



DOMESTIC HOT WATER CIRCULATION

# TAKE CONTROL OF YOUR SYSTEM WITH GRUNDFOS TPE3 PUMPS

DEEP DIVE INTO OPTIMAL SYSTEM DESIGN ENSURING STEADY HOT WATER SUPPLY WITHIN SECONDS.



**INCREASED  
END-USER  
COMFORT**



**REDUCED  
OPEX**



**FULL  
CONTROL**

## GRUNDFOS ISOLUTIONS



In the regional hospital in the city of Viborg, Denmark, domestic hot water isn't taken lightly. Here, a steady hot water supply with a constant temperature is crucial to maintain high standards of hygiene. Doctors, nurses and patients, meanwhile, expect virtually no waiting times when opening hot water taps. Grundfos therefore set out to improve the technology behind this application.

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## Table of contents

Facts – Viborg Hospital .....	2
The TPE3 pump in DHW Applications .....	2
Constant temperature control mode .....	3
Installation examples with TPE3 .....	3
Grundfos GO .....	4

In domestic hot water applications there is a need for instant hot water as soon as the tap is open. In order to provide that, separate circulation pipelines are required in the application. In a traditionally made solution a constant speed pump is used for providing the needed pressure in the hot water and circulation pipeline. Typically the pump runs at maximum speed. The pump is usually throttled by a valve to the design flow. The right flow in the vertical riser pipes are commissioned by either static balancing valves or thermostatic valves.



One of the two hot water preparation plants at the regional hospital of Viborg

#### Facts about Viborg Hospital:

Patient capacity: 500 beds.

Floor area: 95.000 m<sup>2</sup>

Employees: 2900

Water consumption in 2014: 967.000 m<sup>3</sup>



#### The TPE3 pump in DHW applications

With the new TPE3 pump, a constant temperature control mode has been added. This mode maintains the temperature that's been set on the pump by adapting the pump speed to the actual need. If the sensed temperature increases, the pump will ramp down and vice versa. The temperature signal is based on the pump's internal temperature sensor, or an external sensor can be connected directly to the pump.

#### The system in Viborg

At the regional hospital in Viborg, two circulation pumps are fitted on two hot water heating plants that serve the main building. They are set up to operate in constant temperature mode at a temperature of 42°C at the sensor location.



Steady water supply, constant temperature and instant hot water are crucial at any hospital. Waiting time for water at the hospital is only 3-4 seconds.

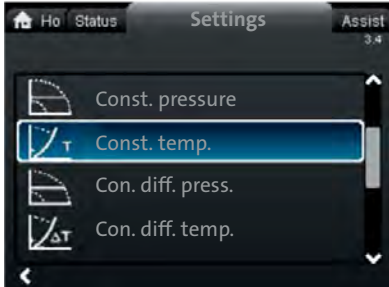
The TPE3 pumps have an integrated wireless technology that enables them to connect directly to each other. Here the two pumps are set up to run in alternating mode, in order to ensure even operation hours. This wireless technology is integrated in all TPE3 pumps, which means that no other pump controller unit is needed. Up to four pumps, sitting in parallel, can be operated this way.



The TPE3 pump has integrated temperature sensors that enable the pump to adapt its performance according to the water temperature.

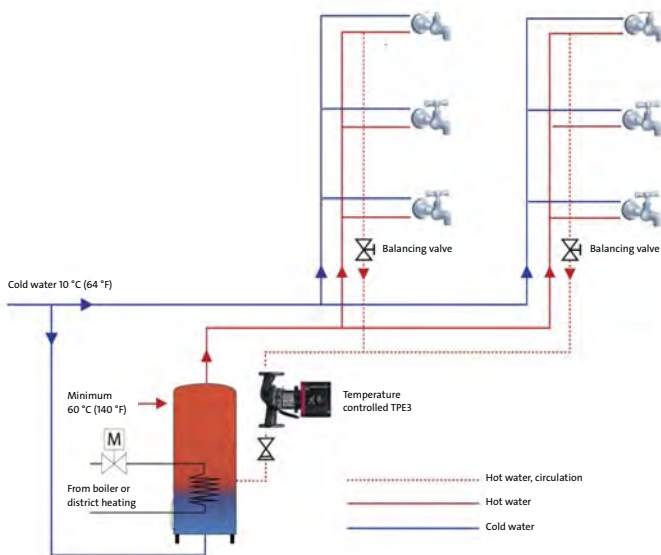
### Constant temperature control mode

The constant temperature control mode ensures pressure and flow in the system are just what's needed to maintain the desired water temperature. Because the desired water temperature is always ensured, and overflow will never occur, the building owner can look forward to not only substantial pump energy savings but also capital cost reductions since pump throttling valves are made redundant.



Pump display showing control mode settings page. All settings are managed on the pump display as well as the Grundfos GO handheld device or app.

### Installation examples with TPE3



DHW system with a TPE3 pump located on the main circulation pipeline. Here, water distribution in the water risers are taken care of by balancing valves on each riser. The main water flow is taken care of by the pump itself, meaning there's no need for a pump throttling valve.

### TPE3 advantages:

- The right water temperatures are always guaranteed
- Increased monitorability as temperatures can be read out and documented with Grundfos GO
- As everything is based on temperatures, design and specification are simpler
- No need for pump throttling valves
- Reduced pump operating costs

### External sensors



The TPE3 pump can be fitted with almost any kind of external sensor, such as a PT100 sensor.



Analog input settings screen in the Grundfos GO app. The sensor signal properties are set on the left wheel and the signal units are set on the right wheel.

### Grundfos GO

The TPE3 pump can be set up and accessed with the Grundfos GO handheld device, allowing control mode and setpoints to be selected or changed.



Pump settings are managed with a Grundfos GO handheld device, or an iPhone or Android smartphone app.

### Grundfos GO gives provide several advantages:

- Pump set up and commissioning functionality
- Monitor, read out, save and share system operation reports
- Full access to online replacement and sizing tools
- Handheld pump control works with your own smartphone. You need to connect to the pump via a Grundfos dongle

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