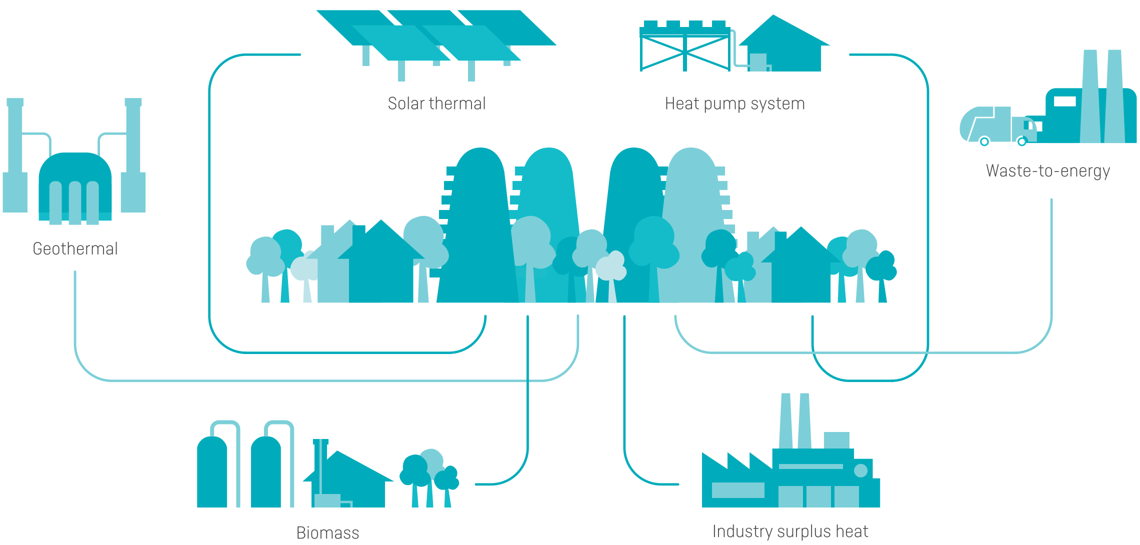
Why accurate temperature sensor measurements are more important than ever

The green transition is here to stay. Therefore, it is more important than ever to have a strong focus on improving energy efficiency and incorporating new renewable energy sources.
For district heating utilities, it is crucial to reduce the inlet and outlet temperatures by optimising their heat distribution network to improve energy efficiency.
New renewable energy sources such as large heat pumps, solar heating and surplus heat from industry also require reducing the inlet and outlet temperatures to perform optimally.



The challenge is: How do you know that you actually reduce the inlet and outlet temperatures if you can't measure them accurately?

WHY THE STANDARD ISN'T ACCURATE ENOUGH

A standard heat meter is typically only optimised for measuring the temperature difference because the billing of customers has traditionally solely been based on the amount of consumed energy, where the temperature difference is used to calculate the amount of consumed energy.

A Kamstrup heat meter with the new 2-wire Kamstrup TemperatureSensor 63 makes it possible to measure inlet and outlet temperatures with high accuracy. This is done through a smart function called "temperature offset", where data from the temperature sensor verification is transferred to the Kamstrup calculator, which optimises the measurement of inlet and outlet temperature – leading to better data and actual knowledge.

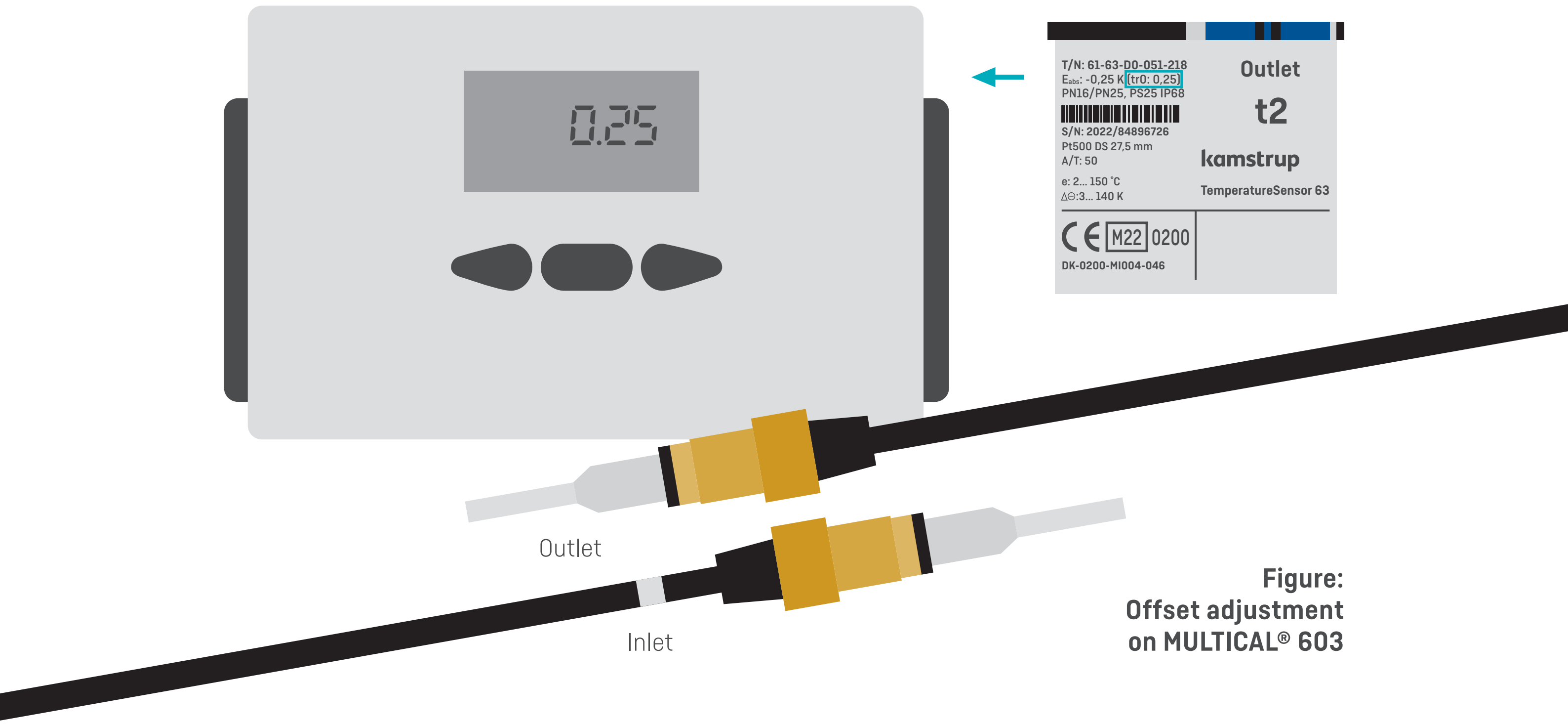


Figure: Offset adjustment on MULTICAL® 603

In the EN1434 standard, it is required for a heat meter to have an accuracy of ± 2 K when measuring inlet or outlet temperature. With a Kamstrup heat meter with temperature offset adjustment, it is typically possible to achieve an accuracy of ± 0.1 K.

The improved accuracy has several benefits. For instance, when trying to pinpoint new initiatives for increasing energy efficiency, it is now easier to compare the measured inlet or outlet temperatures in the different parts of the distribution network.

FAIRER BILLING WHEN USING MOTIVATIONAL TARIFFS

To increase energy efficiency, many district heating utilities have started to implement motivational tariffs that typically use the actual outlet temperature as a key value when calculating the cost for district heating and give a bonus to end-customers with a low outlet temperature.

This is done to economically motivate end-customers to reduce their outlet temperature and thereby contribute to increasing energy efficiency.

Since such motivational tariffs depend on the measured outlet temperature and not the temperature difference, the improved accuracy and knowledge using the temperature offset adjustment function will ensure fairer billing of customers when motivational tariffs are implemented.

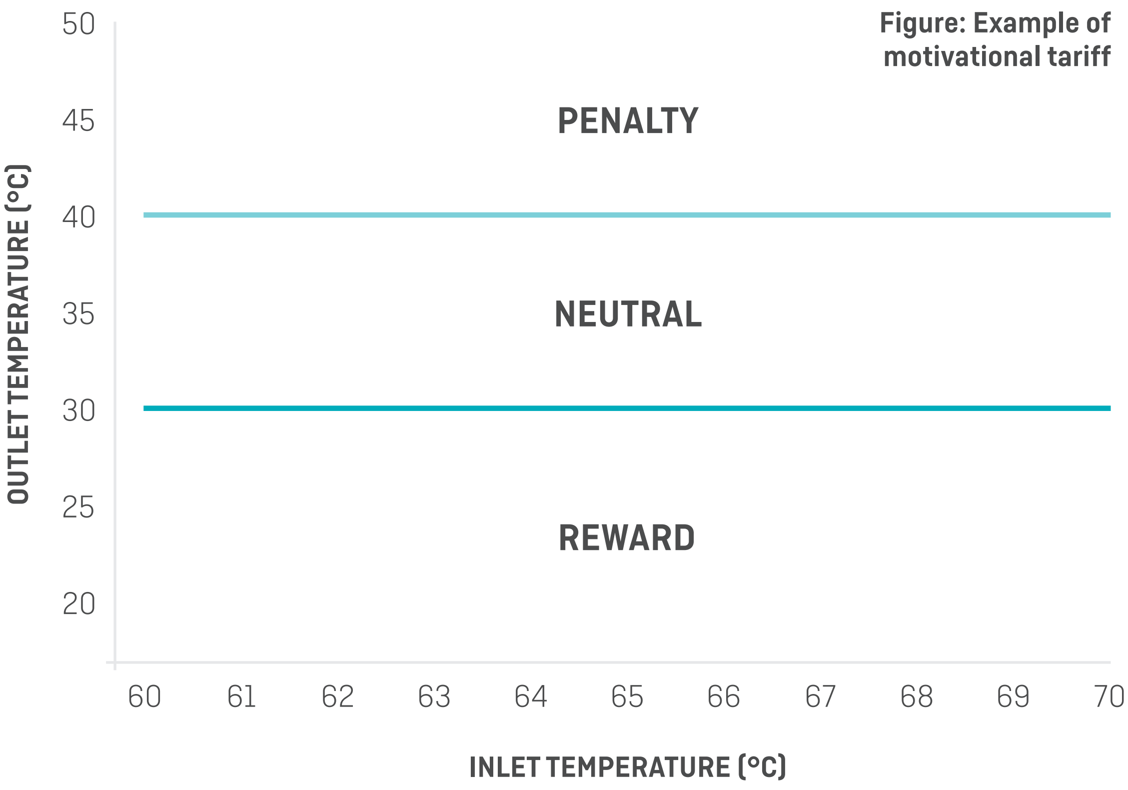


Figure: Example of motivational tariff

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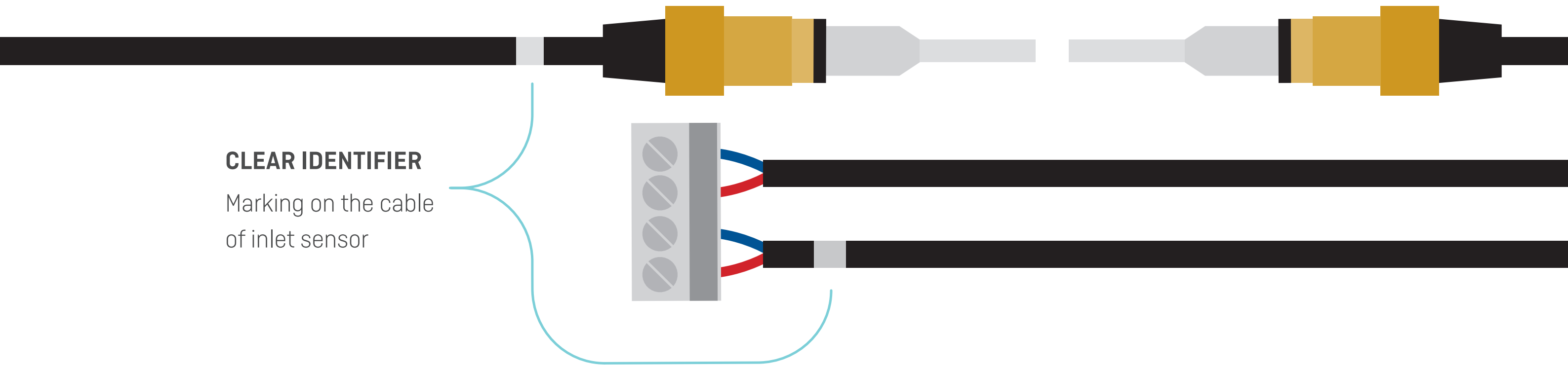
EASY TO INSTALL

Wrong installation of heat meters can lead to additional costs and/or bad customer service. Kamstrup TemperatureSensor 63 comes with a series of improvements that make installing the temperature sensors easier.

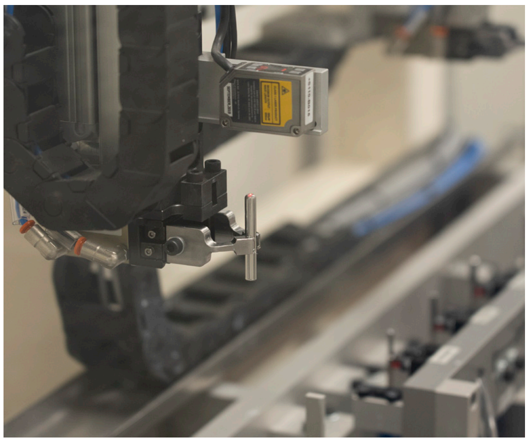
The inlet sensor can now be identified using innovative engravings on the sensor's cable. This makes it easier to visually check if the temperature sensor is installed in the correct pipe.



Also, the new innovative Metertool X app makes it easy and straightforward to make onsite configuration of the meter, saving time and money for additional stock.

DURABILITY IS SUSTAINABILITY

The need for more accurate temperature measurements puts an increased focus on the durability of the temperature sensors. Unique to temperature sensors used on heat meters, TemperatureSensor 63 is produced using fully automated equipment. Therefore, high product quality is constantly secured through multiple quality checks during the production process.



This ensures that district heating utilities can expect temperature measurements with high accuracy during the whole lifetime of the meter – ensuring money saved, accurate billing and measurement, and ultimately greater sustainability.

Accurate measurement of inlet and outlet temperatures is, therefore, more important than ever.