

## APPLICATION NOTE

# Low voltage motors for water and wastewater industry

## Know your flow



### Motors that make a difference

Energy efficiency, long-term reliability, increasing productivity and reduced downtime are all key factors for utilities in the water and wastewater industry to continue to grow profitably.

We offer a wide range of high efficiency IEC low voltage motors produced with low carbon footprint. Our induction motors are available with up to IE4 efficiency and synchronous motors, like ABB SynRM motors, even with IE5 efficiency. Since each IE class delivers 20% lower losses, upgrading the motors offers the potential for significant energy and cost savings.

ABB motors are adapted to application with wide range modification possibilities and designed for highest reliability in 24/7 operations. Their robust design with high quality materials from trusted partners increases the motor lifetime and reduces downtime and maintenance costs.

Our motors are designed for both direct on-line and variable speed operations and we can offer matched motor-drive packages.

Water is a limited resource, and rapid population growth and increasing urbanization are set to make security of water supplies a major issue in many parts of the world. As a result there is a need for solutions that will help the water and wastewater sector to manage this valuable resource as reliably and efficiently as possible.

### A complete partner

We at ABB, together with our global network of water-dedicated partners, can offer you local water expertise to help you find new and better ways to improve your water operations. We will help identify many possible factors that can influence both the resilience and the operating costs of the assets and equipment you use in water and wastewater treatment and distribution.

Our global network of specialized staff can use their application knowledge to support your operations whenever and where-ever required.

### ABB Ability™ Smart Sensor

ABB motors can be equipped with ABB Ability™ Smart Sensors. They optimize the performance and efficiency of electric motor-driven rotating equipment and enables better decision making by providing real-time access to data on all parameters for your equipment.

The sensors help to detect potential motor disturbances and plan maintenance before reliability, productivity and safety are impacted. This is crucial at remote network sites like pumping stations.

01 General performance motor

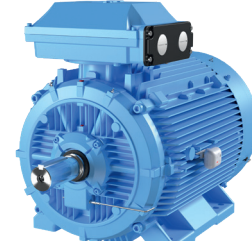
02 Process performance motor with Smart sensor

03 Water cooled motor

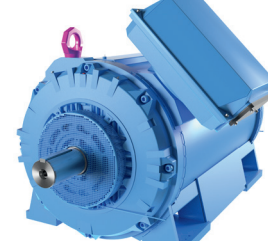
04 ACQ580 frequency converter



01



02



03



04

### Motors for the water and wastewater industry

High quality, reliable motors that meet all requirements of public and private utilities, and OEMs. ABB supplies a wide range of motors for water and wastewater processes and applications, including:

- Pumping stations
- Inflow pumps
- Irrigation systems
- Booster pumps
- Mixers, dosing pumps
- Transfer pumps
- Sludge pumps
- Desalination processes
- Compressors
- Fans
- And more...

### ABB motors provide flexibility and performance

- Protection against external conditions found in the water and wastewater industry
- Bearing locked at D-end to avoid axial play
- Bearings can be either greased for life or regreasable, fitted with grease relief systems
- Fan and motor fins optimized for low noise levels
- Oversized terminal box fitted as standard for ease of installation
- IP55 protection against ingress of water or solids (according to IEC 60034-5 and IEC 60529). IP56 protection available as option
- Surface treatment (polyurethane or epoxy) in accordance with corrosion class C3M, with C4 and C5 as an option
- IE3, IE4 or IE5 efficiency levels to support emissions reduction
- Designed for frequency converter operation

### Induction motors

Induction motors are the workhorses of industry, and our induction motors and drive systems are providing reliable service in a large number of water and wastewater applications around the world.

#### 1. General performance motors

Power: 0.09 to 355 kW  
Frame sizes: 56 to 355, aluminum and cast iron  
Efficiency classes IE2, IE3  
Simple and robust design, off-the-shelf available

#### 2. Process performance motors

Power: 0.12 to 1000 kW  
Frame sizes: 63 to 450, aluminum and cast iron  
Efficiency classes IE2, IE3 and IE4  
Designed for demanding environments and applications

#### 3. Water-cooled motors

Power: 100 to 2000 kW  
Frame sizes: 280 to 500  
High power density, compact size, no external fans

#### 4. Tailor-made solutions

Power: 0.25 to 2000 kW  
Frame sizes: 71 to 500  
Complete range of enclosures and cooling arrangements.

### Synchronous motors

Synchronous motors are typically preferred when high reliability, Super premium efficiency, precise motor control even at very low speeds, and compact overall equipment size are required. ABB offers two technologies: permanent magnet and synchronous reluctance (SynRM, with or without magnets). These motors are always controlled by variable speed drives.

Power: 1.1 to 2500 kW  
Frame sizes: 90 to 560  
Efficiency classes IE2, IE3 and up to IE5