



The new Grundfos TPE3 in-line pump

Intelligent in-line pumping

Grundfos TPE3 pumps are single-stage, close-coupled in-line centrifugal pumps with mechanical shaft seal and primely for applications such as heating, cooling and district energy. The pumps are fitted with frequency controlled motors and differential pressure transmitter.



A quantum leap in in-line pumping



TPE3, a uniform range up to 22 kW, provides unrivalled efficiency and a wide range of functionalities that makes it more than a pump

More than a pump

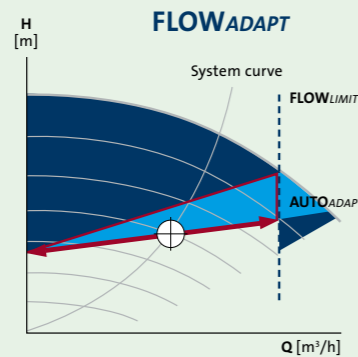
The TPE3 has a built-in heat energy monitor as well as a flow limiting function that eliminates the need for a pump throttling valve.

Choose the intelligent control modes

A large selection of control modes lets you easily customise the operation of your TPE3 perfectly to your needs.

FLOWADAPT

FLOWADAPT is a control mode that combines the well-known AUTOADAPT with the FLOWLIMIT function. The pump continuously monitors the flow rate to ensure the desired maximum flow is not exceeded. This can save the cost of a separate pump throttling valve.



Other available control modes:

- Proportional pressure
- Constant differential pressure
- Constant temperature
- Constant curve
- Constant differential temperature

Go DELTA with TPE3

Connect and set up any HVAC sensor to the TPE3 and let the pump take charge of the system pressure and flow on basis of the ΔT or ΔP in the system.



This pump wants to communicate

Intelligent communication is part of every TPE3



Twin-head efficiency

The twin-head TPE3 D enables cascade or duty/standby control modes and features two parallel power heads for double reliability and highly efficient multi-pump functionality.



Model shown: TPE3 D, motor size <5.5 kW

More input, more output

With a number of configurable relays and analogue inputs, the complete TPE3 I/O package allows for better system monitoring and optimal pump regulation. The TPE3 I/O package includes:

- 3 x analogue input for differential pressure sensor, constant/differential temperature control, heat energy metering or external set-point
- 2 x relay output configurable as alarm, ready, operation, pump running or warning
- 2 x digital input and 2 x digital input/output for external start/stop, max/min curve, alarm reset, multi-pump function with wireless communication between TPE3 pumps in parallel or as twin pumps.
- 1 x analogue output
- 2 x PT100/1000 input
- Real time clock
- Modbus RTU on board as standard*
- Bluetooth*
- Ethernet IP*
- STO*

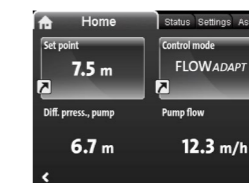
CIM modules

For connection to BMS, CIM modules with the following fieldbus standards can be added: LON, Profibus, Modbus, SMS/GSM/GPRS and BACnet. Modbus RTU* is on board and the GENIbus is also available.

Grundfos GO

The Grundfos GO app gives you more efficient workdays from the palm of your hand:

- Save time with handheld pump control
- Save and share electronic reports easily
- Full access to online replacement and sizing
- Handheld pump control is conducted from a smartphone connected via Bluetooth



Installation and commissioning made easier than ever

Plug it in, follow the simple instructions on the intuitive display and press start. It is as easy as that.

Wireless multi-pump control

TPE3 is supplied with wireless technology which enables it to connect with up to four single TPE3 pumps. Connection to a parallel coupled pump is easily obtained with the built-in wizard or Grundfos GO. The pumps can be controlled jointly in either cascade mode, alternating mode or duty/standby.

* 2.2-22 kW low speed and 3-22 kW medium/high speed models only

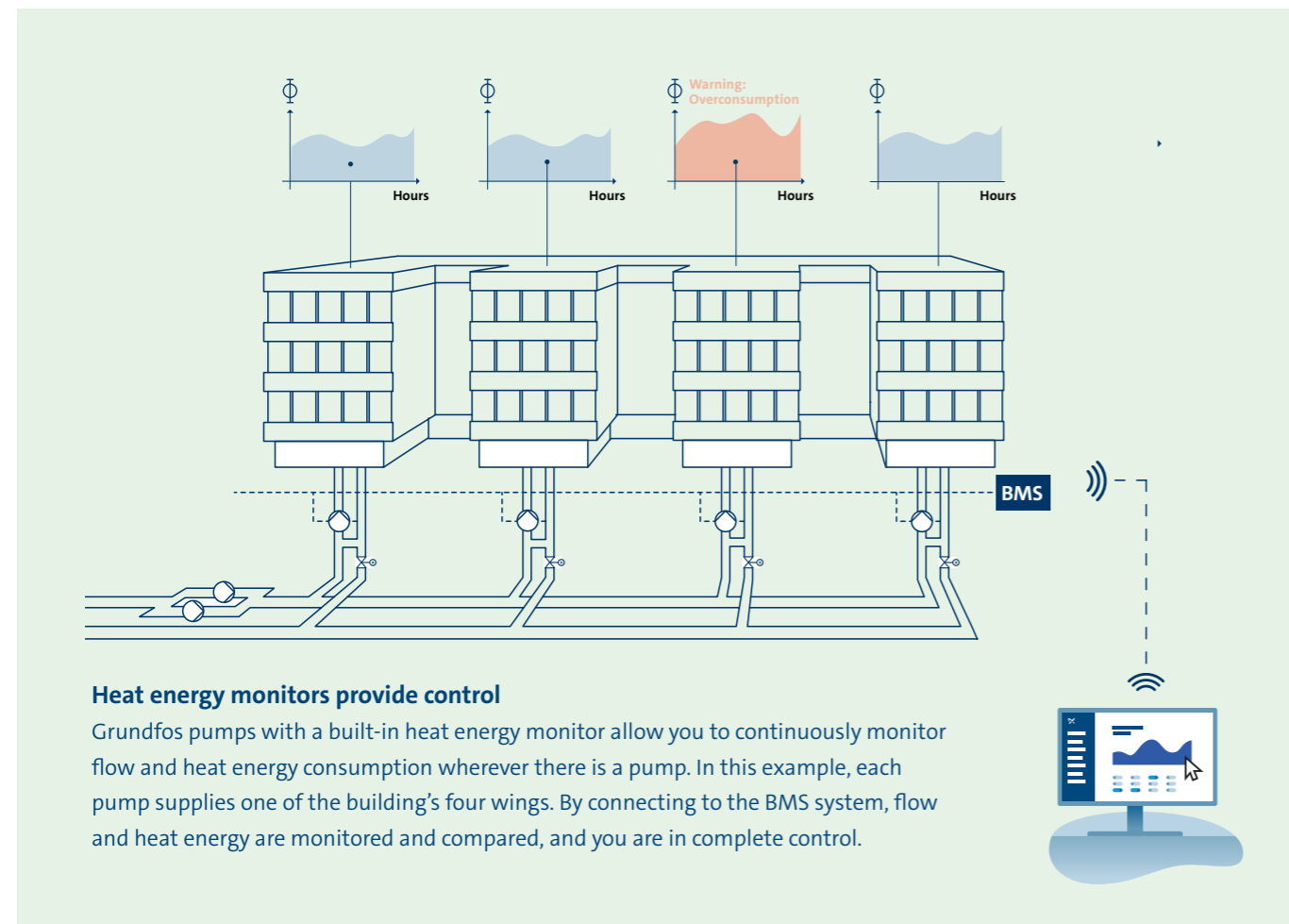
Improved building performance

Built-in heat energy monitor for complete control



The TPE3 features a built-in heat energy monitor that can monitor heat energy distribution and consumption, and help avoid excessive energy bills caused by system imbalances.

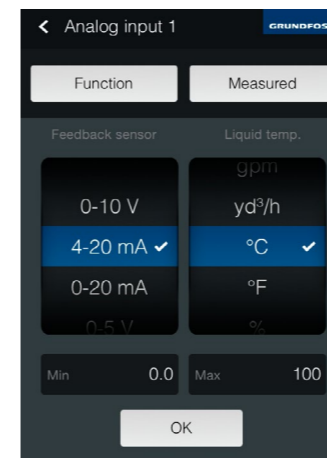
- Measure current energy consumption, flow rate and much more.*
- Avoid the cost of installing a separate heat energy monitoring device within your system.
- Integration with BMS gives you a quick overview of the performance of your system (available as extra functionality).
- Can be used in a wide range of applications, from Ground Source Heat Pumping and solar to more traditional applications like heating and cooling.



Heat energy monitors provide control

Grundfos pumps with a built-in heat energy monitor allow you to continuously monitor flow and heat energy consumption wherever there is a pump. In this example, each pump supplies one of the building's four wings. By connecting to the BMS system, flow and heat energy are monitored and compared, and you are in complete control.

Take control of pressure and flow



Connect one or two external sensors to your TPE3 and let the pump take charge of the system's pressure and flow based on the differential temperature or pressure. Your ΔT will never be too low or too high again, and you can set up all common sensor types via the pump display.



As the TPE3 is fitted with an internal temperature sensor in the pump housing, it only needs one external sensor to operate in ΔT control mode.

Goodbye pump throttling valves

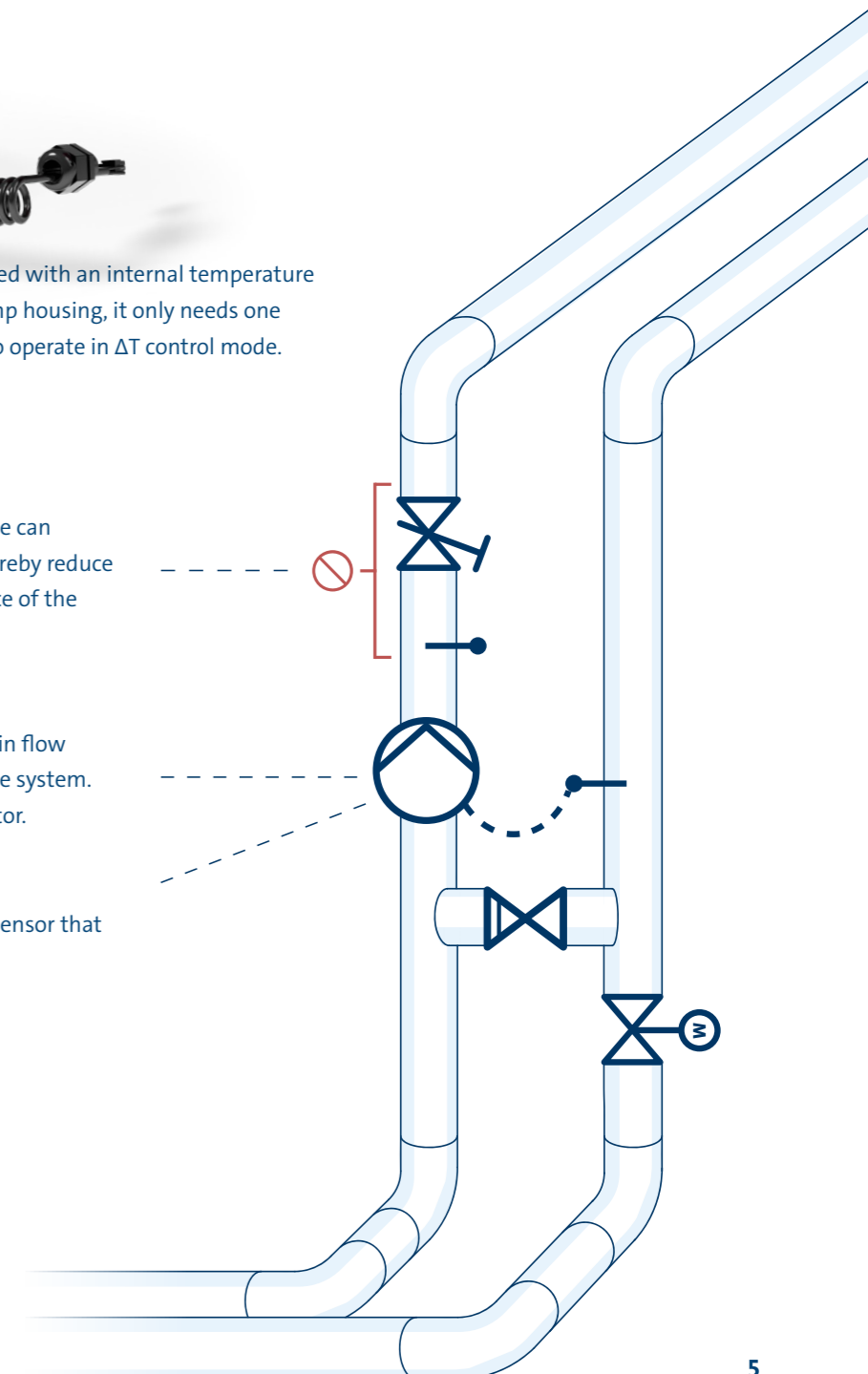
The FLOWLIMIT function and FLOWADAPT control mode can eliminate the need for a pump throttling valve and thereby reduce the pressure loss. This improves the overall performance of the system and reduces the initial costs.

Hello integrated energy monitor

Combined with a return temperature sensor, the Built-in flow estimation allows you to monitor the energy flow in the system. Wherever there is a pump, there is a heat energy monitor.

Integrated sensor

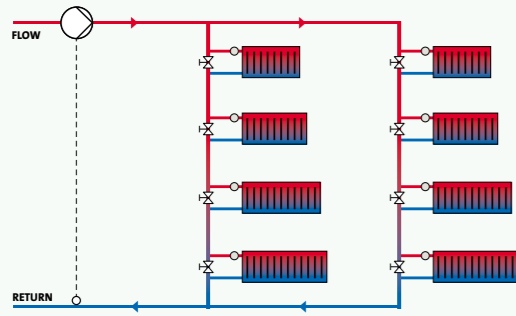
The TPE3 comes with an integrated flow temperature sensor that can make other temperature sensor redundant.



Application examples

Improve system performance

One-string heating systems



Increase system efficiency and avoid penalties

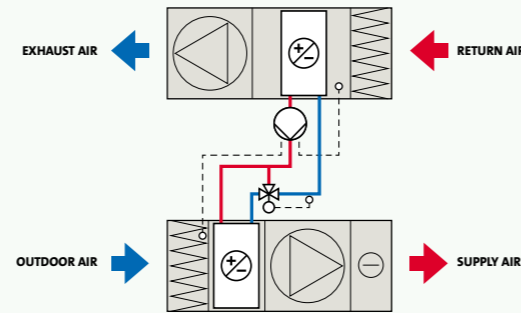
In single string systems the design is typically made with constant flow. The result is increased return temperatures from the system in low load situations. A TPE3 pump that operates based on ΔT across the system solves this problem and ensures that ΔT is maintained as originally intended during the design phase.

- Increased system efficiency as design ΔT is secured at all times
- No risk of financial penalties in district heating due to high return temperatures
- No additional temperature valves needed
- Fast and easy commissioning based on temperatures
- Temperatures can be read out and documented with the Grundfos GO app
- Energy monitoring is included for free
- Reduced pump operating cost

Recommended pump: TPE3



Heat recovery systems



Reduce water temperatures, reduce costs and simplify installations

Runaround heat recovery systems should only be active when there is a temperature difference between outdoor air and return air of more than 2-3 °C.

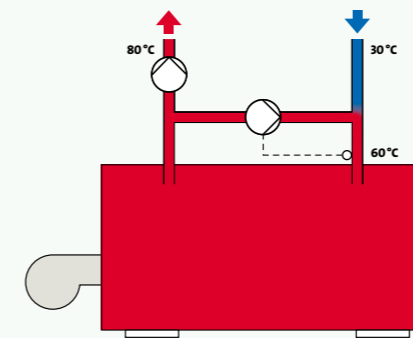
A TPE2 pump simplifies the system, eliminating the need for an external controller. The intelligent pump adds two temperature sensors to the system, adapting the circulating flow to what is really needed based on the temperature difference.

- Maximum heat recovery guaranteed
- No more constant flow pumps running 24/7
- No need for a pump throttling valve
- No need for external controllers
- Temperatures can be read out and documented in the Grundfos GO app
- Reduced pump operating costs

Recommended pump: TPE2



Boiler shunt pumps



Boiler protection and reduced cost of operation

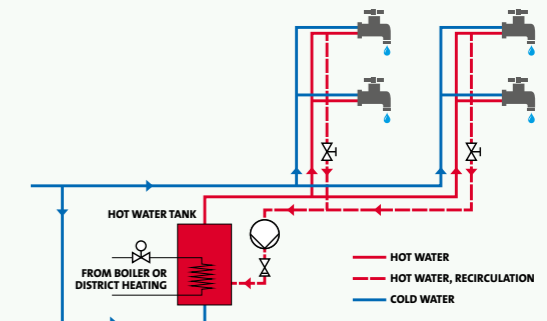
All non-condensing boilers need a minimum return temperature in order to avoid condensation of the flue gas. Instead of using a normal pump running at full speed to secure this, you can now use the TPE3 and an added temperature sensor. The sensor measures the temperature of the water returning to the boiler, and ensures that the right temperature is maintained at all times. This secures optimum boiler protection and reduces cost of operation.

- Increased system efficiency – minimum boiler temperature is secured independent of load
- No risk of flue gas condensation
- Only one temperature sensor needs to be added
- Reduced pump operating costs
- Fast and easy commissioning via the Grundfos GO app
- Increased monitorability

Recommended pump: TPE2



Domestic hot water recirculation



Gain control of hot water temperatures and save

In DHW applications you need instant hot water when the tap is opened. Traditionally, a throttled constant speed pump runs 24/7 to ensure this – but this is a waste of energy. Instead, a TPE3 can be applied and put in temperature control mode. Based on the signal from its own internal temperature sensor, the pump will continuously maintain the desired temperature of the water.

- Use Limit Exceed function to stop the pump when the wanted temperature is reached
- Temperatures can be read out and documented with the Grundfos GO app
- No need for a pump throttling valve
- As everything is based on temperatures, design and specification are simpler
- Reduced pump operating costs

Recommended pump: TPE3 in stainless steel



Take a closer look

Clamp ring
Specially designed, innovative clamp ring allows for fast repositioning of pump housing and fast service of pump
Bigger sizes has stay bolts and nuts instead of the clamp ring

Improved hydraulics
All Grundfos TPE3 pumps have the highest efficiency and are rated with the highest Minimum Efficiency Index: $MEI \geq 0.70$

Sensors make the difference
Integrated sensor measures differential pressure over the pump for increased efficiency

IE5 motor
The Grundfos MGE motor is a very efficient motor. The motor is at IE5 level according to IEC DTS 60034-30-2.

Easy BMS integration
For connection to BMS, CIM modules are easily mounted directly in the control box

High-quality user interface
TFT colour display for easy and intuitive pump setup

Renewable neck ring
All TPE3 pumps come with renewable neck rings that make pump upgrades easy and fast

Anti-corrosion surface
Cataphoresis surface treatment consisting of Powercron® cathodic electrocoating and zinc phosphate coating

- Maximal protection against corrosion
- Cataphoresis on the inside of the pump keeps efficiency high

Shaft seal
Shaft seal with standard dimensions according to EN 12756

The all-in-one solution
In Grundfos TPE3 pumps, coupling and shaft have been friction-welded together to create a completely stable mechanical unit. This drastically reduces vibration levels and prolongs the lifetime of both shaft seal and bearings

Pump status indicator
The innovative Grundfos Eye provides visual indication of pump status: Pump running, ready, warning or alarm

More data to and from the pump
Two digital inputs, two output relays and two analogue inputs for external sensor or set point



Built for installers

- Front-mounted wiring box
- Single-screw clamp ring for pump head adjustment
- Grundfos GO gives you intuitive handheld pump control and full access to Grundfos online tools. This is also possible via the pump's display
- Grundfos Eye visual status indicator
- Hassle-free insulation with clip-on tailor-made shells around the pump (accessory)



Insulation shells
(only for TPE3 small)

Expect much more efficiency

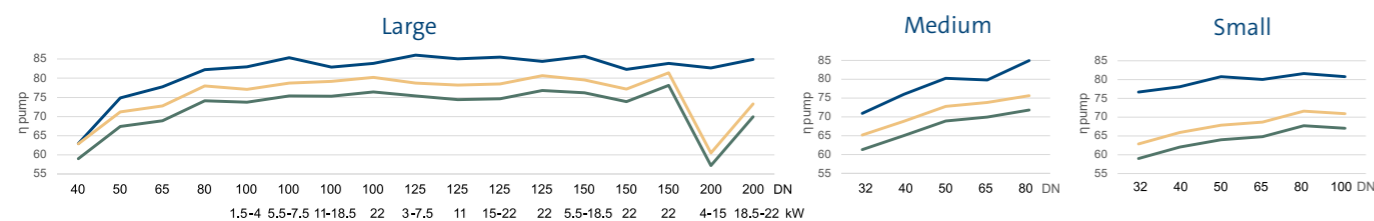
TPE3 is an extremely energy-efficient in-line pump choice – well above industry standards



Above the benchmark

The hydraulic pump efficiency for TPE3 is much higher than the efficiency at benchmark MEI (minimum efficiency index) rating (0.70). The minimum MEI rating in 2015 is 0.40.

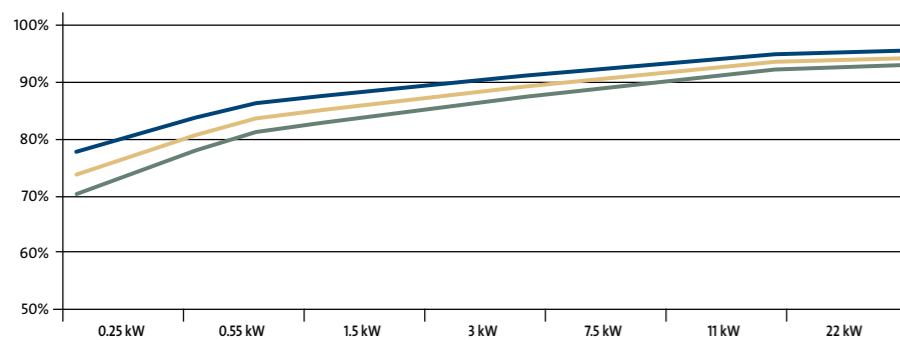
— η TPE3
— η MEI=0.70
— η MEI=0.40



IE5 motor

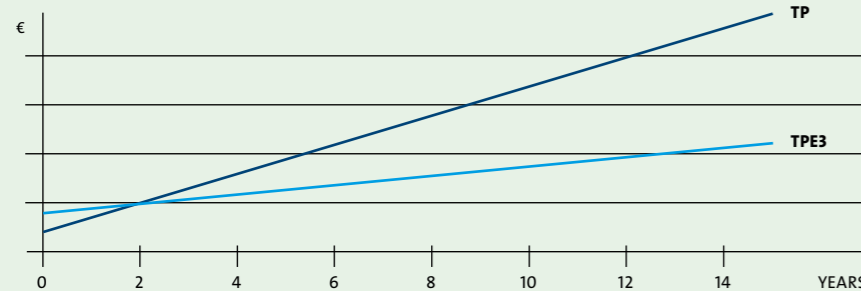
The TPE3's MGE motor goes far beyond what regulations require. The chart below shows the IE levels in IEC DTS 60034-30-2.

— η IE5: 2-pole, 50Hz motor
— η IE4: 2-pole, 50Hz motor
— η IE3: 2-pole, 50Hz motor



Combine a highly efficient motor with maximised hydraulics and an MEI well above industry standards, and the result is a record-breaking in-line pump. Add to that a built-in patented differential pressure sensor, and great savings and short payback times are inevitable.

Low energy consumption pays back

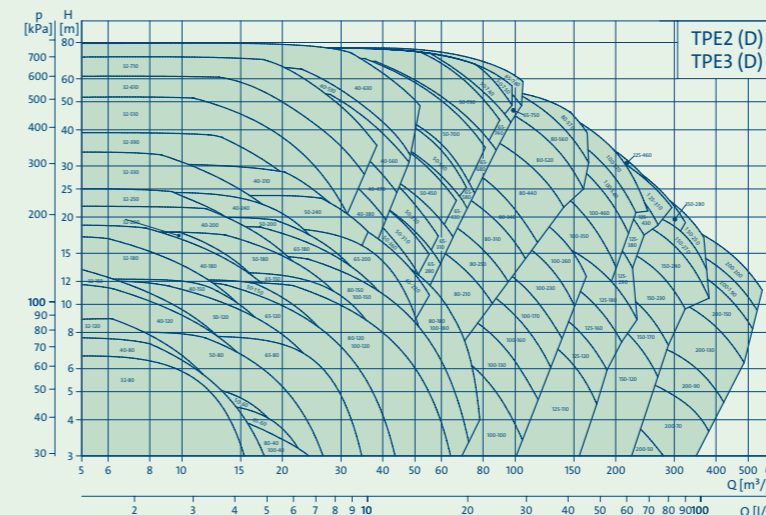


Payback time – TPE3 vs. TP

Within 2 years, and often less, the TPE3 pays back its initial cost. The short payback time is a result of the pump's extremely low energy consumption.

Performance range

TPE3 ensures superior efficiency across the entire Q/H area (shown below) because of its unique combination of motor efficiency, world-class hydraulics and intelligent functionalities



Temperature range

Liquid temperature: -25 °C to +140 °C*
Ambient temperature: -20 °C to +50 °C

Product details

MEI ≥ 0.70
1 x 200-240V (0.25-1.5 kW)
3 x 380-500V (0.25-22 kW)
PN 16 pressure rating; PN 6 & PN 10 also available on smaller pumps.
Cast iron as standard. Stainless steel for small model single pumps up to DN 65.

Comparison of TPE3 and TPE2

	Description	TPE3	TPE2
System intelligence	Heat Energy Monitor	+	–
	AUTOADAPT	+	–
	FLOWLIMIT & FLOWADAPT	+	–
	ΔT control with 2 sensors	1 internal + 1 external sensor or 2 external sensors	External sensors only
	ΔP control with 2 sensors	1 internal + 1 external sensor or 2 external sensors	External sensors only
Control modes	Proportional pressure	+	–
	Constant flow	+	+
	Constant pressure	+	+
	Constant differential pressure	+	+
	Constant temperature	+	+
Other	Multipump	+	+
	Standstill heating	+	+
	Setpoint influence	3 possibilities	3 possibilities
	Limit exceed	+	+
	Operating log	+	Only limited via Grundfos GO
	Display	+	–
	Safe Torque Off**	+	+
	Modbus RTU**	+	+
	Bluetooth**	+	+
	Ethernet IP**	+	+

* For a limited period of time. Medium and large models with an alternate shaft seal can tolerate persistent temperatures up to 140 °C

** Remark of size: 2.2 -22 kW low speed and 3-22 kW medium/high speed models only

About Grundfos

Grundfos is a global leader that designs, manufactures and delivers intelligent and energy-efficient pump and water solutions that tackle global water-related challenges.

Our solutions, including innovative products such as the ALPHA, MAGNA and TPE3, deliver reliable and efficient circulation in diverse applications ranging from water supply and wastewater management to district energy systems and HVAC, heating and cooling systems in large commercial buildings.

Guided by research and development, we create products engineered for peak performance to meet the rising demand for reduced resource consumption and lower CO2 emissions.

By prioritising innovation and sustainability, we have become the trusted partner for contractors, consulting engineers, facility managers and installers, empowering them to build the most sustainable and efficient buildings and systems.

Visit www.grundfos.com to explore our full range of energy-efficient pump solutions.