

QUALITY & EFFICIENCY



PXFLOW[®]



Innovation made to Last.



**SUBMERSIBLE WASTEWATER PUMPS
SERVICE & ENGINEERING**



The Company



QUALITY WHICH REDUCES PUMPING COSTS

For over 60 years, **PAPANONATOS S.A.** has focused on meeting customer needs in the design, manufacturing and servicing of submersible pumps.

Our engineering department has acquired invaluable technical expertise through long standing collaboration with leading global pump manufacturers.

This extensive experience has significantly contributed to our success as a pump manufacturer. Today, we offer some of the most robust and energy efficient pump units on the market, perfectly adapted to demanding operating conditions in both cleanwater and wastewater applications.

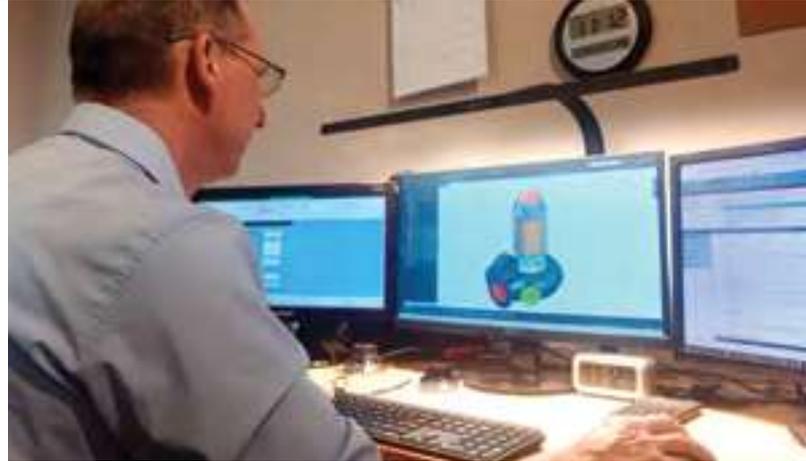
Certified Quality Management Systems

- ISO 9001 • ISO 14001 • ISO 45001
- Certified by TÜV NORD CERT GmbH

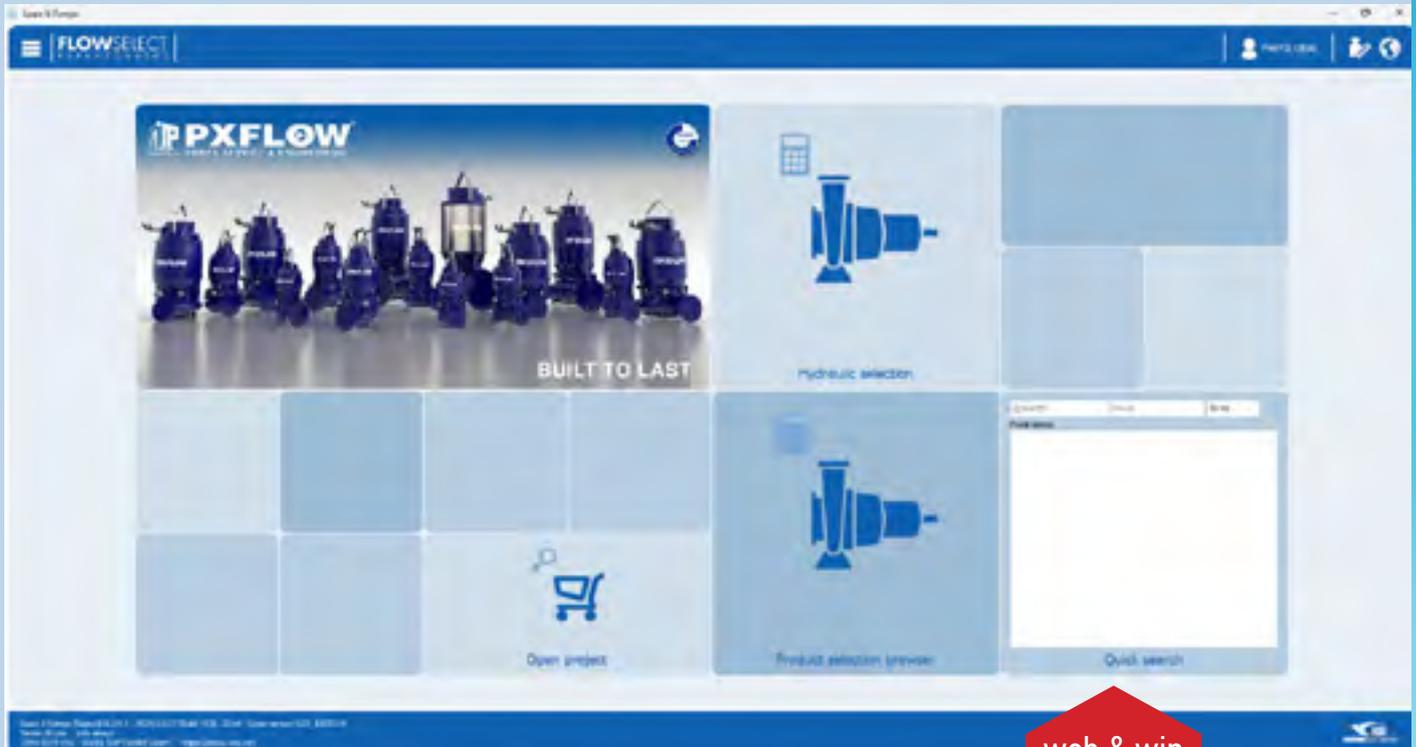
Our production workflow is supported by **our own foundry** in Greece, which manufactures cast components exclusively for our pump lines. This vertical integration ensures full control over material quality, specifications and production consistency. These components are then processed in our company owned facilities using advanced CNC lathes and milling equipment to guarantee precision and durability.

Our design department employs state of the art **3D CAD** software to accurately develop the most efficient pump geometries.

We carefully select motors and standard components from leading European manufacturers such as **Pleuger**, **Innomotics** and **Franklin**, ensuring full compliance with the latest manufacturing and environmental standards. All pumps from both product families (**PXFLOW** and **FLOWPAP**) undergo meticulous testing in our modern test stand, where critical performance data is collected and recorded before dispatch.



Software



web & win
versions
available

ALL SUBMERSIBLE PUMPS IN ONE PROGRAM SELECTION

Pump selection and sizing software with built in friction losses calculation

FLOW Select is a powerful tool for all pump consulting engineers and users. Both pump family brand names are included PXFLOW waste water submersible pumps FLOWPAP clean water submersible pumps. If the basic planning data such as capacity and total head length are available, the FLOW Select can choose the pump types from each or from both pump family brand names (demand our choice). If the data are not available, FLOW Select provides a simple friction loss calculator that can help the user in full connection with the pump program selection.



Other advantages of FLOW Select:

- 19 languages
- Easy change between units
- 50-60Hz (only where it is available)
- Impeller trimming
- Enter multiple duty points
- Variable curve speed (for application with inverter)
- Show parallel and series circuit
- Built in friction loss calculation
- Combination of curve characteristic with friction loss curve
- Possible export performance curve points in excel
- Life Cycle Calculation (energy cost)
- Easy export drawing in DXF file

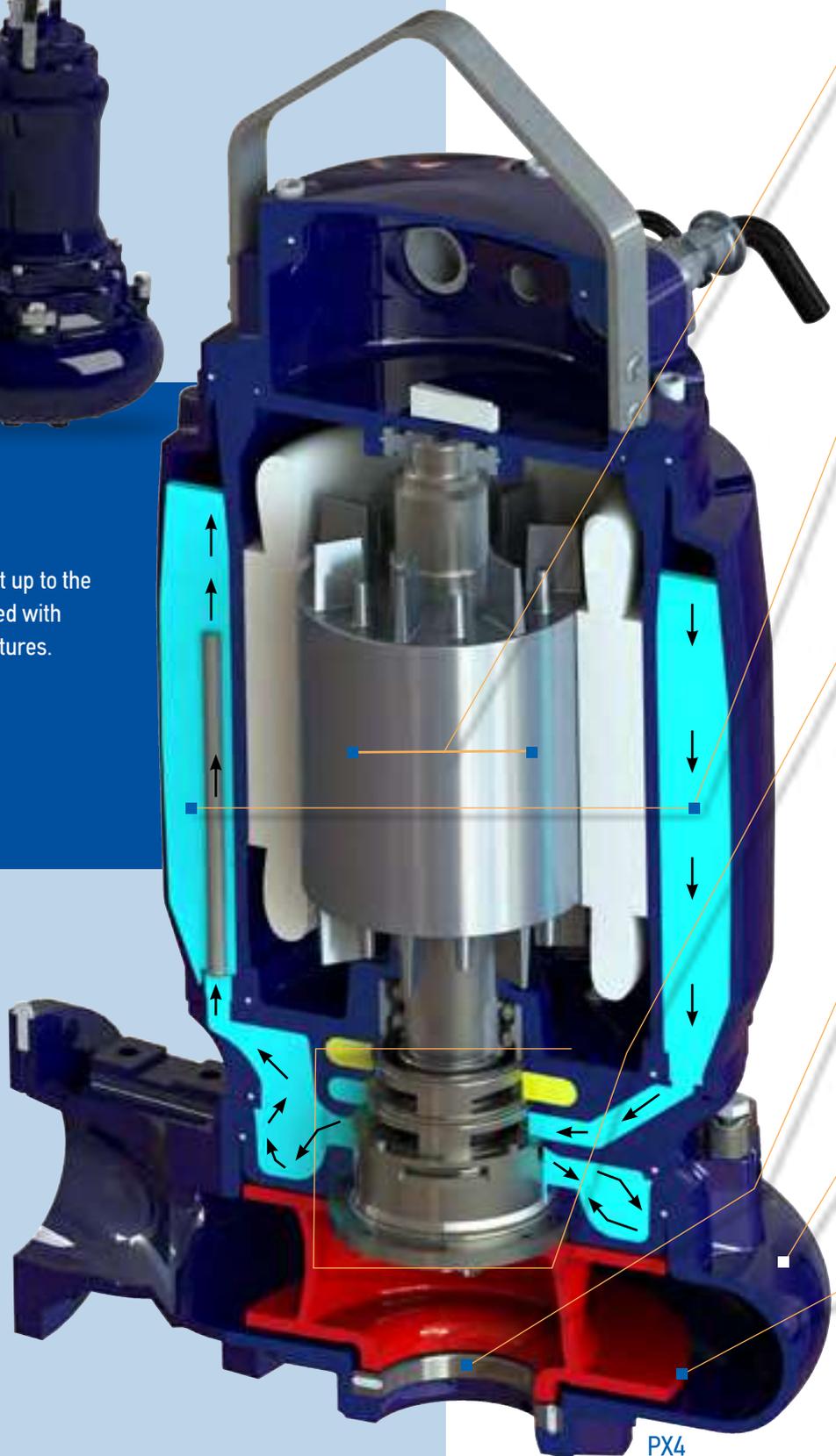
Submersible waste water pumps



DESIGN FEATURES

All **PXFLOW** pumps are designed and tough built up to the highest industrial specifications and are equipped with a number of operation/maintenance friendly features.

Only the very best features come as a standard in **PXFLOW** pumps.



PXFLOW code system

- No of poles
- Motor power P2 Kw (50Hz)
Hp (60Hz)
- Motor series
- Impeller code
- Impeller type V=Vortex, C=Channel,
S=S Channel impeller
- Pump volute code
- 15 discharge volute size DN cm
- Pump series for waste water

ex.

PX3-150.0 VX3-150 + M3.1D-18,5/4

PX4

Design features

■ MOTOR UNIT*

The pumps are equipped mainly with Siemens-INNOMOTICS motor parts standard IE1 or IE2, with Premium Efficiency IE3 and Super Premium Efficiency IE4 as an option for most motor sizes, are fitted with F class insulation, (for operating temperatures up to 155 degrees Celsius), or can be optionally fitted with H class insulation. Three thermal overload switches, one per phase, are inside the winding, to combat high temperature loads. The oversized stainless steel rotor shaft and the two oversized ball bearings ensure the motor's smooth and vibration free rotation. Consequently the motor's operational life time is significantly extended.



■ INTERNAL MOTOR COOLING SYSTEM WITH "ECOFLU COOLING JACKET" *

All **PXFLOW** standard motor sizes are equipped with a closed cooling system. An internal impeller that is fitted in between the two mechanical shaft seals circulates the cooling liquid (ecoflu) in a closed loop inside a cooling jacket. The heat is then transferred to the pumped liquid by means of a cooling flange (heat exchange).

This efficient cooling system has the following great advantages:

- Maintains the optimal temperature range for the motor bearings.
- The cooling system is separated from the pumped liquid to eliminate any risk of clogging and sedimentation.
- The double sound absorbing pump motor casing, enables the unit to be running at extremely low noise levels.



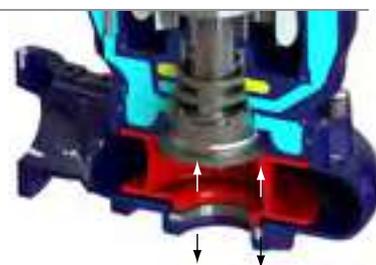
■ CARTRIDGE SEALING SYSTEM "FAST SEAL" *

The shaft system consists of a double set of mechanical seals that are built into a replaceable cartridge. The cartridge sealing system can be easily removed on site without the need of any special tools and thus eliminating the risk of any improper installation. The primary seal (impeller side) is made of abrasive resistant carbide against silicon carbide. The secondary seal (motor side) is made of heat resistant carbon against silicon carbide (option for PX1&2). Both mechanical seals incorporate a stainless steel shaft sleeve (316 as option) protecting the pump shaft. Every cartridge sealing system has been pressure tested at the factory regardless if it is being installed inside a **PXFLOW** pump or sold separately as spare parts.



■ CLEARANCE REDUCTION SYSTEM "REDUCER" *

The channel impellers are fitted with volute/impeller clearance reduction wear rings or wear plates. This system easily allows the ring to be repositioned axially in order to reduce the clearance between the channel impeller and the volute. This sealing method offers an advantage over other methods which use radial impeller and volute wear rings that cannot be repositioned and have to be replaced when wear levels are not acceptable.



■ PUMP VOLUTES

The **PXFLOW** volutes are made from high quality cast iron and have been designed to have additional thickness on the walls. Extra attention has been given to the smoothed internal volute surfaces so higher hydraulic efficiency and minimum turbulence can be achieved. The volute is connected to the motor unit through a fast lock* connection system with stainless steel latch bolts for easy and fast removal. The motor unit can be quickly removed from the pump's volute for an easy inspection.



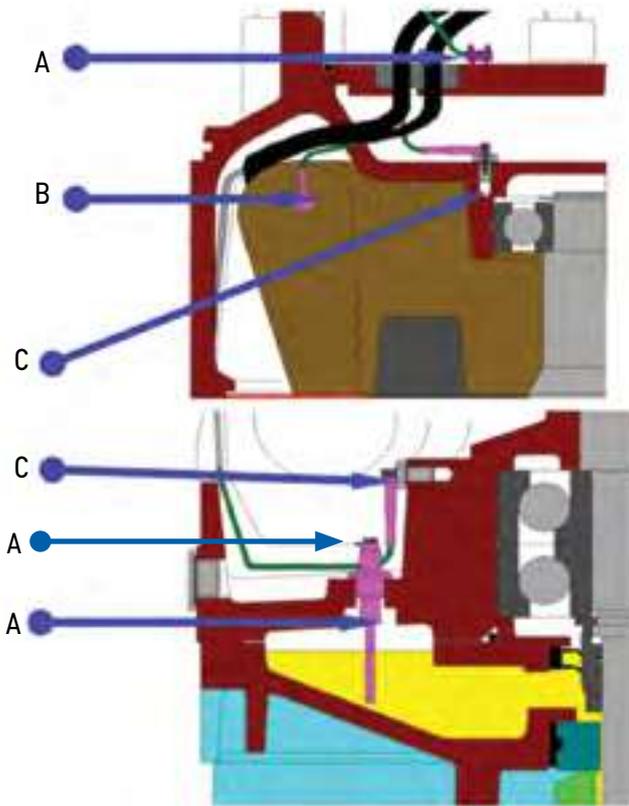
■ IMPELLERS

PXFLOW impellers are made from hardwearing ductile iron, (high chrome with hardness 55-60HRC minimum or stainless steel Duplex as an option). A variety of 3 different impeller types (close Channel, vortex and semi open "S" Channel) allows us to choose the right one for application. The initial impeller design can be easily adjusted, (when trimmed), to meet the customer's performance requirements. **PXFLOW** impellers are dynamically balanced and machined to exacting tolerances to reduce any unwanted vibrations.



* not for PX0, PX1-65

Protection Systems



MOTOR PROTECTIONS

A. Moisture sensors

All **PXFLOW** pumps are equipped with two moisture sensors that are linked together in a series connection. Both sensors are connected to an electronic moisture monitoring system in order to effectively detect any increase in moisture inside the following areas:

- Terminal connection area (upper motor side).
- Inside the motor housing enclosure.
- Oil chamber of the sealing cartridge unit.

B. Motor winding Thermo-sensor

All **PXFLOW** pumps are equipped with thermo sensors to protect the stator from overheating and burning in the event of a motor malfunction. The thermal protection in the typical standard motor configuration consists of three bi-metal switches in series connection that are embedded in each respecting motor winding. Optionally we can offer with PTC or PT 100.

C. Bearing Thermo-sensors

In our largest pumps, (series PX3 & PX4 and above), the upper* and lower bearings housings can be equipped with the PT100 thermo sensors which provide the protection necessary against excessive temperatures.

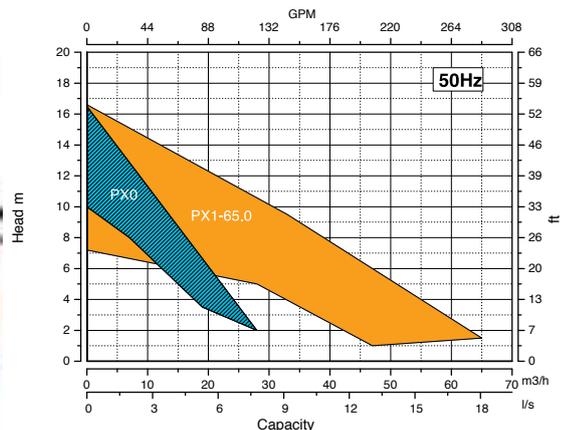
* only PX3 (M3.1E series), PX4 (M4 series), PX5, PX6

PX450:
ELECTRONIC
SUPERVISION
RELAY FOR
MONITORING AND
PROTECTION OF
PXFLOW PUMPS



SERIES PX0, PX1-65 WITH VORTEX IMPELLER

The PX0 and PX1-65 pumps are made of cast iron and are equipped with a vortex impeller that is designed for pumping wastewater and other contaminated liquids. The PX0 series, (single phase voltage configuration), is available with float switches and thermal protection or without them. The three phase voltage configuration can also be equipped with thermal protection upon the customer's request.



PXFLOW® Series

PX1, PX2



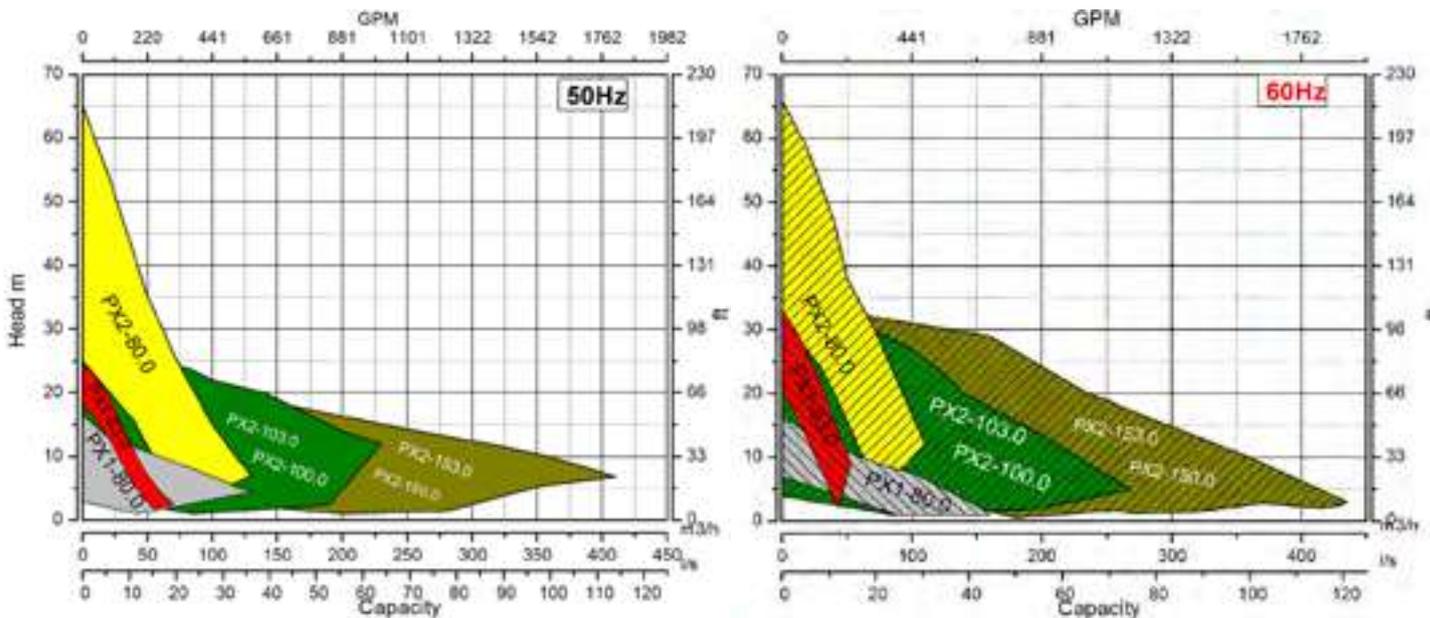
• M2.1C

• M1.1A / M2.1B

DESIGN FEATURES

- Internal motor cooling system with "ECOFLU" (closed loop through a cooling jacket)
- Cartridge sealing system "Fast Seal"
- Easily adjustable channel impeller clearance system "Reducer"* , for all installation types, for improved performance and less clogging occurrences
- Oil tap drain
- Free choice* channel or vortex impeller that can be fitted to the same volute
- Fast lock assembly/disassembly feature with only two latch bolts for quick and easy volute/impeller inspection (major advantage is the significant reduction of man-hours)
- Electrical motor **PXFLOW** - SIEMENS-INNOMOTICS motor parts standard IE1 or higher efficiency IE2 (Premium efficiency IE3 and Super Premium efficiency IE4 as option for most motor sizes), have Class F insulation (rated for 155 degrees Celsius) as standard (Class H as option)
- Motor inspection hole
- Cable entry in stainless steel 316 as standard (in Duplex as option)
- Handle in Stainless steel

**PX1-83.0, PX2-80.0 is only available in the Vortex impeller design and has no wear rings.*



| Model | PX1-80.0 | PX1-83.0 | PX2-80.0 | PX2-100.0 / PX2-103 | PX2-150.0 / PX2-153.0 |
|------------------------------|------------------|------------------|------------------|---------------------------------------|---------------------------------------|
| Rating 50Hz | 1,5-4kW | 4-5kW | 4-15kW | 3-15kW | 3-15kW |
| Rating 60Hz | 2,5-6HP | 6-7,5HP | 7,5-25HP | 4,6-25HP | 4,6-25HP |
| Motor | 2/4/6 pole | 2 pole | 2/4 pole | 4/6 pole | 4/6 pole |
| Pump outlet flange | 80-100/3"-4" | 65-80/2 1/2"-3" | 80/3" | 100/4" | 150/6" |
| Pump inlet flange | 80-100/3"-4" | 100/4" | 80/3" | 100/4" | 150/6" |
| Impeller types | channel / vortex | vortex | vortex | channel / vortex / S-Channel Impeller | channel / vortex / S-Channel Impeller |
| installation types available | wet/dry/portable | wet/dry/portable | wet/dry/portable | wet/dry/portable | wet/dry/portable |

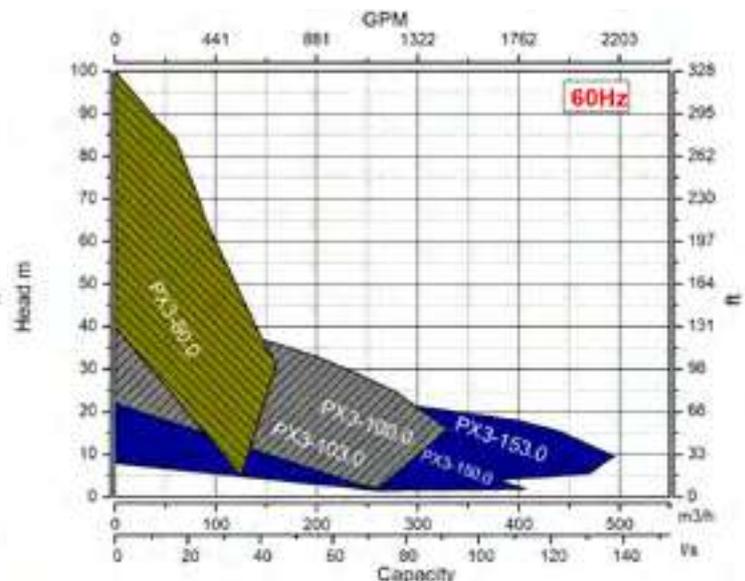
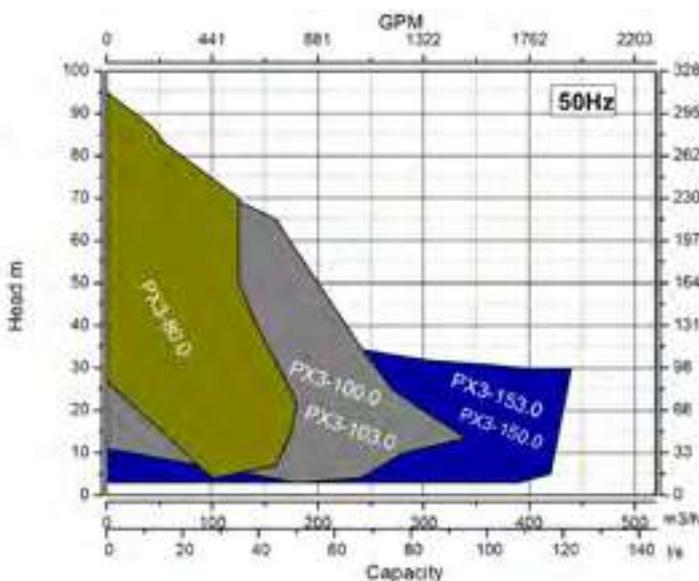
PXFLOW® Series

PX3

DESIGN FEATURES

- Internal motor cooling system with "ECOFLU " (closed loop through a cooling jacket)
- Cartridge sealing system " Fast Seal "
- Easily adjustable channel impeller clearance system "Reducer"*, for all installation types, for improved performance and less clogging occurrences
- Oil tap drain
- Free choice* channel or vortex impeller that can be fitted to the same volute
- Fast lock assembly/disassembly feature with only four latch bolts for quick and easy volute/impeller inspection, (major advantage is the significant reduction of man-hours)
- Electrical motor **PXFLOW** - SIEMENS-INNOMOTICS motor parts standard IE1 or higher efficiency IE2 (Premium efficiency IE3 and Super Premium efficiency IE4 as option for most motor sizes) have Class F insulation (rated for 155 degrees Celsius) as standard (Class H as option)
- Motor inspection hole
- Cable entry in stainless steel 316 as standard (in Duplex as option)
- Handle in Stainless steel

* PX3-80.0 is only available in the Vortex impeller design and has no wear rings.



| Model | PX3-80.0 | PX3-100.0 / PX3-103 | PX3-150.0 / PX3-153 |
|------------------------------|------------------|---------------------------------------|---------------------------------------|
| Rating 50Hz | 8-55kW | 7,5-55kW | 7,5-55kW |
| Rating 60Hz | 19-75HP | 19-75HP | 19-75HP |
| Motor | 2pole | 2/4/6pole | 4/6pole |
| Pump outlet flange | 80-100/3"-4" | 100/4" | 150/6" |
| Pump inlet flange | 80-100/3"-4" | 100/4" | 150/6" |
| Impeller types | vortex | channel / vortex / S-Channel Impeller | channel / vortex / S-Channel Impeller |
| installation types available | wet/dry/portable | wet/dry/portable | wet/dry/portable |

PXFLOW® Series

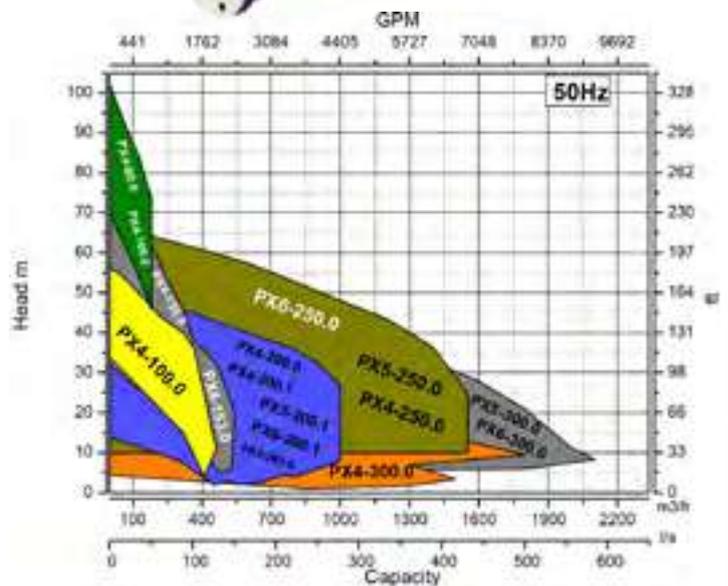
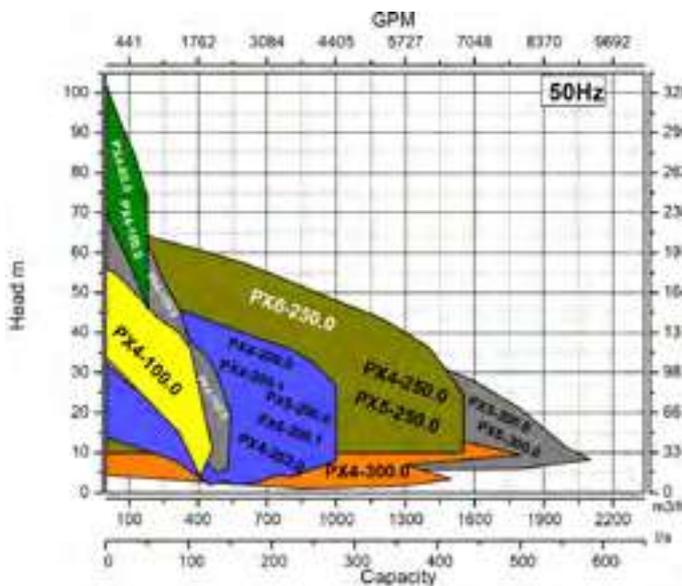
PX4, PX5, PX6

DESIGN FEATURES

- Internal motor cooling system with "ECOFLU" (closed loop through a cooling jacket)
- Cartridge sealing system "Fast Seal"
- Easily adjustable channel impeller clearance system "Reducer", for all installation types, for improved performance and less clogging occurrences
- Oil tap drain
- Free choice* channel or vortex impeller that can be fitted to the same volute
- Fast lock assembly/disassembly feature with only six latch bolts for quick and easy volute/impeller inspection (major advantage is the significant reduction of man-hours)**
- Electrical motor **PXFLOW** - SIEMENS-INNOMOTICS motor parts standard IE1 or higher efficiency IE2 (Premium efficiency IE3 and Super Premium efficiency IE4 as option for most motor sizes) have Class H insulation (rated for 180 degrees Celsius) as standard
- Motor inspection hole
- Cable entry in stainless steel 316 as standard (in Duplex as option)
- Handle in Stainless steel

*PX4-80.0 is only available in the Vortex impeller design and has no wear rings.

** Not for PX6



| Model | PX4-80.0 | PX4-100.0 | PX4-150.0 PX4-153.0 PX5-150.0 PX6-150.0 | PX4-200.0 PX4-203.0 PX4-200.1 PX5-200.1 PX6-200.1 | PX4-250.0 PX5-250.0 PX6-250.0 | PX4-300.0 PX5-300.0 PX6-300.0 |
|------------------------------|------------------|------------------|--|---|-------------------------------------|-------------------------------------|
| Rating 50Hz | 30-150kW | 30-170kW | 30-170kW | 30-170kW | 30-170kW | 30-170kW |
| Rating 60Hz | 46-200HP | 46-220HP | 15-220HP | 15-220HP | 15-220HP | 15-220HP |
| Motor | 2 pole | 2/4 pole | 2/4 pole | 4/6/8 pole | 4/6/8 pole | 4/6/8 pole |
| Pump outlet flange | 80-100/3"-4" | 100/4" | 150/6" | 200/8" | 250/10" | 300/12" |
| Pump inlet flange | 80-100/3"-4" | 100/4" | 150/6" | 200/8" | 250/10" | 300/12" |
| Impeller types | vortex | channel / vortex | channel / vortex / S-Channel Impeller | channel / vortex / S-Channel Impeller | channel / vortex | channel / vortex |
| installation types available | wet/dry/portable | wet/dry/portable | wet/dry/portable | wet/dry/portable | wet/dry/portable | wet/dry/portable |

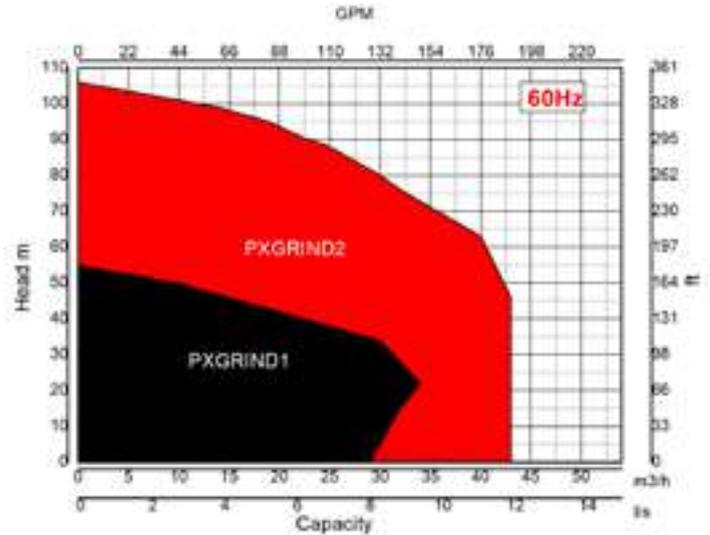
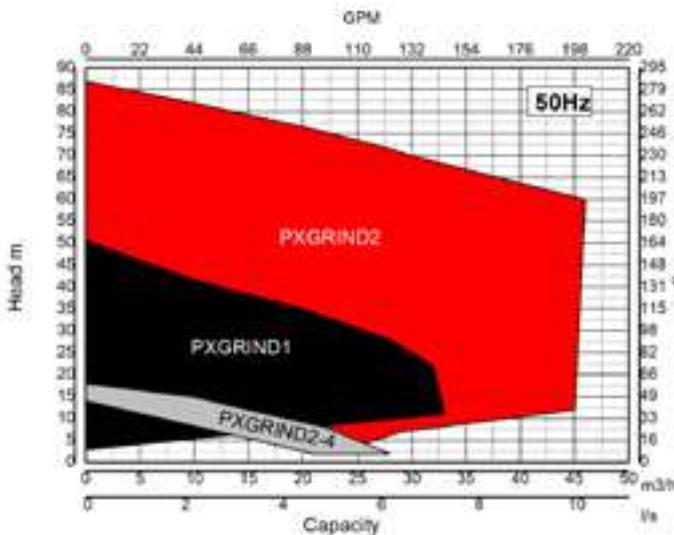
PXGRIND® Series

GRINDER PUMPS

The **PXGRIND** pumps are equipped with a grinding system that effectively reduces the size of all destructible solid pieces and fibrous materials, such as paper, textile, plastics, etc into small particles so they can be led away through pipes of relatively small diameter.

DESIGN FEATURES

- Stainless steel cutting system made in stainless steel with hardness 55 HRC minimum
- Internal motor cooling system with "ECOFLU" (closed loop through a cooling jacket)
- Cartridge sealing system "Fast Seal"
- Easily adjustable channel impeller clearance system "Reducer" for improved performance and less clogging occurrences
- Oil tap drain
- Ductile iron multi channel impeller
- Fast lock assembly/disassembly feature with only two latch bolts for quick and easy volute/impeller inspection (major advantage is the significant reduction of man-hours)
- **PXFLOW** - SIEMENS-INNOMOTICS motor parts standard IE1 or higher efficiency IE2 (Premium efficiency IE3 and Super Premium efficiency IE4 as option for most motor sizes)
- Motor inspection hole
- Cable entry in stainless steel 316 as standard (in Duplex as option)
- Handle in Stainless steel



| Model | PXGRIND1 | PXGRIND2 |
|------------------------------|------------------|------------------|
| Rating 50Hz | 3-5kW | 4-15kW |
| Rating 60Hz | 6-7,5HP | 10-25HP |
| Motor | 2 pole | 2/4 pole |
| Pump outlet flange | 50/2" | 50/2" |
| Pump inlet flange | Grinder | Grinder |
| Impeller type | Open channel | Open channel |
| installation types available | wet/dry/portable | wet/dry/portable |

Quality & efficiency

Chopper PUMPS

PXChopper series are equipped with a chopping system (made in stainless steel with hardness 55 HRC) at the inlet to the pump that effectively reduces the size of all destructible solids before passing through the pump.

DESIGN FEATURES

- Stainless steel cutting system made in stainless steel with hardness 55 HRC minimum
- Internal motor cooling system with "ECOFLU" (closed loop through a cooling jacket)
- Cartridge sealing system "Fast Seal"
- Easily adjustable channel impeller clearance system "Reducer" for improved performance and less clogging occurrences
- Oil tap drain
- Ductile iron multi channel or vortex impeller
- Fast lock assembly/disassembly feature with only two latch bolts for quick and easy volute/impeller inspection (major advantage is the significant reduction of man-hours)
- **PXFLOW** - SIEMENS-INNOMOTICS motor parts standard IE1 or higher efficiency IE2 (Premium efficiency IE3 and Super Premium efficiency IE4 as option for most motor sizes)
- Motor inspection hole
- Cable entry in stainless steel 316 as standard (in Duplex as option)
- Handle in Stainless steel



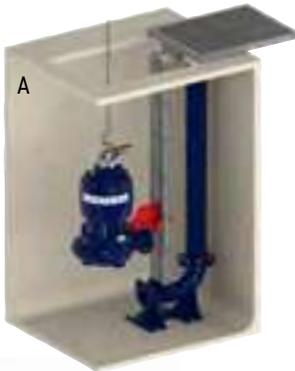
EXAMPLE WITH
CHANNEL IMPELLER



EXAMPLE WITH
VORTEX IMPELLER



Configuration



TYPES OF INSTALLATION

A. Wet type installation

The self guiding coupling system allows for the quick and efficient pump unit inspection. The elbow shaped stationary Discharge Connection Bracket (DCB) is securely fastened at the bottom of the sump. The pump's discharge outlet is perfectly aligned with the DCB's opening and the connection is maintained sealed by the pump's own weight.



B. Dry type installation

In this case a **PXFLOW** pump, equipped with the ECOFLU (internal motor cooling system), is installed in a separate pump chamber. All piping is bolted directly to the pump volute (suction and discharge end).

The fast lock connection system permits the fast motor unit and impeller removal from the pump's volute for an easy and friendly inspection. These pumps can replace old existing pumps with dry motors and can still remain operational even there is still water inside the pump chamber.



C. Transportable installation

This type of submersible pump is equipped with a suction stand that comes with or without a strainer. This portable pump unit can be an excellent solution for dewatering construction sites especially when equipped with the ECOFLU cooling system.



SERVICE ADVANTAGES

Discharge flange connection and adapter designed for quick and easy replacement of other brand pumps. When an existing pump needs to be replaced, **PXFLOW** pumps may utilize the existing pump flange adapter or a **PXFLOW adapter**, (see depictions below). In both cases perfect alignment with the base elbow is ensured via the existing guide rail system.



PXFLOW® Series

Corrosion resistant stainless steel pumps

PXFLOW corrosion resistant pumps are constructed of stainless steel 316 or Duplex for corrosive liquids or salt water

Applications, where cast iron is not recommended. Stainless steel pumps are corrosion resistant.

PXFLOW "modular" material selection system makes it easy and economical for the customer to adapt the pump to specific requirements.

All PXFLOW construction materials can be upgraded on request to increase the overall corrosion resistance of the pump.



PXFLOW® Series



PXFLOW "MODULAR" MATERIAL SELECTION SYSTEM

EXAMPLE CONFIGURATIONS

1. Stainless steel impeller in 316 or Duplex
Volute and motor housing in cast iron
Outer shaft Retaining Ring special in 316
2. Same as 1 with ceramic coating inside volute and lower motor parts (which are in contact with pumping media)
3. Stainless steel impeller in 316 or Duplex
Volute and lower motor parts (which are in contact with pumping media) in 316. Duplex on request
Outer shaft Retaining Ring special in 316
Rotor shaft, cartridge sleeve (shaft protection sleeve) in Duplex.
4. Outer motor casing (parts which are in contact with the liquid media) or combination of some motor parts with the cooling jacket (PX4 series) in 316. Duplex on request
Volute, impeller in 316. Duplex on request
Outer shaft Retaining Ring special in 316
Rotor shaft, cartridge sleeve (shaft protection sleeve) in Duplex.

EXAMPLE No3



**EXAMPLE No4
PX4-300
WITH COOLING JACKET**



EXAMPLE No4



PXFLOW® Series

STANDARD COATING

Two-component, resin modified epoxy paint. Special coating for life time optimization provides protection for most applications involving corrosion, erosion, chemical attack and abrasion.

High Hardness and Wear Resistant Coatings

SURFACE PROTECTION

Seamlessly spayable elastomeric coatings for protection (impeller and inside pump volute)

Resistant against erosion and cavitation protection (impeller and inside pump volute)





GREEK INNOVATION — WORLDWIDE DISTRIBUTION

45+
DISTRIBUTORS

BRIGHTMEDIA

PAPANTONATOS S.A. designs and manufactures high performance submersible pumps for clean water (**FLOWPAP**) and wastewater (**PXFLOW**) applications, delivering robust engineering, efficiency, and maximum operational safety.

With a rapidly expanding network of distributors and service specialists across the Americas, Europe, Asia-Pacific, and the Middle East, we stand ready to support you wherever your operations take place.

Our dedicated technical and engineering teams provide dependable assistance and customized solutions tailored to the specific requirements of your application.



Selected pumps ranges available with ATEX and ETL Listed Intertek - UL 674 certifications, ensuring safe operation in hazardous locations.

Please contact us to learn about the location of a sales and service point near you

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