GRUNDFOS TPE, NBE, NKE

SINGLE-STAGE SOLUTIONS FOR APPLICATIONS IN COMMERCIAL BUILDINGS AND INDUSTRY

be
think
innovate

GRUNDFOS

TRUE SYSTEM ADVANTAGES WITH INTELLIGENT PUMPING SOLUTIONS

Commercial buildings and industrial solutions cover a large range of applications – each with their own individual characteristics. Whether you are specifying a heating system for an office building or an industrial cooling system for a factory, the best results are created with intelligent, robust, and energy efficient pumping solutions designed to be a perfect fit for the entire system.

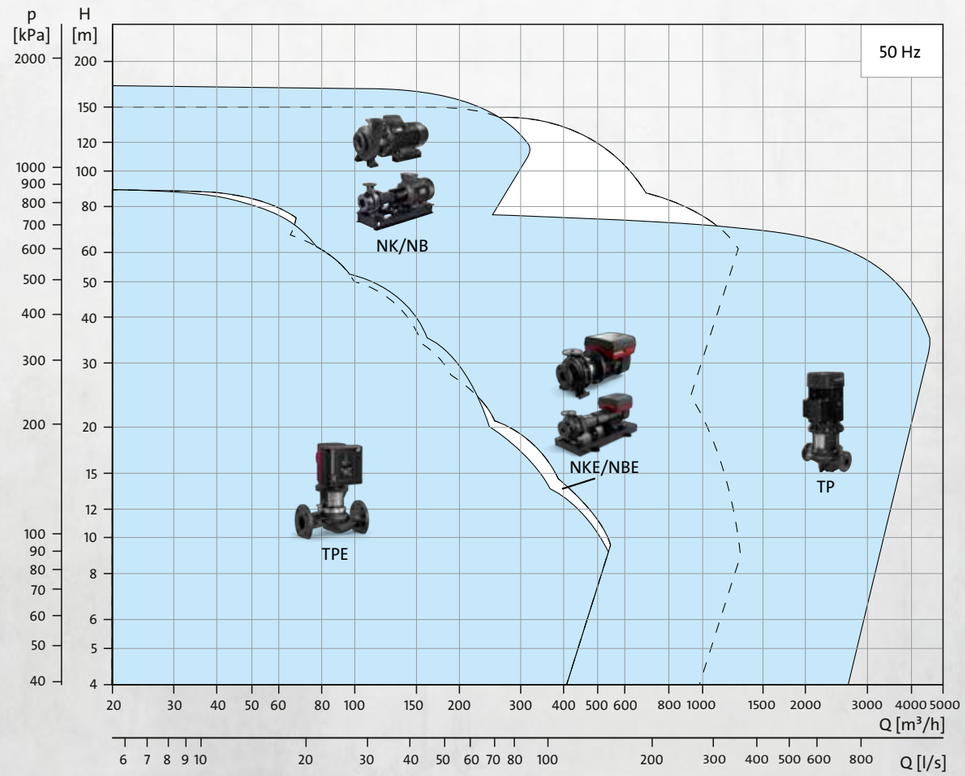
TPE, NBE, NKE: FLAGSHIPS IN INTELLIGENT SOLUTIONS

TPE, NBE, and NKE are pumps, motor, and frequency drive in one product. Together with various sensors, these products allow for dynamic and intelligent solutions to many industrial and commercial buildings applications.

APPLICATION AREAS:

- District heating
- Heating systems
- Cooling and air conditioning
- Hot Water Circulation
- Cooling systems
- Washing and cleaning systems
- Other industrial systems

PERFORMANCE CURVE: TPE, NK/NB, NKE/NBE, TP



SMART ACCESSORIES

Accessories like Grundfos GO and CIM/CIU create a unique user experience with an endless number of communication possibilities.

GRUNDFOS GO

- Easy pump control from your smart phone
- Full access to online replacement and sizing tools

FIELDBUS CONCEPT
The Communication Interface Module (CIM) and the Communication Interface Unit (CIU) enable data communication via open and interoperable networks. Available for the following fieldbus standards: LON, Profibus, Modbus, SMS/GSM/GPRS, GENIBus and BACnet.

THE PERFECT MOTOR IS HALF THE SOLUTION

For an intelligent pumping solution, the motor is half the story. Our E-motors (MGE/MLE) are frequency converter controlled motors that have been designed specifically for use with Grundfos pumps, and they feature unique functionalities that allow for complete system optimisation.

ULTIMATE FLEXIBILITY AND EFFICIENCY

The MGE/MLE motors can be operated to meet any individual needs for a specific solution. This makes them an excellent choice for a number of applications within heating, cooling, ventilation and industrial processes – each of which are characterized by varying demands, different control needs, and varying number of operating hours.

NEW FUNCTIONALITIES FOR ADVANCED SOLUTIONS

REAL TIME CLOCK*
Allows for calendar function for e.g. automatic system stop during weekends.

2 ANALOGUE INPUTS
Get Δp and ΔT-control with two sensors.

MANUAL SPEED OPERATION MODE
Even while under external signal control, you can switch to manual speed operation mode to test the pump's operation.

TIMER FUNCTIONS ON DIGITAL INPUTS
For each digital input you can activate and set a delay time and a duration time.

ADJUSTABLE PROPORTIONAL PRESSURE CONTROL CURVE
You can select the shape and steepness of the control curve – choose between a linear or quadratic curve.

PT100/1000 INPUT*
Get temperature and differential temperature control at a low cost.

1 ANALOGUE OUTPUT*
Get relevant parameter information in real time.

PREDEFINED SET-POINT*
Get dynamic response to different operation profiles.

* Advanced functional module FM300 is required for these functionalities

ENGINEERED FOR ENGINEERS

Grundfos for Engineers is our knowledge hub packed with news about the latest developments in the pumping industry and inspiration for fully integrated pump systems.

Visit Grundfos for Engineers to get access to the best we have to offer whether you are an engineer working within commercial building services, process industry applications or in hot water supply/treatment industries.

Find technical white papers, training, engineering tools, and webinars at **www.grundfos.com/engineers**

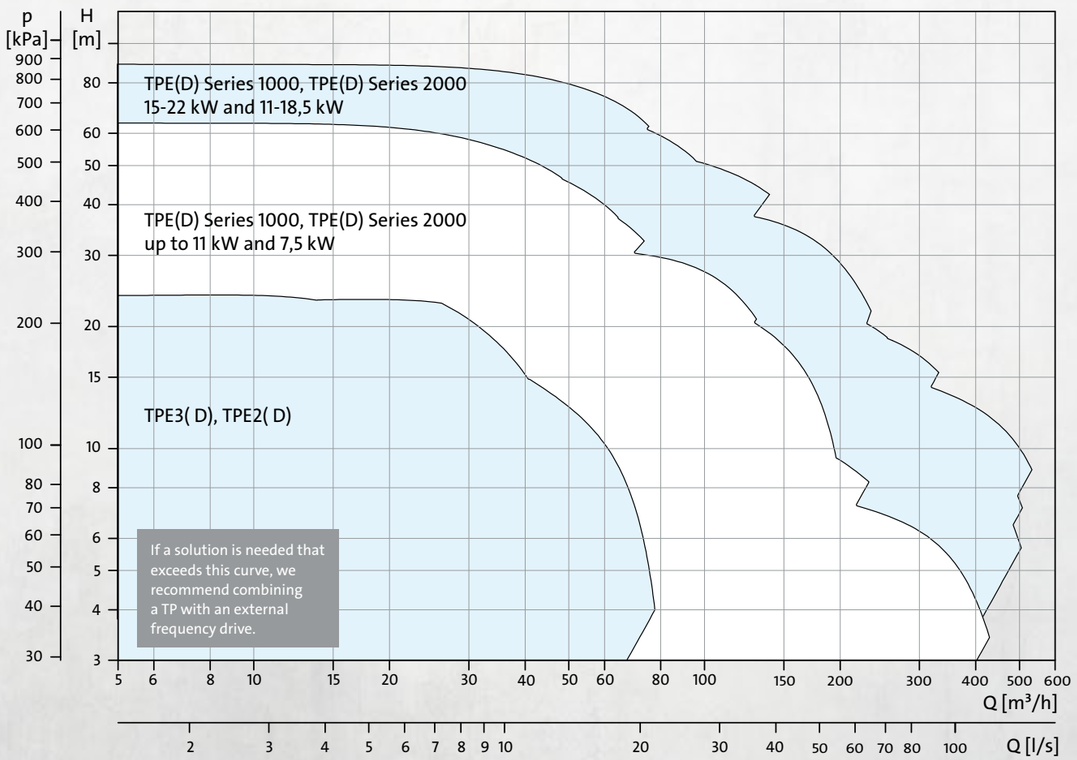
THE IN-LINE RANGE

A TPE is the perfect choice when you need a single-stage, in-line solution with a state-of-the-art motor and mechanical shaft seal. TPEs are close-coupled and thus less sensitive to impurities in the pumped liquid compared to wet runner circulators. That makes the solution they are part of extra robust and reliable.

TPE FACTS

- Liquid temperature range up to +140°C
- Ambient temperature up to +50°C
- Operating pressure up to 16 bar
- In-line construction
- Installation into vertical or horizontal pipework
- Universal BQQE shaft seal for both water and glycol based media
- Top pull-out design – easy to dismantle in case of service
- Low energy consumption
- Plug and pump solution
- Compact design with small footprint
- Low noise levels
- Single and twin pump designs available

PERFORMANCE CURVE: TPE



TPE2, TPE3

0,25 - 2,2 kW

TECHNICAL DETAILS	
Flow rate	max. 78 m³/h
Head	max. 25 m
Liquid temperature	-25 to 120 deg. °C
Operating pressure	max. 16 bar
Ambient temperature	-20 to 50 deg. °C
Pump housing	Cast iron or stainless steel

MOTOR DETAILS

TPE2 and TPE3 are fitted with permanent-magnet motors at IE5 efficiency level according to IEC DTS 60034-30-2. See more functionality and features details on page 10-11.

TPE SERIES 1000, TPE SERIES 2000

MEDIUM SPEED MOTOR (COMPARABLE TO 2 POLED SPEED)
LOW SPEED MOTOR (COMPARABLE TO 4 POLED SPEED)

TECHNICAL DETAILS	
Flow rate	max. 430 m3/h
Head	max. 65 m
Liquid temperature	-25 to 140 deg. C
Operating pressure	max. 16 bar
Ambient temperature	-20 to 50 deg. C
Pump housing	Cast iron

MOTOR DETAILS

The Series 1000 and 2000 are fitted with permanent-magnet motors. Low speed motors from 1,5kW to 7,5kW and medium speed motors from 3kW to 11kW. All motors are at IE5 efficiency level according to IEC DTS 60034-30-2.

TPE SERIES 1000, TPE SERIES 2000

MEDIUM SPEED MOTOR (COMPARABLE TO 2 POLED SPEED)
LOW SPEED MOTOR (COMPARABLE TO 4 POLED SPEED)

TECHNICAL DETAILS	
Flow rate	max. 520 m3/h
Head	max. 90 m
Liquid temperature	-25 to 140 deg. C
Operating pressure	max. 16 bar
Ambient temperature	-20 to 50 deg. C
Pump housing	Cast iron

MOTOR DETAILS

TPE Series 1000 and 2000 are fitted with motors with integrated frequency converter that have an efficiency that exceeds the IE3 demands. The only exemption is the 18,5 kW, low speed motor, which exceeds the IE2 demands. See more functionality and feature details on page 10-11.

THE NBE/NKE RANGE

Close-coupled (NBE, NBGE) and long-coupled (NKE, NKGE) end-suction pumps from Grundfos are all non-self-priming, single-stage, centrifugal volute pumps with axial suction port, radial discharge port and horizontal shaft. Known for their sturdiness and reliability, they are ideal for use in even the most demanding applications. Application areas include water supply, industrial pressure boosting, industrial liquid transfer, HVAC and irrigation.

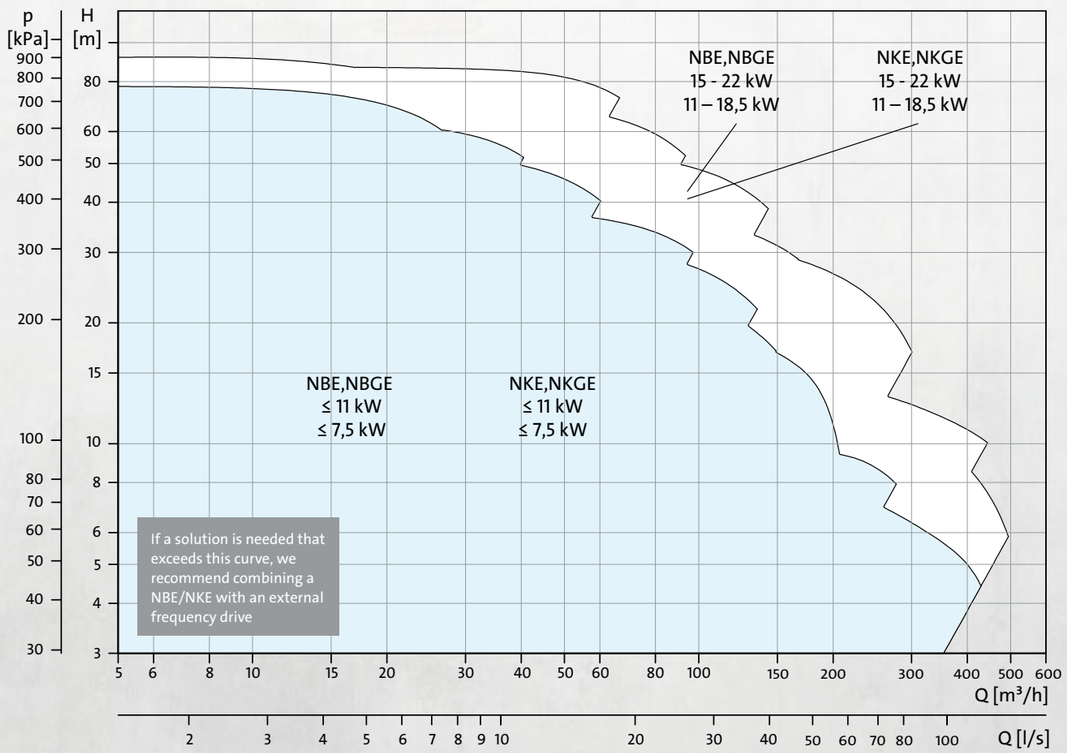
NBE/NBGE/NKE/NKGE FACTS

- End suction construction
- PN 10, 16 and 25 bar
- For temperatures up to 220 °C.
- Low NPSH values means great suction ability
- Compact design – small footprint
- Highly customizable (your choice of i.e. bearing design, material, shaft seal, impeller trimming, motor size, and much more)
- Robust design

SENSOR DETAILS

NBE, NBGE, NKE, NKGE pumps are all without factory fitted sensor, no matter the power size. Via an external signal (from a sensor or a controller), the pumps allow for any configuration and control method required, i.e. constant pressure, temperature, flow or level.

PERFORMANCE CURVE: NBE, NBGE, NKG, NKGE



NBE, NBGE, NKG, NKGE

MEDIUM SPEED MOTOR (COMPARABLE TO 2 POLED SPEED)
LOW SPEED MOTOR (COMPARABLE TO 4 POLED SPEED)

TECHNICAL DETAILS	
Flow rate	max. 210 m³/h
Head	max. 85 m
Liquid temperature	-45 to 220 deg. C
Operating pressure	max. 25 bar
Ambient temperature	-20 to 50 deg. C
Pump housing	Cast iron, Stainless steel 1.4408 , Duplex 1.4517

MOTOR DETAILS

NBE, NBGE, NKE, NKGE in the above mentioned power sizes are fitted with permanent-magnet motors.

Medium speed motors up to 11kW and low speed motors up to 7,5kW. All motors are at IE5 efficiency level according to IEC DTS 60034-30-2.

NBE, NBGE, NKE, NKGE

MEDIUM SPEED MOTOR (COMPARABLE TO 2 POLED SPEED)
LOW SPEED MOTOR (COMPARABLE TO 4 POLED SPEED)

TECHNICAL DETAILS	
Flow rate	max. 290 m³/h
Head	max. 95 m
Liquid temperature	-45 to 220 deg. C
Operating pressure	max. 25 bar
Ambient temperature	-20 to 40 deg. C
Pump housing	Cast iron, Stainless steel 1.4408 , Duplex 1.4517

MOTOR DETAILS

NBE, NBGE, NKE, NKGE in the above mentioned power sizes are fitted with motors with integrated frequency converters that have an efficiency that exceeds the IE3 demands. Only exemption is the 18,5 low speed motor, which exceeds the IE2 demands.

REVIEW AND OPTIMISE YOUR SYSTEM

Reviewing your pumps and installations can lead to massive energy savings. Let us help you conduct an assessment of your system and start saving right away.

We offer two types of energy assessments: An **Energy Check** based on system information provided by you, and the more extensive **Pump Audit** based on measurements conducted by our expert team.

Please contact us or go to **www.grundfos.com/service-support.html** for further information.

STAY IN CONTROL

MONITORING AND SYSTEM INTEGRATION FOR TOMORROW'S BUILDINGS

Modern buildings depend highly on interconnected systems to transport water efficiently and precisely. Grundfos offers completely integrated solutions for both building automation and building management systems. The long-term benefit is obvious: optimised energy efficiency and pre-emptive maintenance.

SOLUTIONS FOR STAND-ALONE PUMPS

Grundfos E-pumps enable you to read data straight from pump HMI or through Grundfos GO remote control solution.

SOLUTIONS FOR BUILDING AUTOMATION SYSTEMS

Monitor and control your pumps and pump systems from anywhere in the world with Grundfos G501 connect box. Access your systems directly from your laptop, tablet or smartphone and see trend graphs, or stay updated on system performance.

SOLUTIONS FOR BUILDING MANAGEMENT SYSTEMS

A strong fieldbus solution is the cornerstone of any building management system. It guarantees flexible and cost-effective integration of pump data into management systems, and severely reduces the time spent on reporting and collecting data. The number of maintenance visits and emergency situations are also reduced because of the high level of information. Grundfos offers open and interoperable protocols for all our data bus networks.

DATA POINTS AVAILABILITY

Below is an overview of selected data points accessible through Standalone solutions, Remote monitoring, and integrated Building Management System solutions.

DATA POINTS	GO APP / PUMP HMI	REMOTE MONITORING	BMS INTEGRATIONW
Operating mode	●	●	●
Setpoint	●		●
Control mode	●	●	●
Relay control	●		●
Alarm/warning information	●	●	●
Bearing Service information	●		●
Power/energy consumption	●	●	●
Speed and frequency	●	●	●
Motor Current	●	●	●
Motor voltage			●
Motor temperature		●	●
Digital I/O	●		●
Sensor feedback (P/d P, T, d T, feedback or monitoring)	●	●	●
Operation time	●	●	●
Total on time		●	●
Number of starts	●	●	●

TPE, NBE, NKE
PORTFOLIO OVERVIEW

	DESCRIPTION	TPE3 New MGE motor 0,37 - 2,2 kW	TPE2 New MGE motor 0,37 - 2,2 kW	TPE SERIES 2000 New MGE motor up to 11 kW	TPE SERIES 1000 New MGE motor up to 11 kW NBE/NKE New MGE motor up to 11 kW	TPE SERIES 2000 MGE motor 15 - 22 kW	TPE SERIES 1000 MGE motor 15 - 22 kW NBE/NKE MGE motor 15 - 22 kW
SYSTEM INTELLIGENCE	Heat Energy Meter	●					
	AUTOAdapt	●					
	FLOWLIMIT & FLOWADAPT	●					
	ΔT control with 2 sensors	1 internal + 1 external sensor or 2 external sensors	2 external sensors	2 external sensors	2 external sensors		
	ΔP control with 2 sensors	2 external sensors	2 external sensors	2 external sensors	2 external sensors		
CONTROL MODES	Proportional pressure	●		●		●	
	Constant flow	●	●	●	●		●
	Constant pressure	●	●	●	●		●
	Constant differential pressure	●	●	●	●	●	●
	Constant temperature	●	●	●	●		●
OTHER	Multipump	●	●	●	●		
	Standstill heating	●	●	●	●	●	●
	Setpoint influence	9 possibilities	9 possibilities	9 possibilities	9 possibilities	1 possibility	1 possibility
	Limit exceed	●	●	●	●		
	Operating log	●	Only limited via Grundfos GO	●	Only limited via Grundfos GO	Only limited via Grundfos GO	Only limited via Grundfos GO
	Display	●	Optional	●	Optional		
	Signal relays	2	2	2	2	2	2

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