COMPANY PUMP RANGE
Engineered pumps tailored to your plant projects
We think out of the box for you
Termomeccanica Pompe – The ideal pump partner for your plant projects

TM.P. S.p.A. - Termomeccanica Pompe, a pump designer whose history dates back as far as 1912, ranks today amongst the leading manufacturers and service providers of engineered centrifugal pumps solutions.

Since privatization nearly 25 years ago, the company has done nothing but grow, a growth which stems from the company’s 100-year long heritage and its international development strategies supported by the Termomeccanica Group.

TMP belongs indeed to a holding company with a 118 million euro net worth and with the prominent Italian banking group Intesa San Paolo as the major shareholder (35%).

Our fields of applications range from Oil & Gas, Power, Desalination, Power Generation and Water Handling to Heavy Industry.

Over the last 10 years, the company has developed from a “simple” pump manufacturer into a true “system integrator”, offering all-encompassing customized solutions that can meet the most stringent customers’ and end-users’ project requirements.

**Oil & Gas**
Termomeccanica offers a wide range of API 610 pumps in compliance with the most stringent technical specifications of the Upstream, Midstream and Downstream sectors. The company’s pump range covers the most demanding services of the industry such as those related to refineries & petrochemical plants, oil pipelines, LNG and onshore & offshore water injection plants.

**Power Generation**
Termomeccanica pumps cover all main and auxiliary services not only of the traditional & combined cycle power plants but also those of the geothermal and nuclear power plants.

**Desalination**
Termomeccanica pumps cover all process and water intake services related to the various Desalination technologies, such as MSF, MED and Reverse Osmosis.

**Water Handling**
Termomeccanica pumps cover all main and auxiliary services in Irrigation, Land Reclamation, Potable Water and Water Treatment plants.
Our Headquarters in La Spezia
Index

**TMP pump matrix – overview of Termomeccanica products per pump type, market and services**  p.6

**TMP Product Range - Focus on specific pump types:**

Horizontal single-stage overhung pumps
API-610 type: OH2 ● TMP model: AP  p.9

Horizontal between bearings, axially split, one-stage, double-suction pumps
API-610 type: BB1 ● TMP model: DD  p.11

Horizontal between bearings, axially split, one-stage, double-suction pumps
API-610 type: BB1 – product-lubricated bearings ● TMP model: HSS  p.13

Horizontal between bearings, axially split, two-stage pumps
API-610 type: BB1 ● TMP model: D2 – D2D – DD2D  p.15

Horizontal between bearings, radially split, one-stage, double-suction pumps
API-610 type: BB2 ● TMP model: DP  p.17

Horizontal between bearings, radially split, two-stage pumps
API-610 type: BB2 ● TMP model: A2P – A2PD  p.19

Horizontal between bearings, axially split, multi-stage pumps
API-610 type: BB3 ● TMP model: PF  p.21

Horizontal between bearings, single-casing, radially split, multi-stage pumps
API-610 type: BB4 ● TMP model: MES - MESD  p.23

Horizontal between bearings, double casing, radially split, multi-stage pumps
API-610 type: BB5 ● TMP model: MESB – MESBD  p.25

Vertically suspended, wet pit, single casing, single or multistage, diffuser or volute pumps
API-610 type: VS1-VS2 ● TMP model: CPP - CPPD  p.27-28

Vertically suspended, wet pit, single casing, axial-flow pumps
API-610 type: VS3 ● TMP model: EV  p.30

Vertically suspended, single casing, volute, line-shaft driven sump pumps
API-610 type: VS4 ● TMP model: CPPL  p.32

Vertically suspended, canned, single- or double-suction, single- or multi-stage pumps
API-610 type: VS6 – VS7 ● TMP model: CEX – CEXD  p.34

Large vertical volute dry pit pumps
API-610 type: N.A. ● TMP model: NV  p.36
## Termomeccanica Pompe – pump matrix for Oil & Gas services

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>Overhung</th>
<th>1-2 Stage Between Bearings</th>
<th>Multistage Between Bearings</th>
<th>Vertically Suspended</th>
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#### Upstream
- Sea water lifting
- Oil well water injection
- Oil well water injection booster
- Shipping service
- Oil Transfer
- FPSO-FSO-FPO
- Heavy oil, oil sands and shale
- Auxiliary services

#### Midstream
- Hydrocarbon pipelines
- Sea Water/ Spray services
- Charge / Discharge services

#### Downstream
- Distillation
- Hydrotreating
- Hydrocracking
- Catalytic cracking
- Residuum & heavy oil upgrading
- Gas treating & sulphur recovery
- LNG, NGL, LPG
- Gas Reliquefaction
Termomeccanica Pompe – pump matrix for Power Generation, Water & other industrial services

<table>
<thead>
<tr>
<th>Pump Type</th>
<th>API 610-type code</th>
<th>1-2 Stage Between Bearings</th>
<th>Multistage Between Bearings</th>
<th>Vertically Suspended</th>
<th>Special Design</th>
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<td>Radially Split Diffuser Volute Axial Flow Volute Diffuser Volute Volute</td>
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<td>OH2</td>
<td>BB1</td>
<td>BB2</td>
<td>BB3 BB4 BB5 VS1 VS2 VS3 VS4 VS6 VS7 N.A.</td>
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<tr>
<td>Radially Split</td>
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<td>DP</td>
<td>A2P A2PD</td>
<td>PF MES MESB CPP CPPD EV CPPL CEX CEXD NV</td>
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</tbody>
</table>

### Power Generation

- **Main boiler feed water**: ![Diagram](image)
- **Start-up & emergency feed water**: ![Diagram](image)
- **Booster**: ![Diagram](image)
- **Condensate extraction**: ![Diagram](image)
- **Condenser cooling water**: ![Diagram](image)
- **Closed cooling water system**: ![Diagram](image)
- **Auxiliary services**: ![Diagram](image)
- **Geothermal services**: ![Diagram](image)
- **Nuclear auxiliary services**: ![Diagram](image)

### Water

- **Sea water desalination**: ![Diagram](image)
- **Water transportation**: ![Diagram](image)
- **Water distribution**: ![Diagram](image)
- **Flood control**: ![Diagram](image)
- **Irrigation & land reclamation**: ![Diagram](image)
- **Water treatment**: ![Diagram](image)

### Industry

- **Cooling water**: ![Diagram](image)
- **Water supply & storage**: ![Diagram](image)
- **Boiler feed**: ![Diagram](image)
- **Fire fighting**: ![Diagram](image)
- **Scaling**: ![Diagram](image)
- **Auxiliary services**: ![Diagram](image)
API 610 OH2-type pumps • TMP AP pump model

Photo: TMP AP pump model for amine preparation service at oil field facility
Horizontal single-stage overhung pumps
API-610 type: OH2
Termomeccanica pump model: AP

Key features:
- Single-stage, single-suction radial impeller, end/top centrifugal pumps
- Thanks to the back pull-out arrangement, maintenance activities are very simple and can be carried out without disconnecting the piping or removing the driver
- Center-line assembly, large diameter shaft and very stiff bearing casing assure proper alignment of the rotating parts during the most critical conditions
- Seal chamber according to API 682 for any mechanical seal configuration and API 610 seal flushing plan
- Coke crusher can be provided upon request

Main applications:
- Heavy duty services in Oil & Gas processing
- Boiler circulation & other high temperature industrial services
- Water market & general auxiliary pumping systems

Operating range
- Capacity: up to 4,000 m³/h 17,611 gpm
- Head: up to 400 m 1,300 ft
- Pressure: up to 100 bar 1,450 psig
- Temperature: range -100 to +450 °C -150 to +840 °F
Horizontal between-bearings, axially split, one-stage, double-suction pumps
API-610 type: BB1
Termomeccanica pump model: DD

Key features:
- Axially split casing, single stage double entry impeller, double volute, between bearings pumps
- Very large number of hydraulics optimized for any need - medium and high capacities, low and high heads
- Near centerline foot mounted for high temperature (DDH)
- Vertical arrangement available (DDBV)
- Bearing type and lubrication
  - Antifriction radial and thrust bearings, oil bath or oil ring lubricated
  - Hydrodynamic radial and rolling element thrust bearings, lubricated by oil bath or oil ring
  - Hydrodynamic radial and thrust bearings with pressurized oil system, for higher speed and power

Main applications:
- Water transportation
- Water supply and distribution
- Cooling water services in industrial plants
- Boiler feed boosting & condensate extraction in power plants
- Sea water desalination
- Crude oil pipeline
- Tank farm transfer
- Ship charge and discharge
- General industry

Operating range
- Capacity: up to 30,000 m³/h 132,000 gpm
- Head: up to 600 m 1,970 ft
- Pressure: up to 150 bar 2,180 psig
- Temperature: up to 200 °C 392 °F
- Speed of rotation up to 5,000 rpm 5,000 rpm
API 610 BB1-type product lubricated bearings pumps • TMP HSS pump model

Photo: TMP HSS pump model for municipal water systems
Key features:
- The bearing housings and bearing brackets of the DD model are removed and the two radial bearings are located within the pump casing on the two sides. The radial bearings are product lubricated through a line from the impeller discharge to the suction chamber.
- Axial hydraulic thrusts are compensated by disc-type wear rings.
- Only one seal (either mechanical or packing) is provided on D.E. side.
- The pump’s reduced number of components and simplicity of assembly/disassembly lower its operating & maintenance costs while maintaining a high level of operational safety & reliability.

Main applications:
- Clean or slightly polluted water and hydrocarbon services in general industry.
- Water transmission, distribution and irrigation.
- Various services in Reverse Osmosis Desalination plants.

Operating range:
- Capacity: up to 4,000 m³/h, 18,000 gpm.
- Head: up to 200 m, 650 ft.
- Pressure: up to 25 bar, 360 psig.
- Temperature: up to +150 °C, 300 °F.
API-610 BB1 type pumps ● TMP D2 - D2D- DD2D pump models

TMP D2D pump model for main line service at water transmission plant
Horizontal between-bearings, axially split, two-stage pumps
API-610 type: BB1
Termomeccanica pump model: D2 – D2D – DD2D

Key features:
- Axially split casing, double volute, two stage, between bearings pumps:
  - D2 two single entry impellers, back to back arrangement
  - D2D two double entry impellers. Volute is staggered to reduce pressure pulsations
  - DD2D first stage double entry impeller, second stage single entry impeller. To minimize axial hydraulic forces, a solution with first stage consisting of two single entry, back-to-back impellers, with diffuser design is also available
- Bearings and lubrication:
  - Antifriction radial and thrust bearings, oil bath or oil ring lubricated
  - Hydrodynamic radial and rolling element thrust bearings, lubricated by oil bath or oil ring
  - Hydrodynamic radial and thrust bearings with pressurized oil system, for higher speed and power
- Near center line mounted casing
- Hydraulics optimized through extensive CFD analyses & experimental tests.

Main applications:
- Water transportation
- High pressure services in sea water desalination plants
- Crude oil pipelines
- Applications requiring high capacities and high head services

Operating range
- Capacity: up to 20,000 m³/h 88,057 gpm
- Head: up to 800 m 2,625 ft
- Pressure: up to 150 bar 2,180 psig
- Temperature: up to +150 °C 302 °F
- Speed of rotation up to 5,000 rpm 5,000 rpm
API-610 BB2-type pumps • TMP DP pump model

Photo: TMP DP pump model for feed service at offshore oil field facility
Horizontal between-bearings, radially split, one-stage, double-suction pumps
API-610 type: BB2
Termomeccanica pump model: DP

Key features:
- Radially split, single stage double entry impeller, double volute, between bearings pumps
- Heavy duty process pumps, centerline-mounted for high temperature, high pressure services.
- Centerline arrangement helps avoiding misalignment at elevated temperatures. Additional features are provided to compensate axial thermal expansion
- Top-top nozzles: side-side, bottom-side, side-top upon request
- Double volute casing to reduce radial hydraulic thrust. Double cover design allows easy access for maintenance. On the largest sizes, single cover solution is adopted.
- For the highest speeds and heads, diffuser design is available together with staggered vane impeller
- Very sturdy pump casing to withstand high nozzle loads
- Bearings: ball/ball, sleeve/ball and sleeve/tilting pads solutions are available
- Coke crusher available upon request

Main applications:
- Refinery and petrochemical services
- Oil well water injection
- Oil transfer
- FPSO - FSO - FPO
- Hydrocarbon pipelines
- Boiler feed and booster in fossil fuel and nuclear power stations
- Auxiliary services in nuclear power plant and general industry

Operating range
- Capacity: up to 5,000 m³/h 22,014 gpm
- Head: up to 600 m 1,970 ft
- Pressure: up to 150 bar 2,180 psig
- Temperature: up to +450 °C 842 °F
- Speed of rotation up to 6,000 rpm 6,000 rpm
API-610 BB2-type pumps • TMP A2P–A2PD pump models

Photo: TMP A2P pump model for sponge oil service at refinery
Horizontal between-bearings, radially split, two-stage pumps
API-610 type: BB2
Termomeccanica pump model: A2P – A2PD

Key features:
- Radially split, two stage, double volute, between bearings pumps
- Heavy duty process pumps, centerline-mounted for high temperature, high pressure services
- Centerline arrangement helps avoiding misalignment at elevated temperatures. Additional features are provided to compensate axial thermal expansion
- Top-top nozzles is standard. Side-top or side-side is optional.
- On A2P models, two single entry impellers, with back-to-back arrangement to compensate axial hydraulic loads
- On A2PD models, first stage double entry impeller for low NPSH applications
- Opposed volute design to reduce radial hydraulic forces
- Very sturdy pump casing to withstand high nozzle loads
- Bearings: ball/ball, sleeve/ball and sleeve/tilting pads solutions are available
- Coke crusher available upon request

Main applications:
- Refinery and petrochemical services
- Oil well water injection
- Hydrocarbon pipelines
- Liquefied gas industry
- Offshore installation

Operating range
- Capacity: up to 2,000 m³/h 8,806 gpm
- Head: up to 750 m 2,460 ft
- Pressure: up to 150 bar 2,180 psig
- Temperature: up to +450 °C 842 °F
API 610 BB3-type pumps • TMP PF pump model

Photo: TMP PF pump model for boiler feed water service at oil field facility
Horizontal between-bearings, axially split, multi-stage pumps
API-610 type: BB3
Termomeccanica pump models: PF

Key features:
- Heavy duty, high pressure, double volute casing, multistage opposed impellers, near centerline mounted pumps
- First stage double entry impeller for low NPSH applications
- Opposed impellers arrangement for axial thrust balancing and minimum bearing loads
- Double volute design for radial thrust reduction to minimize the shaft deflection
- Suction and discharge nozzles are integrally cast with the bottom half casing, on opposite sides
- Ball/ball, sleeve/ball and sleeve/tilting pads solutions are available
- De-staging can be provided upon request
- Special features are used to compensate thermal expansion and ensure casing alignment

Main applications:
- Oil well water injection
- Hydrocarbon pipelines
- Liquefied gas industry
- Offshore installation
- Water transportation
- Reverse Osmosis HP service
- Boiler feed
- Nuclear auxiliary services
- Fire fighting

Operating range
| Capacity: up to 3,000 m³/h | 13,209 gpm |
| Head: up to 2,500 m | 8,200 ft |
| Pressure: up to 300 bar | 4,350 psig |
| Temperature: up to +200 C | 392 °F |
| Rotational speed up to 6,000 rpm | 6,000 rpm |
API 610 BB4-type pumps • TMP MES-MESD pump models

Photo: TMP MES pump model for boiler feed water service at power plant
Horizontal high pressure multi-stage ring-section pumps
API-610 type: BB4
Termomeccanica pump model: MES - MESD

Key features:
- Single-casing, radially split, multistage between bearings pumps, diffuser design; suction & discharge covers center-line mounted
- Casings are pressed together by external tie bolts and sealed by confined o-rings
- First stage double entry impeller for low NPSH applications (MESD)
- Top-top suction and discharge nozzles are standard
- Hydraulic axial thrust is compensated by balancing disk or balancing drum
- Stacked impellers; push fit design is standard but shrink fit design is available with impellers individually locked by split rings
- Bleed off nozzle can be provided
- Bearing design depends on the type of axial thrust balancing system; however, antifriction as well as hydrodynamics bearings can be supplied depending on pump design and operation parameters
- Special product lubrication bearing design is available for high pressure reverse osmosis service

Main applications:
- Main & start-up boiler feed water for any type of fossil fuel power plant
- High pressure auxiliary services in general industry, petrochemical and RO Desalination plants
- Fire fighting systems
- Water transmission pipelines and water distribution
- Seal water transfer in nuclear power plants
- Condensate extraction

Operating range
- Capacity: up to 2,000 m³/h 8,800 gpm
- Head: up to 4,000 m 13,100 ft
- Pressure: up to 450 bar 6,530 psig
- Temperature: up to +220°C 428 °F
- Rotational speed up to 7,000 rpm
API 610 BB5-type pumps • TMP MESB-MESBD pump models

Photo: TMP MESB pump model for export oil service at offshore oil field facility
Horizontal high pressure multi-stage barrel pumps
API-610 type: BB5
Termomeccanica pump model: MESB - MESBD

Key features:
- Double-casing, radially split, multistage, between-bearings pumps, diffuser design
- Full cartridge pull-out solution is standard for very easy and fast dismantling; cartridge includes rotor, diffusers, intermediate casings, suction and discharge covers, mechanical seals and bearing brackets
- First stage double entry impeller for low NPSH applications (MESBD)
- Bolted discharge cover design is available
- For high stage number, back-to-back arrangement is adopted
- Centerline mounting to ensure alignment at elevated operation temperature
- Depending on operating conditions and/or customer requirements the impellers can be stacked on the shaft with push fit design or individually locked by shrink fit
- Bleed off nozzle can be provided
- Hydraulic axial thrust is compensated by balancing drum
- Antifriction or hydrodynamic bearings can be supplied depending on operation parameters

Main applications:
- Main & start-up boiler feed for any type of fossil fuel & nuclear power plants
- Nuclear auxiliary services
- Water and oil transportation
- Oil well water injection - onshore and offshore
- High pressure applications in refinery and petrochemical plants

Operating range
- Capacity: up to 3,000 m³/h 13,200 gpm
- Head: up to 7,000 m 23,000 ft
- Pressure: up to 1,000 bar 14,500 psig
- Temperature: up to +450°C 842 °F
- Rotational speed: up to 7,000 rpm 7,000 rpm
API-610 VS1–VS2 type pumps • TMP CPP– CPPD pump models

photo: TMP CPP pump model for sea water supply service at LNG facility
Vertically suspended, wet pit, single casing, single or multistage, diffuser or volute pumps
API-610 type: VS1 – VS2
Termomeccanica pump model: CPP - CPPD

Operating range
- Capacity: up to 100,000 m³/h 440,000 gpm
- Head: up to 2,000 m 6,560 ft
- Pressure: up to 220 bar 3,190 psig
- Temperature: range -150 to +400 °C -302 to +752°F
- Settings: up to 50m 164 ft

CPPD max. capacity

Various speeds
Vertically suspended, wet pit, single casing, single or multistage, diffuser or volute pumps
API-610 type: VS1 – VS2
Termomeccanica pump model: CPP - CPPD

Key features:
- Wet pit, vertically suspended, single casing pumps, with discharge through the column
- CPP model refers to single or multistage, diffuser pumps (VS1), radial or mixed flow impellers
- CPPD model refers to single stage, volute pumps (VS2), single or double entry radial impeller
- CPPD model also includes multistage pumps with volute casing first stage and diffuser casing for other stages
- A very wide number of hydraulics are available for an optimum selection
- To specify the various different constructions the name CPP can be completed by one, two or three additional letters i.e.:
  - A: single stage, open impeller design, mixed flow
  - S: pull out construction, single stage, single entry, mixed flow impellers
  - R: single stage, single entry, mixed flow with adjustable impeller vanes or inlet guide vane device
- Motor stool can be integral with the pump discharge head or on separate frame
- Discharge nozzle below or above the foundation floor is possible
- Design in full compliance with API 610 is available on small/medium size standardized models.
  Large sizes are custom-made pumps, designed in compliance with international standards, including API 610
- For large capacities, CPP pumps can also be supplied in dry pit solution

Main applications:
- Condenser cooling water
- Industrial cooling water services
- Water supply
- Flood control and irrigation
- Desalination sea water intake
- Offshore sea water lift
- Hydrocarbon pipelines and transfer service
- Chemical and petrochemical auxiliary services
- Molten salt services in solar power plants
- Fire fighting
API 610 VS3-type pump • TMP EV pump model
Vertically suspended, wet pit, single-casing, axial-flow pumps
API-610 type: VS3
Termomeccanica pump model: EV

Key features:
- Vertical or inclined propeller pumps, suitable for pumping large flow rates at low pressure on wet pit applications
- Wide range of hydraulics available in combination with a variety of materials and construction options to meet any special service requirement
- Adjustable impeller vanes or inlet guide vane design also available (EVR)
- On large size pumps, pull out design is recommended for easy maintenance

Main applications:
- River intake
- Irrigation
- Land reclamation and flooding control
- Water treatment
- Cooling water
- Dry docks
- Storm and drain water services

Operating range
- Capacity: up to 130,000 m³/h 572,400 gpm
- Head: up to 15 m 49.2 ft
- Pressure: up to 2 bar 29 psig
- Temperature: up to 50 °C 120 °F

Various speeds
API-610 VS4 type pumps • TMP CPPL pump model

Photo: API 610 VS4-type pump for closed drain drum service at gas field
Vertically suspended, single-casing, volute, line-shaft driven sump pumps
API-610 type: VS4
Termomeccanica pump model: CPPL

Key features:
- Designed for installation in wet pit depths up to 10 meters
- Volute casing with radial split design
- Impellers are enclosed type but semi-open solutions are also available for special duties (high viscosity, suspended solids)
- The motor support is bolted to the pump mounting plate; motor support and column pipe are centered on the pump mounting plate.
- The lower pump shaft can be one piece or divided into sections connected by rigid couplings; intermediate radial bushings are fitted on bearing holders which are fixed between the column pipe flanges
- The discharge column is external and parallel to the column pipe and connects the discharge branch of the casing to the pump mounting plate.

Main applications:
- Hydrocarbon & chemical processing
- Liquid transfer
- Recovered oil tank
- Drain water services
- General Industry
- Melted sulphur

Operating range
- Capacity: up to 1,000 m³/h 44,000 gpm
- Head: up to 200 m 650 ft
- Pressure: up to 40 bar 580 psig
- Temperature: range -30 to + 260 °C -86 to +500 °F
API-610 VS6–VS7 type pumps • TMP CEX-CEXD pump models

Photo: TMP CEXD pump model for brine recycle service at desalination plant
Vertically suspended, canned, single- or double-suction, single- or multi-stage pumps
API-610 type: VS6 – VS7
Termomeccanica pump models: CEX – CEXD

Key features:
- Canned pumps, radial or mixed flow impellers, single or multi-stage design
- Double entry impeller to minimize the suction can length
- Availability of wide number of hydraulics for an optimum selection
- Design in full compliance with API 610 is available on small/medium size standardized models. Large sizes are custom-made pumps, designed in compliance with international standards, including API 610
- Discharge nozzle above the foundation floor or in the suction can is possible
- Elastic or rigid coupling between pump and motor
- In elastic coupling design, axial thrust bearing assembly located on top of discharge head. Bath oil lubrication with antifriction bearings; for high power or high thrust services,a tilting pad thrust bearing is used

Main applications:
- Condensate extraction in power plants
- Circulating pumps in geothermal power plants
- Main process pumps in thermal sea water desalination plants
- Hydrocarbon pipelines or oil transfer
- General refining
- LPG, LNG cryogenic services

Operating range
- Capacity: up to 20,000 m³/h 88,000 gpm
- Head: up to 2,000 m 29,008 ft
- Pressure: up to 220 bar 3,191 psig
- Temperature: range -150 to +400 °C -302 to +752°F
Concrete volute metallic pumps • TMP NV pump model

Photo: concrete volute metallic pump for land reclamation project
Vertical volute dry pit large pumps
API-610 type: N/A
Termomeccanica pump model: NV

Key features:
- Vertical, dry pit, single stage, metallic or concrete volute pumps with or without guide vanes
- Radial or mixed flow impeller
- Pull-out design allows rotor & pump cover to be easily removed for maintenance
- Packing or mechanical seal
- Different solutions for axial & radial bearings are available depending on pumping unit arrangement

Main applications:
- Sea water intake
- Water supply
- Irrigation
- Drainage
- Sewage
- Storm water

Operating range
- Capacity: up to 120,000 m³/h  528,000 gpm
- Head: up to 130 m  425 ft
- Power up to 12,000 kW  16,300 Hp