the left or right; efficiencies over 90%

**Materials:** Cast iron, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Single or double flow closed radial impellers with optimum suction behavior and very good NPSH values

**Applications:** Water, other industries, small hydropower

---

**High-pressure pumps**

**Multi-stage centrifugal pumps**

Nominal diameter (DN) 25 to 250
Flow rate up to 3,500 usgpm
Head up to 2,600 ft
Pressure up to 1,450 psi
Temperature up to 320 °F

**Design:** Multi-stage high-pressure pumps, vertical and horizontal design

**Media:** Clean and slightly contaminated liquids up to a viscosity of 5,8 ft²/h without abrasive and solid content

**Materials:** Cast iron, bronze, aluminum-bronze, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial impeller

**Applications:** Water, pulp and paper, sugar, thermal power, other industries
Self-priming centrifugal pumps

Nominal diameter (DN) 80 to 250
Flow rate up to 8,800 usgpm
Head up to 250 ft
Pressure up to 230 psi
Temperature up to 180 °F

Design: Single-stage, single-flow centrifugal pumps with integrated water ring vacuum pump
Media: Water, viscous media (e.g. sugar concentration of up to 70%), and media containing solids (e.g. for pulp, paper, or waste water applications)
Special benefits: Self-priming; the integrated vacuum pump prevents air from gathering in front of the impeller and the centrifugal pump can therefore operate well even in the presence of high gas content; high-viscosity media can also be pumped
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Semi-open impeller
Applications: Water and waste water, pulp and paper, sugar, other industries

Vertical submerged pumps

Nominal diameter (DN) 80 to 200
Flow rate up to 3,500 usgpm
Head up to 160 ft
Pressure up to 230 psi
Temperature up to 140 °F

Design: Single-stage, single-flow submerged pumps
Media: Water, waste water, high-viscosity media, and media containing solids, consistencies up to 6%; slurries containing large particles (up to 5.5 inch); abrasive media
Special benefits: Modular base frame design; generously sized shafts; standard construction length of 3.3 to 6.6 ft; flexible coupling – also developed for transporting coarse media
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Open or vortex impeller
Applications: Water and waste water, pulp and paper, other industries
**Sewage pumps, dry**

Nominal diameter (DN) 65 to 700
Flow rate up to 44,000 usgpm
Head up to 330 ft
Pressure up to 230 psi
Temperature up to 285 °F

**Design:** Single-stage waste water pumps
**Media:** Low-viscosity, high-viscosity, and abrasive media, as well as gaseous and non-gaseous slurries
**Special benefits:** Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing
**Materials:** Cast iron, stainless steel
**Shaft seal:** Gland packing, mechanical seal
**Impeller design:** Single-channel, double-channel, vortex, multi-channel, open mixed-flow impeller
**Applications:** Waste water

---

**Sewage pumps, wet**

Nominal diameter (DN) 65 to 400
Flow rate up to 11,500 usgpm
Head up to 260 ft
Pressure up to 145 psi
Temperature up to 105 °F

**Design:** Single-stage submersible pumps in close-coupled design
**Media:** Sewage and waste water, as well as sludges with solid content (10% dry substance max.)
**Special benefits:** Explosion-proof designs can be supplied; available with a float switch
**Materials:** Cast iron, stainless steel
**Shaft seal:** Mechanical seal
**Impeller design:** Single-channel, double-channel, vortex impeller
**Applications:** Waste water
Single-flow submersible motor pumps
MS-T – Modular Shaft Technology

**Well Ø**  
from 6" upwards

**Flow rate**  
up to 4,000 usgpm

**Head**  
up to 2,600 ft

**Pressure**  
up to 1,450 psi

**Temperature**  
up to 170 °F

**Design:** Multi-stage, single-flow submersible motor pumps

**Media:** Clean, slightly contaminated, and abrasive raw, clean, mineral, sea, industrial, mine, and cooling water

**Special benefits:** Maintenance-free; long service life, and high operating reliability; can be supplied optionally with modular shaft technology for flexible extension or reduction of the number of stages

**Materials:** Cast iron, aluminum-bronze, stainless steel

**Impeller design:** Radial, semi-axial impeller

**Applications:** Water, mining, other industries (e.g. offshore)

---

**The challenge**

The cost of an application is becoming increasingly important in making investment decisions. This raises the question of whether the continuous shaft concept is still up to date. Installing and removing a pump with a continuous shaft requires numerous individual steps. The logistics and storage of many different individual parts is associated with high costs. Adjustments to changing heads are generally only possible through cost-intensive exchanging of pumps.

**MS-T – The solution**

MS-T is not only a technological evolution, from the cost perspective it is a revolution.

MS-T is designed using a modular concept – with all of its technical and economic advantages:

- Flexible adjustment to changing pumping conditions – easy and fast by extending or reducing the number of stages.
- Simple, time-saving, and targeted installation and removal of individual stages, either horizontal or vertical.
- A small number of highly standardized components ensure high availability and short delivery times, as well as low storage costs for the operator.

Thus, pumps with MS-T are the best solution wherever there is a need for operating reliability, freedom from maintenance, long service life, high efficiency, and flexible heads.
Double-suction submersible motor pumps
HDM – Heavy Duty Mining

Well Ø from 20” upwards
Flow rate up to 26,500 US gpm
Head up to 4,900 ft
Pressure up to 2,175 psi
Temperature up to 170 °F

Design: Multi-stage, double-flow submersible motor pumps
Media: Clean, slightly contaminated, and abrasive raw, clean, mineral, sea, industrial, mine, and cooling water
Special benefits: No axial thrust, double-flow design for long service life and high reliability; maintenance-free
Materials: Cast iron, bronze, aluminum-bronze, stainless steel
Impeller design: Radial impeller
Applications: Water, mining, other industries (e.g. offshore)

The challenge
The use of submersible motor pumps for large volumes or in great depths is associated with high stresses on the equipment. The higher the pump performance, the greater the axial thrust on the pump, motor, and its thrust bearing. The consequence: overloading and an increased risk of failure.

HDM – The solution
Two pumps are arranged one above the other, running in counter direction and driven by a continuous pump shaft. Splitting the workload between both pumps ensures complete axial thrust balancing and thus contributes towards solving the problems of force effects on the unit and loads on the thrust bearings; at the same time, the flow and suction speed outside the pump is halved. Thus, well walls are protected around the suction areas, and the intake of abrasive particles is minimized.

The result
In addition to technical benefits – HDM offers complete balancing of the axial thrust, flow speeds halved, and smaller impeller cross-sections – there are also economic benefits: maximum operating reliability, minimal wear, and long service life, which can often be more than 20 years. In combination with ANDRITZ high-performance submersible motors, the result is a complete technical solution.

Custom solutions
Each ANDRITZ submersible pump with HDM technology is customized. It is individually configured to meet your requirements.
Submersible motors
MC-T – Modular Cooling Technology

Well Ø from 8" upwards
Power up to 6,700 hp
Voltage up to 14,000 V
Temperature up to 170 °F

Design: Water-filled and water-cooled three phase asynchronous motors with squirrel-cage rotors
Special benefit: Rewindable winding
Materials: Cast iron, bronze, stainless steel
Shaft seal: Mechanical seal
Installation: Vertical, some horizontal
Applications: Water, mining, other industries (e.g. offshore)

The challenge
Efficient and cost-effective cooling of submersible motors is a constant source of discussion by well and mine operators. De-rating is a less-than-ideal solution. In addition to high capital and energy costs, the overlarge, downgraded motors usually require a larger well diameter. Oil cooling needs careful consideration as well – any failure can cause ecological damage.

MC-T – The solution
MC-T, an intelligent and compact cooling system, is the best solution here. A pump impeller brings movement into the cooling circuit and thus provides flow in the right direction. Our own-development cooling channels ensure heat absorption at all thermal sources and heat evacuation, as well as providing optimal heat conduction through the outside of the motor to the flow medium. The additional use of heat exchanger modules allows precise dimensioning of the cooling capacity.

Technical details and economic benefits

- Media temperature up to 170 °F
- High efficiency across the entire performance range
- Uses drinking water as the coolant
- Low investment required
- Reduced energy costs
- Maximum reliability
- Long service life
**Vertical line shaft pumps**

- **Flow rate**: up to 310,000 usgpm
- **Head**: up to 260 ft
- **Power**: up to 13,400 hp

**Design:** Pull-out or non pull-out

**Special benefits:** Option with hydraulically adjustable impeller blades: The hydraulic impeller blade adjustment mechanism allows the impeller angle to be varied continuously during operation. Thus, the operator can react promptly to changes in flow rate and head.

**Materials:** Cast iron, non-alloy and low-alloy steels, duplex and super duplex

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial, axial, and semi-axial impeller, optionally adjustable angle impeller blades or hydraulically adjustable impeller blades

**Applications:** Water, thermal power, other industries

---

**Vertical volute pumps**

- **Flow rate**: up to 790,000 usgpm
- **Head**: up to 130 ft (concrete volute)
  
- up to 820 ft (metal volute)
- **Power**: up to 40,200 hp (concrete volute)
  
- up to 67,000 hp (metal volute)

**Design:** Metal or concrete volute with or without guide vane mechanism

**Special benefits:** The hydraulic dimensioning and design of the volute casing depends on the specific output characteristics. Optimum flow is achieved in the volute thanks to its individual shaping, thus also achieving a high level of efficiency.

**Materials:** Cast iron, non-alloy and low-alloy steels, duplex and super duplex

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial, semi-axial

**Applications:** Water, thermal power, other industries
Are you responsible for the operation or maintenance of a pulp or paper production facility, or are you project manager for the construction of a greenfield pulp or paper mill? We can provide you with a series of high-performance, reliable pumps.

- **Centrifugal pumps** are used as process pumps in many different areas in pulp and paper mills. They pump suspensions with consistencies up to 8% b.d., offer high efficiencies up to 90%, and are easy to maintain with a modular design. These pumps are also available with additional degassing units for media with high gas content.

- **Double-flow axial split case pumps** are optimized for use in the pulp and paper industry, above all as headbox or cleaner pumps (fan pumps). They feature efficiencies of over 90% and have been developed specially for the pulp and paper industry with a particularly low-pulsation impeller with staggered blades.

- **Medium-consistency pumps** convey the following media: chemical, mechanical, and wastepaper pulp suspensions with consistencies of up to 16% b.d. and efficiencies of up to 74%. They can be operated in most applications without internal or external vacuum pump.

- **Self-priming centrifugal pumps** convey media with high gas content. They are also highly suitable for transporting viscous and solids-containing media due to their open impellers.

- **Sump pumps** convey fresh and white water or waste water, pulp, slurries with large particles, and abrasive media.

---

**Single-stage centrifugal pumps**

**EN 733, ISO 2858/5193**

- **Nominal diameter (DN)** 32 to 150
- **Flow rate** up to 2,650 usgpm
- **Head** up to 530 ft
- **Pressure** up to 230 psi
- **Temperature** up to 285 °F

**Design:** Single-stage centrifugal pumps – main dimensions and performance grid also available according to EN 733, ISO 2858 and 5193

**Media:** Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5,8 ft²/h without abrasive and solid components

**Special benefits:** Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing; low energy consumption

**Materials:** Cast iron, bronze, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Closed impeller, radial impeller, vortex impeller, and two-channel impeller available in some cases

**Applications:** Pulp and paper, sugar, thermal power, water, other industries, small hydropower
Single-stage centrifugal pumps
From closed to open impellers

Nominal diameter (DN) 65 to 600
Flow rate up to 26,500 usgpm
Head up to 530 ft
Pressure up to 360 psi
Temperature up to 390 °F

Design: Single-stage centrifugal pumps
Media: Depending on the impeller design: water, slightly contaminated, and contaminated media with solids content; consistencies up to 8%
Special benefits: Easy to maintain; the modular system is easy to access, uses tested components, and reduces the number of spare parts to be kept in stock; efficiency up to 90%; can be delivered with a degassing unit if the medium has a high gas content (ARE version)
Materials: Cast iron; stainless steel; highly wear-resistant, hardened stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Closed, semi-open, or open impeller, also available in highly wear-resistant design
Applications: Pulp and paper, water, mining, sugar, thermal power, other industries, small hydropower

Double-flow axial split case pumps

Nominal diameter (DN) 150 to 1,200
Flow rate up to 88,100 usgpm
Head customized up to 158,500 usgpm
Pressure up to 720 ft
Temperature up to 230 °F

Design: Single-stage, double-flow axial split case pumps
Media: Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content; consistency up to 2%
Special benefits: In-line casing design; horizontal or vertical installation; with horizontal installation, the motor can be placed on the left or right; efficiencies over 90%; low pulsation
Materials: Cast iron, stainless steel
Shaft seals: Gland packing, mechanical seal
Impeller design: Double-flow radial impeller with optimum suction behavior and very good NPSH values
Applications: Pulp and paper, water, thermal power, other industries, small hydropower
High-pressure pumps
Multi-stage centrifugal pumps

Nominal diameter (DN) 25 to 250
Flow rate up to 3,500 usgpm
Head up to 2,600 ft
Pressure up to 1,450 psi
Temperature up to 320 °F

Design: Multi-stage high-pressure pumps, vertical and horizontal design
Media: Clean and slightly contaminated liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content
Materials: Cast iron, bronze, aluminum bronze, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Radial impeller
Applications: Pulp and paper, water, thermal power, other industries, small hydropower

Nominal diameter (DN) 80 to 250
Flow rate up to 8,800 usgpm
Head up to 250 ft
Pressure up to 230 psi
Temperature up to 180 °F

Design: Single-stage, single-flow centrifugal pumps with integrated water ring vacuum pump
Media: Water, viscous media (e.g. sugar concentration of up to 70%), and media containing solids (e.g. for pulp, paper, or waste water applications)
Special benefits: Self-priming; the integrated vacuum pump prevents air from gathering in front of the impeller so that the centrifugal pump can thus operate well, even in the presence of high gas content; high-viscosity media can also be pumped
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Semi-open impeller
Applications: Pulp and paper, water and waste water, sugar, other industries
### Vertical submerged pumps

**Nominal diameter (DN)** 80 to 200  
**Flow rate** up to 3,500 US.gpm  
**Head** up to 160 ft  
**Pressure** up to 230 psi  
**Temperature** up to 140 °F  

**Design:** Single-stage, single-flow submerged pumps  
**Media:** Water, waste water, high-viscosity media, and media containing solids, consistencies up to 6%; slurries containing large particles (up to 5.5 inch); abrasive media  
**Special benefits:** Modular base frame design; generously sized shaft; standard construction lengths of 3.3 to 6.6 ft; flexible coupling – also developed for transporting coarse media  
**Materials:** Cast iron, stainless steel  
**Impeller design:** Open or vortex impeller  
**Applications:** Pulp and paper, water and waste water, other industries

### Medium-consistency pumps

**Nominal diameter (DN)** 80 to 400  
**Flow rate** up to 13,000 admt/d  
**Head** up to 620 ft  
**Pressure** up to 360 psi  
**Temperature** up to 285 °F  
**Consistencies** up to 16% b.d.  

**Design:** Single-flow, single-stage, medium-consistency pump with fluidizer  
**Media:** Pulp suspensions up to a consistency of 16% b.d. and all types of viscous media  
**Special benefits:** No need to monitor the pressure in the degasser line and no loss of fibers thanks to the newly developed SMARTSEP degassing system  
**Materials:** Cast iron, stainless steel, acid-resistant individual components if needed  
**Shaft seal:** Mechanical seal  
**Impeller design:** Semi-open impeller  
**Applications:** Pulp and paper, sugar
Are you looking for safe and effective solutions in mining water management? ANDRITZ is one of the leading manufacturers of pumps for water management and emergency drainage in surface and underground mining.

- Deployment under extreme conditions
- Highest operating reliability
- Long service life
- Maintenance-free operation
- High-grade materials

Safety and reliability are the greatest necessities in surface and underground mining in order to ensure that there are no disruptions in extraction. Mine operators around the world trust the single-flow and double-suction submersible motor pumps from ANDRITZ in order to remove mine water reliably from operating areas. If rescue pumps are needed to drain water from mines reliably and quickly in emergencies, the patented HDM technology is the best possible solution to keep people and the environment safe.

### Double-suction submersible motor pumps

- **Well Ø**: from 20" upwards
- **Flow rate**: up to 26,500 usgpm
- **Head**: up to 4,900 ft
- **Pressure**: up to 2,175 psi
- **Temperature**: up to 170 °F

**Design**: Multi-stage, double-flow submersible motor pumps

**Media**: Clean, slightly contaminated, and abrasive raw, clean, mineral, sea, industrial, mine, and cooling water

**Special benefits**: No axial thrust, double-flow design for long service life and high operating reliability; maintenance-free

**Materials**: Cast iron, bronze, aluminum-bronze, stainless steel

**Impeller design**: Radial impeller

**Applications**: Mining, water, other industries (e.g. offshore)
HDM – Heavy Duty Mining

The challenge
The use of submersible motor pumps for large volumes or in great depths is associated with high stresses on the equipment. The higher the pump performance, the greater the axial thrust on the pump, motor, and its thrust bearing. The consequence: overloading and an increased risk of failure.

HDM – The solution
Two pumps are arranged one above the other, running in counter direction and driven by a continuous pump shaft. Splitting the workload between both pumps ensures complete axial thrust balancing and thus contributes towards solving the problems of force effects on the unit and loads on the thrust bearings; at the same time, the flow and suction speed outside the pump is halved. Thus, well walls are protected around the suction areas, and the intake of abrasive particles is minimized.

The result
In addition to technical benefits – HDM offers complete balancing of the axial thrust, flow speeds halved, and smaller impeller cross-sections – there are also economic benefits: maximum operating reliability, minimal wear, and long service life, which can often be more than 20 years. In combination with ANDRITZ high-performance submersible motors, the result is a complete technical solution.

Custom solutions
Each ANDRITZ submersible pump with HDM technology is customized. It is individually configured to meet your requirements.

Single-stage pumps
Highly abrasion-resistant

Nominal diameter (DN) 65 to 600
Flow rate up to 26,500 usgpm
Head up to 530 ft
Pressure up to 360 psi
Temperature up to 390 °F

Design: Single-stage, abrasion-resistant volute casing pumps
Media: Slightly contaminated and contaminated media with solids content
Special benefits: Easy to maintain, the modular system is easy to access, uses tested components, and reduces the number of spare parts to be kept on stock, efficiency up to 90%
Materials: Cast iron; stainless steel; highly wear-resistant, hardened stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Semi-open, or open impeller, also available in highly wear-resistant design
Applications: Mining, sugar
Single-flow submersible motor pumps
MS-T – Modular Shaft Technology

Well Ø from 6" upwards
Flow rate up to 4,000 usgpm
Head up to 2,600 ft
Pressure up to 100 bar
Temperature up to 170 °F

Design: Multi-stage, single-flow submersible motor pumps
Media: Clean, slightly contaminated, and abrasive raw, pure, mineral, sea, industrial, mine, and cooling water
Special benefits: Maintenance-free; long service life and high operating reliability; can be supplied optionally with modular shaft technology for flexible extension and to reduce the number of stages
Materials: Cast iron, aluminum-bronze, stainless steel
Impeller design: Radial, semi-axial impeller
Applications: Water, mining, other industries (e.g. offshore)

The challenge
The cost of an application is becoming increasingly important in making investment decisions. This raises the question of whether the continuous shaft concept is still up to date. Installing and removing a pump with a continuous shaft requires numerous individual steps. The logistics and storage of many different individual parts is associated with high costs. Adjustments to changing heads are generally only possible through cost-intensive exchanging of pumps.

MS-T – The solution
MS-T is not only a technological evolution, from the cost perspective it is a revolution.

MS-T is designed using a modular concept – with all of its technical and economic advantages:

- Flexible adjustment to changing pumping conditions – easy and fast by extending or reducing the number of stages.
- Simple, time-saving, and targeted installation and removal of individual stages, either horizontal or vertical.
- A small number of highly standardized components ensure high availability and short delivery times, as well as low storage costs for the operator.

Thus, pumps with MS-T are the best solution wherever there is a need for operating reliability, freedom from maintenance, long service life, high efficiency, and flexible heads.
Submersible motors
MC-T – Modular Cooling Technology

Well Ø          from 8" upwards
Power            up to 6,700 hp
Voltage          up to 14,000 V
Temperature      up to 170 °F

Design: Water-filled and water-cooled three phase asynchronous motors with squirrel-cage rotors
Special benefit: Rewindable winding
Materials: Cast iron, bronze, stainless steel
Shaft seal: Mechanical seal
Installation: Vertical, some horizontal
Applications: Water, mining, other industries (e.g. offshore)

The challenge
Efficient and cost-effective cooling of submersible motors is a constant source of discussion by well and mine operators. Derating is a less-than-ideal solution. In addition to high capital and energy costs, the overlarge, downgraded motors usually require a larger well diameter. Oil cooling needs careful consideration as well – any failure can cause ecological damage.

MC-T – The solution
MC-T, an intelligent and compact cooling system, is the best solution here. A pump impeller brings movement into the cooling circuit and thus provides flow in the right direction. Our own-development cooling channels ensure heat absorption at all thermal sources and heat evacuation, as well as providing optimal heat conduction through the outside of the motor to the flow medium. The additional use of heat exchanger modules allows precise dimensioning of the cooling capacity.

Technical details and economic benefits
- Media temperature up to 170 °F
- High efficiency across the entire performance range
- Uses drinking water as the coolant
- Low investment required
- Reduced energy costs
- Maximum reliability
- Long service life
Sugar

Are you responsible for the operation or maintenance of a sugar processing facility? ANDRITZ develops and manufactures centrifugal pumps that can be used in the entire sugar production process. Depending upon where they are installed, our pumps have either closed or open impellers. In self-priming centrifugal pumps, an open impeller with an integrated water ring vacuum pump is used. When choosing pumps, the pump type selected depends on the characteristics of the media in each stage of the production process – such as viscosity, solids content, size of the solids, and abrasion characteristics.

- For example, self-priming centrifugal pumps:
The combination of a single-stage centrifugal pump with an integrated vacuum pump prevents gas from gathering at the inflow opening. This guarantees smooth operation, even with suboptimal suction pipe configurations. The pump unit can also be used without any difficulties up to a sugar content of 70% thanks to its semi-open impeller.

- For example, medium-consistency pumps:
ANDRITZ offers a practically tested pump to transport molasses, green juice, white juice, lime water, or sludge.
Single-stage centrifugal pumps
From closed to open impellers

Nominal diameter (DN) 65 to 600
Flow rate up to 26,500 usgpm
Head up to 530 ft
Pressure up to 230 psi
Temperature up to 285 °F

Design: Single-stage centrifugal pumps
Media: Depending on the impeller design: water, slightly contaminated, and contaminated media with some solids content; consistencies up to 8%
Special benefits: Easy to maintain; the modular system is easy to access, uses tested components and reduces the number of spare parts to be kept on stock; efficiency up to 90%; can be delivered with a degassing unit if the medium has a high gas content (ARE version)
Materials: Cast iron; stainless steel; highly wear-resistant, hardened stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Closed, semi-open, or open impeller, also available in highly wear-resistant design
Applications: Sugar, water, pulp and paper, mining, thermal power, other industries, small hydropower

Single-stage centrifugal pumps
EN 733, ISO 2858/5193

Nominal diameter (DN) 32 to 150
Flow rate up to 2,650 usgpm
Head up to 530 ft
Pressure up to 230 psi
Temperature up to 285 °F

Design: Single-stage centrifugal pumps – main dimensions and performance grid also available according to EN 733, ISO 2858 and 5193
Media: Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5,8 ft²/h without abrasive and solids content
Special benefits: Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing; low energy consumption
Materials: Cast iron, bronze, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Closed impeller, radial impeller, vortex impeller, and two-channel impeller available in some cases
Applications: Sugar, water, pulp and paper, thermal power, other industries, small hydropower
Self-priming centrifugal pumps

Nominal diameter (DN) 80 to 250
Flow rate up to 8,800 usgpm
Head up to 250 ft
Pressure up to 300 psi
Temperature up to 180 °F

Design: Single-stage, single-flow centrifugal pumps with integrated water ring vacuum pump
Media: Water, viscous media (e.g. sugar concentration of up to 70%), and media containing solids (e.g. for pulp, paper, or waste water applications)
Special benefits: Self-priming; the integrated vacuum pump prevents air gathering in front of the impeller and the centrifugal pump can therefore operate well even in the presence of high gas content; high-viscosity media can also be pumped
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Semi-open impeller
Applications: Sugar, water and waste water, pulp and paper, other industries

Medium-consistency pumps

Nominal diameter (DN) 80 to 400
Flow rate up to 13,000 admt/d
Head up to 620 ft
Pressure up to 360 psi
Temperature up to 285 °F
Consistencies up to 16% b.d.

Design: Single-flow, single-stage, medium-consistency pump with fluidizer
Media: All types of viscous media and fibrous suspensions up to a consistency of 16% b.d.
Special benefits: No need to monitor the pressure in the degassing line thanks to the newly developed SMARTSEP degassing system
Materials: Cast iron, stainless steel, acid-resistant individual components if needed
Shaft seal: Mechanical seal
Impeller design: Semi-open impeller
Applications: Sugar, pulp and paper
Thermal power

Are you planning or do you operate a thermal power plant? ANDRITZ offers energy utility pumps worldwide. We develop and produce:

- **Cooling water pumps** such as vertical line shaft and vertical volute pumps for thermal power plants.
- **Standard centrifugal pumps** such as double-flow split case pumps for district heating facilities.

Experience and know-how in hydraulic machinery and pump engineering guarantee the high standard of ANDRITZ pumps, providing consistent high quality and the effective use of energy. Our in-house laboratory for fluid dynamics, ASTRÖ, develops pumps according to customer requirements with very high efficiency, thus significantly lower energy costs, and excellent cavitation properties. In addition, many years of experience in turbine design and manufacturing enable ANDRITZ to make optimum use of the advantages of hydraulic impeller blade adjustment for cooling water pumps.
Vertical line shaft pumps

Flow rate: up to 310,000 usgpm
Head: up to 260 ft
Power: up to 13,400 hp

Design: Pull-out or non pull-out
Special benefits: Option with hydraulically adjustable impeller blades: The hydraulic impeller blade adjustment mechanism allows the impeller angle to be varied continuously during operation. Thus, the operator can react promptly to changes in flow rate and head.
Materials: Cast iron, non-alloy and low-alloy steels, duplex and super duplex
Shaft seal: Gland packing, mechanical seal
Impeller design: Radial, axial, and semi-axial impeller, optionally angle adjustable impeller blades or hydraulically adjustable impeller blades
Applications: Thermal power, water, other industries

Vertical volute pumps

Flow rate: up to 790,000 usgpm
Head: up to 130 ft (concrete volute)
         up to 820 ft (metal volute)
Power: up to 40,200 hp (concrete volute)
         up to 67,000 hp (metal volute)

Design: Metal or concrete volute with or without guide vane mechanism
Special benefits: The hydraulic dimensioning and design of the volute casing depends on the specific output characteristics. Optimum flow is achieved in the volute thanks to its individual shaping, thus also achieving a high level of efficiency.
Materials: Cast iron, non-alloy and low-alloy steels, duplex and super duplex
Shaft seal: Gland packing, mechanical seal
Impeller design: Radial, semi-axial
Applications: Thermal power, water, other industries
Double-flow axial split case pumps

Nominal diameter (DN) 150 to 1,200
Flow rate up to 88,100 US gpm
Head up to 720 ft
Pressure up to 360 psi
Temperature up to 230 °F

Design: Single-stage, double-flow axial split case pumps
Media: Pure, slightly contaminated, and aggressive liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content; consistency up to 2%
Special benefits: In-line casing design; horizontal or vertical installation; with horizontal installation, the motor can be placed on the left or right; efficiency over 90%; low pulsation
Materials: Cast iron, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Double-flow radial impeller with optimum suction behavior and very good NPSH values
Applications: Thermal power, water, pulp and paper, other industries, small hydropower

Single-stage centrifugal pumps
EN 733, ISO 2858/5193

Nominal diameter (DN) 32 to 150
Flow rate up to 2,650 US gpm
Head up to 530 ft
Pressure up to 230 psi
Temperature up to 285 °F

Design: Single-stage centrifugal pumps – main dimensions and performance grid also available according to EN 733, ISO 2858 and 5193
Media: Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content
Special benefits: Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing; low energy consumption
Materials: Cast iron, bronze, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Closed impeller, radial impeller, vortex impeller, and two-channel impeller available in some cases
Applications: Thermal power, water, pulp and paper, sugar, other industries, small hydropower
**Single-stage centrifugal pumps**

From closed to open impellers

- **Nominal diameter (DN)**: 65 to 600
- **Flow rate** up to 26,500 USGPM
- **Head** up to 530 ft
- **Pressure** up to 360 psi
- **Temperature** up to 390 °F

**Design:** Single-stage centrifugal pumps

**Media:** Depending on the impeller design: water, slightly contaminated, and contaminated media with solids content; consistencies up to 8%

**Special benefits:** Easy to maintain; the modular system is easy to access, uses tested components and reduces the number of spare parts to be kept on stock; efficiency up to 90%; can be delivered with a degassing unit if the medium has a high gas content (ARE version)

**Materials:** Cast iron; stainless steel; highly wear-resistant, hardened stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Closed, semi-open, or open impeller, also available in highly wear-resistant design

**Applications:** Thermal power, water, pulp and paper, mining, sugar, other industries, small hydropower

**High-pressure pumps**

Multi-stage centrifugal pumps

- **Nominal diameter (DN)**: 25 to 250
- **Flow rate** up to 3,500 USGPM
- **Head** up to 2,600 ft
- **Pressure** up to 1,450 psi
- **Temperature** up to 320 °F

**Design:** Multi-stage high-pressure pumps, vertical and horizontal design

**Media:** Clean and slightly contaminated liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content

**Materials:** Cast iron, bronze, aluminum-bronze, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial impeller

**Applications:** Thermal power, water, pulp and paper, other industries, small hydropower
Other industries

None of the previous sectors apply to you? Here you can find further examples of where ANDRITZ pumps are used in many different industries and applications.

- **Offshore**
  We have been working in the offshore industry for many years, primarily in seawater pumping applications. ANDRITZ pumps and motors can be found on platforms and on board ships. In the sub-sea sector, we offer customer-specific solutions for special submersible motors.

- **Seawater desalination**
  Readily available seawater can be used in order to cover the need for clean drinking water in dry regions and in metropolitan areas. ANDRITZ provides system components that respond to the challenges in successful desalination systems.

- **Bioethanol**
  ANDRITZ offers pumps for second-generation bioethanol plants.

- **Starches and the food industry**
  Our product portfolio extends beyond sugar and starches to cover proteins, dairy products, and drinks.

- **Various industrial applications**
  In addition, ANDRITZ industrial pumps are used nearly everywhere where secondary circuits are used for pumping coolants or auxiliary and operating liquids, or in demanding washing and cleaning processes in the raw materials sector. ANDRITZ pumps work in extreme temperatures and under high pressure, in aggressive, corrosive or solids-containing media (e.g. in the steel or chemical industries), and they transport coolants and lubricants as well as acids, liquors, and oils.

---

**Single-stage centrifugal pumps**

**EN 733, ISO 2858/5193**

<table>
<thead>
<tr>
<th>Nominal diameter (DN)</th>
<th>32 to 150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>up to 2,650 usgpm</td>
</tr>
<tr>
<td>Head</td>
<td>up to 530 ft</td>
</tr>
<tr>
<td>Pressure</td>
<td>up to 230 psi</td>
</tr>
<tr>
<td>Temperature</td>
<td>up to 285 °F</td>
</tr>
</tbody>
</table>

**Design:** Single-stage centrifugal pumps – main dimensions and performance grid also available according to EN 733, ISO 2858 and 5193

**Media:** Clean, slightly contaminated, and aggressive liquids up to a viscosity of 5,8 ft²/h without abrasive and solids content

**Special benefits:** Easy to maintain due to its modular design; the impeller unit can be removed from the installed pump casing; low energy consumption

**Materials:** Cast iron, bronze, stainless steel

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Closed impeller, radial impeller, vortex impeller, and two-channel impeller available in some cases

**Applications:** Other industries, water, pulp and paper, sugar, thermal power, small hydropower
Single-stage centrifugal pumps
From closed to open impellers

Nominal diameter (DN) 65 to 600
Flow rate up to 26,500 usgpm
Head up to 530 ft
Pressure up to 360 psi
Temperature up to 390 °F

Design: Single-stage centrifugal pumps
Media: Depending on the impeller design: water, slightly contaminated, and contaminated media with solids content; consistencies up to 8%
Special benefits: Easy to maintain; the modular system is easy to access, uses tested components and reduces the number of spare parts to be kept on stock; efficiency up to 90%; can be delivered with a degassing unit if the medium has a high gas content (ARE version)
Materials: Cast iron; stainless steel; highly wear-resistant, hardened stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Closed, semi-open, or open impeller, also available in highly wear-resistant design
Applications: Other industries, water, pulp and paper, mining, sugar, thermal power, small hydropower

Double-flow axial split case pumps

Nominal diameter (DN) 150 to 1,200
Flow rate up to 88,100 usgpm
Head customized up to 158,500 usgpm
Pressure up to 720 ft
Temperature up to 230 °F

Design: Single-stage, double-flow axial split case pumps
Media: Pure, slightly contaminated, and aggressive liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content; consistency up to 2%
Special benefits: Inline casing design; horizontal or vertical installation; with horizontal installation, the motor can be placed on the left or right; efficiency over 90%; low pulsation
Materials: Cast iron, stainless steel
Shaft seals: Gland packing, mechanical seal
Impeller design: Double-flow radial impeller with optimum suction behavior and very good NPSH values
Applications: Other industries, water, pulp and paper, thermal power, small hydropower
Multi-stage axial split case pumps

Nominal diameter (DN) 150 to 1600
Flow rate up to 132,000 usgpm
Head up to 2,600 ft
Power up to 20 MW
Efficiency up to 91%

Design: Multi-stage axial split case pumps with various impeller arrangements in single or double flow design
Media: Pure, slightly contaminated
Special benefits: In-line casing design; horizontal installation, the motor can be placed on the left or right; efficiencies over 90%
Materials: Cast iron, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Single or double flow closed radial impellers with optimum suction behavior and very good NPSH values
Applications: Water, other industries, small hydropower

High-pressure pumps
Multi-stage centrifugal pumps

Nominal diameter (DN) 25 to 250
Flow rate up to 3,500 usgpm
Head up to 2,600 ft
Pressure up to 1,450 psi
Temperature up to 320 °F

Design: Multi-stage high-pressure pumps, horizontal and vertical design
Media: Clean and slightly contaminated liquids up to a viscosity of 5.8 ft²/h without abrasive and solids content
Materials: Cast iron, bronze, aluminum-bronze, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Radial impeller
Applications: Other industries, water, pulp and paper, thermal power, small hydropower
Self-priming centrifugal pumps

Design: Single-stage, single-flow centrifugal pumps with integrated water ring vacuum pump
Media: Water, viscous media (e.g. sugar concentration of up to 70%), and media containing solids (e.g. for pulp, paper or waste water applications)
Special benefits: Self-priming; the integrated vacuum pump prevents air from gathering in front of the impeller and the centrifugal pump can therefore operate well even in the presence of high gas content; high-viscosity media can also be pumped
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Semi-open impeller
Applications: Other industries, water and waste water, pulp and paper, sugar

Nominal diameter (DN) 80 to 250
Flow rate up to 8,800 usgpm
Head up to 250 ft
Pressure up to 230 psi
Temperature up to 180 °F

Vertical submerged pumps

Design: Single-stage, single-flow submerged pumps
Media: Water, waste water, high-viscosity media, and media containing solids; consistencies up to 6%; slurries containing large particles (up to 5.5 inch); abrasive media
Special benefits: Modular base frame design; generously sized shaft; standard construction length of 3.3 to 6.6 ft; flexible coupling – also developed for the transport of coarse media
Materials: Cast iron, stainless steel
Impeller design: Open or vortex impeller
Applications: Other industries, water and waste water, pulp and paper

Nominal diameter (DN) 80 to 200
Flow rate up to 3,500 usgpm
Head up to 160 ft
Pressure up to 230 psi
Temperature up to 140 °F

Other industries
Sewage pumps, dry

Nominal diameter (DN): 65 to 700
Flow rate: up to 44,000 usgpm
Head: up to 330 ft
Pressure: up to 230 psi
Temperature: up to 285 °F

Design: Single-stage waste water pumps
Media: Low-viscosity, high-viscosity, and abrasive media, as well as gaseous and non-gaseous slurries
Special benefits: Easy to maintain due to its modular design; impeller unit can be removed from the installed pump casing
Materials: Cast iron, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Single-channel, double-channel, vortex, multi-channel, open mixed-flow impeller
Applications: Other industries, waste water

Sewage pumps, wet

Nominal diameter (DN): 65 to 400
Flow rate: up to 11,500 usgpm
Head: up to 260 ft
Pressure: up to 145 psi
Temperature: up to 105 °C

Design: Single-stage submersible pumps in close-coupled design
Media: Sewage and waste water as well as sludges with solids content (10% dry substance max.)
Special benefits: Explosion-proof designs can be supplied; available with a float switch
Materials: Cast iron, stainless steel
Shaft seal: Mechanical seal
Impeller design: Single-channel, double-channel, vortex impeller
Applications: Other industries, waste water
Single-flow submersible motor pumps
MS-T – Modular Shaft Technology

- **Well Ø**: from 6" upwards
- **Flow rate**: up to 4,000 US.gpm
- **Head**: up to 2,600 ft
- **Pressure**: up to 1,450 psi
- **Temperature**: up to 170 °F

**Design**: Multi-stage, single-flow submersible motor pumps
**Media**: Clean, slightly contaminated, and abrasive raw, clean, mineral, sea, industrial, mine, and cooling water
**Special benefits**: Maintenance-free; long service life and high operating reliability; can be supplied optionally with modular shaft technology for flexible extension and reduction of the number of stages
**Materials**: Cast iron, aluminum-bronze, stainless steel
**Impeller design**: Radial, semi-axial impeller
**Applications**: Other industries, water, mining

**The challenge**
The cost of an application is becoming increasingly important in making investment decisions. This raises the question of whether the continuous shaft concept is still up to date. Installing and removing a pump with a continuous shaft requires numerous individual steps. The logistics and storage of many different individual parts is associated with high costs. Adjustments to changing heads are generally only possible through cost-intensive exchanging of pumps.

**MS-T – The solution**
MS-T is not only a technological evolution, from the cost perspective it is a revolution.

MS-T is designed using a modular concept – with all of its technical and economic advantages:

- Flexible adjustment to changing pumping conditions – easy and fast by extending or reducing the number of stages.
- Simple, time-saving, and targeted installation and removal of individual stages, either horizontal or vertical.
- A small number of highly standardized components ensure high availability and short delivery times, as well as low storage costs for the operator.

Thus, pumps with MS-T are the best solution wherever there is a need for operating reliability, freedom from maintenance, long service life, high efficiency, and flexible heads.
Double-suction submersible motor pumps

HDM – Heavy Duty Mining

Well Ø from 20" upwards
Flow rate up to 26,500 usgpm
Head up to 4,900 ft
Pressure up to 2,175 psi
Temperature up to 170 °F

Design: Multi-stage, double-flow submersible motor pumps
Media: Clean, slightly contaminated, and abrasive raw, clean, mineral, sea, industrial, mine, and cooling water
Special benefits: No axial thrust, double-flow design for long service life and high reliability; maintenance-free
Materials: Cast iron, bronze, aluminum-bronze, stainless steel
Impeller design: Radial impeller
Applications: Other industries, water, mining

The challenge
The use of submersible motor pumps for large volumes or in great depths is associated with high stresses on the equipment. The higher the pump performance, the greater the axial thrust on the pump, motor, and its thrust bearing. The consequence: overloading and an increased risk of failure.

HDM – The solution
Two pumps are arranged one above the other, running in counter direction and driven by a continuous pump shaft. Splitting the workload between both pumps ensures complete axial thrust balancing and thus contributes towards solving the problems of force effects on the unit and loads on the thrust bearings; at the same time, the flow and suction speed outside the pump is halved. Thus, well walls are protected around the suction areas, and the intake of abrasive particles is minimized.

The result
In addition to technical benefits – HDM offers complete balancing of the axial thrust, flow speeds halved, and smaller impeller cross-sections – there are also economic benefits: maximum operating reliability, minimal wear, and long service life, which can often be more than 20 years. In combination with ANDRITZ high-performance submersible motors, the result is a complete technical solution.

Custom solutions
Each ANDRITZ submersible pump with HDM technology is customized. It is individually configured to meet your requirements.
### Submersible motors
**MC-T – Modular Cooling Technology**

| Design: Water-filled and water-cooled three phase asynchronous motors with squirrel-cage rotors |
| Special benefit: Rewindable winding |
| Materials: Cast iron, bronze, stainless steel |
| Shaft seal: Mechanical seal |
| Installation: Vertical, horizontal in some cases |
| Applications: Other industries, water, mining |

#### The challenge
Efficient and cost-effective cooling of submersible motors is a constant source of discussion by well and mine operators. De-rating is a less-than-ideal solution. In addition to high capital and energy costs, the overlarge, downgraded motors usually require a larger well diameter. Oil cooling needs careful consideration as well – any failure can cause ecological damage.

#### MC-T – The solution
MC-T, an intelligent and compact cooling system, is the best solution here. A pump impeller brings movement into the cooling circuit and thus provides flow in the right direction. Our own-development cooling channels ensure heat absorption at all thermal sources and heat evacuation, as well as providing optimal heat conduction through the outside of the motor to the flow medium. The additional use of heat exchanger modules allows precise dimensioning of the cooling capacity.

#### Technical details and economic benefits
- Media temperature up to 75°C
- High efficiency across the entire performance range
- Uses drinking water as the coolant
- Low investment required
- Reduced energy costs
- Maximum reliability
- Long service life
**Vertical line shaft pumps**

Flow rate: up to 310,000 usgpm
Head: up to 260 ft
Power: up to 13,400 hp

**Design:** Pull-out or non pull-out

**Special benefits:** Option with hydraulically adjustable impeller blades: The hydraulic impeller blade adjustment mechanism allows the impeller angle to be varied continuously during operation. Thus, the operator can react promptly to changes in flow rate and head.

**Materials:** Cast iron, non-alloy and low-alloy steels, duplex and super duplex

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial, axial, and semi-axial impeller, optionally adjustable angle impeller blades or hydraulically adjustable impeller blades

**Applications:** Thermal power, water, other industries

---

**Vertical volute pumps**

Flow rate: up to 790,000 usgpm
Head: up to 130 ft (concrete volute) up to 820 ft (metal volute)
Power: up to 40,200 hp (concrete volute) up to 67,000 hp (metal volute)

**Design:** Metal or concrete volute with or without guide vane mechanism

**Special benefits:** The hydraulic dimensioning and design of the volute casing depends on the specific output characteristics. Optimum flow is achieved in the volute thanks to its individual shaping, thus also achieving a high level of efficiency.

**Materials:** Cast iron, non-alloy and low-alloy steels, duplex and super duplex

**Shaft seal:** Gland packing, mechanical seal

**Impeller design:** Radial, semi-axial

**Applications:** Water, thermal power stations, other industries
Small hydropower

Are you looking for energy-saving solutions – or for solutions that produce energy? Small hydropower plants, and thus independent power generation, are suitable for the private as well as the municipal sectors, and for industry and commercial facilities.

- **Standard pumps** from ANDRITZ used as turbines are designed for island operation as well as to feed existing networks.

- Save energy with **pumps from ANDRITZ used as turbines**: Ecological and economic success was achieved by a paper plant in Germany with a reverse-running standard pump. This pump – an ANDRITZ turbine pump operating in the waste water microflotation plant – takes the existing overpressure after the waste water tank and transfers the additional energy back to the booster pump motor.

Hydroelectric energy has many benefits: It can always be generated, is easily stored, and guarantees a base load. It is also a clean and emission-free means of generating electricity.
Pumps as turbines

Nominal diameter (DN) 32 to 1200
Water flow up to 95,100 usgpm
Head up to 980 ft
Power up to 2 MW

Design: Single-stage or multi-stage; single or double-flow; open and semi-open impeller
Media: Drinking water, residual water and waste water, stock suspensions in the pulp and paper industries
Special benefits: Low investment and fast amortization, short delivery times
Materials: Cast iron, bronze, stainless steel
Shaft seal: Gland packing, mechanical seal
Applications: Energy production and recovery: island facilities (e.g. for mountain refuges), drinking water turbines, waste water turbines, residual water turbines, small power plants connected to the electricity grid, pump turbines for storage in small applications

Multi-stage axial split case pumps

Nominal diameter (DN) 150 to 1600
Flow rate up to 132,000 usgpm
Head up to 2,600 ft
Power up to 20 MW
Efficiency up to 91%

Design: Multi-stage axial split case pumps with various impeller arrangements in single or double flow design
Media: Pure, slightly contaminated
Special benefits: In-line casing design; horizontal installation, the motor can be placed on the left or right; efficiencies over 90%
Materials: Cast iron, stainless steel
Shaft seal: Gland packing, mechanical seal
Impeller design: Single or double flow closed radial impellers with optimum suction behavior and very good NPSH values
Applications: Water, other industries, small hydropower
## Installation

<table>
<thead>
<tr>
<th>Bare shaft pumps</th>
<th>Pumps with flexibly coupled motor</th>
<th>Pumps with directly coupled motor (close-coupled design)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation:</td>
<td>Installation:</td>
<td>Installation:</td>
</tr>
<tr>
<td>dry, horizontal</td>
<td>dry, horizontal or vertical</td>
<td>dry, horizontal or vertical</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pumps with flexibly coupled motor</th>
<th>Pumps with cardan shaft drive</th>
<th>Pumps with V-belt drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation:</td>
<td>Installation:</td>
<td>Installation:</td>
</tr>
<tr>
<td>dry, vertical</td>
<td>dry, vertical</td>
<td>dry, horizontal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pumps with a directly coupled submersible motor</th>
<th>Pumps with drive via extended shaft or supporting tube system, with an optional pressure line</th>
<th>Pumps with directly coupled submersible motor, optionally with cooling or pipe shroud casing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation:</td>
<td>Installation:</td>
<td>Installation:</td>
</tr>
<tr>
<td>wet, vertical</td>
<td>wet, vertical, mobile</td>
<td>wet, vertical, partially horizontal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pumps with flexibly coupled motor</th>
<th>Pumps with directly coupled submersible motor, optionally with cooling or pipe shroud casing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation:</td>
<td>Installation:</td>
</tr>
<tr>
<td>dry, vertical</td>
<td>wet, vertical, partially horizontal</td>
</tr>
</tbody>
</table>
Close to our customers
ANDRITZ locations worldwide