TPE3

INTELLIGENT IN-LINE PUMPING FOR INCREASED SYSTEM PERFORMANCE

be
think
innovate

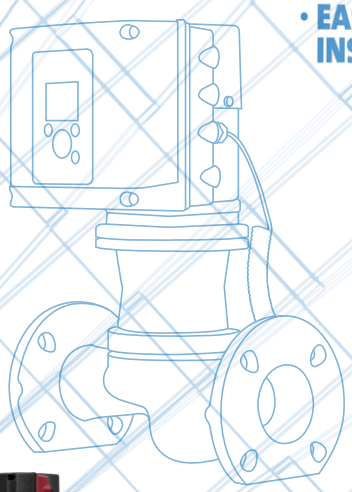
GRUNDFOS

GOAL ACHIEVED:
SUPER INTELLIGENT IN-LINE PUMP

RESULT:
- RECORD BREAKING EFFICIENCY
- EXTREME RELIABILITY
- EASIEST INSTALLATION EVER

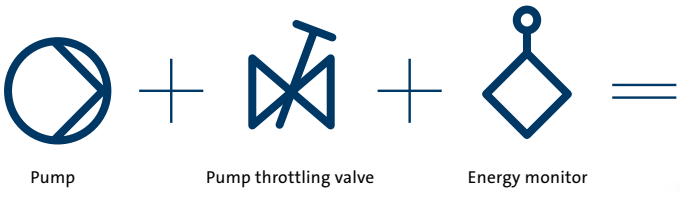
A QUANTUM LEAP IN IN-LINE PUMPING

TPE3 PROVIDES UNRIVALLED EFFICIENCY AND A WIDE RANGE OF INTELLIGENT 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.

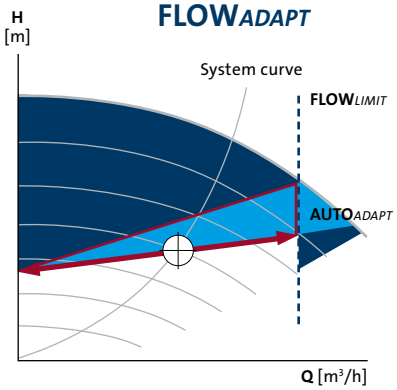


Pump | Pump throttling valve | Energy monitor

CHOOSE THE INTELLIGENT CONTROL MODES

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

FLOW*ADAPT* is a control mode that combines the well-known **AUTO***ADAPT* with the **FLOW***LIMIT* 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.

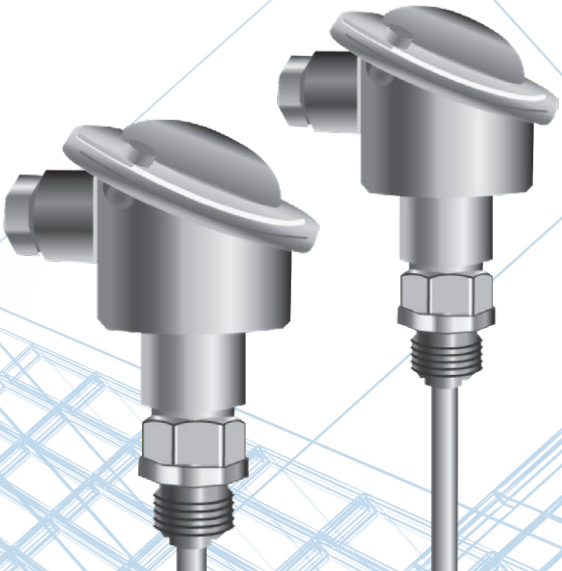


OTHER AVAILABLE CONTROL MODES:

/ 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

More input, more output

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

- 3 x analog 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 analog output
  2 x PT100/1000 input
  Real time clock

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/stand-by.

CIM modules

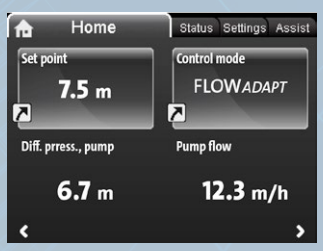
For connection to BMS, CIM modules with the following field-bus standards can be added: LON, Profibus, Modbus, SMS/GSM/GPRS and BACnet. In addition, the GENIBus is also available.

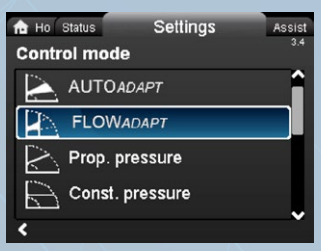
Grundfos GO

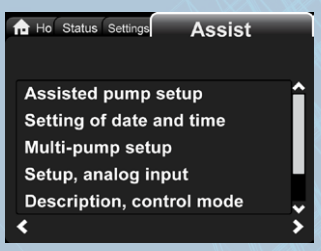
Grundfos GO gives you everything you need on the GO:

- Save time with the 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 to a Grundfos dongle

INSTALLATION AND COMMISSIONING MADE EASIER THAN EVER







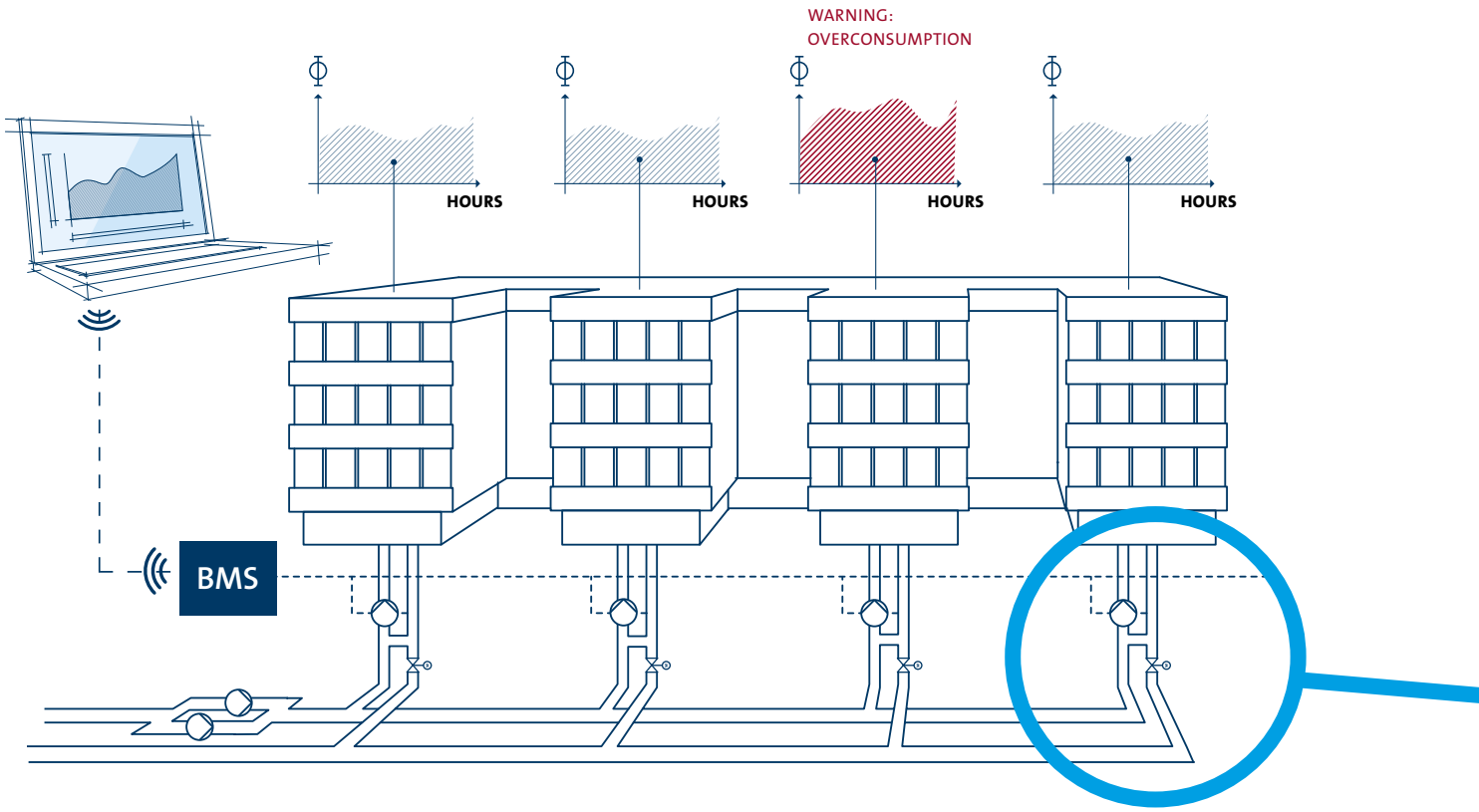
Plug it in, follow the simple instructions on the intuitive display and press start.
It is as easy as that.

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 metering 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.

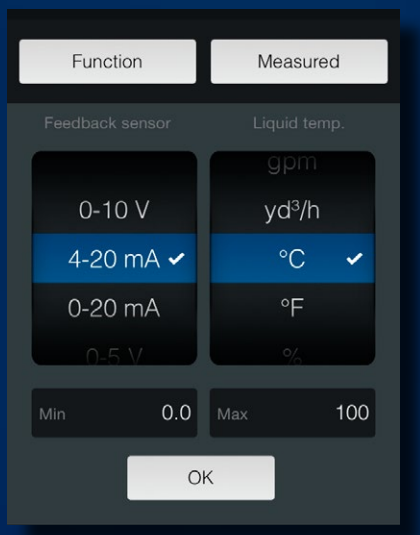


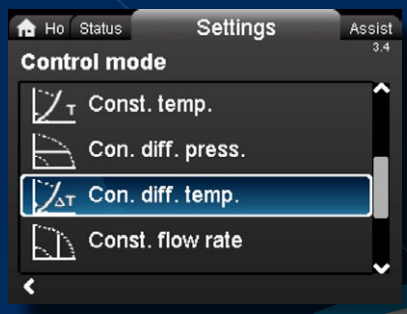
HEAT ENERGY MONITOR PROVIDE CONTROL
Grundfos pumps with built-in heat energy monitor allow you to continuously monitor flow and heat energy consumption wherever there is a pump. In this example, each pump supplies one of the building's four wings. By connecting to the BMS system, flow and heat energy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

**Accuracy of flow estimation is +/-10% of max flow*

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.



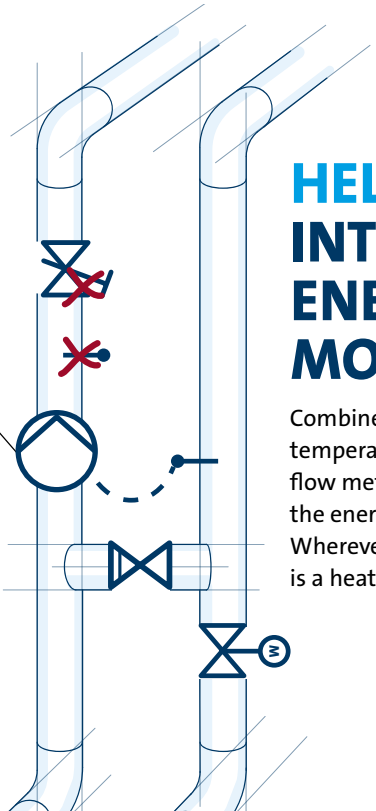


As the TPE3 is fitted with an internal temperature sensor in the pump housing, it only needs one external sensor to operate in ΔT control mode.

GOODBYE PUMP THROTTLING VALVES!

The new **FLOW***LIMIT* function and **FLOW***ADAPT* 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.



INTEGRATED SENSOR

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

HELLO INTEGRATED ENERGY MONITOR

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

APPLICATION EXAMPLES

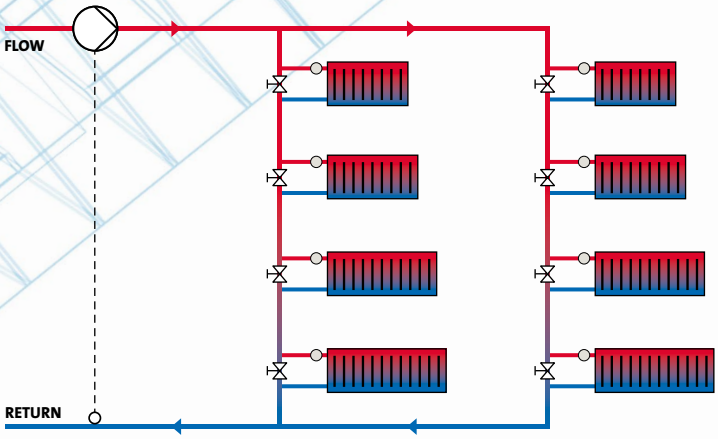
IMPROVE SYSTEM PERFORMANCE NOW!

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
- Energy monitoring is included for free
- Reduced pump operating cost



Recommended pump: TPE3

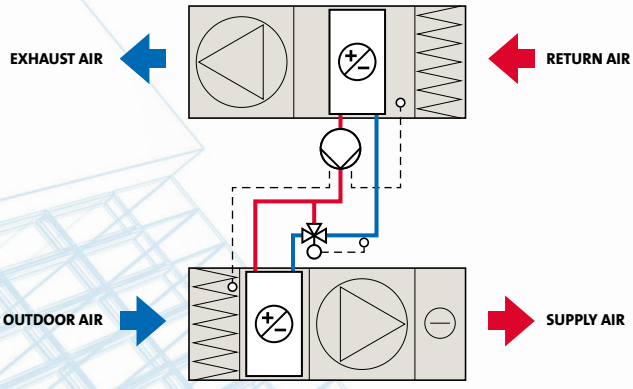
HEAT RECOVERY SYSTEMS

REDUCE WATER TEMPERATURES AND REDUCE COSTS

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.

With a TPE2 pump you can add two temperature sensors and the pump will adapt the circulating flow in the system to what is really needed, based on the temperature difference.

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



Recommended pump: TPE2

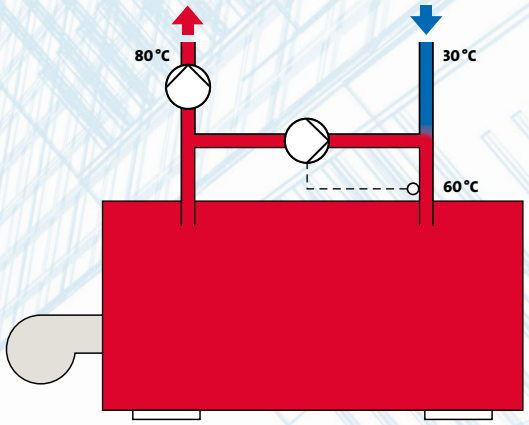
BOILER SHUNT PUMPS

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 by use of Grundfos GO
- Increased monitorability

Recommended pump: TPE3



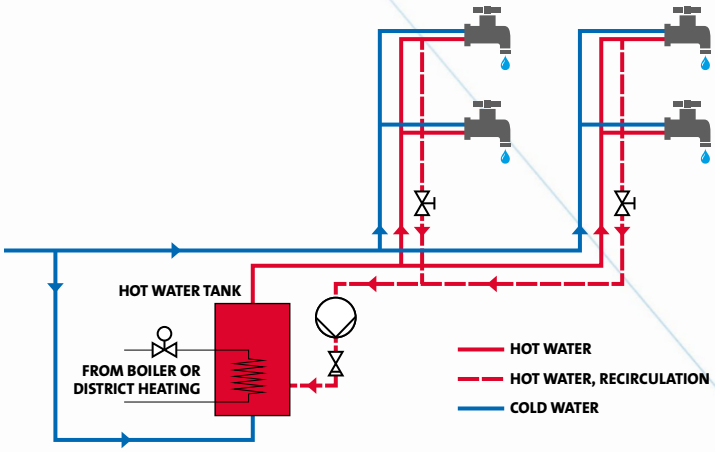
DOMESTIC HOT WATER RECIRCULATION

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.

- The right water temperatures are always guaranteed
- Temperatures can be read out and documented with the Grundfos GO
- 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



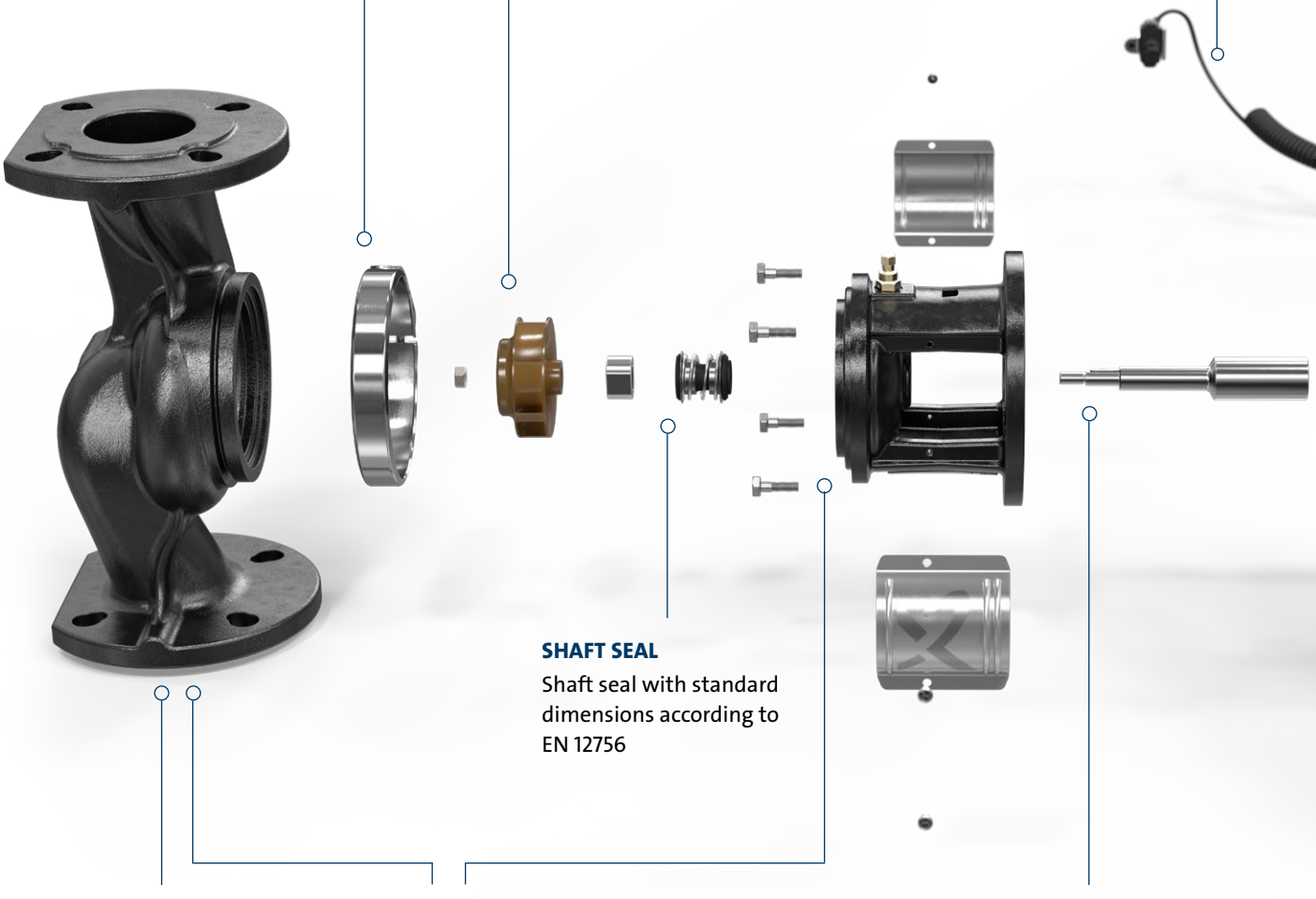
TAKE A CLOSER LOOK

CLAMP RING

Specially designed, innovative clamp ring allows for fast repositioning of pump housing and fast service of pump

IMPROVED HYDRAULICS

All Grundfos TPE3 pumps have the highest efficiency and are rated with the highest Minimum Efficiency Index: MEI ≥ 0.70



SHAFT SEAL

Shaft seal with standard dimensions according to EN 12756

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

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

SENSORS MAKE THE DIFFERENCE

Integrated sensor measures differential pressure over the pump for increased efficiency.

IE5 MOTOR

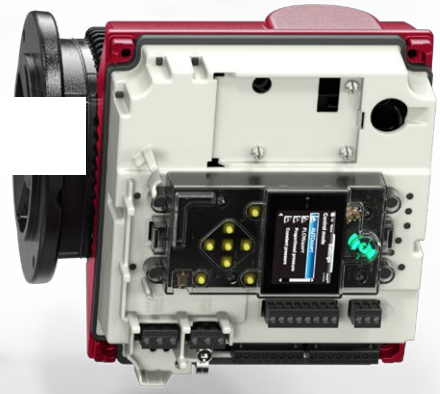
The Grundfos MGE motor is a very efficient motor. The motor is at IE5 level according to IEC DTS 60034-30-2.

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



MORE DATA TO AND FROM THE PUMP

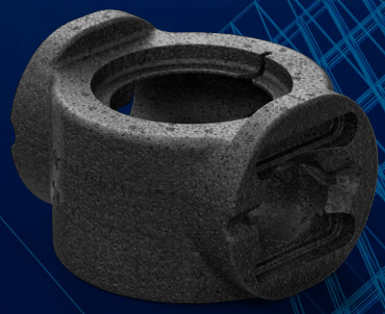
Two digital inputs, two output relays and two analog inputs for external sensor or set point

PUMP STATUS INDICATOR

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

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)



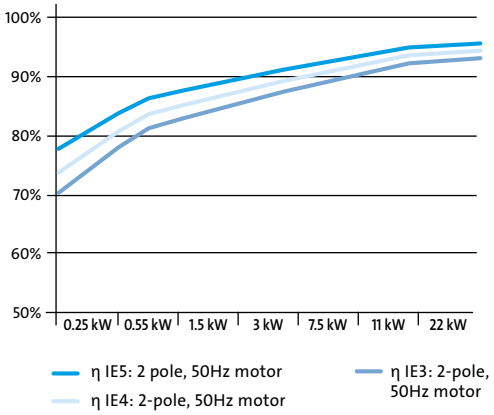
Insulation shells

EXPECT MORE EFFICIENCY MUCH MORE

TPE3 is an extremely energy efficient In-line pump choice – well above industry standards. The motor easily meets IE5 demands, according to IEC DTS 60034-30-2.

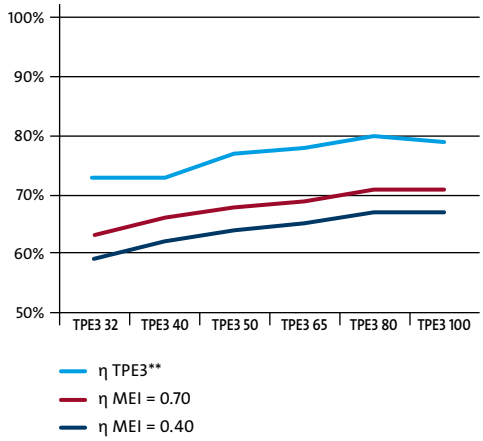
IE5 MOTOR

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



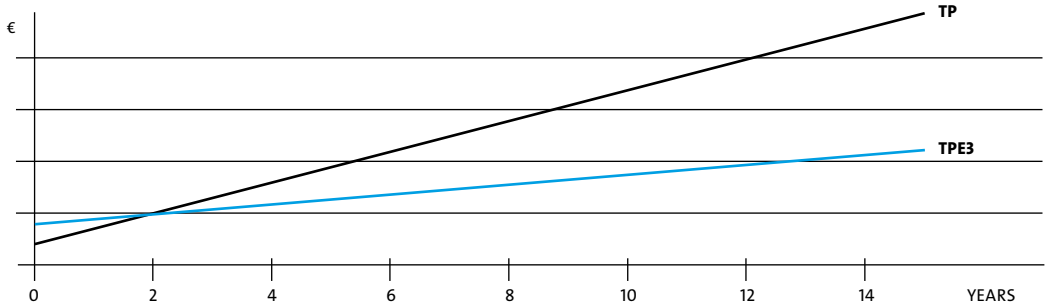
ABOVE THE BENCHMARK

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.



Combine a highly efficient motor with maximized 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

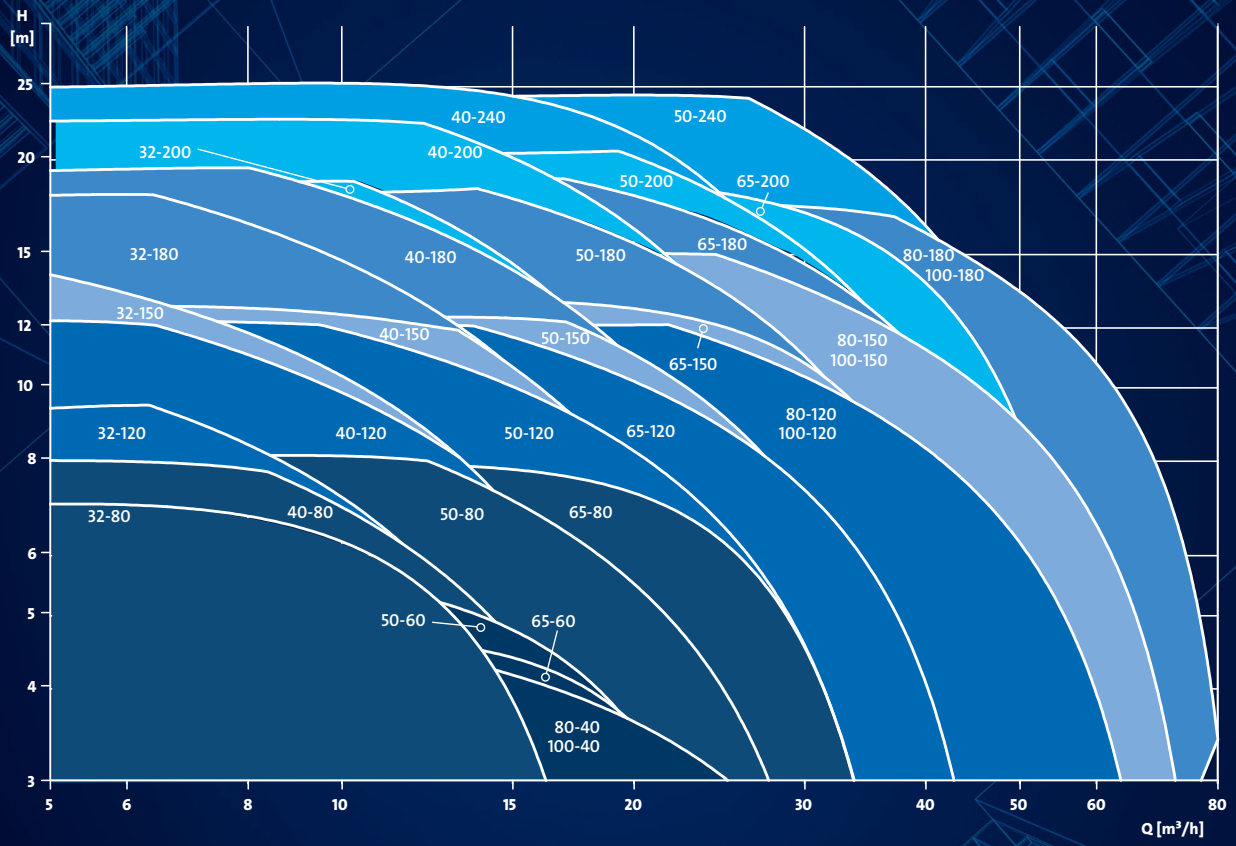


PAYBACK TIME – TPE3 VS. TP
Within 2 years, and often less, the TPE3 pays back its initial cost. The short payback time is a result of the pump's extremely low energy consumption.

**The motor is not in scope of this regulation*
***Based on preliminary test results. Subject to alterations*

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°
* limited period of time

PRODUCT DETAILS

MEI ≥ 0.70
1 x 200-240V (0.25-1.5 kW)
3 x 380-500V (0.25-2.2 kW)
Available in 6, 10, and 16 bar
Cast iron as standard. Stainless steel for single pumps up to DN65

COMPARISON OF TPE3 AND TPE2

	DESCRIPTION	TPE3	TPE2
SYSTEM INTELLIGENCE	Heat Energy Monitor	+	–
	AUTO*ADAPT*	+	–
	FLOW*LIMIT* & **FLOW***ADAPT*	+	–
	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	+	–

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