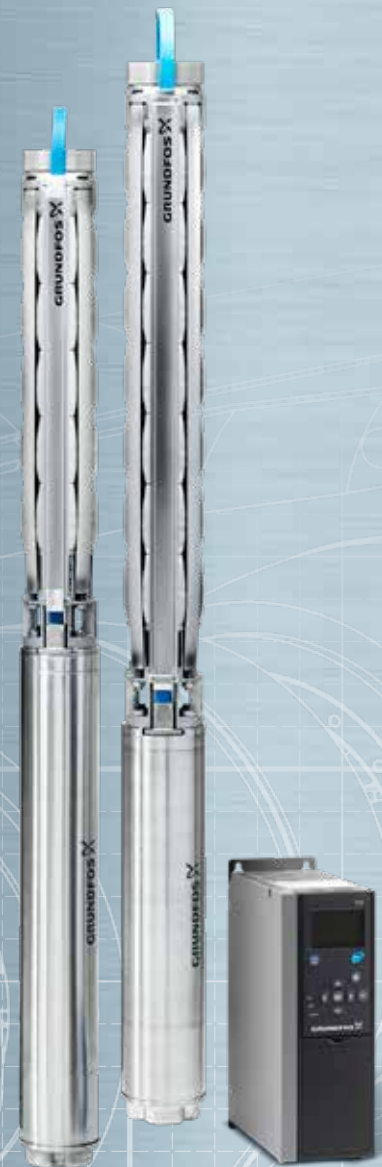


INCREASED EFFICIENCY AND RELIABILITY FOR YOUR GROUNDWATER PUMP SYSTEMS

SPE SYSTEM WITH THE MS6000P MOTOR

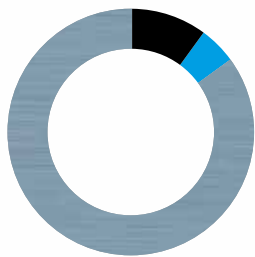
LOWERS ENERGY CONSUMPTION, EXTENDS
SERVICE INTERVALS AND REDUCES MAINTENANCE,
FOR THE LIFETIME OF THE PUMP



SAVE COSTS WITH EFFICIENCY AND RELIABILITY GAINS

OVER THE PUMP LIFETIME

Grundfos supplies the SPE pumping system with a 6" permanent magnet (PM) submersible motor and tailored CUE variable speed drive. A Grundfos PM motor ensures the highest possible energy efficiency and is made from high grade and robust materials that increase the time between service and reduce maintenance. The SPE system has proven reliability and longer lifetime.



- Maintenance costs 10%
- Initial investment 5%
- Operational costs 85%

Lifecycle costs are typically calculated over 10 to 20 years.

WHAT DOES AN SPE SYSTEM INCLUDE?

Grundfos will assist you in selecting the right pump, motor, variable frequency drive, cable and filter for your requirements to ensure a trouble-free operation. Grundfos offers an entire system solution from pump to complete controls cabinet with all the required components, including start-up and commissioning.

WHY IS A SINE WAVE FILTER NECESSARY?

Because a permanent magnet motor cannot be directly connected to the grid, a variable frequency drive is a requirement for an SPE System. Therefore, a sine wave filter must also be used.

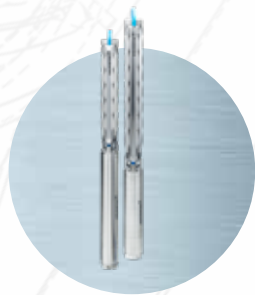
- Permits non-screened cables
- Better EMC conditions
- Increases motor lifetime

THE ADVANTAGES

OF THE SPE SYSTEM

The SPE System combines reliability and energy efficiency, giving you lower costs over the lifetime of the pump system. The SPE System is easy to set up, adapts pump performance to changing conditions and is perfect for water supply and irrigation applications.

- Permanent magnet motor for the highest possible energy efficiency
- High grade and robust materials increase the time between service and reduce maintenance
- Proven reliability and extended pump lifetime



THE PUMP

- Reliability proven in the market for more than 50 years
- Superior hydraulic design for greater energy efficiency
- Wide range of flow sizes
- 100 % stainless steel construction and material variants available



THE MOTOR

- Permanent magnet technology for highest possible energy efficiency
- Canned design for highest possible reliability
- Increased temperature rating (standard 60 °C) for wider application use and longer lifetime
- Best possible materials used



THE FREQUENCY DRIVE

- Grundfos CUE recommended as the best choice
- Wizard makes set-up and commissioning easy
- Predefined control modes: constant pressure, flow and water level
- Sensor input options
- Soft start for optimal protection of well and pump
- Protection of the submersible motor



REMOTE MONITORING

- Connect pump system to SCADA via CIM/CIU Communication interfaces for data communication via open and interoperable networks
- One solution offering complete process monitoring and control
- Improve reliability, reduce downtime and lower operational costs with precise control
- Reduce manual settings, monitoring time, and travel time to sites or installations
- Easy to install and commission

GRUNDFOS PERMANENT MAGNET 6” SUBMERSIB

WHY USE A PERMANENT MAGNET MOTOR?

As the name indicates, a permanent magnet (PM) motor is based on the use of permanent magnets. A PM motor is in many ways like traditional asynchronous induction motors. The difference is in the rotor (the rotating part of the motor), which is fitted with permanent magnets, resulting in close-to-zero rotor losses.

Without rotor losses – which is equal to energy loss – PM motors will run at synchronous speed; for example, 3,000 rpm. Reducing rotor losses increases motor efficiency compared to asynchronous motors, and the lower operating temperature results in longer expected lifetime.

However, compared to the asynchronous motor, permanent magnet motors generally require a frequency converter as it cannot start directly from the electricity network.

OUTPUT UP TO 45 KW

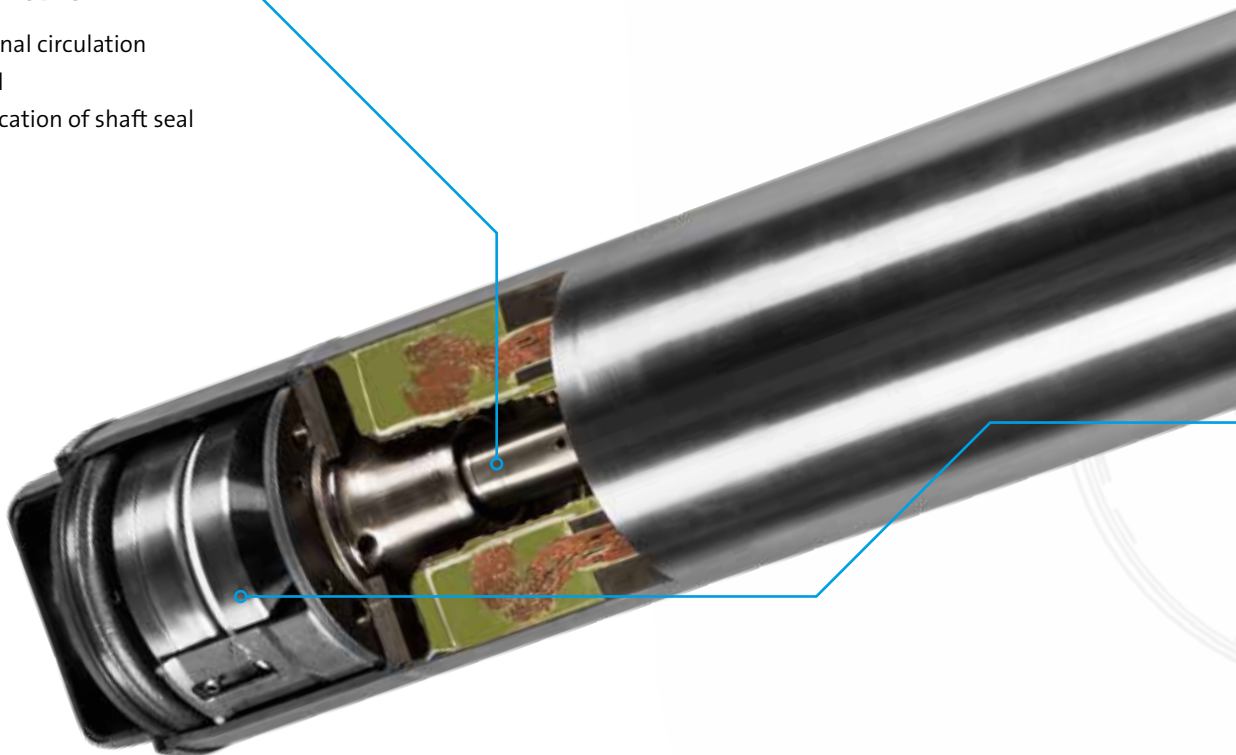
- 5.5-7.5 kW
- 9.2-18 kW
- 22-30 kW
- 37-45 kW

ENCAPSULATED STATOR

- Hermetically sealed, encapsulated with motor cable plug system
- Embedding material to fix the windings and increase heat transfer capabilities wound with class H insulated enamel wire
- Insulation system class F (due to use of Mylar)

STAINLESS STEEL TUBE SHAFT

- Optimal internal circulation of motor fluid
- Optimal lubrication of shaft seal



LE MOTOR: PROVEN EFFICIENCY AND RELIABILITY

HOW THE PERMANENT MAGNET MOTOR MS6000P BENEFITS YOUR INSTALLATION:

- Efficiency improvement of approximately 10-12 %, compared to an equivalent asynchronous motor
- More compact design, a lighter motor and higher output, due to the high energy density of the permanent magnets
- Reduced internal temperature in the motor due to the high efficiency, resulting in extended lifetime
- Magnets protected against corrosion by metal cladding - reducing risk of demagnetisation
- PM design based on 20 years of operating experience with motors of comparable construction for groundwater applications

DRIVE SIDE

- Spline made in accordance with ANSI norm (NEMA spline)

ROBUST MECHANICAL SHAFT SEAL

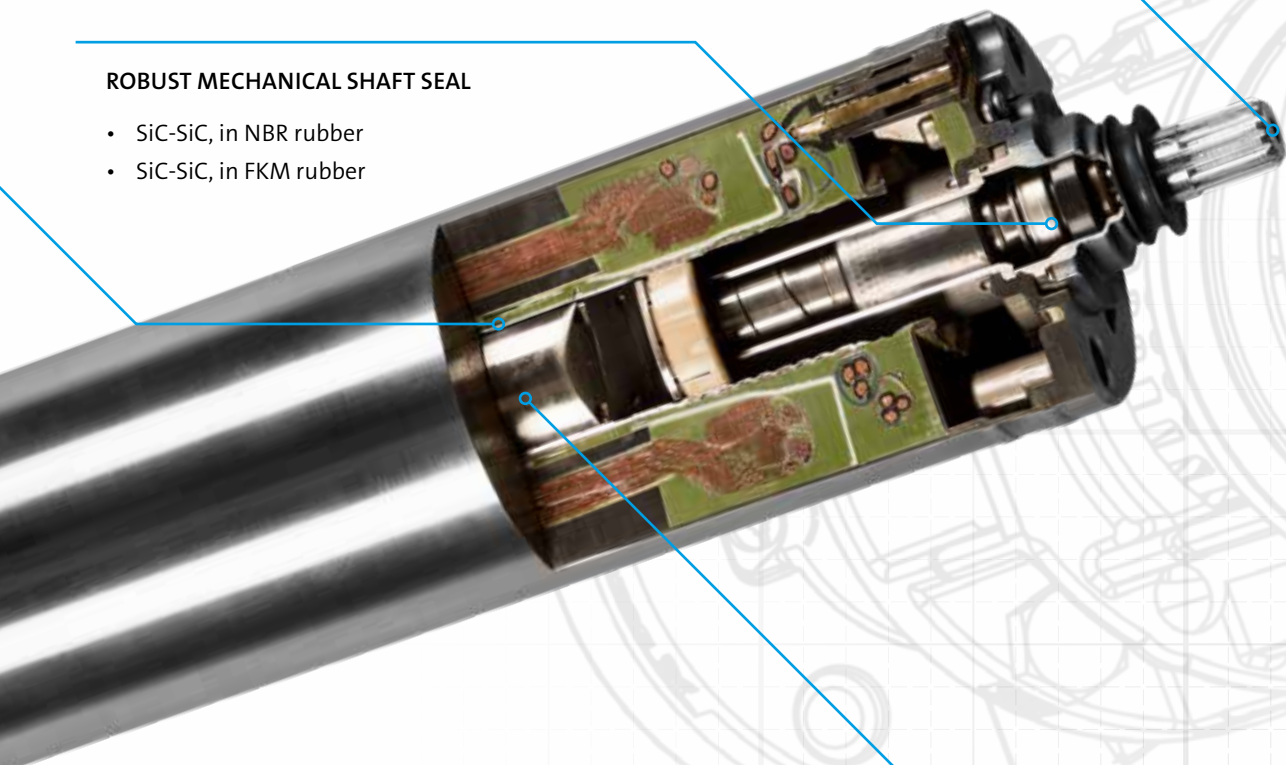
- SiC-SiC, in NBR rubber
- SiC-SiC, in FKM rubber

HIGH-THRUST CAPACITY

- Michell-type thrust bearing
- Quick build-up of water film during start-up to ensure high thrust capacity

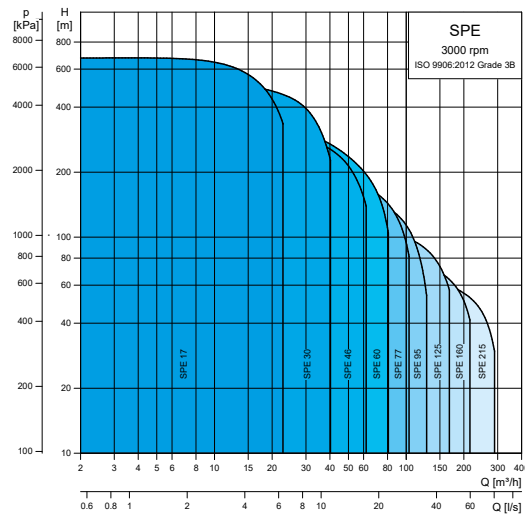
STEEL-ENCAPSULATED ROTOR

- With buried permanent magnets
- IPM type rotor
- Extra corrosion protection by metal cladding



PERFORMANCE RANGE FOR SPE

SYSTEM PUMPS



VARIABLE FREQUENCY DRIVE FOR SPE

GRUNDFOS OFFERING, EASY SELECTION TABLE

MS6000P			CUE (100 Hz)			SINE WAVE FILTER (100 Hz)		MOTOR CABLE (5 M)	
MOTOR VOLTAGE 3 X 350 V (3000 RPM)			3 X 380-440 V			3 X 200-500 V			
PART NUMBER	OUTPUT [kW]	CURRENT [A]	PART NUMBER	OUTPUT [kW]	CURRENT [A]	PART NUMBER	CURRENT [A]	PART NUMBER	
76207712	4.0	9.4	99616713	4.0	10	96754976	13	96164209 ^{1*}	
	5.5	12.4	99616714	5.5	13				
	7.5	16.4	99616716	11	24				
9.2	21.4	96754977		18					
76207717	11	25	99616717	15	32	96754978	26.5		
	13	29.2		96755019	36				
	15	33.4	99616718	18.5	37.5	96755021	46.5		
	18.5	40.6	99616719	22	44				
76207720	22	47.4	99616720	30	61	96755032	56		96164214 ^{2**}
	26	55.6		97774436	86				
	30	63.6		99616721	37	73			
76207722	37	84	99616722	45	90	97775142	135	2 x 96164214	
	45	101	99616723	55	106				

1*) 96164209: 4 G 6.0 mm²

2**) 96164214: 4 G 10 mm²

GRUNDFOS SERVICE & SOLUTIONS

BRINGS PEACE OF MIND TO CUSTOMERS

Grundfos Service & Solutions has been established to bring peace of mind to customers through performance contracts. By taking a greater responsibility for the operation and efficiency of their pumps, we allow our customers to focus their attention on what is important to them rather than worrying about their pumps.

GRUNDFOS SERVICE & SOLUTIONS' REASON FOR BEING IS:

"We minimise downtime and optimise performance by providing world-class water technology services – when our customers need it, in the exact way they need it and always with the environment in mind."



Service Agreements



Repair Services



Operation Services



Optimisation
Services

SUPPLY SPARES

- Fewer surprises
- Greater reliability
- Increased efficiency
- Fast delivery

REPAIR

- All repair work carried out according to Grundfos specifications
- Original Grundfos spare parts used
- Check of warranty

COMMISSIONING

- Peace of mind knowing that your pumps have been installed and commissioned optimally
- Flexibility in organising and carrying out commissioning
- Extended warranty period (starting on the day of commissioning)

CONTACT US

With Grundfos service centres in more than 50 countries throughout the world, supplemented by more than 600 authorised Grundfos Service Partners, we're never far away.

As a Grundfos Service customer, you enjoy prompt and reliable service wherever you are. You get emergency access to service personnel as well – just call us!

ABOUT GRUNDFOS SOLUTIONS FOR GROUNDWATER

Grundfos supplies a cost-effective, reliable and energy-optimised submersible pumping solution for borehole installations. Our pumps and pump systems are optimised for the highest performance and reliability for groundwater installations. Made entirely of corrosion-resistant stainless steel, Grundfos has decades of application expertise within public and domestic water supply, agricultural irrigation and livestock watering.

Grundfos is a global water technology company committed to pioneering solutions to the world's water and climate challenges and improving the quality of life for people. Founded in 1945, today we are one of the world's leading providers of pump solutions with annual production standing at more than 17 million units and with over 19,000 employees.

Get more information on the benefits of a complete SP submersible pump system at grundfos.com