

DISTRICT HEATING:

# GRUNDFOS iGRID TEMPERATURE ZONE

GRUNDFOS iSOLUTIONS



PUMP



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SERVICES



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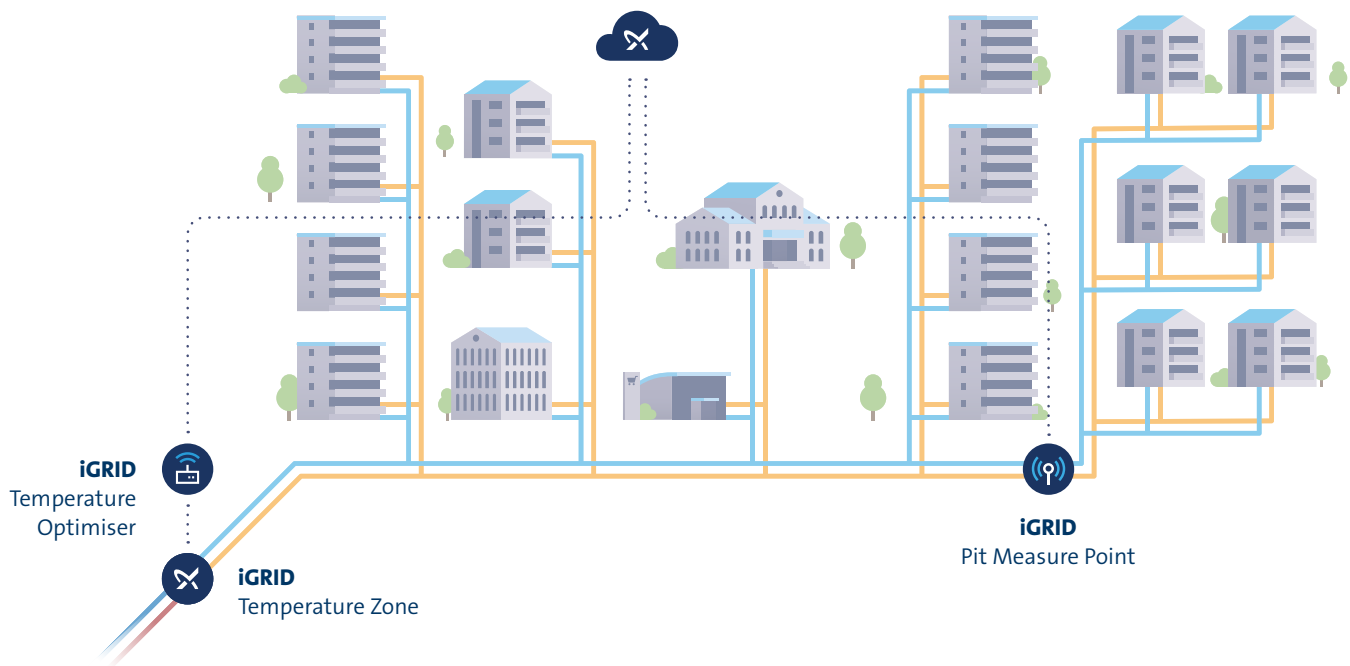
# REDUCE HEAT LOSSES IN YOUR DISTRICT HEATING GRID

By dividing your city into smaller zones you can, in a decentralised way, reduce your heat losses significantly and with a very quick return on investment.

The Grundfos iGRID Temperature Zone is an intelligent mixing loop, ideally connected to iGRID Measure Points for demand-driven temperature optimisation based on real-time data from strategic points in the grid.

Reducing temperatures result in significantly reduced heat losses, leading to lower carbon emissions, increased capacity in the grid and an increase of asset lifetime of e.g. pipes and consumer installations.

With these zones, you can even increase pressure where needed to reduce residual pressure in the grid.

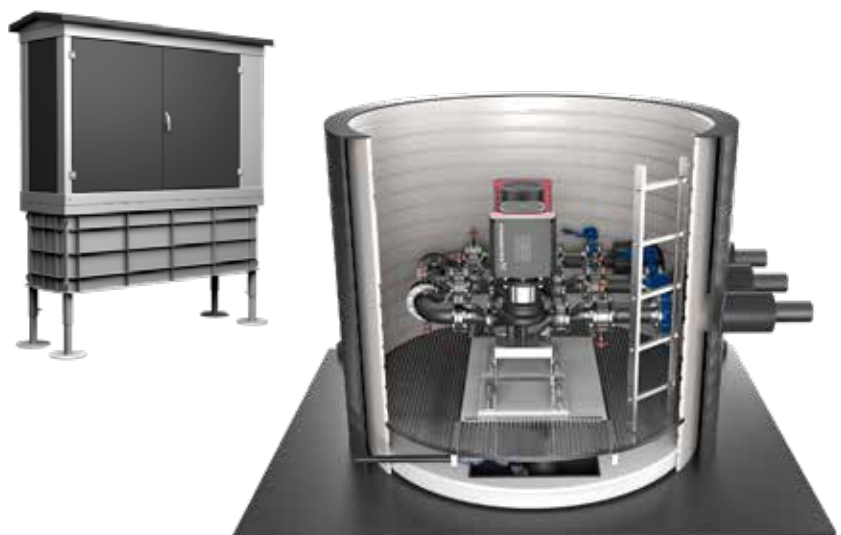


## EASY TO CUSTOMISE

The iGRID Temperature Zone is a modularised plug'n'pump solution that can easily be adapted to your needs.

The iGRID Temperature Zone can be delivered in a pit, on a skid or in a cabinet, and it can be controlled through our iGRID web-portal, a smart device, or your own SCADA system.

If installed with our Grundfos iGRID Temperature Optimiser you get optimal control based on weather compensation, peak shaving algorithms and real-time data from iGRID Measure Points.



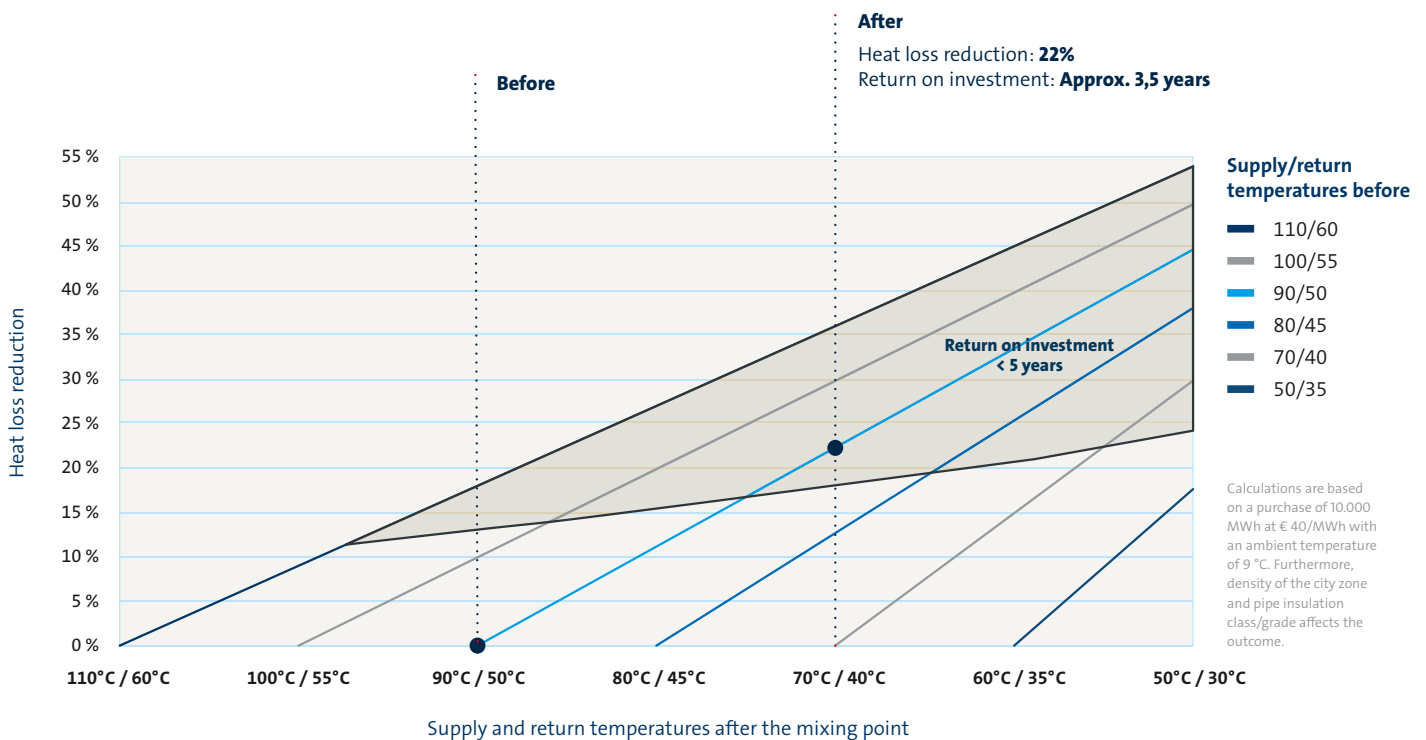
# SHORT RETURN ON INVESTMENT

In most heat grids, several parameters lead you to operate differently than originally designed:

- The design is based on the customers requiring the highest temperature and pressure installations are typically at least 20 % oversized
- A lot of energy renovation has happened – e.g. new windows, more insulation etc.

- The design peak loads are only reached a few minutes per year
- New and renovated buildings have much lower heat demands

This makes it possible to identify many smaller city zones where temperatures can be significantly reduced, leading to the short return on investment indicated below.



## CASE: GENTOFTE, DENMARK

Grundfos delivers an iGRID Temperature Zone for Gentofte Gladsaxe District Heating Co. - one of the fastest growing district heating networks in Denmark.

Customer demand: **9,000 MWh**

	Usual design	New design
<b>Average temperature</b> (supply/return)	79°C / 48°C	60°C / 38°C
<b>Heat loss in pipes / year</b> (MWh)	2,570	1,950
<b>Pump energy / year</b> (MWh)	0	14



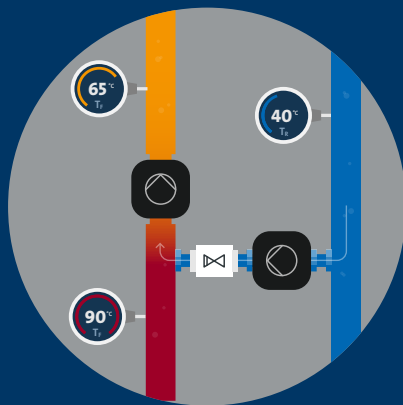
### OUTCOME

Heat loss reduction: **24 %**  
Return on investment: **Approx. 3 years**

Source: Based on calculation tool provided by Danish District Heating Association

# THE BASIC VARIANTS OF THE GRUNDFOS IGRID TEMPERATURE ZONE

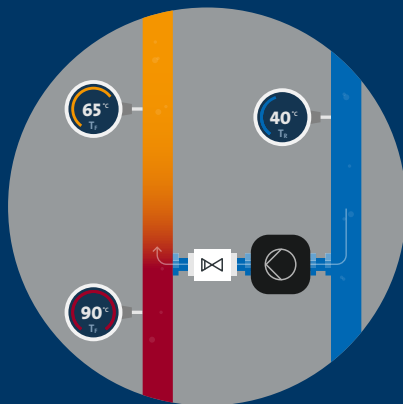
The iGRID Temperature Zone comes in three fundamental variants of mixing loops to meet different needs. All solutions ensure that the colder return water from the zone is mixed with the hot water from the supply line to reach the needed temperature in the zone – nothing more and nothing less.



## THE FREE FLOW SOLUTION

An efficient solution whereby pressure can be increased in the zone. By the use of a pump in the bypass, the pressure from the supply is adjusted in order to add the required return of water. Consequently, a free flow of water is created and a traditional motor valve is no longer necessary. Nonetheless, the need for maintenance is reduced due to a high degree of reliability.

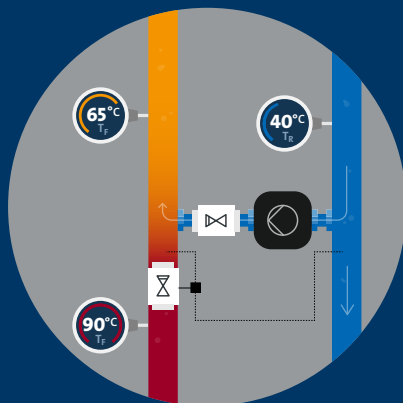
**This is the ideal solution for reducing heat losses to a minimum.**



## THE SHUNT SOLUTION

A cost-effective solution utilising pressure from the main pumps in the existing grid. A pump in the bypass is designed to overcome pressure from the supply to add the needed flow of return water.

**This solution is suggested if there is always enough supply pressure for the zone and no ambition to implement the low pressure benefits of distributed pumping.**



## THE PRESSURE REDUCTION SOLUTION

A shunt solution with a pressure control valve utilized when the pressure in the zone is higher than required.

**This will reduce the pumping need for mixing and pressure reduction in all buildings will no longer be required. Additionally, it will increase the lifetime of pipes and building installations.**

# iGRID CONTROL OPPORTUNITIES



## Temperature Reduction

The customer is responsible for the temperature optimisation.

## Demand-Driven Optimisation

The Grundfos iGRID Temperature Optimiser works its magic and ensures optimal temperature control.

## Full Energy Control

A flow meter ensures that the energy in and out of the zone is monitored for optimisation purposes.

<b>Pre-fabricated mixing loop in a pit, cabinet or on a skid – plug'n'pump</b>	•	•	•
<b>Enter setpoints on the pump or through your SCADA system</b>	•	•	•
<b>Peak shaving</b>		•	•
<b>Weather compensation</b>		•	•
<b>Automatic PID regulation</b>		•	•
<b>Real-time temperature optimisation based on iGRID Measure Points</b>		•	•
<b>User portal accessible via web, smart devices and SCADA</b>		•	•
<b>Complete overview of energy in and out of the zone</b>			•
<b>Energy benchmarking between zones</b>			•

# PRODUCT DATA

Data	Pit	Cabinet	Skid
<b>Pump type</b>	TPE / CRE	TPE / CRE	TPE / CRE
<b>Pressure rating</b>	Up to 16 bar	Up to 25 bar	Up to 25 bar
<b>Media temperature</b>	0 – 130 °C	0 – 130 °C	0 – 130 °C
<b>Ambient temperature</b>	0 – 60 °C	0 – 60 °C	0 – 60 °C
<b>Maximum motor power</b>	22 kW	22 kW	22 kW
<b>Power supply</b>	3 × 400 V 50 Hz	3 × 400 V 50 Hz	3 × 400 V 50 Hz
<b>IP rating</b>	54	54	54
<b>Pipe connection</b>	Welding joint	Welding joint	Welding joint
<b>Number of pipes</b>	2-3*	3	3
<b>Pipe size</b>	DN 50-200	DN 50-200	DN 50-200
<b>Top cover</b>	Light Aluminum / Traffic cover	-	-
<b>Material</b>	PE	Steel	Steel
<b>Diameter</b>	2000 mm	On request	On request
<b>Height</b>	1600 – 2200 mm	On request	On request

\*Only 2 pipes in the pit, if DN 150-200 pipes

## Built-in Options

- Temperature and pressure sensors
- Flow meters
- Pressure gauges
- Pipe insulation covers
- Level sensor (only in pit)
- Pressure reduction valves

## Solution add-ons

- Grundfos iGRID Bypass Cabinet or Grundfos iGRID Building Bypass
- Grundfos iGRID Pit Measure Point or Grundfos iGRID Building Measure Point
- Grundfos iGRID Temperature Optimiser

*For more information, see relevant product brochures*

# DIMENSIONING AND OFFER

## 1. DEFINE A ZONE

*You suggest a zone/branch in your heat grid where it is relevant to lower the temperature*



## 2. SHARE DATA

*You share a few data about the zone with Grundfos – e.g. energy, temperature and pressure data*



## 3. CALCULATIONS WITHIN 48 HOURS

*Grundfos suggests a suitable solution and estimates the return on investment for the complete project, based on your input*



## 4. OFFER & AGREEMENT

*The business case and the solution is discussed face-to-face or on the phone and the final offer, including the financial model, is agreed upon*



## 5. PREPARING THE SITE

*You ensure that the excavation is done and that a power cabinet is placed above ground*



## 6. DELIVERY & WELDING

*Grundfos delivers the pre-fabricated solution and you do the necessary pipe welding and electrical connections and close the excavated area*



## 7. COMMISSIONING

*Grundfos does the commissioning to ensure that the solution works as intended*



**GRUNDFOS iGRID IS A NEW SOLUTION RANGE FOR DISTRICT HEATING**

With this range we fight heat losses and prepare for utilisation of renewable energy sources through intelligent temperature control.

By creating city zones with mixing loops, temperatures can be lowered to meet the actual demands in those zones and thereby deliver exactly the heat energy needed – nothing more and nothing less!

**Find out more about the Grundfos iGRID concept by contacting your local Grundfos Sales Company or visit [grundfos.com](http://grundfos.com) form more information.**

