

# Centrifugal pumps for any needs

#### LA STORIA

Elementi chiave del successo nazionale ed internazionale di Salvatore Robuschi, attiva sul mercato da oltre 80 anni, sono

la progettazione customeroriented e la preparazione dello staff tecnico-commerciale. La Salvatore Robuschi si pone infatti come obiettivo principale diventare sempre di più un riferimento nel campo delle pompe di processo,



modularità dei componenti: l'impiego della microfusione nella costruzione di molti particolari, tra cui le giranti, unitamente alla progettazione ad essa applicata, ha consentito la realizzazione di macchine con elevati rendimenti energetici e bassi valori di NPSH.

La serie comprende pompe centrifughe orizzontali e verticali con girante chiusa o aperta secondo ISO 5199-2858, arretrata con passaggio integrale ed a canali. La gamma può essere costruita in ghisa, acciaio inossidabile e leghe speciali. Di recente inoltre è stata introdotta una nuova linea di pompe verticali cantilever, in grado di lavorare nelle condizioni più

Nella produzione è contemplata anche una tipologia leggera, più economica ma di grande versatilità, costruita in AISI 316 e con portate fino a 200 m3/h

La gamma relativa alle idrauliche disponibili ed alle varianti costruttive (versione orizzontale, verticale e cantilever ) è presente sul sito www.salvatorerobuschi.com, completo di tutte le caratteristiche tecniche del prodotto.

#### LE APPLICAZIONI

Tra i settori in cui le pompe centrifughe Salvatore Robuschi trovano le maggiori applicazioni ricordiamo chimico e petrolchimico, farmaceutico di base (preparazione dei principi attivi), alimentare (fasi di lavaggio frutta e verdura, veicolazione e concentrazione sotto vuoto), distillazione, depurazione, tessile, conciario e in tutti quei campi che prevedono problematiche di pompaggio (solidi in sospensione, prodotti difficili da veicolare ecc.).

#### HISTORY

The key elements that have led to the international success of Salvatore Robuschi, on the market since 1935, are the

> customer-oriented design and the technical-commercial staff's knowledae.

Salvatore Robuschi's primary goal is to become a reference brand for process pumps, designing "tailor-made" solutions for every need. The Company has devoted to the realization of pumps innovative for building technologies and components' modularity: through the microcasting used to build many parts, for example impellers, together with the

design, the Company produces machines with high energy efficiency and low NPSH values.

The range includes centrifugal pumps with closed or open impeller according to ISO 5199- 2858 rule, vortex impeller with full passage, channel impellers, both horizontal and vertical arrangements.

The range can be built in cast iron, stainless steel or special

The Company produces also a lighter series, cheaper but very versatile, in stainless steel AISI 316, with flow up to 200 m3/h. The production includes the new vertical cantilever pumps' type, which run even in the most difficult conditions. This product offers a good, long lasting and innovative alternative from the application point of view and product's

Visiting the web site www.salvatorerobuschi.com you can find the complete range of hydraulic components with the relevant different arrangements and the technical details.

## MAIN APPLICATIONS

Salvatore Robuschi's centrifugal pumps can be used in many industrial fields: chemical and pharmaceutical industry (preparation of active ingredients), food industry (washing of fruits and vegetables, vacuum conveying and concentration), distillation, purification, tanning, textiles and in all those sectors that present pumping issues (suspended solids, products difficult to convey).

# **SERVIZIO**

Attraverso una particolare attenzione all'organizzazione e alla gestione delle scorte di magazzino, è possibile consegnare pompe di processo in 2 settimane e parti di ricambio in sole 24-72 ore. Si arriva a realizzare una pompa in 2-3 giorni, quando il cliente ne ha necessità.

Prerogative dell'azienda sono infatti una pronta assistenza, rapidità nelle consegne e grande flessibilità nell'affrontare esigenze immediate.

#### SERVICE

Thanks to good organization and a huge stock of machined parts, the Company is able to deliver process pumps in 2/3 weeks and spare parts in just 24/72h.

Prerogatives of the company are prompt technical and commercial assistance, quick delivery service and great flexibility in dealing with immediate needs.

## LA STRUTTURA ORGANIZZATIVA

L'ufficio tecnico commerciale è in grado di affiancare il cliente nella scelta del prodotto, intesa come vera e propria quida nell'identificazione della corretta macchina da destinare all'uso specifico.

#### **DIRETTIVA ATEX**

L' Azienda è anche in grado di fornire pompe certificate secondo le norme ATEX, categorie 2 e 3, per l'utilizzo in atmosfera esplosiva.

#### ATTENZIONE PER L'AMBIENTE

L'attenzione che la Salvatore Robuschi riserva all'ambiente ha portato l'azienda a sviluppare una politica ecosostenibile investendo nella posa di un impianto fotovoltaico composto da 1000 mg di pannelli di ultima generazione con capacità produttiva media annuale di 1MW.







# THE ORGANIZATIONAL STRUCTURE

The sales-technical departement is well-qualified to assist the customer in choosing the most suitable machine and meet customers specific needs.

#### ATEX DIRECTIVE

Salvatore Robuschi is able to supply pumps according to the ATEX rule, category 2 & 3, suitable to be installed in hazardous

#### ENVIRONMENT

Salvatore Robuschi is concerned with the environment and this has led to a eco-friendly politics investing in the photovoltaic power system composed of 1000 mg of panels, with yearly average production capacity of 1 MW.

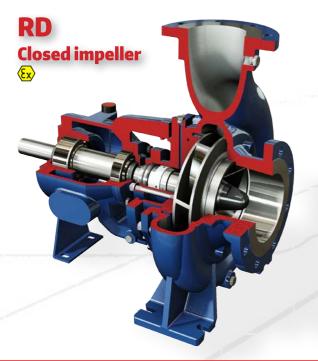


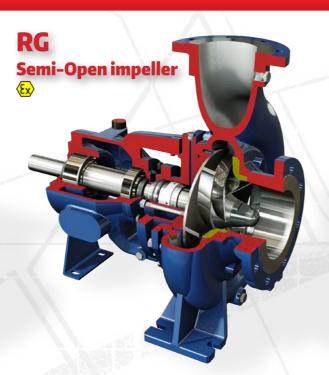






# **Process**









# Vertical



# **Close Coupled**









# Water





# RAM Peripheral impeller



Centrifugal pumps built according to ISO 2858/ISO 5199

- Impeller type: closed.
- Discharge sizes: from DN 32 to DN 125.
- Maximum working pressure: 16 bar.
  Flow rate: up to 500 m3 /hr.
- Differential head: up to 140 m.
- Temperature: up to 220°C according to the pumped liquid.
- Materials: AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy B and C.
- High hydraulic efficiencies and low NPSH value (investment casting impellers).

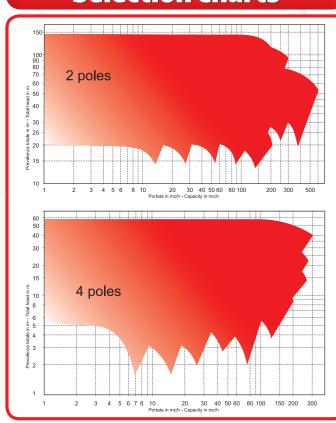
  • Heavy duty shaft and bearings.
- Only 3 bearing brackets for the whole range.
- Only 1 casing cover fits every seal arrangement (see page "Seals").

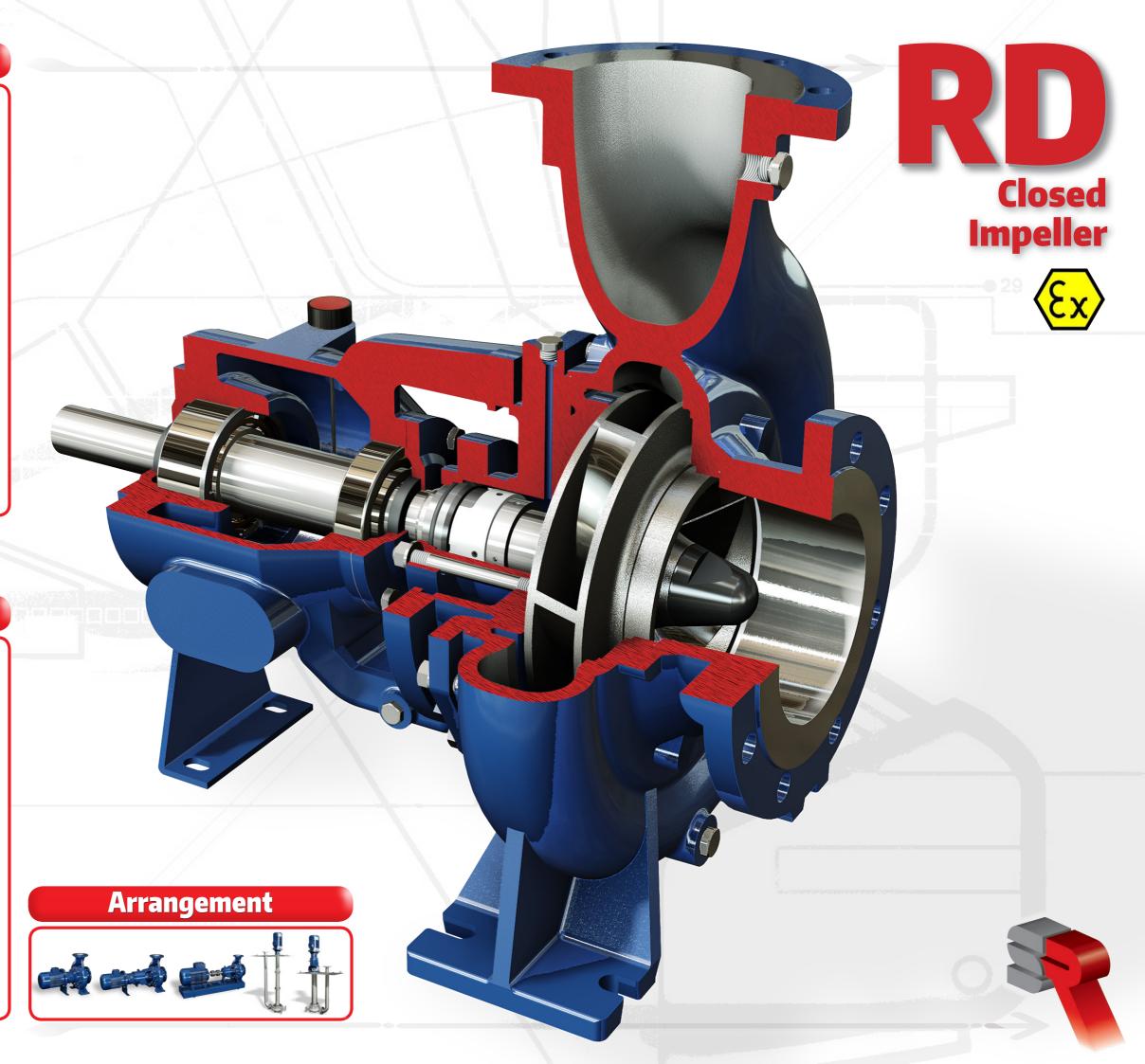
## FIELDS OF APPLICATION:

handling aggressive organic and inorganic liquids in the chemical and petrochemical industries.

#### They are also used in:

sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industry, hot water distribution.





Centrifugal pumps built according to ISO 2858/ISO 5199 norms.

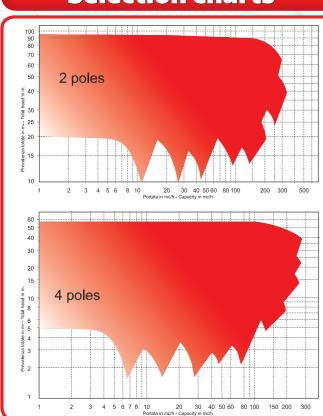
- Impeller type: semi-open with wear plate and external adjustment.
- Discharge sizes: from DN 32 to DN 125.
- Maximum working pressure: 16 bar
- Flow rate: up to 300 m3 /hr.
- Differential head: up to 95 m.
- Temperature: up to 220°C according to the pumped liquid.
- Materials: AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy B and C.
- High hydraulic efficiencies and low NPSH value (investment casting impellers).
- Heavy duty shaft and bearings.
- Only 3 bearing brackets for the whole range.
- Only 1 casing cover fits every seal arrangement (see page "Seals").

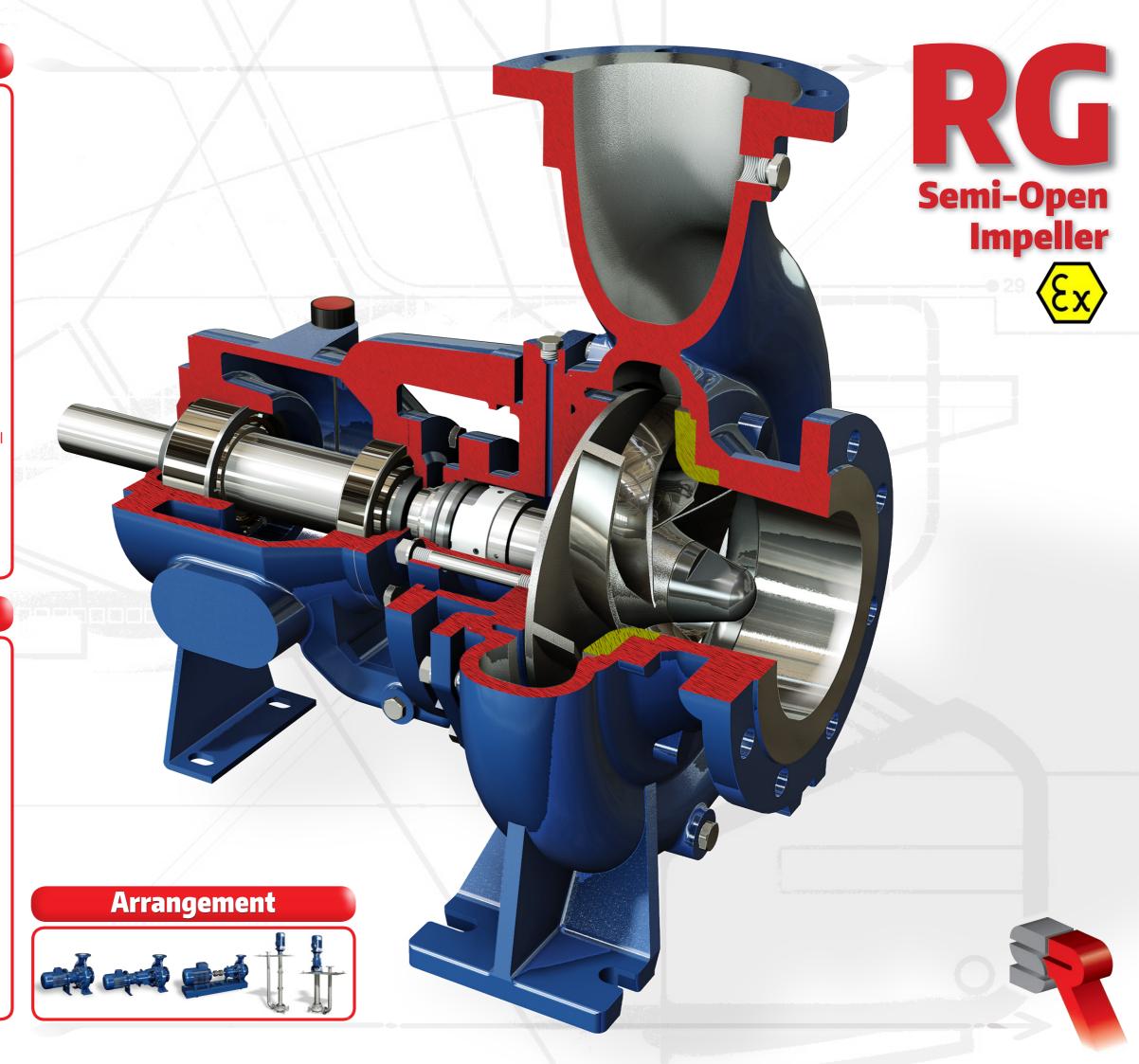
#### FIELDS OF APPLICATION:

handling slightly contaminated liquids or not abrasive slurries in the chemical and petrochemical industries. Well suited for handling liquids with gas contents up to 15%.

#### They are also used in:

refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries, hot water distribution.





Centrifugal pumps with bearing bracket in according to ISO 2858/ISO 5199 norms.

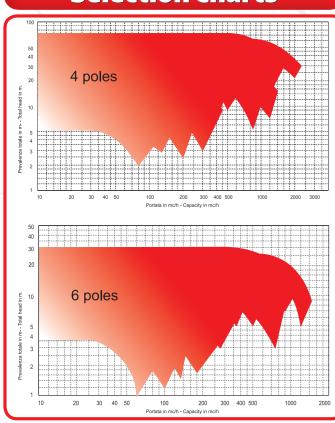
- Impeller type: channel.
- Discharge sizes: from DN 65 to DN 300.
  Maximum working pressure: 10 bar
- Flow rate: up to 2400 m3 /hr.
- Differential head: up to 70 m.
- Temperature: up to 220°C according to the pumped liquid
   Materials: Cast Iron GJL250 or AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy.
- Impeller with special blades geometry for low NPSH and high free passage.
- Heavy duty shaft and bearings.Only 5 bearing brackets for the whole range.
- Only 1 casing cover fits every seal arrangement (see page "Seals").

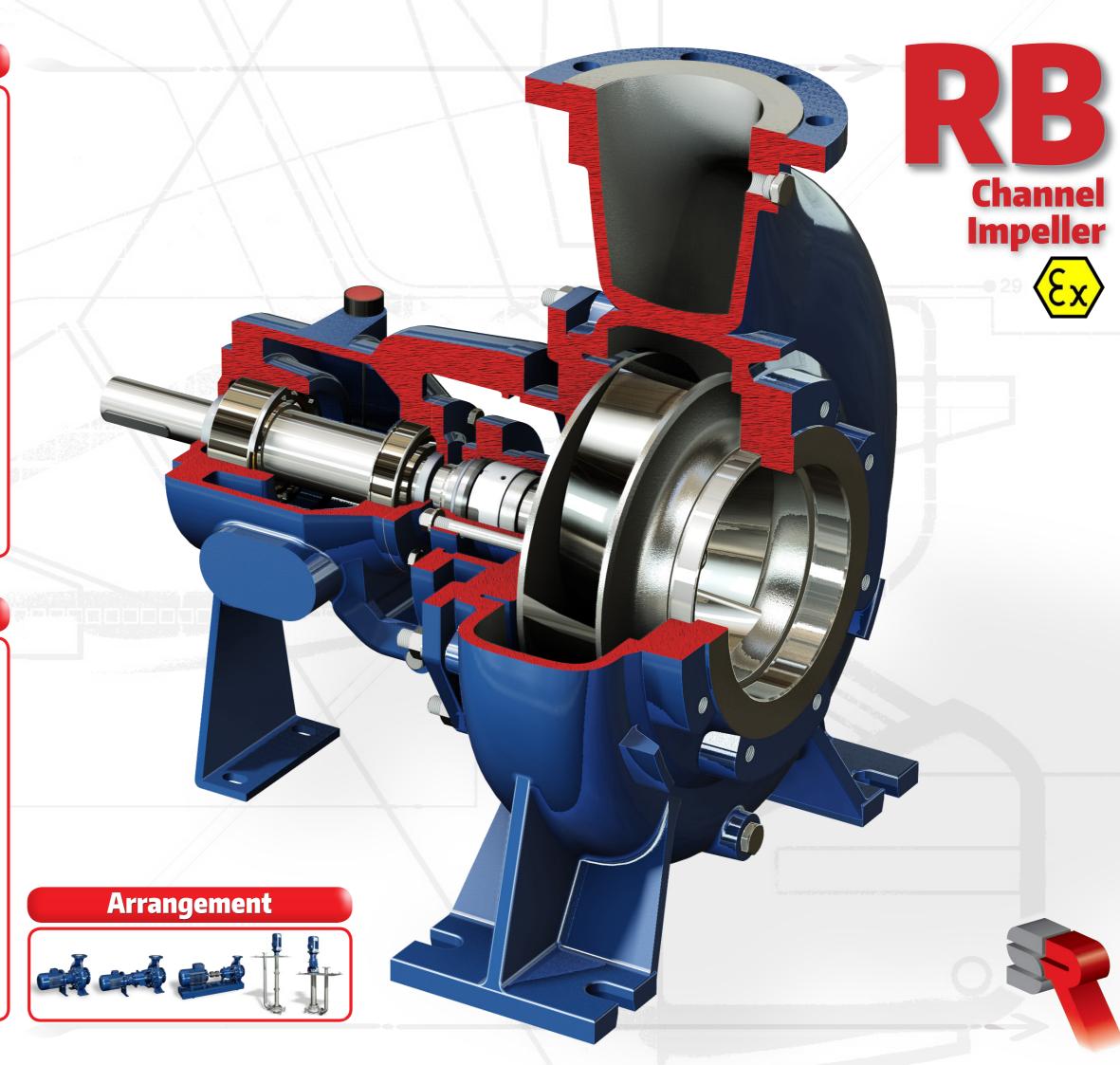
## FIELDS OF APPLICATION:

Handling slightly contaminated liquids in waste water treatment plants, clean water for cooling towers or condensate recovery plants, viscous liquids in evaporators in food or chemical industry.

#### They are also used in:

refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries, hot water distribution.





Centrifugal pumps with bearing bracket in according to ISO 2858/ISO 5199 norms.

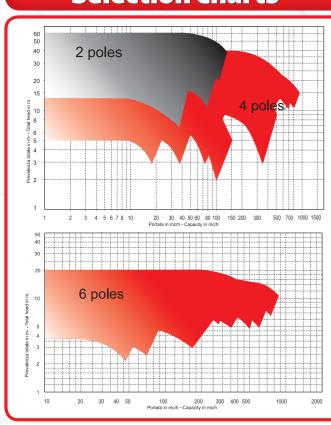
- Impeller type: vortex.
- Discharge sizes: from DN 32 to DN 250.
- Maximum working pressure: 10 bar
- Flow rate: up to 800 m3 /hr.
- Differential head: up to 60 m.
- Temperature: up to 180°C according to the pumped liquid.
   Materials: Cast Iron GJL250 or AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex, Hastelloy.
- Large free passage clearance up to 150 mm due to the completely recessed impeller.
- Heavy duty shaft and bearings.
- Only 4 bearing brackets for the whole range.
- Only 1 casing cover fits every seal arrangement (see page "Seals").

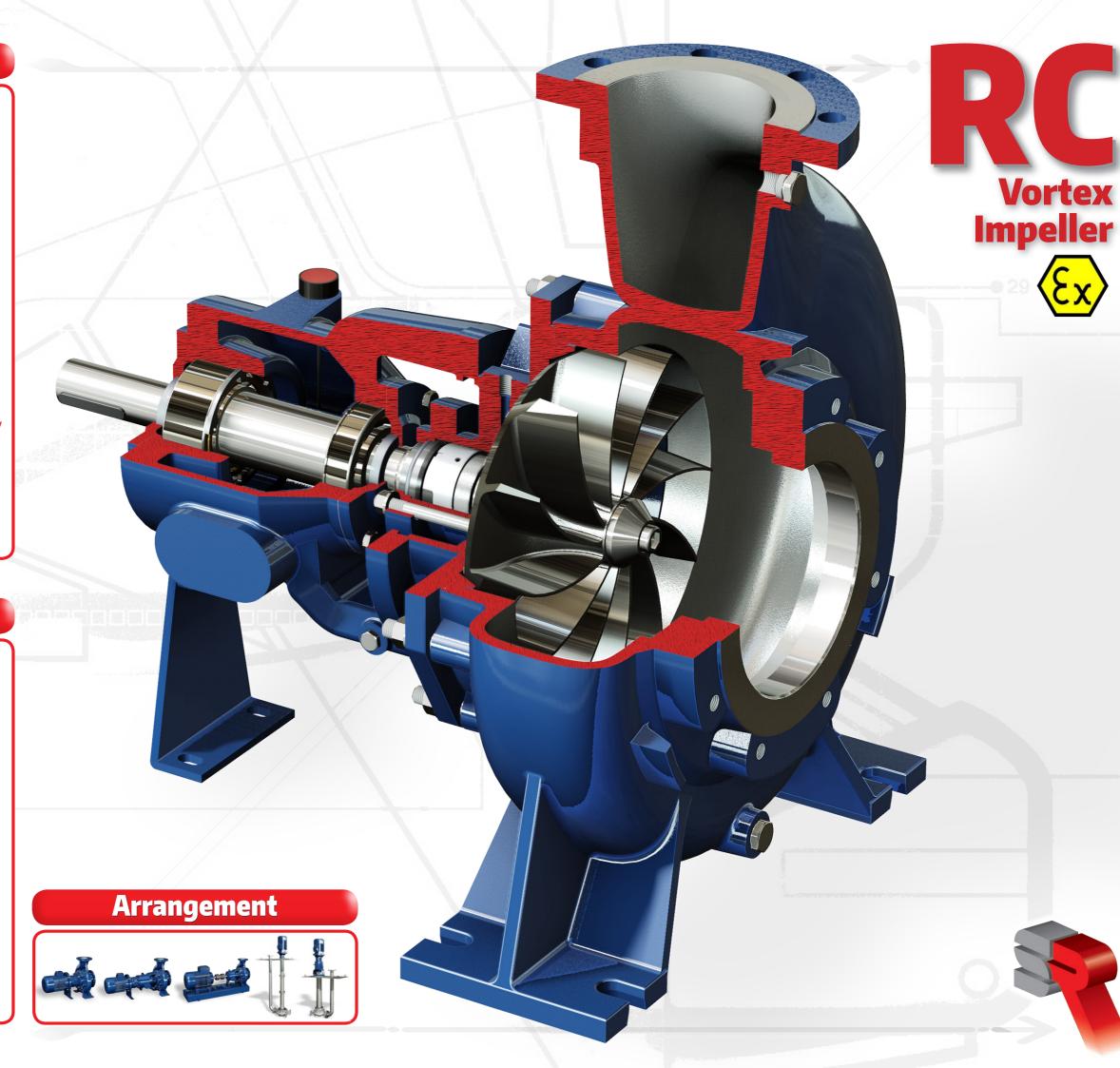
#### FIELDS OF APPLICATION:

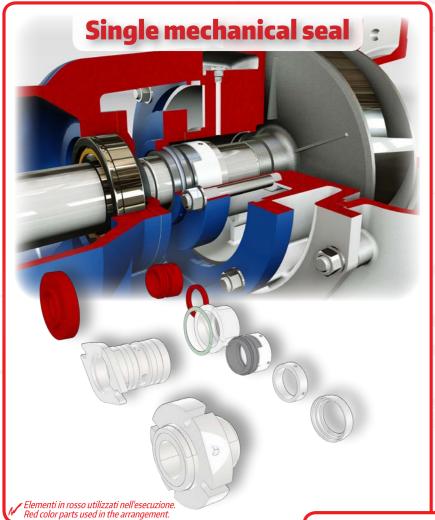
Handling chemical and crystalline suspensions, all viscous liquid , liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge.

#### They are also used in:

textile, tannery, refineries, general industrial service, pulp and paper industry, foodstuffs industry, sugar industry, sea water desalination plants, absorption equipment in environmental engineering, power stations, steel industries.



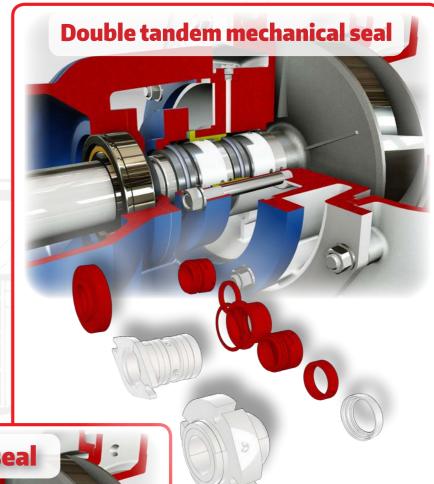




# Double back to back mechanical seal

# SEALS

Elementi in rosso utilizzati nell'esecuzio Red color parts used in the arrangemen



# ONLY ONE CASING FOR DIFFERENT MECHANICAL SEAL ARRANGEMENT

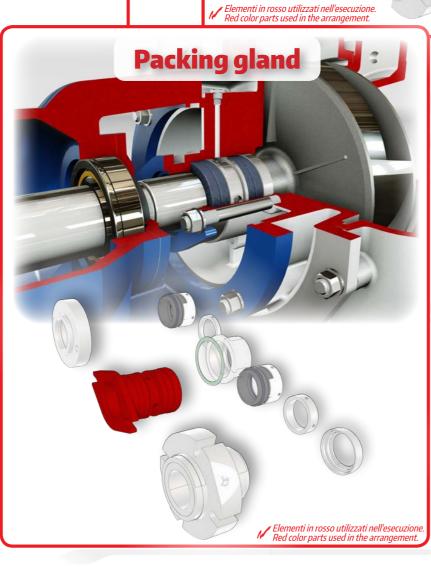
Cylindrical chamber built in according to EN 12756 standards can be fitted with any type of mechanical seal or cartridge.

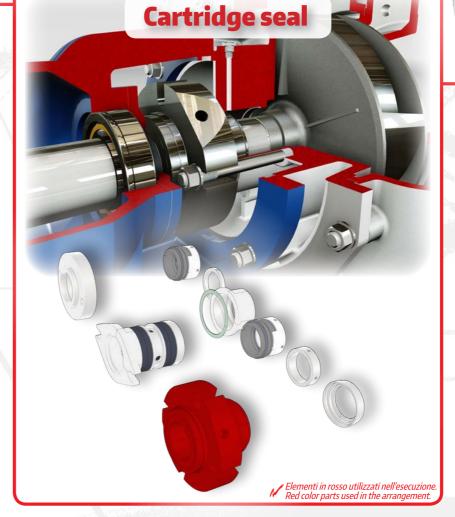
Single mechanical seals, double mechanical seals (tandem or back to back arrangements) or packing can be obtained using few components.

This modular system allow the customer to change seal arrangements using the same casing cover and replacing just few parts.

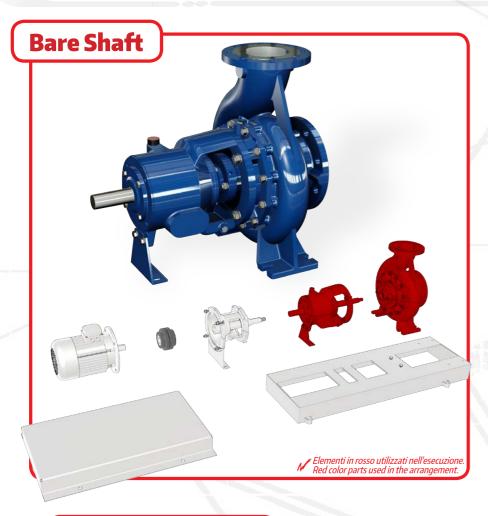
# Up to 15 different seal arrangements to cover all the customer needs.

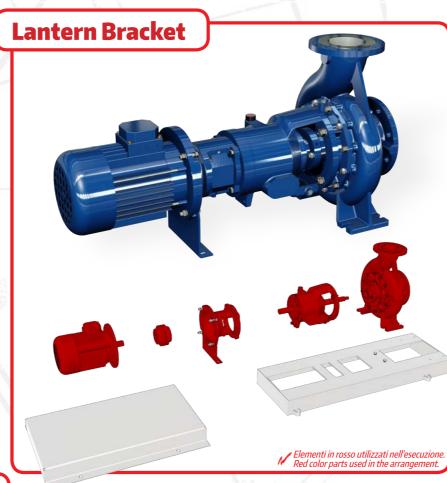
Seal arrangements can be fitted with flushing plans in according to API 682 standards (such as PLAN 11, PLAN 52, PLAN 53, PLAN 54).

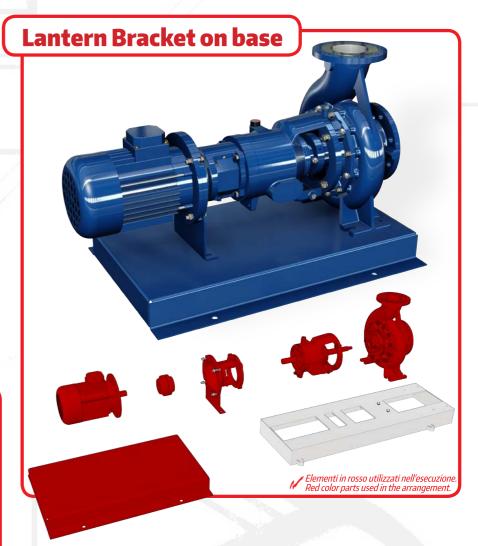


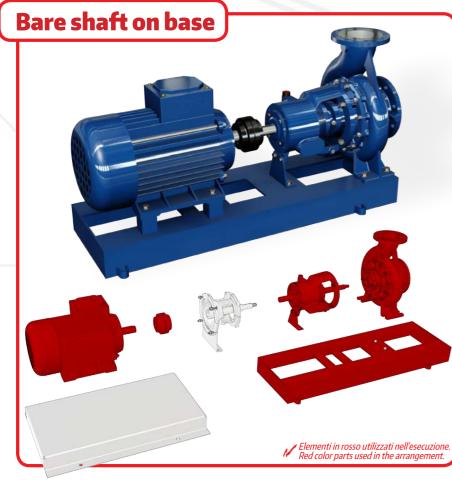


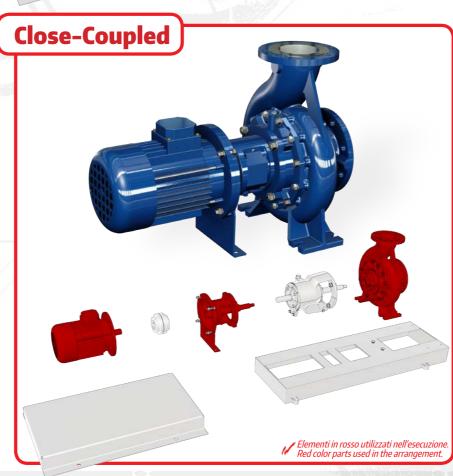
# ARRANGEMENT













Vertical immersible sump pump (ISO 5199 norms) line-shaft with bearing bushes.

The pump body is immersed into the liquid, and the motor is mounted above the plate, keeping it away from the liquid.

The discharge pipe is separated from the column pipe and the lubrication of the line bearings is normally obtained by means of the same pumped fluid, or from an external lubricating source (such as clear liquid or grease) in abrasive services.

The possibility to customize mounting plate shape and dimensions, discharge flange position and column length, allows designers and end-users to match sump or tank plates or flanges.

- Pump length: up to 6 meters.
- Mounting plate: rectangular, circular or according to customer's specifications.
- PTFE LIP SEAL or CARTRIDGE SEAL for vapor proof construction or pressurized designs.
- Materials: Cast Iron GJL250 or AISI 316. Upon request AISI 304, AISI 904, duplex, superduplex.
- Bearing bush materials: bronze, rubber, RULON and
- Suction strainer and suction extension on request.

FIELDS OF APPLICATION:

Used in all industrial applications, refining, oil and gas production, chemical, pulp & paper, and water facilities.

They are also used:

drainage sumps, oily water sumps, tank transfer.

# **Impeller type**



Closed Impeller Clean liquids.



Semi-open impeller with wear plate and external adjustment

Slightly contaminated liquids or non abrasive slurries. Well suited for handling liquids with gas contents up to 15%.



Channel Impeller

Slightly contaminated liquids or non abrasive slurries. Special blade geometry for low NPSH and high free passage. High efficiency.



#### Vortex Impeller

Chemical and crystalline suspensions, all viscous liquids, liquids with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge. Free passage up to 150 mm.

# **Arrangement**



#### A arrangement:

Lubrication by means of pumped fluid.

Pumped fluid lubricates all the bearing bushes (bottom and intermediates).

The liquid must be clean: suspended solids could clog the small pipes for intermediate bearing bush lubrication.

Vertical pumps with bottom bearing bush only, can also work with liquids with non abrasive solids, according to pump size.



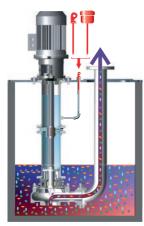
#### B arrangement:

Lubrication by external lubricating source.

A clean external source, clean liquid or grease lubricates all the bearing bushes (bottom and intermediates).

Used when the liquid is dirty, sticky or with suspended solids. This arrangement allows the pump to work without liquid in the sump or

with suction extension. The external fluid is pumped together with the main fluid.



#### E arrangement:

Lubrication by fluid into the pipe column.

Used when the liquid is aggressive, dirty, sticky or with suspended solids.

A mechanical seal is placed between the shaft and the casing cover to fill the pipe column.

All the bearing bushes (bottom and intermediates)

are lubricated by flushing fluid. Before startup, the pipe column must be filled with antifreeze solution.

The level can be controlled by a dip-stick or level probe upon request.



Vertical cantilever sump pumps with non-clogging vortex and channel impeller.

The pump body is immersed into the liquid, and the motor is mounted above the plate, keeping it away from the liquid.

Oversize heavy duty ball bearings are supplied with grease fittings and located above the mounting plate out of the corrosive area. This means:

- ✓ None of the bearings are in the liquid and there is no shaft seal or bearing bush;
- Bearing assembly is sealed-off to prevent bearing's contamination by liquids or gases-vapors;
- ✓ Pumps can run dry without risk of damage;
- ✓ Reliable operation and reduced costs.
- The possibility to customize mounting plate shape and dimensions, discharge flange position and column length, allows designers and end-users to match sump or tank plates or flanges.
- Pump length: up to 1,8 meters. Can be extended by means of a suction extension allowing the pump to operate with a liquid level under the impeller level.
- Mounting plate: rectangular, circular or according to customer's specifications.
- PTFE LIP SEAL for vapor proof construction.
- Materials: Cast Iron GJL250 or AISI 316. Upon request CA6NM (400HB hardness), AISI 304, AISI 904, duplex, superduplex.
- Suction strainer and suction extension on request.

#### FIELDS OF APPLICATION:

Used for sludges, slurries and liquids containing large or long solids.

They are also used in:

drainage sumps, oily water sumps, tank transfer, food processing, ground water development and irrigation, heavy oil, oil sands and shale, paper stock, sewage collection and treatment, shower pumps, slurry processing, slurry transfer.

# **Impeller type**



#### Channel Impeller

Slightly contaminated liquids or non abrasive slurries. Special blades geometry for low NPSH and high free passage. High efficiency.



#### Vortex Impeller

Chemical and crystalline suspensions, all viscous liquid, liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge. Free passage up to 150 mm.

# Installation



#### TYPICAL INSTALLATION

The cantilever pump is installed at the top of sump/tank and works without level controls.

With liquid level above the pump "priming holes", the pump works properly.

As soon as the liquid level is below the suction port, the pump will be unprimed and work dry.

The pump will restart to work when the liquid level reaches. the pump "priming holes".

# TYPICAL INSTALLATION WITH SUCTION EXTENSION

The cantilever pump is installed at the top of sump/tank and works without level controls. With liquid level above the pump "priming holes", the pump works properly. As soon as the liquid level is below the end of suction extension or when the NPSHa is lower than NPSHr, the pump will be unprimed and work dry. This arrangement allows to empty tanks up to 5 meters below the suction port. The pump will restart to work when the liquid level reaches the pump "priming holes".



#### **EXTERNAL INSTALLATION**

The cantilever pump is installed beside of sump/tank and works without level controls.

works without level controls.
When the liquid level inside the tank is above the pump casing the pump can operate.
As soon as the liquid level is below the suction port, the pump will be unprimed and work dry.
The pump will start again to work when the liquid level inside the tank is above the pump casing.
The liquid level inside the tank thas

The liquid level inside the tank has to be lower than recirculation pipe in order to allow the liquid back into the tank and not damage motor.

This arrangement allows to work with very hot fluid (up to 300°C) with suspended solids.



Heavy duty close coupled centrifugal pumps.

- Impeller type: closed.
- Discharge sizes: from DN 32 to DN 80.
- Maximum working pressure: up to 8 bar according to the pump size.
- Flow rate: up to 300 m3 /hr.
- Differential head: up to 55 m. Temperature: up to 120 °C according to the pumped liquid.
- Materials: AISI 316.
- Flanges: PN16 reduced thickness or DIN 11851 food connections.
- Same interaxis of ISO 5199 chemical norm pumps: easy interchangeability.
- Casing and impeller manufactured with investment casting technology.
- Standard IEC motor (different brand available) stub shaft design.
- Seal arrangement: Single, double tandem, double back to back, packing gland.

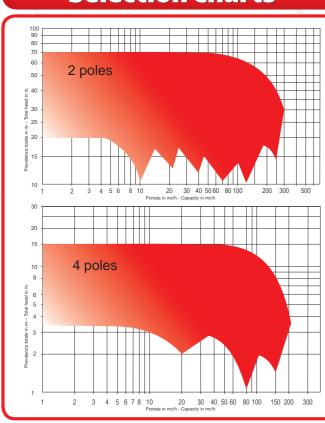
#### FIELDS OF APPLICATION:

handling aggressive organic and inorganic liquids in the chemical industries.

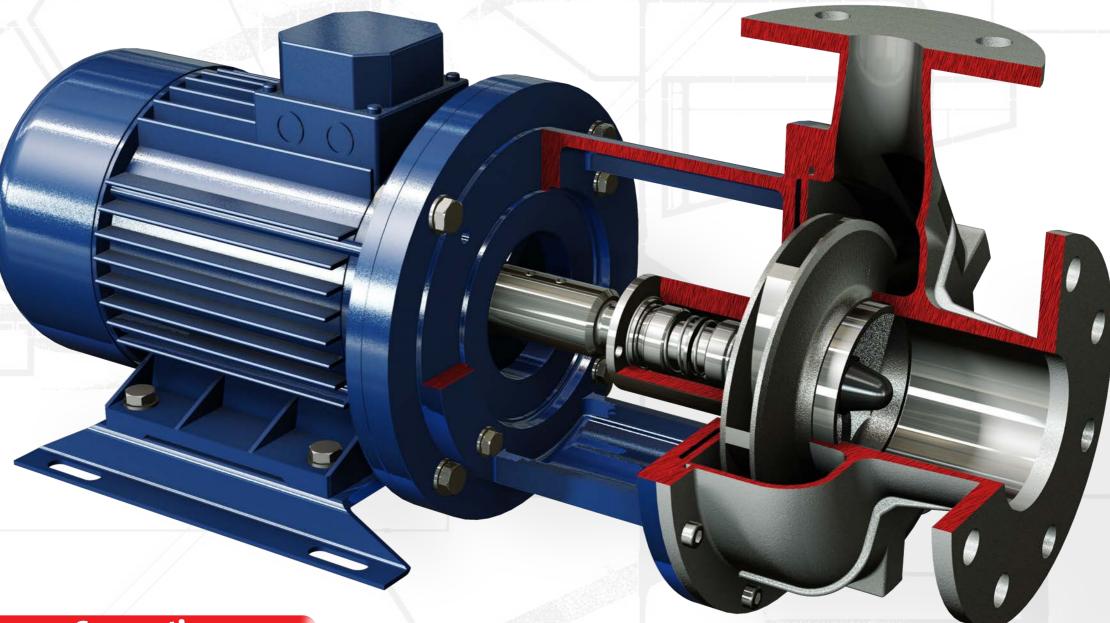
#### They are also used in:

general industrial service, foodstuffs industry, water/ solvent recovery process, power stations, steel industry, small evaporator plants.

# **Selection Charts**







# **Connection**





Heavy duty close coupled centrifugal pumps.

• Impeller type: semi-open with wear plate.

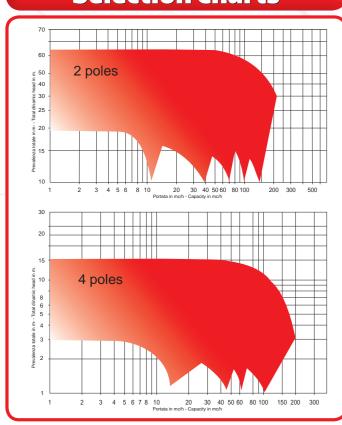
- Discharge sizes: from DN 32 to DN 80.
- Maximum working pressure: up to 8 bar according to the pump size.
- Flow rate: up to 200 m3 /hr.
- Differential head: up to 60 m.
- Temperature: up to 120 °C according to the pumped liquid.
- Materials: AISI 316.
- Flanges: PN16 reduced thickness or DIN 11851 food connections.
- Same interaxis of ISO 5199 chemical norm pumps: easy interchangeability.
- Casing and impeller manufactured with investment casting technology.
- Standard IEC motor (different brand available) stub shaft design.
- Seal arrangement: Single, double tandem, double back to back, packing gland.

#### FIELDS OF APPLICATION:

handling slightly contaminated liquids or non abrasive slurries in the chemical and petrochemical industries. Well suited for handling liquids with gas contents up to 10%.

#### They are also used in:

general industrial service, foodstuffs industry, dissolved air flotation systems, small evaporator plants, sugar industry, water/solvent recovery process, power stations, steel industry, textile.





Heavy duty close coupled centrifugal pumps.

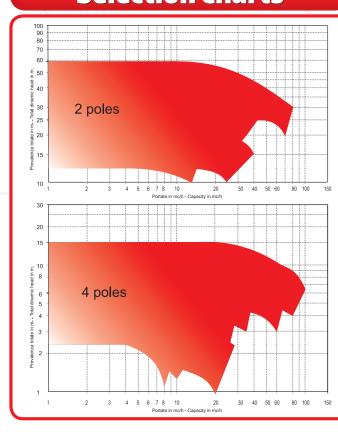
- Impeller type: vortex.
- Discharge sizes: from 3/4" M to DN 65.
- Maximum working pressure: up to 8 bar according to the pump size.
- Flow rate: up to 100 m3 /hr.
  Differential head: up to 60 m.
- Temperature: up to 120 °C according to the pumped liquid.
- Materials: AISI 316.
- Flanges: PN16 reduced thickness or DIN 11851 food connections.
  Same interaxis of ISO 5199 chemical norm pumps: easy interchangeability.
- Casing and impeller manufactured with investment casting technology.
- Large free passage clearance up to 50 mm due to the recessed impeller.
- Standard IEC motor (different brand available) stub shaft design.
- Seal arrangement: Single, double tandem, double back to back, packing gland.

## FIELDS OF APPLICATION:

Handling chemical and crystalline suspensions, all viscous liquid, liquid with high concentrations of fibrous suspensions, municipal and industrial wastewater, every kind of sludge.

#### They are also used in:

general industrial service, foodstuffs industry, dissolved air flotation systems, waste water treatment plant, sugar industry, water/solvent recovery process, power stations, steel industry, textile and tannery.





Centrifugal pumps in according to EN 733 norms.

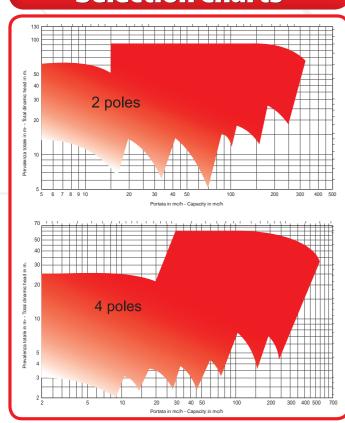
- Impeller type: closed.
- Discharge sizes: from DN 32 to DN 150.
  Maximum working pressure: 10 bar.
  Flow rate: up to 480 m3 /hr.
- Differential head: up to 90 m.
- Temperature: up to 130°C according to the pumped liquid.
- Materials:
- CAST IRON GJL200 EN1561,
- Shaft in AISI 430 or AISI 316,
- Impeller in CAST IRON GJL200 EN1561 or BRASS according to the pump size.

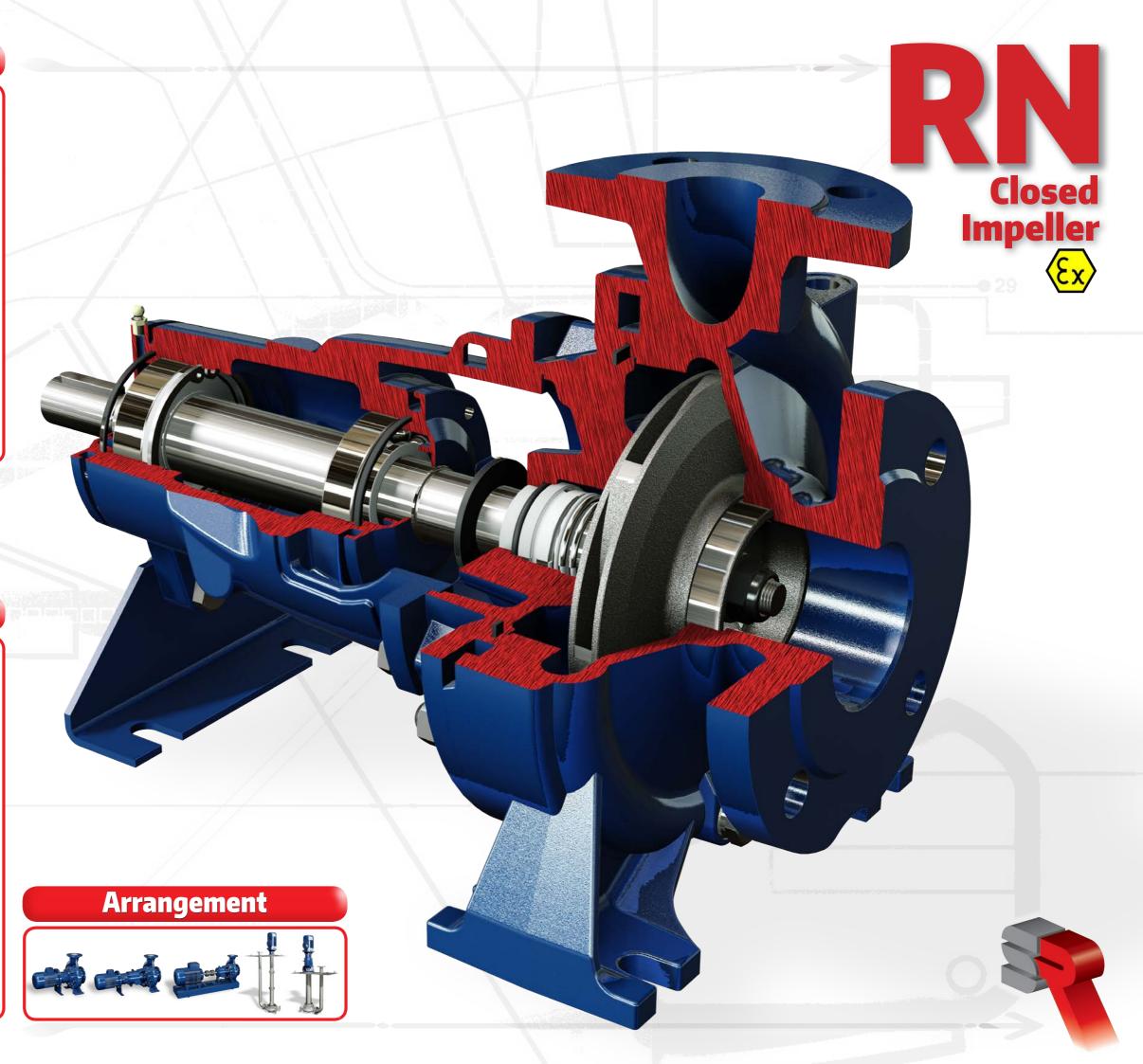
#### FIELDS OF APPLICATION:

Clean and non-aggressive liquids for the pump materials (contents of solids up to 0,2% max).

#### They are also used for:

non aggressive industrial liquids, water supply, heating, conditioning, cooling and circulation plants, civil and industrial applications, fire-fighting plants and irrigations.

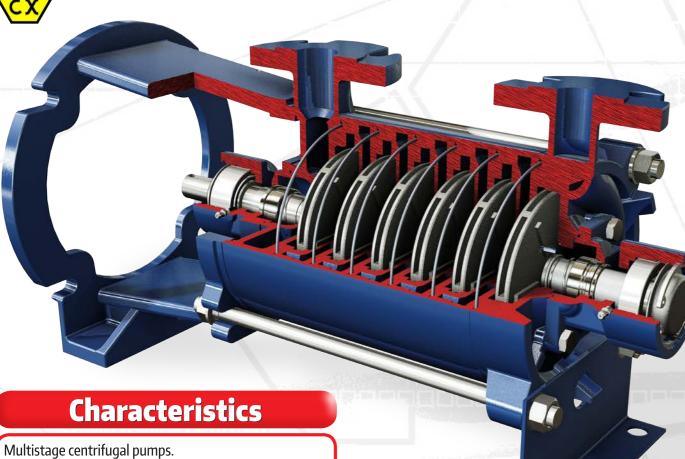




# 5

**Multistage** 





- Impeller type: closed.
- Discharge sizes: from DN 32 to DN 50.
- Maximum working pressure: up to 30 bar.
- Flow rate: up to 45 m3 /hr.
- Differential head: up to 300 m.
- Temperature: up to 140°C.
- Materials: Casing and diffusers in cast iron GJL250, Shaft in AISI 420, bearing bushes in bronze. Upon request AISI 316 shaft and special bearing bushes.
- Flanges: PN16 (suction) PN40 (discharge).
- Seals: TS 31- 32 range is only available with mechanical seal. TS 40 50 range is available both with mechanical seal and gland packing and cooling chambers are supplied as standard equipment.

## FIELDS OF APPLICATION:

Clean or slightly contaminated liquids.

#### They are used for:

boiler feeding, fire fighting plants, autoclaves, water supply systems, washing plants, irrigation, to pump hydrocarbons and whenever high pressures are required

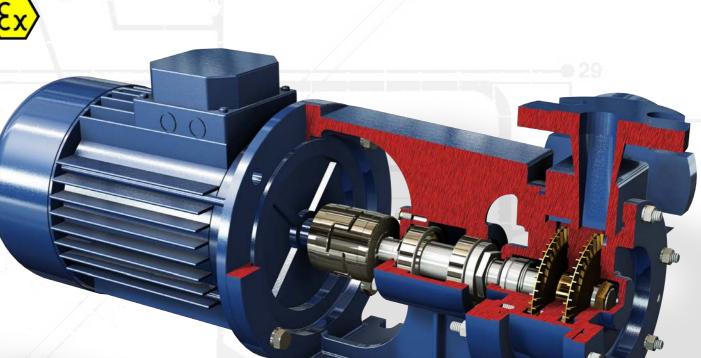
# **Arrangement**





**Peripheral** 





# **Characteristics**

Multistage centrifugal pumps.

- Impeller type: Peripheral.
- Discharge sizes: DN 25.
- Maximum working pressure: up to 25 bar.
- Flow rate: up to 6,3 m3 /hr.
- Differential head: up to 180 m.
- Temperature: up to 120°C.
- Materials: Casing and diffusers in cast iron GJL250, Shaft in AISI 420, impellers in BRASS or AISI 316 SS upon request.
- Flanges: PN25.

FIELDS OF APPLICATION:

clean liquids without solid parts in suspension.

They are used in:

boiler feeding, washing plants, flotation plants in waste water treatment, and whenever low capacity and high pressure are required.

# Arrangement





