HERBORNER PUMPENTECHNIK

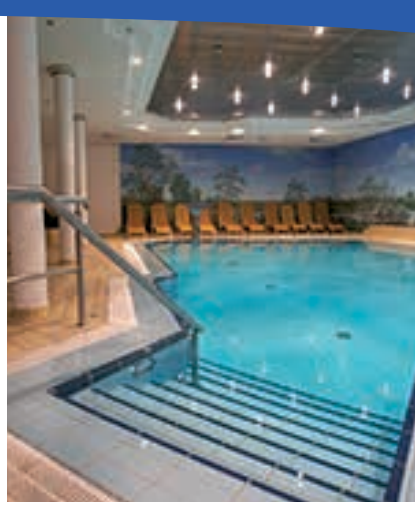
WATER*blue*-H

SELF-PRIMING POOL WATER CIRCULATION PUMP

**The close-coupled self-priming pool water circulation pump:
Compact, lightweight and at the same time effective.**

ENERGY EFFICIENCY made in Germany



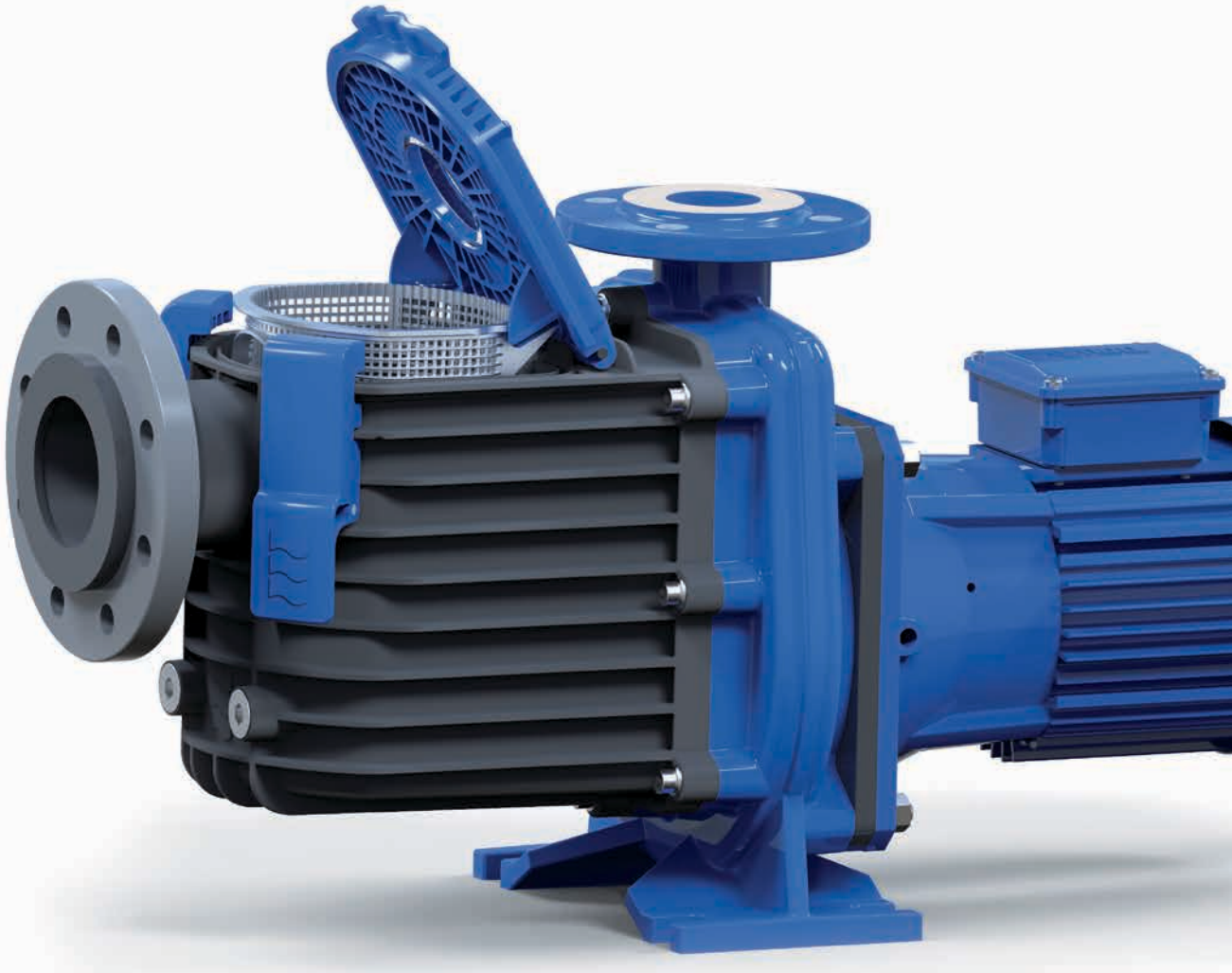
WATER*blue*-H

The new generation of pool water circulation pumps

The WATER*blue*-H achieves high circulation rates with minimum space requirement. The unique compact construction is specially designed to be readily serviceable.

The self-priming swimming pool pump **WATER*blue*-H** with integrated hair and fibre filter is particularly suited to the pumping and filtering of pool water, fresh water, sea water, industrial water and other liquids contaminated by coarse materials.

It is used in private, indoor, outdoor, and adventure swimming baths, water parks, and ice sports, recreation, and hotel facilities for water slides, attractions, water treatment systems, fountains, heat recovery systems, and industrial facilities.



EASY-*clean*©

The filter strainer with a mesh specially designed for hair and fibre enables a high degree of filtration. The filter cover is opened and closed using two toggle lever fasteners. Additional tools are not needed. By lifting the filter cover, the filter strainer is already raised a few centimetres from the pre-filter housing. Along with simplifying the removal of the filter strainer, this also prevents any contact between the operator and the contents collected. In addition, the generous volume of the filter strainer (2400 cm³) guarantees reduced maintenance costs.

The self-priming function of the pump is guaranteed after the pump casing has been filled.

Accessories

Security device (filter cover screw locking device). This safety device is used for preventing unauthorised opening of the filter cover.

Noise

The noise emission is determined by complex influencing factors such as size, materials, operating and installation conditions. As early as the development stage, hydraulic measures and solid construction are used to reduce noise emission. The maximum sound pressure level is generally determined by air, magnetic and bearing noise from the drive motors. Noise levels are below the permissible limit curves specified for electrical motors as defined by DIN EN 60034-9. Minimum noise emission during operation in the area of $Q_{optimal}$ (best efficiency).

General data

- Pump colour RAL 5010 (standard)
- Media temperature range from - 5 to + 60 °C
- Ambient temperature range from -5 to +40°C
- Performance verification in conformity with DIN EN ISO 9906, Class 2.
  Max. density of the pumped medium 1050 kg/m³
  Max. viscosity of the pumped medium 1.75 mm²/s

In case of deviating application conditions, the output is corrected in accordance with customer-specific requirements.

WATERblue-H

Many innovative features:

1 Motor

The motor design ensures an overload safe and efficient operation. Direct or wall-mounted operation of frequency converter possible (3-phase motors only).

2 Motor shaft

Rigid motor shafts made from high-alloy stainless steel for minimal deflection.

3 Bearing

The pump and motor have a common shaft, which is supported by a strengthened bearing. In contrast to the standard motor, the pump-side rigid bearing is designed as a reinforced bearing for long life under extreme operating conditions. The high level of running accuracy of the motor shaft is achieved through the high flexural rigidity and short distance between shafts. This ensures vibration-free running of the mechanical shaft sealing.

4 Shaft sealing

The shaft sealing on the pump side is effected in all models via a maintenance-free mechanical seal, which is independent of the direction of rotation and made from wear-resistant high-performance materials. All motors are equipped with a special seal for splash-proofing on the pump side.

5 By-pass channel

For optimal flushing of mechanical seal by means of the pumped medium.

6 Impellers

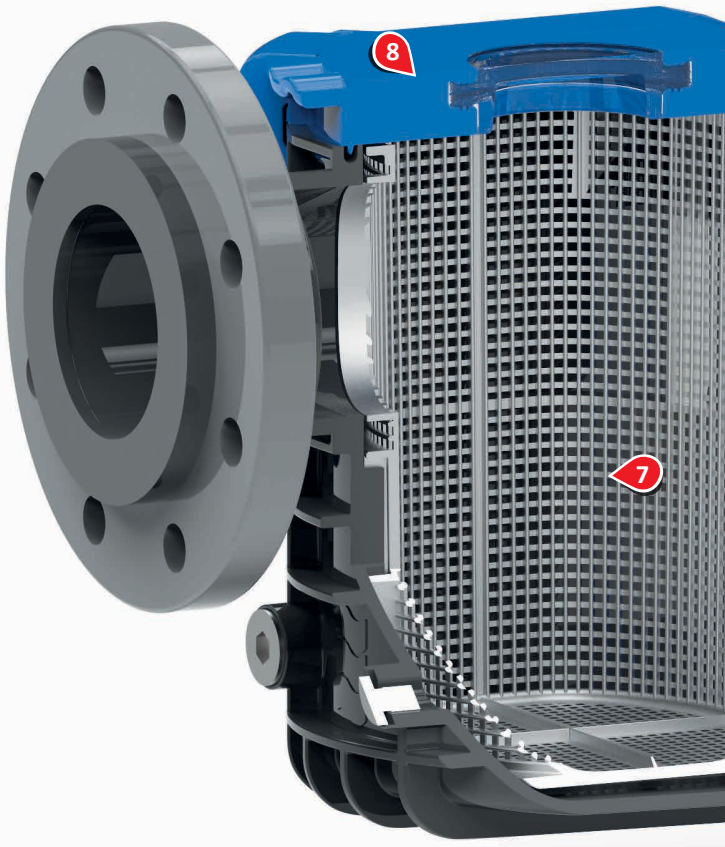
Dynamically balanced impellers ensure vibration-free running and contribute significantly to the long lifetime of the pump.

Closed multi-vane impellers made of high-alloyed aluminium bronze (CuAl10Fe5Ni5) are used for clean to slightly contaminated pumped media.

7 Filter strainer

High degree of filtration thanks to the mesh being designed especially for hair and fibres and the generously dimensioned filter strainer.

The filter strainer's degree of contamination can be seen at any time through the observation window.



8 Filter cover

Filter cover with protected **EASY-***clean*© mechanism for lifting the filter strainer. The toggle lever fasteners enable the cover to be opened and closed easily.

9 Pump casing

Standard pump casing in a bronze design.

10 Construction

Ideal material combination thanks to hybrid type of construction. Easy-to-install and readily serviceable compact design.

High circulation rates are achieved thanks to minimum space requirements and an easy-to-install and readily serviceable compact design.

The material combination of modern plastics ensures a high level of pressure resistance of up to 3 bar as well as providing weight optimisation.

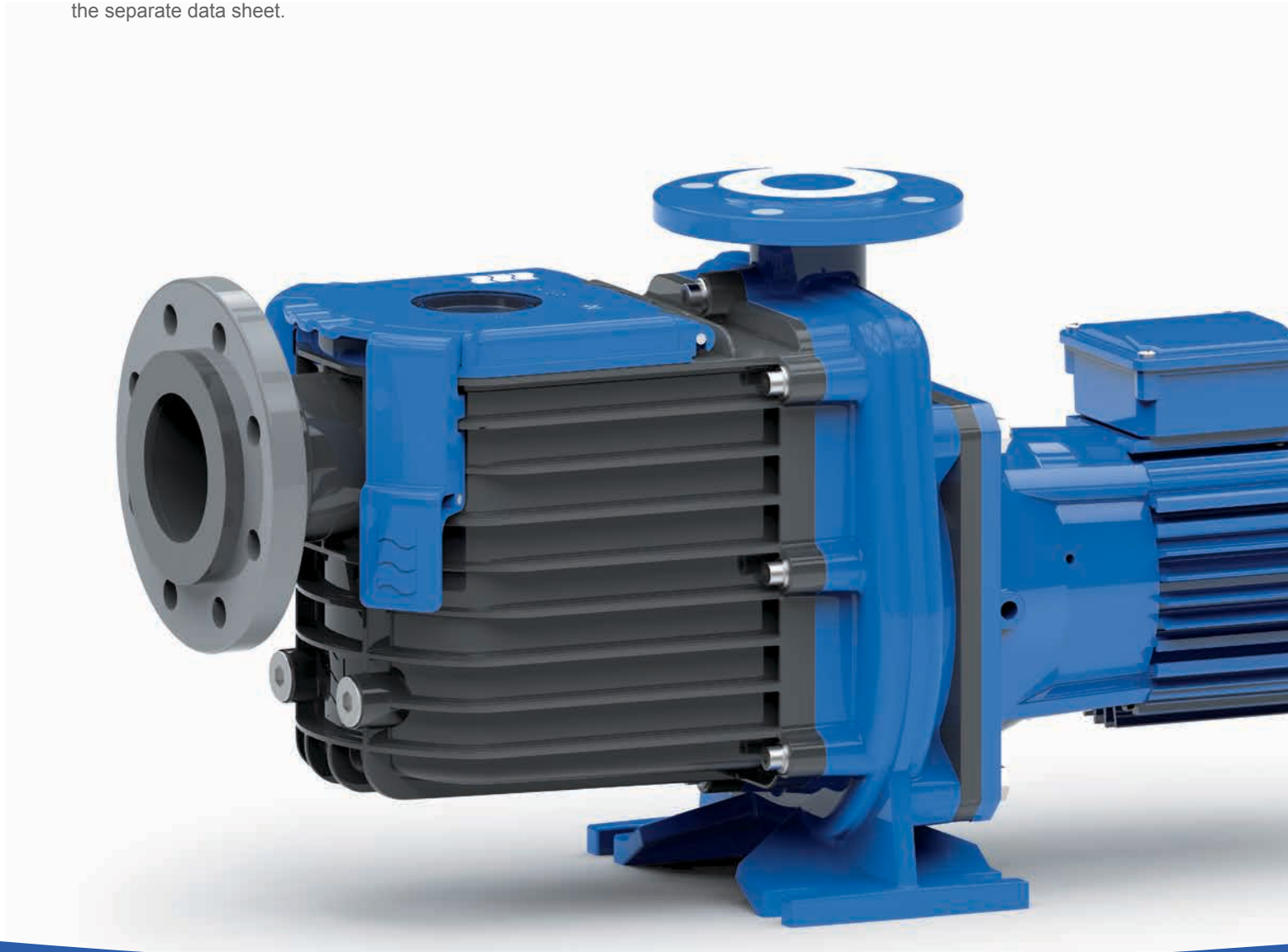
WATER*blue*-H

The self-priming pool water circulation pump WATER*blue*-H has an IE2 motor as standard.

Motor

Various drive options are available. The standard version is a surface-cooled three-phase motor with squirrel cage corresponding to efficiency class IE2. Additionally the pumps can be equipped with a permanent magnet or a single phase motor. The motor is optionally available with an integrated or external frequency converter. The use of a frequency converter is recommended, but not compulsory. You can find further details regarding motors and frequency converters in the separate data sheet.

Design	IM B5
Motor connection	Manufacturer-specific
Protection type	IP 55
Insulation class VDE 0530	F



IE2 and PM motors have a PTC thermistor as standard, ex-works.

High Efficiency Class three-phase motor (IE2) (designation: IE2)

Speed	2900 (3600) rpm
Frequency	50 (60) Hz
Connection ≤ 2.2 (2.6) kW	230 Δ/400 ⅄ (460 ⅄) V
Connection ≥ 3.0 (3.6) kW	400 Δ/690 ⅄ (460 Δ) V

The frequency regulation of pumps is available and depends upon the operating conditions.

Output range

Motor type	Speed	Q_{max} [m^3/h]	H_{max} [m]
IE2 (50 Hz)	2900 rpm	84	24
IE2 (60 Hz)	3600 rpm	84	28
PM	3000 rpm	82	24
WS	2900 rpm	40	15

The maximum energy efficiency (efficiencies of more than IE4) is achieved using a permanent magnet motor (PM).

WATER*blue*-H

The self-priming pool water circulation pump WATER*blue*-H has a permanent magnet motor (PM).

Compared to conventional asynchronous motors, PM motors (synchronous motors) achieve significant improvement in efficiency. This leads to significant energy savings and thus also to a noticeable reduction in costs.

Motor

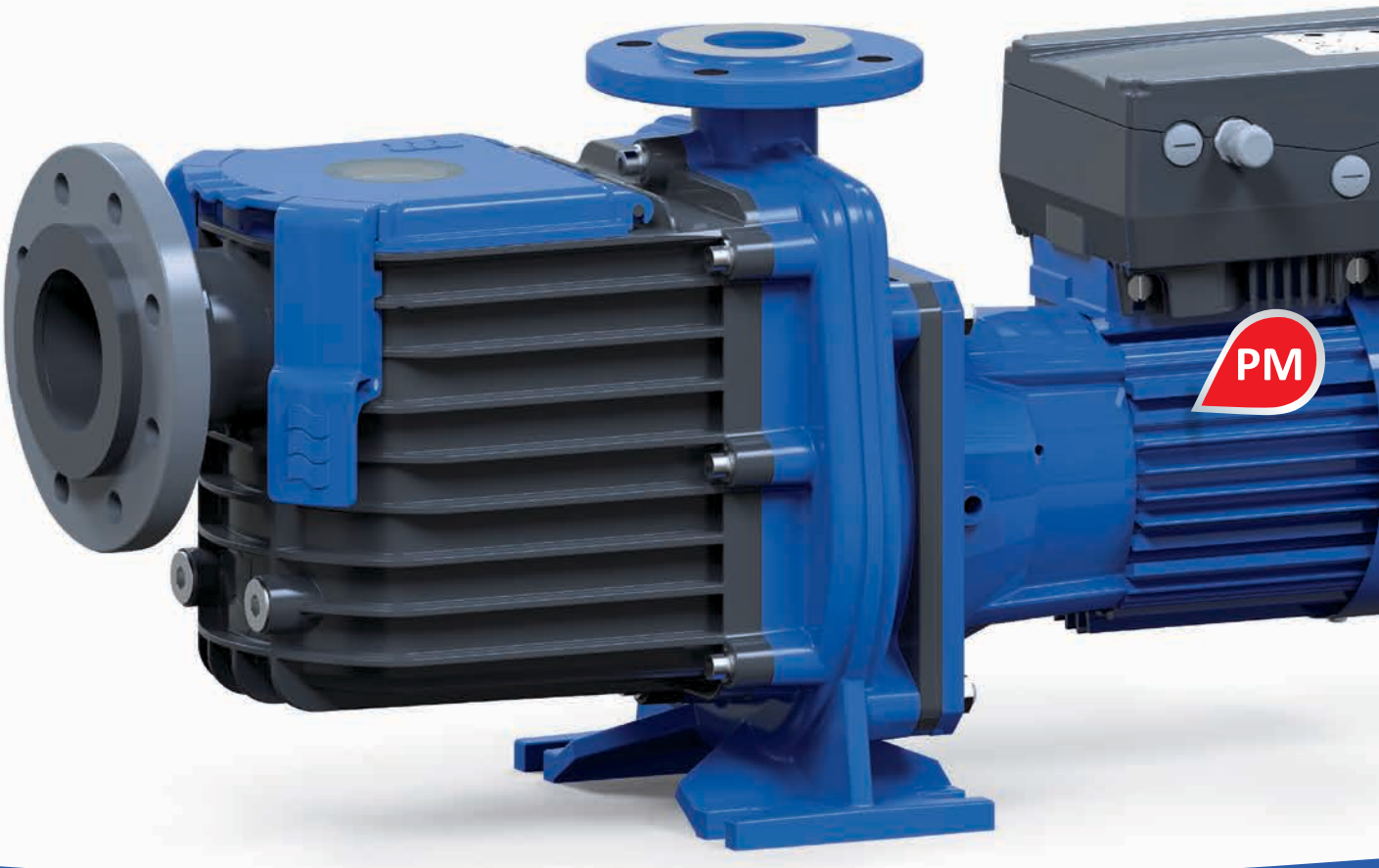
A permanently energised surface-cooled synchronous motor is used. The motors continuously achieve the motor efficiency of energy class IE3 and can also be supplied to comply with IE4. Principally, synchronous motors always require a frequency converter in order to operate, because they cannot start up independently.

The largest saving potential of the PM motor is in the partial load operation of the pump. The improvement in efficiency is considerable for this operating mode because the efficiency of asynchronous motors is strongly reduced while PM motors show an almost stable behaviour.

Permanent magnet motor (PM) for frequency converter operation (designation: PM)

Speed	3000 rpm
Frequency	150 Hz
Connection	3,350 V

The frequency regulation of pumps is available and depends on the operating conditions.



Comparison of the efficiencies

The pump curve shown in the diagram with 3 kW drive output compares the electrical power consumption (efficiency) of the PM motor with an asynchronous motor. The PM motor has a considerably lower power consumption.

IEC energy class	IEC code	EFF code
Super premium efficiency	IE4	
Premium efficiency	IE3	
High efficiency	IE2	EFF1
Standard efficiency	IE1	EFF2
Below standard efficiency	-	EFF3

Comparison of old EFF code and new IEC code

Highest efficiency - PM:
Advantages in comparison with asynchronous motors

In comparison with the asynchronous motors mainly used in swimming pool technology, the synchronous motor (PM motor) has clear advantages. This is because asynchronous motors have a lower efficiency than synchronous motors due to rotor slippage. The smaller the asynchronous motor, the higher the losses and thus the worse the efficiency. In these applications, PM motors are the optimum alternative: with their efficiencies, they are already grouped above motors according to IE3, which means that they achieve even better efficiencies than required for IE3 according to the IEC code.

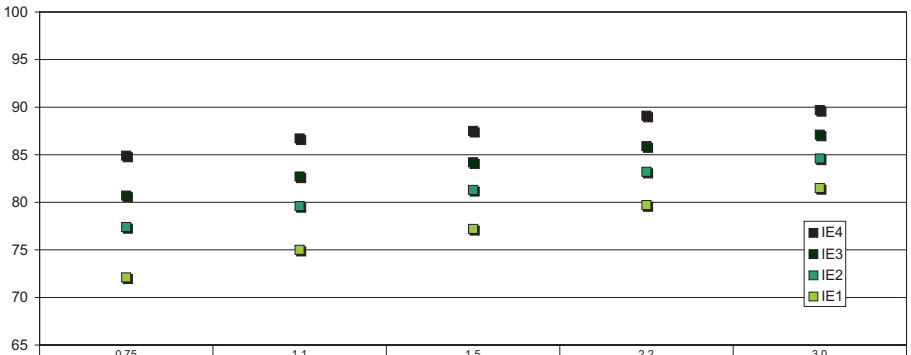
Motor technology with energy efficiency^{IE4}

The new PM motor (synchronous motor) technology offers three decisive advantages:

- More performance due to very high efficiency
- Reduced operating costs due to high energy savings
- Reduced CO_2 emissions due to lower power consumption

PM motors now already achieve the efficiencies that are not yet required by law. They have a constant motor efficiency of IE4 (premium efficiency class).

Efficiency comparison IE1 - IE2 - IE3 - IE4 for 2-pole motors



	0,75	1,1	1,5	2,2	3,0
IE4	84,9	86,7	87,5	89,1	89,7
IE3	80,7	82,7	84,2	85,9	87,1
IE2	77,4	79,6	81,3	83,2	84,6
IE1	72,1	75,0	77,2	79,7	81,5

Motor rating in kW

WATER*blue*-H

The self-priming pool water circulation pump WATER*blue*-H can be fitted with a single-phase or AC motor.

This can be used with a drive power of up to 1.5 kW. It is characterised by high economic efficiency and low maintenance and offers state of the art pump technology for domestic use.

Single-phase motor WS

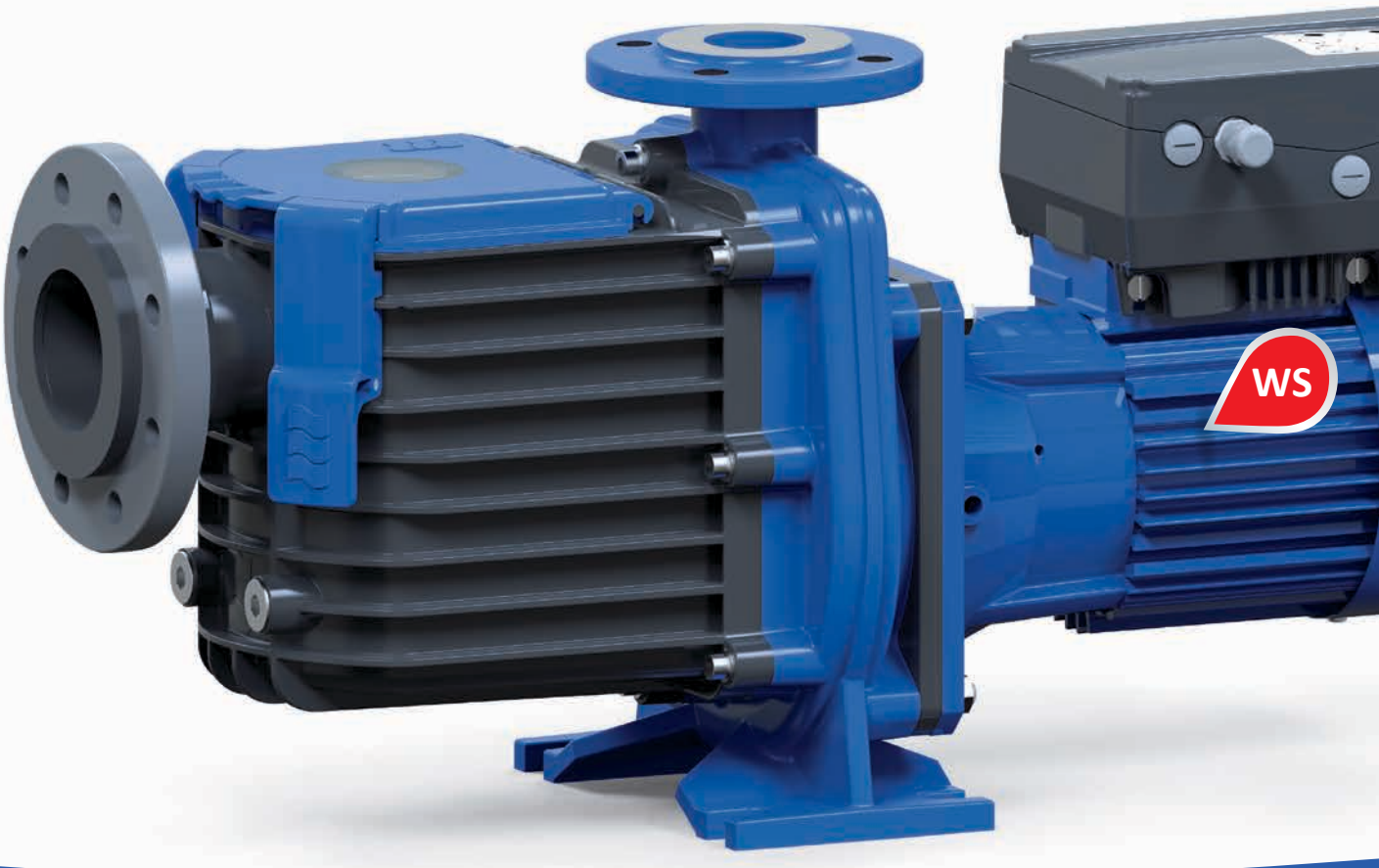
The single-phase motor can be connected to conventional single-phase or AC motors (230 V, 50 Hz). This makes it very popular for use in private households.

The motor is equipped ex-works with a starting and operating capacitor. After the run-up, the starting capacitor is switched off by a current-dependent relay.

Single-phase AC motor up to 1.5 kW
(designation: WS)

Speed	2900 rpm
Frequency	50 Hz
Connection	230 V, single-phase

The frequency regulation of pumps is available and depends on the operating conditions.



Frequency converter

A diversified choice of frequency converters is available to drive the **WATER*blue*-H**. Single-phase motors cannot be operated by frequency converters.

Type PED

This powerful and robust frequency converter has optimum EMC properties with low leakage currents. It can be installed directly or wall mounted. PC software or a manual control unit (MMI) is used for individual parameterisation.

Use with squirrel cage motors and permanent magnet motors

Type PEDC up to 1.5 kW

Type PEDCW is designed for use in private households. The frequency converter has a single-phase feed in (230 V, AC) which operates asynchronous and synchronous motors.

Use in AC systems with squirrel cage motors and permanent magnet motors

Type PEDC up to 2.2 kW

This frequency converter was especially developed to operate motors in the lower power range. The integrated keypad offers functionality and a maximum ease of use.

Use with squirrel cage motors and permanent magnet motors

Wall installation

The frequency converter can be installed in control boxes as well as wall-mounted. It is designed to operate asynchronous and permanent magnet motors.

Use with squirrel cage motors and permanent magnet motors

HERBORNER PUMPENTECHNIK

J.H. Hoffmann GmbH & Co. KG
Littau 3-5
DE-35745 Herborn
Phone: +49 (0) 27 72 / 933-0
Fax: +49 (0) 27 72 / 933-100
Email: info@herborner-pumpen.de

Special solutions

The customisation of special pumps is one of our performance features.

Our decades of experience in development and our on-site foundry form the basis of our ability to adapt to the requirements of individual projects. The technology needed for perpetual innovation provides our customers with the clear advantage of optimised solutions especially tailored to each unique project.

Special configurations

- Different voltage and/or mains frequency
- Different insulation class
- Elevated ambient temperature
- Higher protection type
- Enhanced tropical and moisture protection
- Special materials
- Special paint finish for all uncoated components
- Customer-specific solutions

Consultation and service

We are here for you - competent and personal.

The last decades have seen our company establish itself worldwide. The client base stretches across the entire globe.

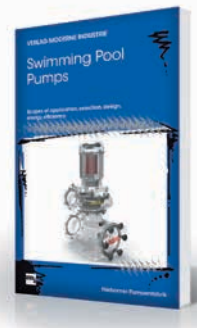
Your contact persons in our company are highly qualified employees who use their professional knowledge and technical skills to find tailor-made solutions for your requirements. We also have globally active sales and service teams.

Consultation and sales
sales@herborner-pumpen.de

Service and maintenance
service@herborner-pumpen.de

You can find more information on swimming pool pumps in the reference book: **Swimming pool pumps**
Areas of application, selection, setup, energy efficiency

Published by
Süddeutscher Verlag onpact GmbH



Further information on the WATER*blue*-H can be found at www.herborner-pumpen.de

WATER*blue*-H