

A true cooling meter solution

Achieve energy efficiency, optimise operations, and maximise comfort for your buildings

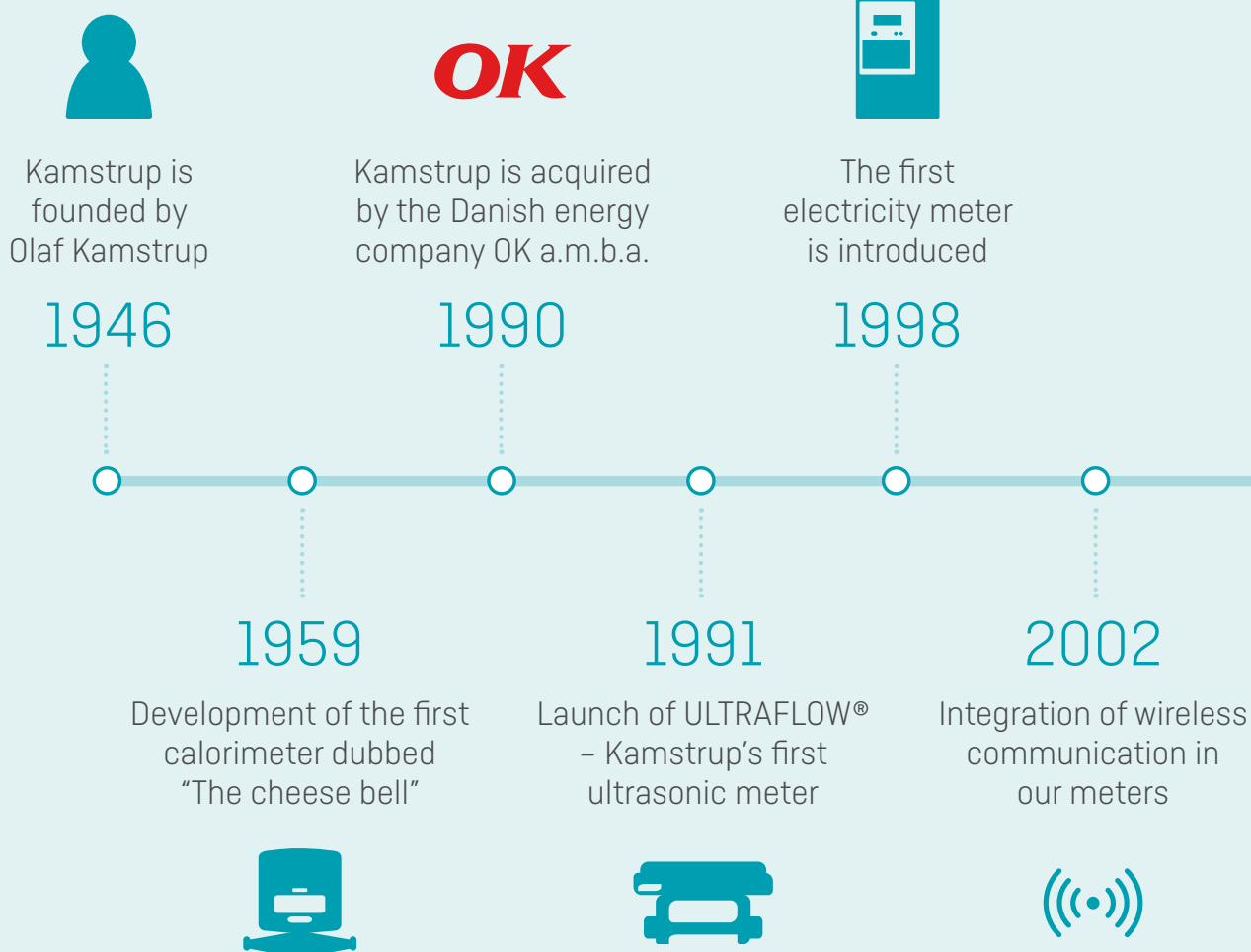


About Kamstrup

Kamstrup is a world leading manufacturer of system solutions for smart energy and water metering.

With our intelligent metering solutions, we are committed to deliver the actionable insights needed to help our customers ensure a clean water and energy supply.

Key milestones



Innovation



Over 20% of our workforce is in R&D

Pioneering



We introduced digital meters, ultrasonic technology, and remote reading

Origins



Everything we sell is manufactured in Denmark and the US

Security



We are owned by Danish energy company OK

Peace of mind



Kamstrup holds a triple-A credit rating

Customised



We offer solutions tailored to your needs



Launch of our first cooling meter

2004



First 3rd generation cooling meter (MULTICAL® 403)

2016



Launch of ULTRAFLOW® 44 flow sensor

2020

2010

The launch of the intelligent water meter MULTICAL® 21



2018

Launch of PQT controller



2022

1500 employees in 25 countries with 90+ certified distributors



Your trusted partner in APAC

In the last 15 years, Kamstrup has delivered over 50,000 cooling meters in different locations across the region.

From the Australian National University in Canberra to the World Trade Center in India, we have proven that we have the knowledge and experience to make your project a success.



What makes a true cooling meter?

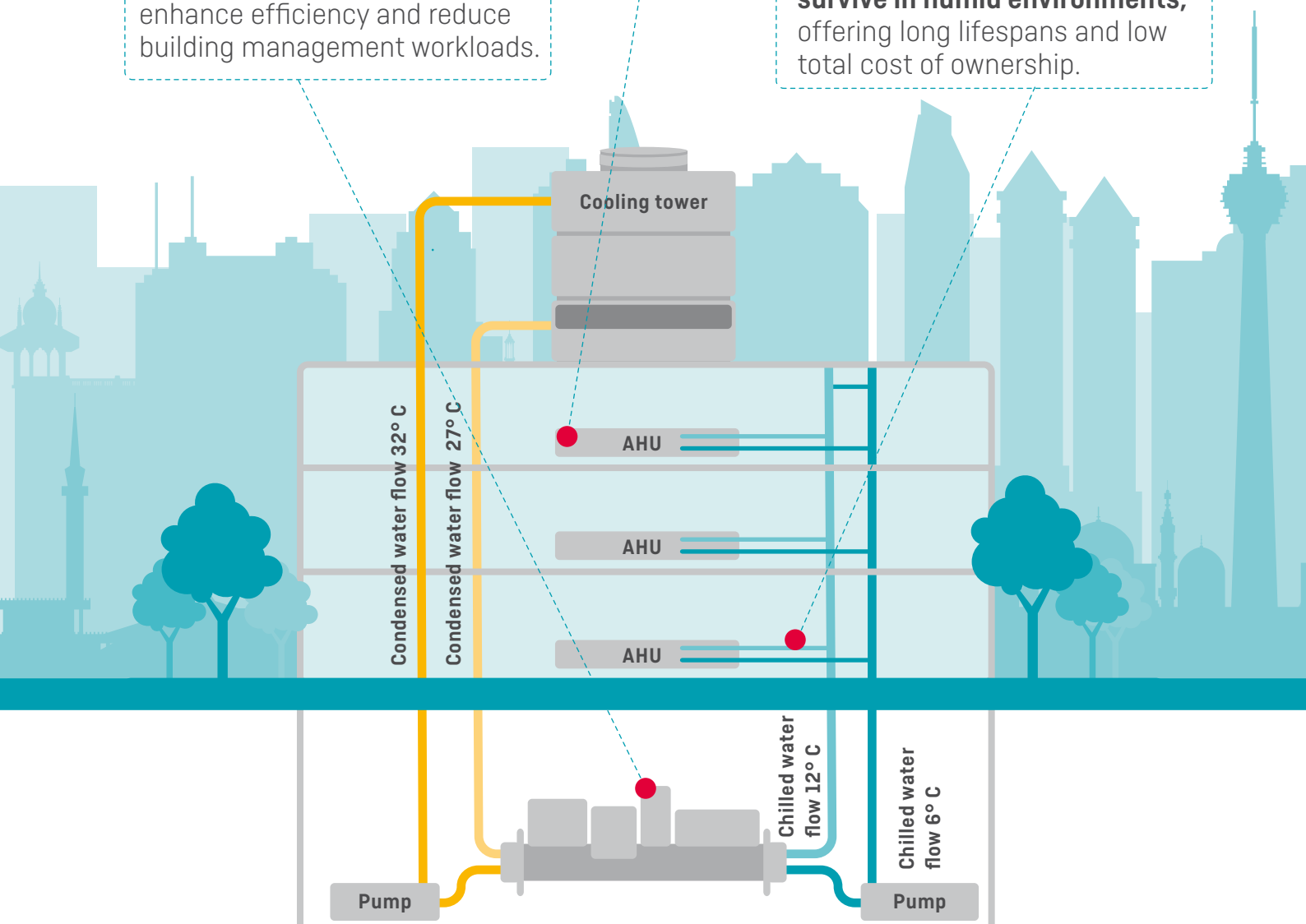
Cooling meters from Kamstrup are designed to enable the optimal cooling experience in commercial buildings.

They are built to enhance energy efficiency, deliver sensible automation functions, and survive the cooling environment.

Optimise energy consumption and **eliminate low delta T syndrome** with true cooling meters.

Sensible automation features enhance efficiency and reduce building management workloads.

True cooling meters are built to **survive in humid environments**, offering long lifespans and low total cost of ownership.



Cooling energy management challenges

ΔT

Low delta T syndrome

- One of the most typical technical barriers related to chilled water systems.
- Increases water pump energy consumption.
- Decreases overall operational efficiency.
- One of the main causes is poor valve flow regulation.



Lack of sensible automation

Parameters set by the original design consultant are not in sync with day-to-day operational needs.



Inefficient cooling system

Poor operating practices can often lead to cooling system inefficiencies and reduction in chiller lifetime.



Hardware failures due to condensation

Exposure to condensation results in reduced lifetime of a cooling meter.



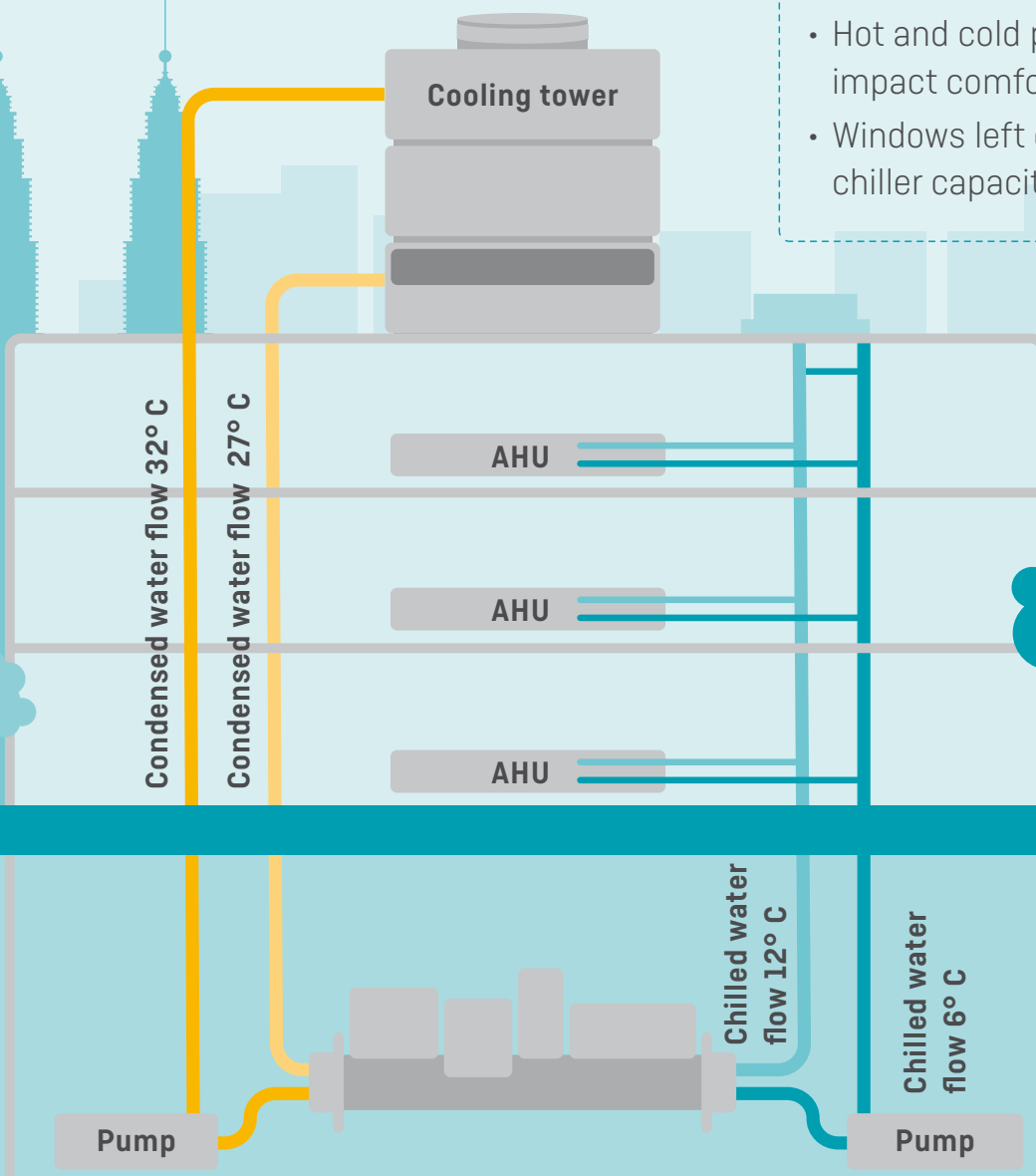
Poor data quality

Large deviations in measured temperatures across chilled water systems often make it difficult to use data to optimise energy consumption.



Uneven energy distribution

- Hot and cold pockets in buildings impact comfort.
- Windows left open bring down chiller capacity.



A woman with dark hair in a ponytail, wearing a white lab coat, is seen from the back, looking at a laptop. The laptop screen displays a complex data interface with various charts and tables. The background is a server room with rows of server racks and glowing lights.

The MULTICAL® family

All meters meet Danish Cooling and MID approval and comply with the latest European standard EN 1434-2022.

- MULTICAL® 303
- MULTICAL® 403
- MULTICAL® 603 with ULTRAFLOW® 44 flow sensor
- MULTICAL® 803 with ULTRAFLOW® 44 flow sensor

The ultimate cooling meter platform

MULTICAL® is our third-generation thermal energy meter platform. Built to the highest quality standards, these cooling meters deliver pinpoint accuracy and outstanding durability for cooling applications in commercial buildings.

They are designed to support a wide-range of modular communication and power supply attachments, which give you the ultimate flexibility to meet new challenges head on – no replacement necessary. All Kamstrup cooling meters and sub-assemblies hold the highest compliance with EN 1434 standard.



The MULTICAL® calculator

- Temperature range: 2 - 180° C
- Up to IP65 protection
- Can be battery supplied with a lifetime up to 16 years
- Communication modules: Modbus, Bacnet, M-Bus
- Valve management with PQT controller



Temperature sensors

- IP68 protection
- Direct and pocket sensors
- 2- and 4-wire sensors
- Pressure stage: PN 16/25
- Medium temperature: 2 - 150° C
- Max. cable length: Up to 100 m
- Supports temperature offset adjustment



ULTRAFLOW® flow sensor

- IP68 protection
- Pressure stage: PN 16/25
- Medium temperature: 2 - 130° C
- Max cable length: Up to 100 m
- Flow range: 0.6-1000 m³/h

Enhancing energy efficiency with MULTICAL®

Challenge

ΔT

Low delta T syndrome

Low delta-T syndrome occurs when the temperature difference between the inlet and outlet of chilled water is lower than designed. It increases the energy consumption of chilled water pumps, decreases overall operating efficiency, and reduces occupant comfort.

Challenge



Sensible automation

The building operator is unable to find a balance between full automation and zero automation. This gap needs to be met by a solution that gives flexibility to allow the building operator to create their own automation process and parameters via the cooling meter.

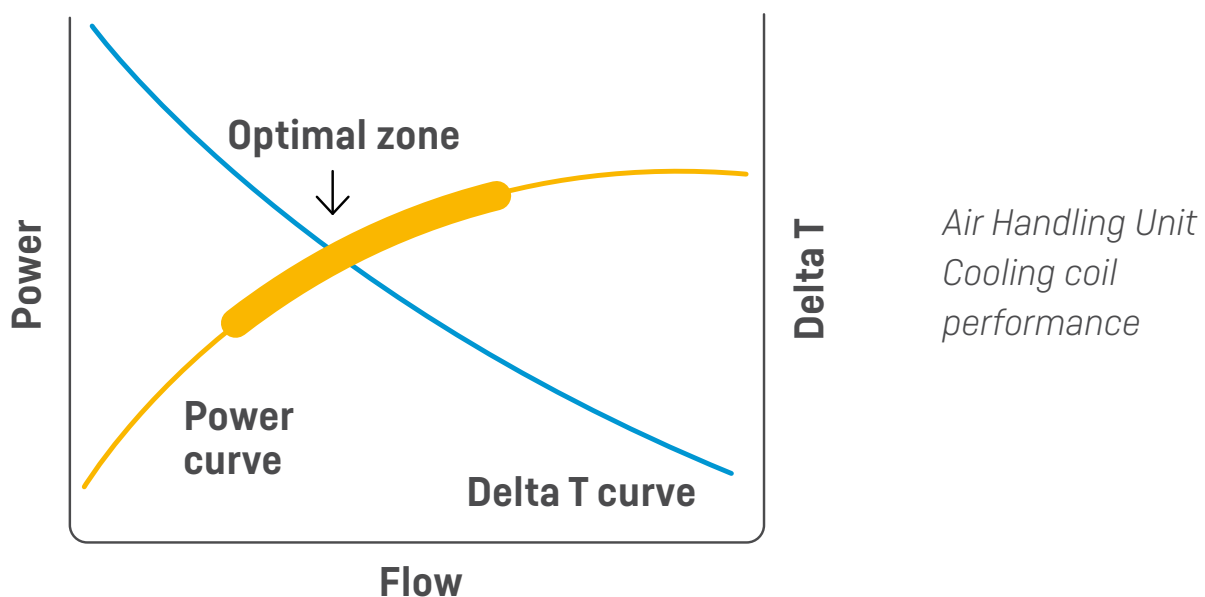


Figure 1 shows that as chilled water flow increases, cooling power increases with an exponential decay. At the same time, the chilled water temperature difference drops as the flow rate increases. Building managers often find it difficult to maintain a temperature difference in the optimal zone, which can cause low delta T syndrome.

Solution

PQT controller

By using a Kamstrup PQT controller module with the MULTICAL® platform, **building managers can use flow, power, and temperature data to automate the AHU actuator-driven valve and optimise energy consumption.**

Optimisation in energy consumption can be achieved because the PQT controller

can monitor and enforce the desired delta T.

The set points and limits in the PQT controller can be configured either through BACnet, Modbus, or directly with the use of the optical eye on the MULTICAL® cooling meter.

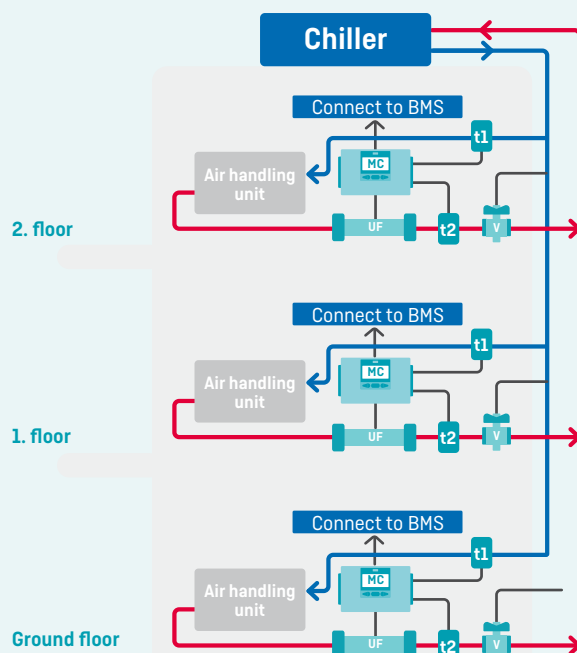


Figure 1(a):
Cooling meter without PQT controller:
The valve is connected separately
to the BMS

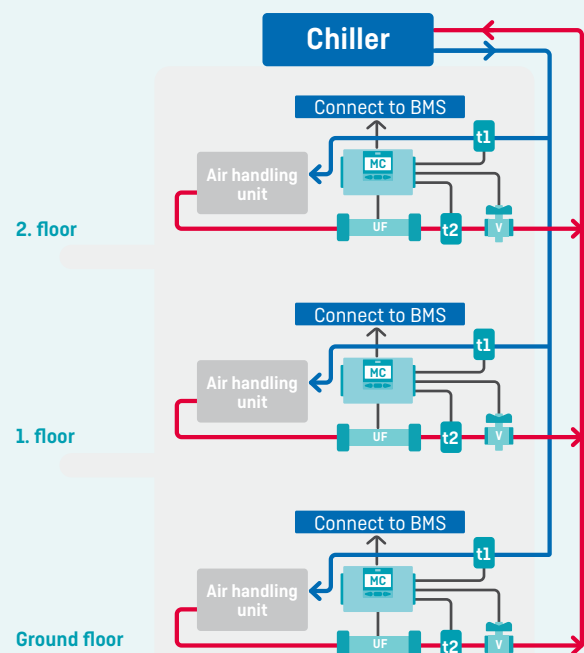


Figure 1(b):
Cooling meter with PQT controller:
The valve is connected and regulated
by Kamstrup cooling meter

MC = MULTICAL® calculator
UF = ULTRAFLOW® flow sensor
t1 = Inlet temperature sensor
t2 = Outlet temperature sensor
v = Valve



Click the link
to learn more about
PQT controller

Improving data quality in building management systems

Challenge



Inaccurate data

BMS systems use temperature and flow measurements to achieve ideal comfort levels with the lowest possible energy consumption.

If data is inaccurate, huge inefficiencies can occur, driving up energy costs and usage.

Solution



Temperature offset function

Kamstrup MULTICAL® cooling meters come with an innovative temperature offset function to achieve precision data readings of ± 0.1 K when measuring inlet or outlet temperature.

This level of accuracy is usually only achieved with expensive 4-wire sensors, but the Kamstrup solution makes it possible to use either direct or pocket sensors without compromise.



Temperature sensor	Standard 2-wire with non Kamstrup calculator	Standard 4-wire with non Kamstrup calculator	Kamstrup 2-wire with Kamstrup calculator
Accuracy	± 1.0 K	± 0.4 K	± 0.1 K
	✗	✗	✓

Kamstrup 2-wire sensor solution delivers the same performance at a competitive price as compared to the normal 4-wire sensors in the market, saving you a lot of money.

Accurate data readings enhance energy efficiency and optimise energy consumption.



Click the link to learn more about temperature offset functions

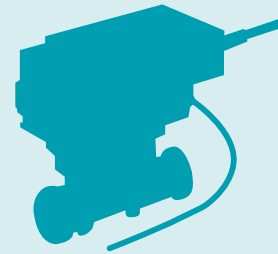
Extend the life of your cooling meter

Challenge

Hardware failures due to condensation

Exposure to condensation results in reduced lifetime of a cooling meter.

Many thermal energy meters/BTU meters are designed for heating applications but used for cooling energy management. This puts such meters at risk of condensation damage as the original design was not intended to withstand moisture.



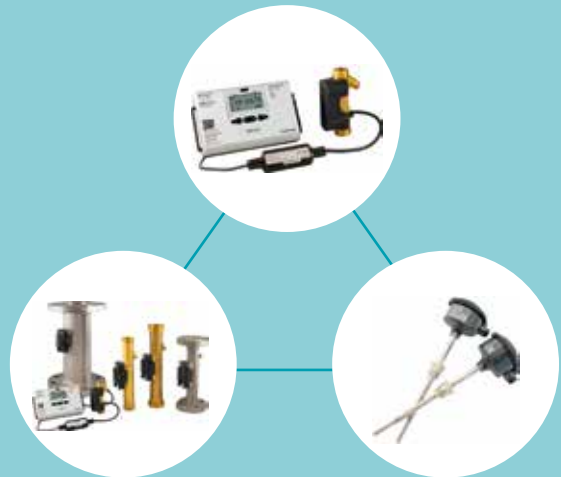
IP67 below

Solution

True cooling meter from Kamstrup

Both ULTRAFLOW® 44 and TemperatureSensor 63 & 83 have a high immunity to intrusion of water and come with an unique IP68 approval.

It prolongs the life of the meter solution and reduces the cost of ownership for building owners.



IP68

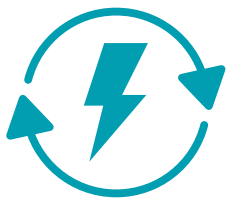
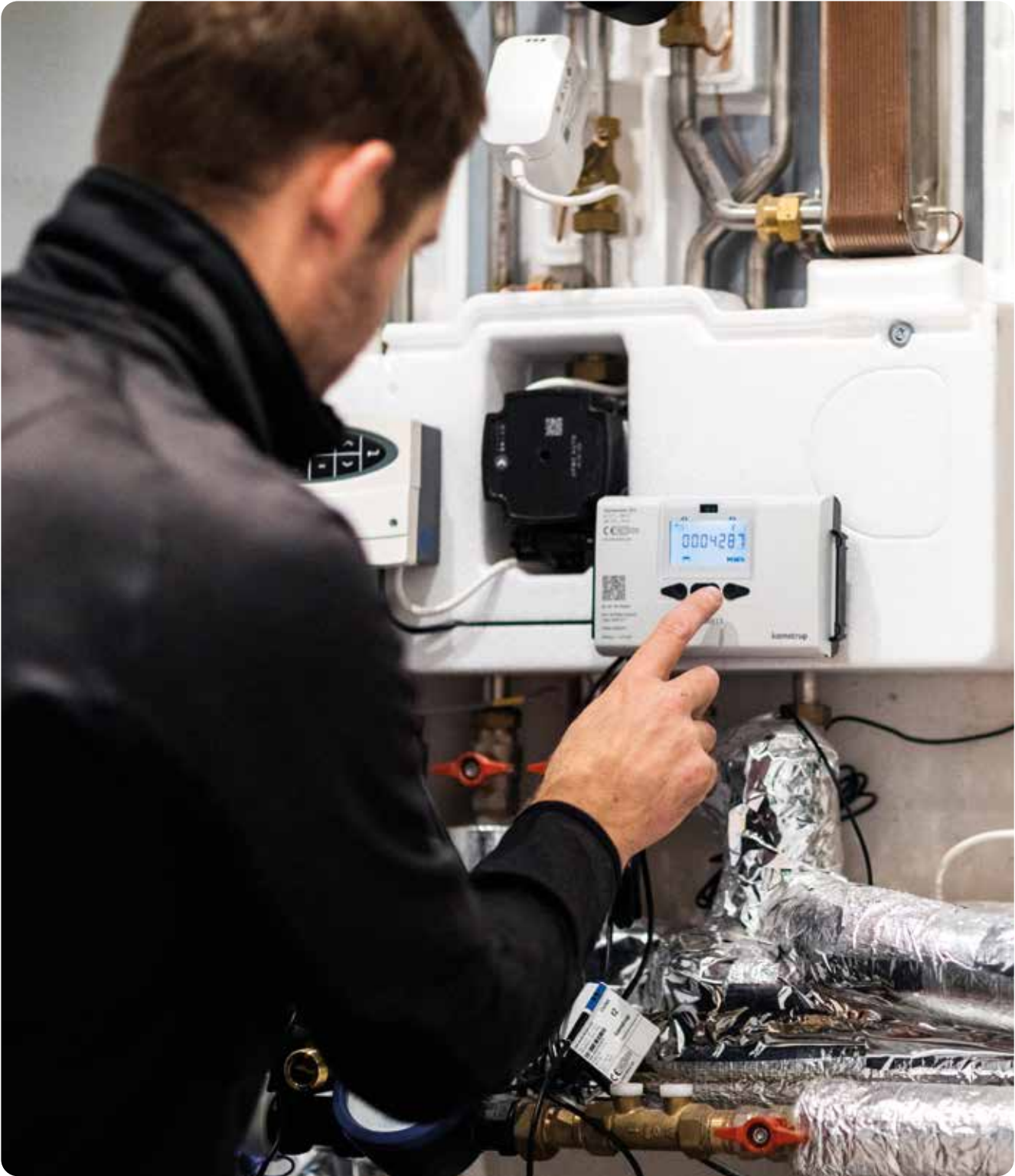
Wish to learn more about how to avoid problems with condensation in cooling meters?



Click the link to read our blog on "Choosing the right product"



Click the link to read our blog on "Best installation practices"



Saving energy



Saving money



Saving time

True cooling meters deliver value to all

No matter what role you play in managing cooling applications in commercial buildings, Kamstrup true cooling meter solutions are built to enhance the way you work.

Building owners

- Save more energy
- Enhance occupant comfort
- Make significant CAPEX savings
- Lower cost of ownership

Building managers/operators

- Reduce workload and monitoring with sensible automation
- BMS failsafe – chilled water flow can still be controlled by the cooling meter
- Intuitive and easy-to-use system
- Less complaints from tenants

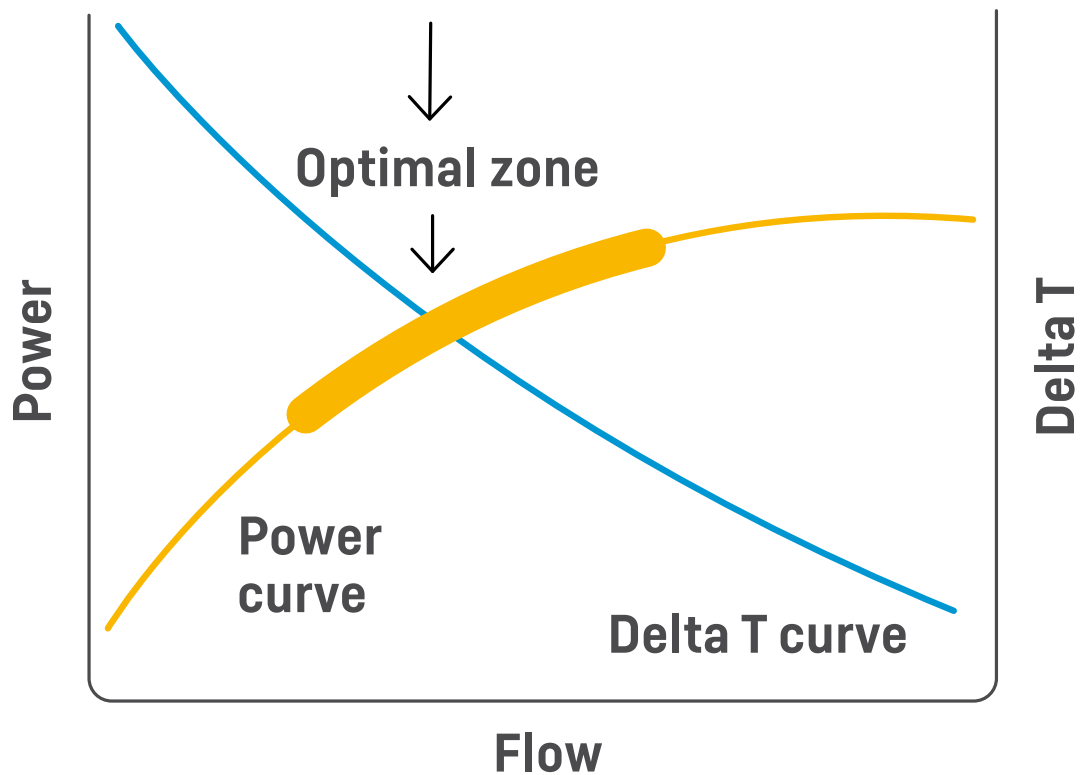
BMS providers

- Offer a more cost-effective solution to customers
- Minimise deployment issues with direct BMS integration
- Simplify the BMS design and procurement process
 - valve selection and operation are independent of BMS
- Reduce cost of BMS systems with less wiring

Consultants

- Get total Kamstrup support at every stage
- Ensure compliance – Kamstrup meters achieve the most important accreditations: Danish Cooling and MID approval based on the latest version of EN 1434
- Reduce the effort of the design with a full package solution
- Access to helpful educational resources to boost your knowledge

Kamstrup
keeps you
here



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