

TSURUMI AVANT

SERIES

MQ

SUBMERSIBLE
SEWAGE PUMPS



TSURUMI AVANT

TSURUMI AVANT is a brand of submersible pumps and wastewater treatment equipment developed with an eye on the future by **TSURUMI**, a leading company in the field of submersible pumps for 100 years. **TSURUMI** created it to deliver the maximum in customer satisfaction, by pooling years of know-how garnered with submersible pumps and wastewater treatment equipment into a series of premium grade products. This includes completely revamping everything from the materials used for components to the product lineup itself. The premier brand is being released under the name of **TSURUMI AVANT**.

Tsurumi MQ-series pump design centres on **3 key concepts**, which guided the Tsurumi engineers in the creation of a genuinely hi-tech product.



Innovation

Innovating means improving, starting with yourself. We have responded with enthusiasm to a fast-changing market and worked passionately to deliver a high-quality product, the shining gem of today's Tsurumi range. **Tsurumi MQ-series** is innovative in performance and technology.



Reliability

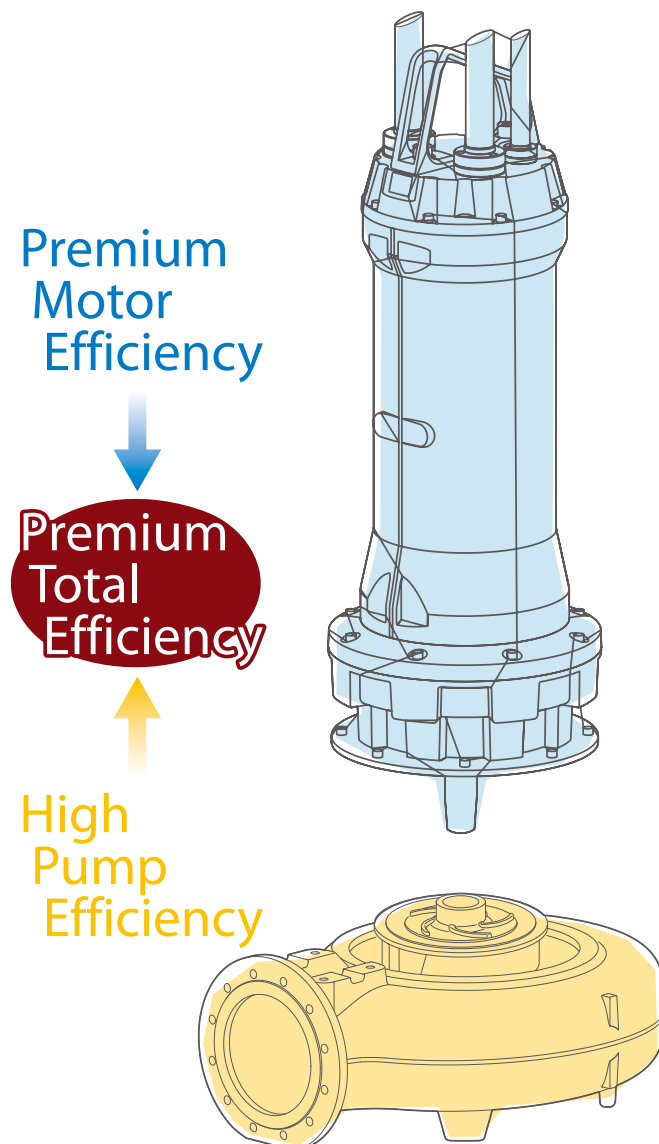
A product's quality lies first and foremost in its **reliability**, meaning trouble-free operation with low maintenance. **Tsurumi MQ-series** is the outcome of painstaking design, machining on state-of-the-art machining centres, and meticulous assembly where the worker's experience plays a vital role.



Efficiency

Since operating costs usually account for a higher proportion of expenditure than other cost factors (purchase, installation and maintenance), design engineers aim to maximise efficiency to reduce running costs.

The **Tsurumi MQ-series** range is designed to be **modular**: the breadth of range allows an energy-saving **motor** in Premium IE3 class to be combined with high-efficiency **hydraulics** optimised for the duty point. The result? High total efficiency and sharply lower costs and environmental impact.



Tailor-made solutions

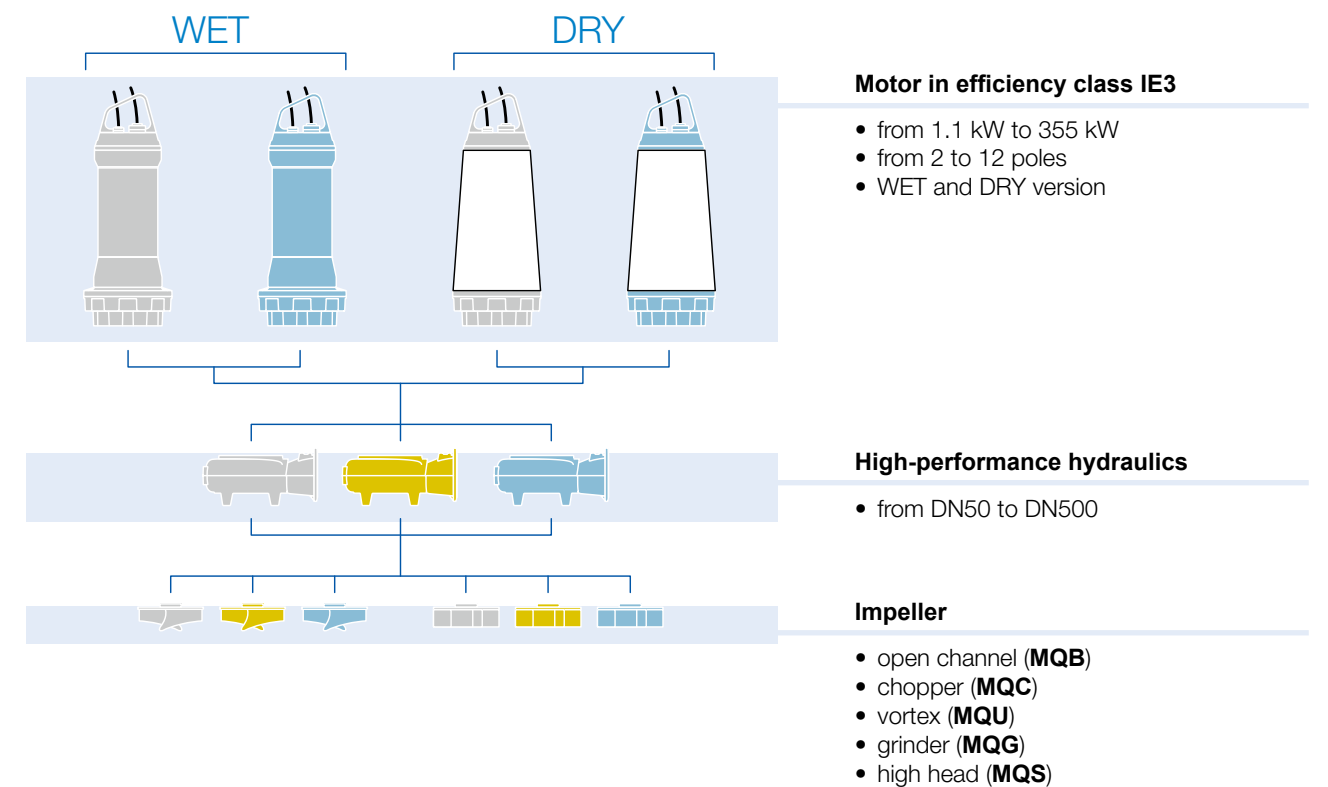
Tsurumi MQ-series is developed to give the best performance for the duty point, with energy saving assured by efficiency class IE3 motors and high-performance hydraulics.

Combining a multinational mentality with flexibility, Tsurumi guarantees effective solutions and products and systems that are genuinely "made to measure".

A modular range

The **Tsurumi MQ-series** is designed with **modularity** in mind. This approach gives the customer access to a large number of motor-hydraulics-material combinations, so every model is optimised for its intended use.

In practice, hydraulics of a given diameter and material can be fitted with motors with different powers and rpm for peak efficiency, and different types, dimensions and builds of impeller can be chosen depending on the specific criticalities of the application.



More materials, more reliability

To deal with special and specific applications, the standard iron hydraulics can be replaced with an alternative solution in bronze, stainless steel or *Molib-tech™*, an **innovative material** that guarantees constant performance even with very abrasive liquids, and significantly longer lifetime than conventional ceramic coating systems.

This means longer maintenance intervals, less inconvenience from system stoppages and lower incidence of running costs than with conventional pumping systems.

MQ-series

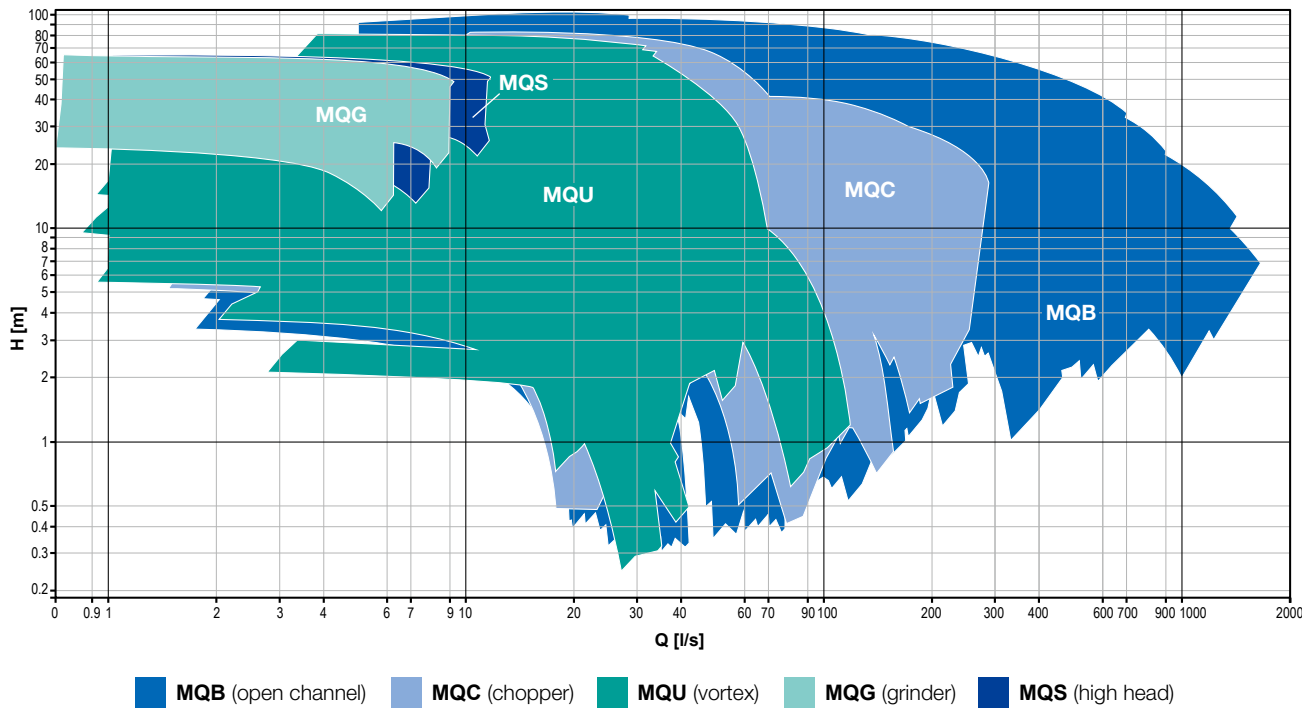
The MQ-series of the TSURUMI AVANT brand adds an IE3 premium efficiency motor to premium grade of submersible sewage pumps that Tsurumi makes. With this new series, overall efficiency and energy-savings have been taken to new heights by pursuing greater efficiency in both the pump and motor. Moreover, to ensure users get what they are looking for, the MQ-series offers 5 types of impellers (Open Channel, Chopper, Vortex, Grinder and High Head) and super wide ranges of specifications featuring 50 to 500 mm discharge bore diameters and 1.1 to 355 kW motor output specifications. Plus, pump installation can be chosen between a WET version that submerges the pump in water or a DRY version that installs the pump indoors or outside the tank using the original closed loop cooling system with internal recirculation. Furthermore, MQ-series pumps accordance with IECEx explosion-proof specifications, and can be used in dry pits and other sites.

Characteristics

- Cast iron structure (stainless steel on request)
- Class H electric motor from 1.1 kW to 355 kW in efficiency class IE3
- 50 Hz and 60 Hz versions
- Thermal protection devices incorporated in stator
- Long life bearings (100,000 hours)
- AISI 431 drive shaft (AISI 329 on request)
- Leakage detection system in seal chamber (standard) and motor (on request)
- Double silicon carbide mechanical seals with Oil Lifter in large oil chamber
- Discharge from DN50 to DN500
- Large free passage declared for every model
- WET or DRY version available
- Original closed loop cooling system with internal recirculation
- Operating temperature up to 40°C (up to 60° on request)
- Explosion-proof available (Designed in accordance with IECEx)



Overview of operating ranges



Construction materials

	Standard	Optional
Lifting handle	Stainless steel	-
Motor complex	EN-GJL-250	Stainless steel
Drive shaft	AISI 431	AISI 329
Cooling jacket	AISI 304	-
Gaskets	NBR	FPM (FKM)
Nuts and bolts	A2-70 Stainless Steel	A4-80
Hydraulics	EN-GJL-250	AISI 316 / AISI 329 Duplex / Molib-tech™
Impeller	EN-GJL-250	AISI 316 / AISI 329 Duplex / Br-Al / Molib-tech™

Standard equipment and options

		Standard	On request
Power voltage tolerance		max ± 10% (S3 duty)	-
		max ± 5% (S1 duty)	
Efficiency class		IE3 - Premium Efficiency	-
Motor insulation class		H	-
Starting		Star-Delta	D.O.L, Soft Start
Maximum ambient temperature		40 °C	60 °C or above
Type of cable		S1RN8-F or equivalent	EMC (VFD)
Cable length		10 m	20 - 30 - 40 - 50 m
Painting		Bicomponent epoxy - 200 µm	Bicomponent epoxy - 400 µm
Mechanical seals		2 SiC/SiC mechanical seals in oil chamber	-
Thermal sensors		Bimetal thermal sensors (150 °C)	PTC/PT100 thermistors
Type of installation		Submersible (WET version)	Dry (DRY version)
			DRY version available with 4 kW and above but, closed loop cooling system is installed from 5.5 kW and above.
Monitoring	Motor	Bimetal thermal sensors (150 °C)	PTC/PT100 thermistors
		Single-signal double leakage detector	Single leakage detector
	Oil chamber	Single-signal double leakage detector	Single leakage detector
	Terminal board	-	Single leakage detector
	Bearings	-	Overheating (PTC/PT100 thermistors)
		-	Vibrations detector
Sacrificial anodes		NO	YES
Explosion-proof		NO	Designed in accordance with IECEx (II 2G Ex db k IIB T4 / II 2D Ex tb IIIC T135°C)

The data provided are not binding.
Tsurumi reserves the right to modify any product without notice.

Features

WET

Explosion-proof specification is available as an option. (Designed in accordance with IECEx)

CABLE GLAND

Cable gland system with cable holder.
The universal thread ring-nut can be removed to fix a rigid or flexible duct to the cable gland to protect the cable from physical and mechanical stresses.
On request a special resin seal is applied to prevent all possibility of water leaking into the motor even if the outer sheath is torn.

ELECTRICAL CONNECTIONS

The terminal board, which simplifies electrical wiring procedures, is in an airtight compartment which can be fitted with a leakage detection sensor.

THERMAL SENSORS

Detects excess heat, therefore, protecting the pump against overheating.

PAINTING

Bicomponent epoxy paint, standard thickness 200 µm.
(max 400 µm on request)

IE3 PREMIUM EFFICIENCY MOTOR

BEARINGS

Ball bearings with lifetime lubrication designed to guarantee 100,000 working hours. Optional sensors can monitor temperature and vibration to guarantee optimal performance.

WATER SENSOR

Sensor fitted as standard to detect water or moisture in the mechanical seal oil chamber.
Also standard on explosion-proof models.

MECHANICAL SEALS (with OIL LIFTER)

Double silicon carbide mechanical seals in oil sump to ensure excellent reliability even in heavy-duty conditions.

Thanks to a special component (oil lifter) the upper mechanical seal remains lubricated at all times, with more effective protection against wear.

SUCTION and DISCHARGE

The suction and discharge flanges can be ordered with holes of any standard type (UNI, ANSI, BS, etc.) to ensure perfect compatibility with the system and the accessories installed.

IMPELLER

The most suitable impeller can be selected for each application.



MQB
Open Channel
impeller



MQC
Chopper
impeller



MQU
Vortex
impeller



MQG
Grinder
impeller



MQS
High Head
impeller

Exclusive cooling system

DRY

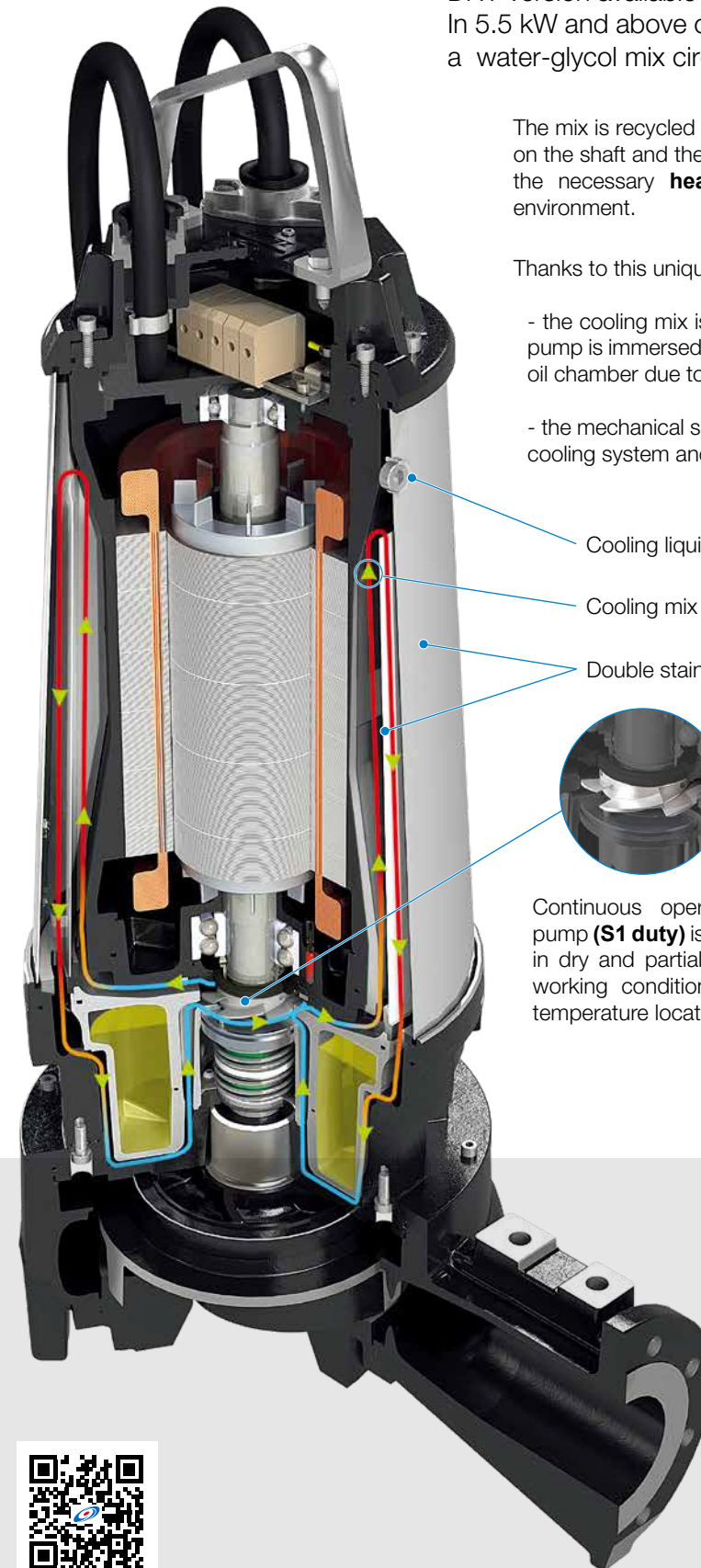
DRY version available with 4 kW and above.

In 5.5 kW and above of DRY version models, the motor is cooled by a water-glycol mix circulating in a special closed loop circuit.

The mix is recycled through the pump by an **axial impeller** rigidly mounted on the shaft and the specially designed steel **double jacket** which provides the necessary **heat exchange** between the motor and the external environment.

Thanks to this unique system:

- the cooling mix is **always separate from the wastewater** in which the pump is immersed and cannot be contaminated even if water leaks into the oil chamber due to wear of the first mechanical seal
- the mechanical seals are installed in an **oil chamber separated** from the cooling system and can be changed without draining the circuit



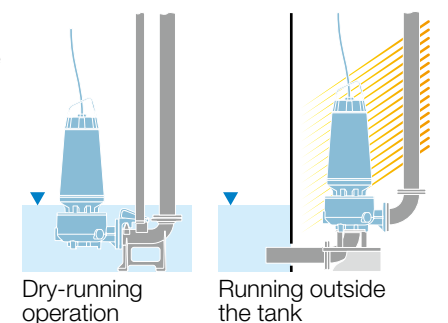
Cooling liquid inspection and filler cap

Cooling mix circulation path

Double stainless steel jacket

Axial recycling impeller

Continuous operation of the pump (**S1 duty**) is ensured even in dry and partially submerged working conditions or in high temperature locations.



Dry-running
operation

Running outside
the tank

No unpleasant surprises

If the outer mechanical seal wears, the **sensor** warns that water is leaking into the oil chamber.

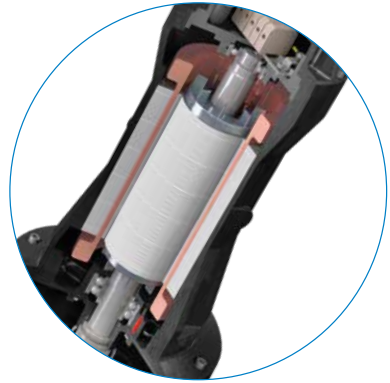
The second mechanical seal allows the pump to continue operating temporarily, allowing **scheduling of the maintenance job** with no need for unplanned system stoppages.



MQ-series
Features Movie

High efficiency motor

The heart of the **Tsurumi MQ-series** lies in its high-efficiency electric motors, designed to deliver high performances and withstand continuous duty cycles.



- **PREMIUM IE3** efficiency
- **NEMA Class A**
- **Class H** insulation for all models in the range.

S1 duty mode operation even in water at a temperature of 60°C or above.

Clogging-proof hydraulics

All hydraulic components are designed using latest-generation software for the highest efficiency and the **best performance** while still ensuring ample free passages.

All models with open channel impeller feature an **axial adjustment system** allowing the impeller clearance to be restored, to maintain performance even further to normal wear and tear.

One of the biggest problems in wastewater treatment application pumping industry is clogging of impeller due to fibrous and stringy materials. As a counter-measure to this clogging, TSURUMI AVANT's open channel impeller pumps have adopted new and innovative **Anti-Clogging System**. This **ACS** uses the centrifugal force of the impeller to pull out the stringy material via spiral groove of suitable depth cut into the diffuser plate. This effective measure eradicates the fibrous material clogging of the impeller.



More reliability with new materials

The need for components with ever-superior mechanical properties has driven the development of **new materials** that enable the production of highly resistant components, suitable for use with very heavily soiled and abrasive liquids.

MOLIB-TECH



This material, called *Molib-tech™*, is an alternative to the conventional ceramic coating process and **applies a layer of high-strength material to the iron**, to improve the product's **mechanical and performance characteristics**.

Unlike a conventional ceramic coating, the **uniform layer** of material does not cause any change in clearance or loss of performance.

HARD CAST IRON



Due to its complex chemical composition, Hard Cast Iron is stronger than commonly used grey cast iron and has a **hardness value between 450 and 500 HB**.

This conveys unique characteristics of **strength and toughness** to the Hard Cast Iron, making it the perfect material for making parts subjected to strong stresses.

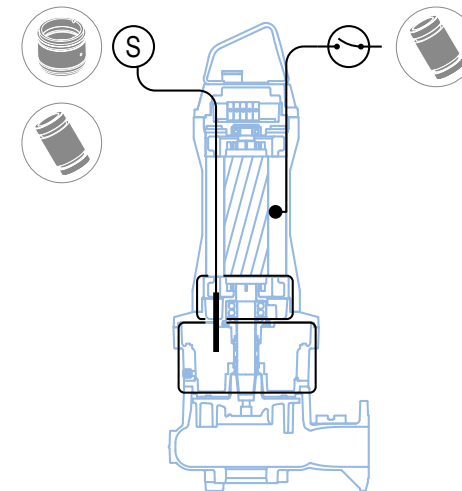
Monitoring

The **MQ-series** can be fitted with sensors for swift signalling of any anomaly, allowing quick action to protect the pump from potential damage.

The monitoring system also acquires data on the operation of the machines installed and helps in the targeted **planning of maintenance** to avoid sudden system shutdowns.

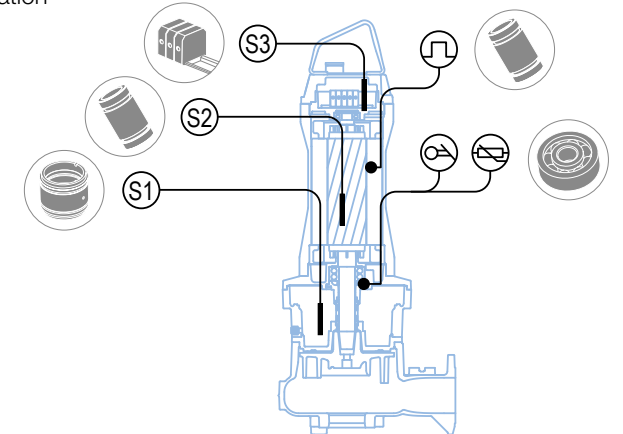
STANDARD

- Bimetal thermal **sensors** (motor)
- Single-signal **double leakage detector (S)** to detect the infiltration into the oil chamber of the mechanical seals and/or into the motor.



ON REQUEST

- PTC/PT100 **thermistors** (motor)
- **Single probes** for the detection of water or humidity inside:
 - **S1** oil chamber of the mechanical seals
 - **S2** motor
 - **S3** terminal board compartment
- **PT100 sensor** that signals bearings overheating
- **Vibration sensor** warning of any impeller imbalance due to damage or cavitation



Maintenance

The **MQ-series** has been carefully, rationally designed to ensure **easy maintenance** and **quick replacement** of parts subject to wear and tear.

• CABLE

All electrical connections are easily acceptable inside the top cover. A terminal board simplifies disconnection of the cable in the event of replacement.

• MECHANICAL SEALS

Once the impeller has been removed, the oil chamber containing the mechanical seals is accessed by just removing the ring-nut that holds them in place.

• OIL

The oil in the mechanical seal chamber can easily be replaced thanks to caps accessible from the outside regardless of whether the pump is installed horizontal or vertical.

• BEARINGS

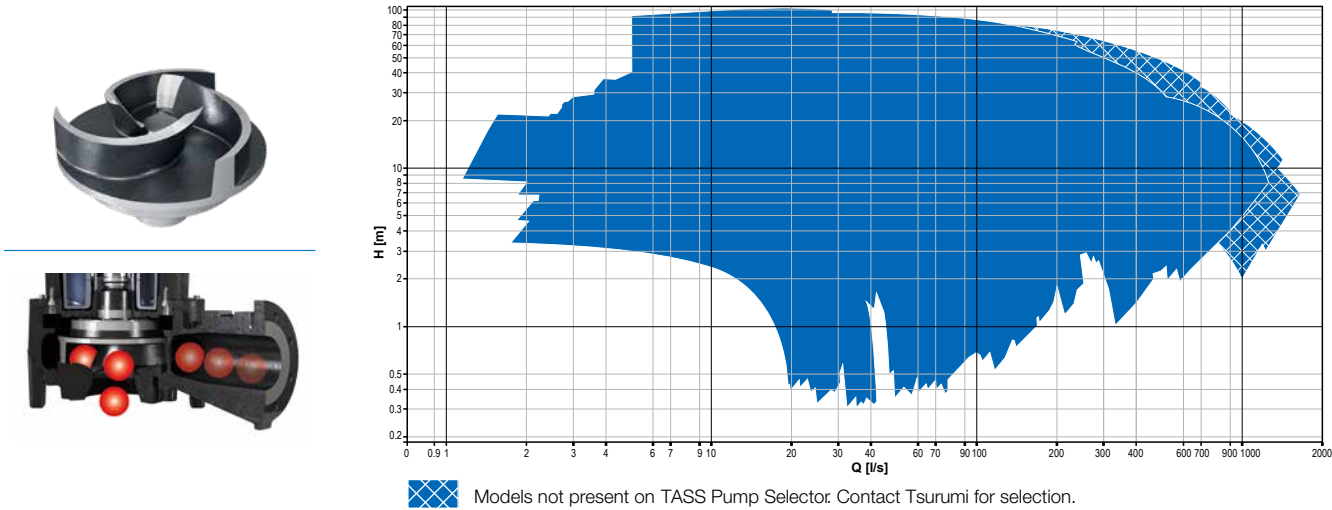
They have standard characteristics, for low-cost maintenance and trouble-free sourcing of replacement parts.

• COOLING LIQUID

The water-glycol mix that cools the motor is in a closed loop circuit and does not need changing even in case of prolonged use.



MQB (Open Channel)



Range characteristics

Power	1.1 - 355 kW
Poles	2 / 4 / 6 / 8 / 10 / 12
Discharge	DN65 - 500
Free passage	max 220 x 110 mm
Max flow rate	1600 l/s
Max head	100 m

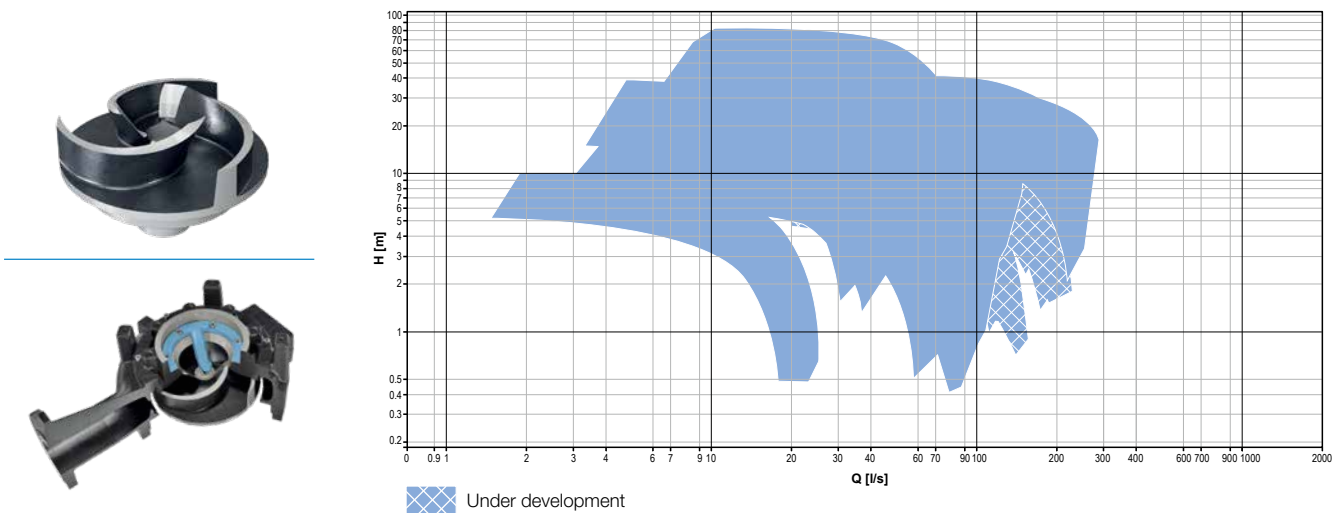
Hydraulics

- Cast iron open channel impeller
- Large free passage

Suitable for

- Liquids containing suspended solids
- Suitable for sewage and drainage systems and first rainfall tanks

MQC (Chopper)



Range characteristics

Power	1.1 - 75 kW
Poles	2 / 4 / 6
Discharge	DN80 - 200
Free passage	-
Max flow rate	281.2 l/s
Max head	82.7 m

Hydraulics

- Chopper impeller in *hard cast iron* as standard
- Chopper system able to cut particles of any shape of proportion

Efficiency of hydraulics only 3/5% less than that of a normal channel impeller

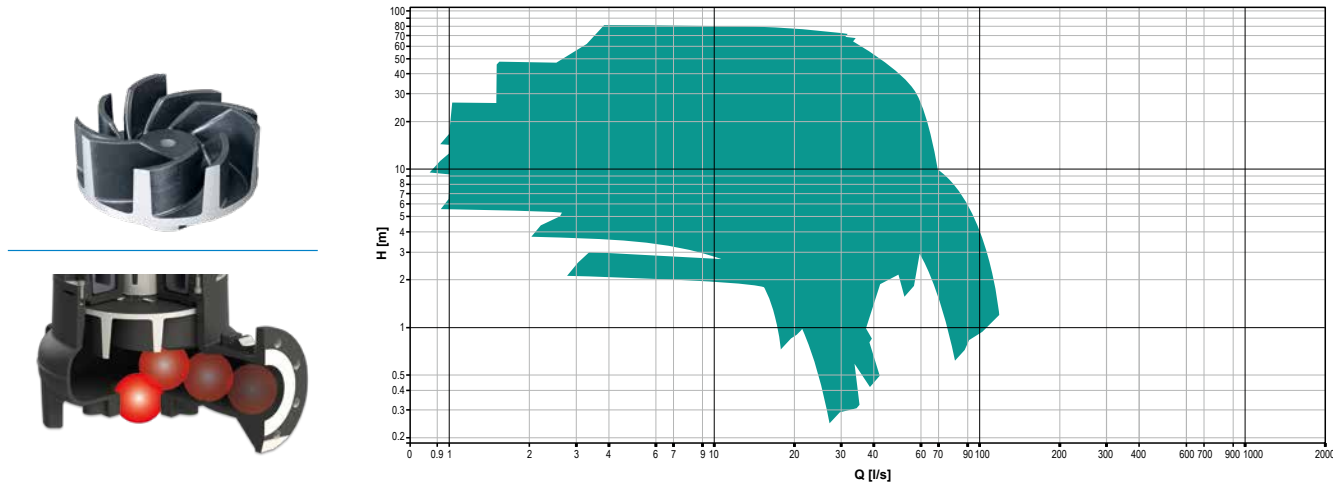
Suitable for

- Liquids containing solid parts and fibres
- Suitable for sewage, lifting of not strained black water



MQC-series
Features Movie

MQU (Vortex)



Range characteristics

Power	3 - 45 kW
Poles	2 / 4
Discharge	DN65 - 150
Free passage	max 125
Max flow rate	110 l/s
Max head	75 m

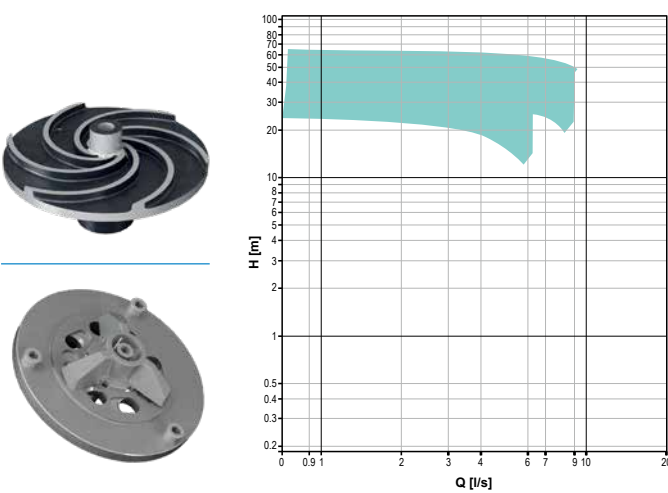
Hydraulics

- Cast iron vortex impeller
- Full free passage

Suitable for

- Biological liquids and wastewater
- Suitable for civil pumping stations and lifting wastewaters in livestock farms and industrial plants

MQG (Grinder)



Range characteristics

Power	4 - 11 kW
Poles	2
Discharge	DN50-G2"
Free passage	-
Max flow rate	8.0 l/s
Max head	57 m

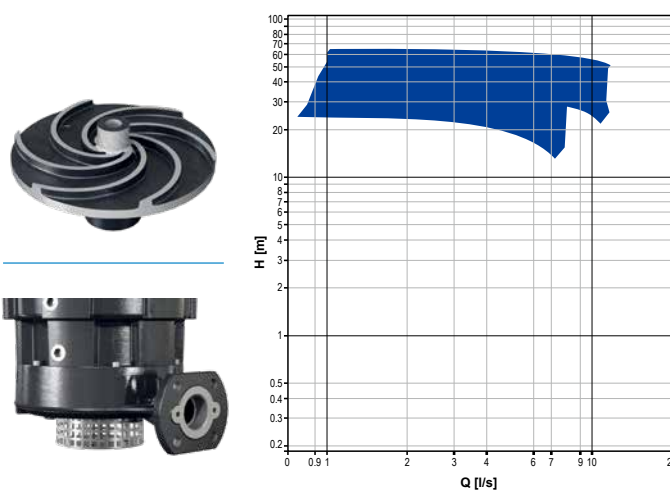
Hydraulics

- Cast iron multi-channel open impeller
- Grinding system with rotary knife

Suitable for

- Soiled liquids containing fibres and filaments
- Suitable for professional and heavy-duty applications

MQS (High Head)



Range characteristics

Power	4 - 11 kW
Poles	2
Discharge	DN50-G2"
Free passage	max 10 mm
Max flow rate	11.0 l/s
Max head	61 m

Hydraulics

- Cast iron multi-channel open impeller
- High manometric head

Suitable for

- Clean, rain and seepage water
- Suitable for applications in agriculture, irrigation and fish farming



Quick and Easy Pump Selector!

Web: <https://tass.tsurumiavant.com>



Cod. 290400097
Rev. 0 - 01/01/2023

We reserve the right to change the specifications and designs without prior notice. The OO series and model OO are indicated with our series/model codes in this catalog.

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Printed in Japan IA151-B NZ-X-F-A