Ultrasonic Flow Sensors
for Heat Pumps

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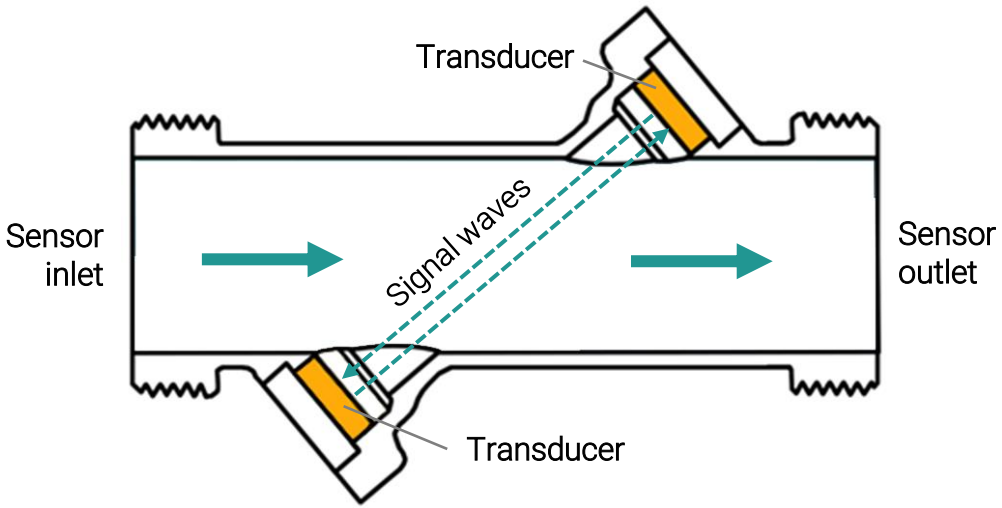
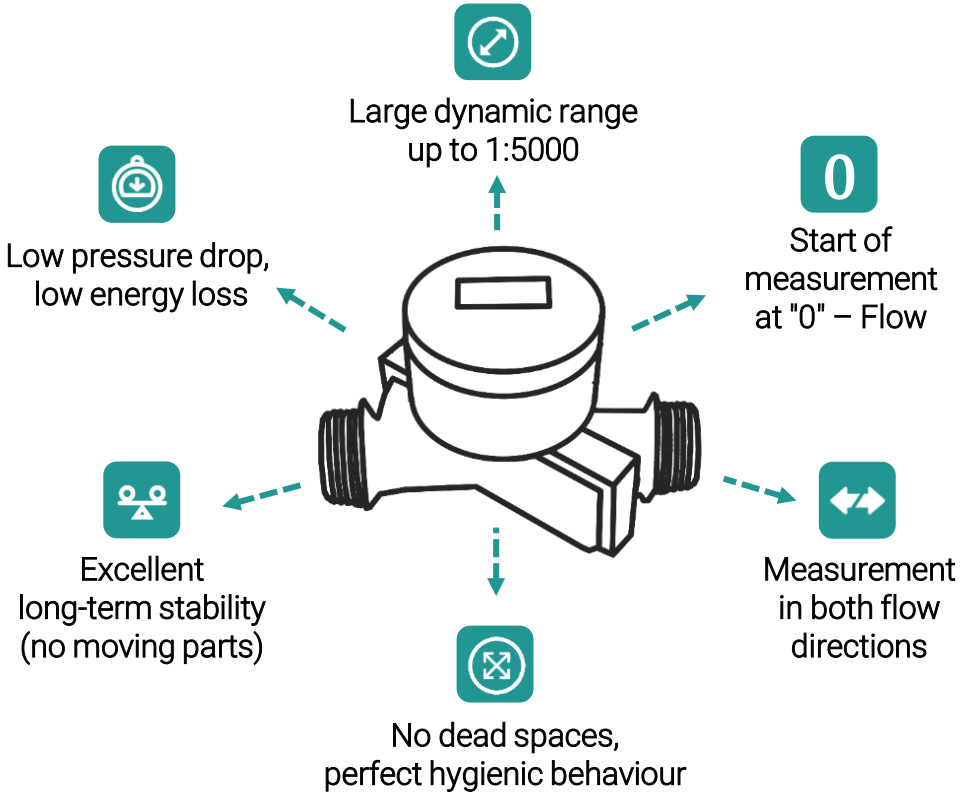
Ultrasonic principle and advantages



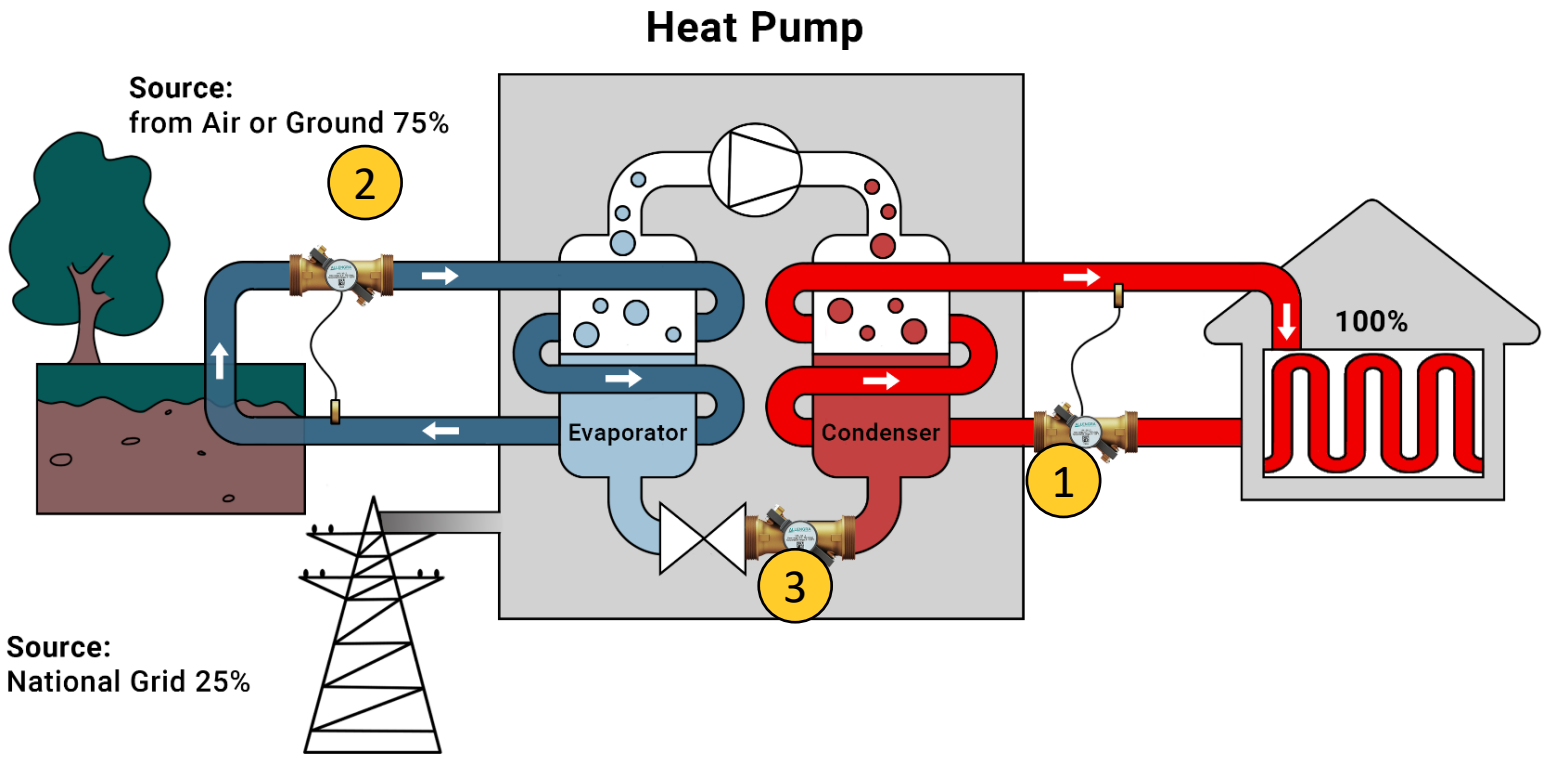
Time of Flight principle



Possible use cases for flow sensors at heat pumps

Inside of the source circuit (2)

- Metering the heat taken out of source, for better control of refrigeration circuit
- Improved pump control for optimized flow
- Measuring of water-/glycol concentration
- Detection of leakages



Inside of the hydraulic circuit (1)

- Improved flow control
- Metering Heater Energy
- Calculating the overall efficiency (acc. to BEG promotion)
- Reduce flow temperature demand by intelligent system control

Inside of the refrigeration circuit (3)

- Optimized control (speed) of the compressor for improved efficiency
- Detect too less refrigerant and avoid inefficient operation

Requirements for flow sensors at heat pumps

Requirements	Inside of the hydraulic circuit (1)	Inside of the source circuit (2)	Inside of the refrigeration circuit (3)
Flow Range	1000-4500 l/h	200-4000 l/h	1kg/h - 200kg/h
Pressure	3-4bar	3-4bar	45 – 65bar
Medium	Heating water	Water/Glycol mix Water/Ethanol mix	R290, R32, R125 + 3-4% refrigerant oil circulation rate
Temperature	5°C - 80°C	-25°C - 50°C	5°C - 130°C
Precision	3% (of measured value)	5% (of measured value)	5% (of measure value)
Optional features	ΔT, Pressure	ΔT, Pressure, Glycol concentration measuring	Pressure
Special requirements	Free of ignition