KTS CENTRAL HOT WATER HEATING

Managing energy efficiency and hygiene

KEMPER

DRIVING PROGRESS

ThermoSystem KTS

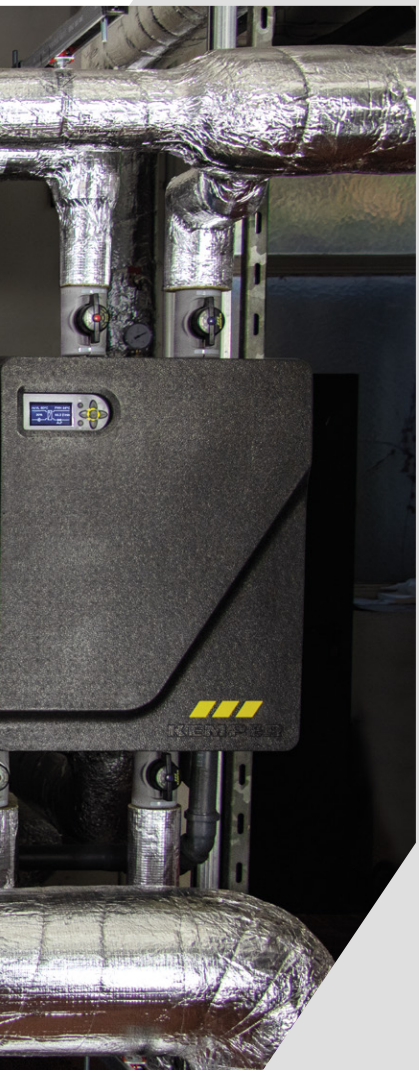
Managing energy efficiency and hygiene

Why choose instantaneous hot water heating?

Ensuring drinking water hygiene while maximising energy efficiency is currently one of the most significant challenges in building technology. It's essential to choose the right technology for the job. You need it to allow you to avoid risks that may affect drinking water hygiene while also enabling you to use energy as efficiently and sustainably as possible. KEMPER ThermoSystems KTS Water Heaters provide innovative solutions for this very purpose. With outstanding performance data even at low flow temperatures, they're considerably more effective at utilising the primary energy as storage systems. This ensures that energy is used much more efficiently and the use of regenerative energy sources is more cost-effective. These solutions also provide significant advantages in terms of drinking water hygiene. Even at least water usage, the water content of the instant heating system is completely exchanged (e.g. only 3 litres for KTS Water Heater M). In contrast, hot water withdrawals in large properties often store volumes a thousand times larger, increasing the risk of stagnation.

Progress through KTS

With the increasing focus on harmonising the use of regenerative energy sources and maintaining drinking water hygiene, there are new and demanding requirements for drinking water heating systems. As a consequence, building technology components need to be better-performing and more flexible than ever. This also applies to their ability to communicate with a central building management system. All the while, time is increasingly of the essence in planning and execution. This means future systems need to be highly favourable in terms of sizing, assembly and commissioning.



THE RESULTS OF CONSISTENT ONGOING DEVELOPMENT

With the new KTS Water Heaters, the KEMPER ThermoSystem KTS has proved itself as a pioneer of water heaters. For almost any type of building or application, KTS can supply hot water:

- faster
- more hygienic
- more efficient
- more innovative

Faster

// **Assembly:**

Included accessories such as safety equipment, additional sensors and a BMS interface allow you to save on additional assembly and cable costs. This cuts down on the usual assembly time by up to 50%.

// **Commissioning:**

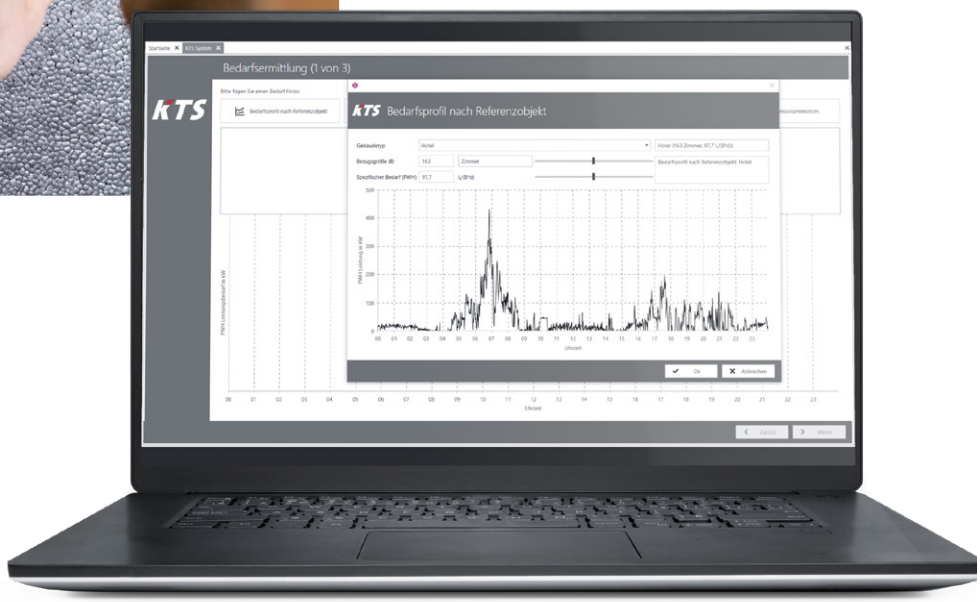
A smart wizard enables you to carry out commissioning for all the basic functions yourself in less than 60 seconds.

DENDRIT *STUDIO*

3-step design process

KTS Water Heaters can be sized faster with Dendrit *STUDIO* calculation software. Standard-compliant design takes place in just 3 steps.

1. Select the building type
2. Adapt the standard calculation parameters (e.g. flow temperature of the heat supply)
3. Issue the results including specifications, material lists and design scheme.



More hygienic

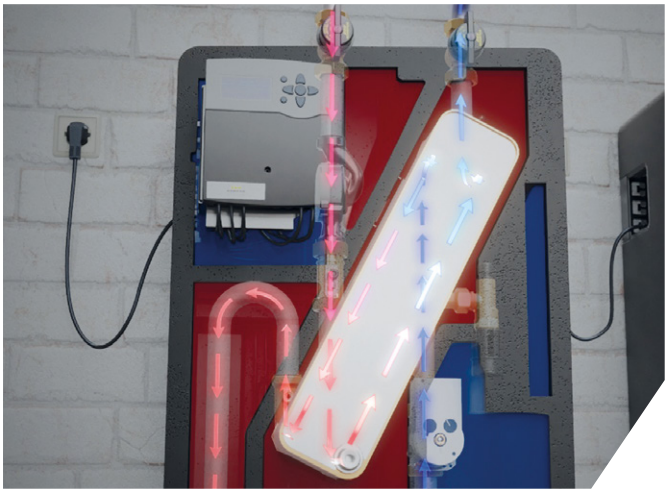
NOTE

What's important for maintaining drinking water hygiene?

Maintaining temperature:
Microorganisms such as legionella multiply exponentially in warm drinking water. So temperature ranges between 25°C and 55°C should be avoided.

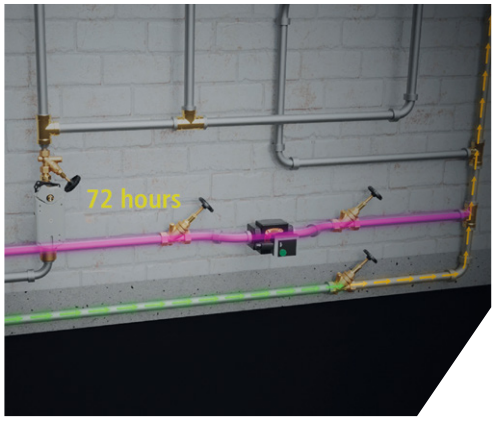
Preventing stagnation:
Drinking water that has stagnated in a system will take on ambient temperatures which greatly impact hygiene. Additionally, metal substances from pipes and components will also accumulate. The water should therefore be exchanged frequently!

This is why DIN 1988-200 and guidelines from the Robert Koch Institute state that the volume of heated drinking water to be stored should be kept to a minimum.



// **Strict separation of hot and cold areas:**
The insulation shell decouples the cold areas from the hot areas. This minimises the effects of the heat loads on the cold water that are detrimental to hygiene.

// **Cascade rotation:**
In phases with lower performance requirements, such as during circulation mode, often only one water heater of a cascade is in operation. Cascade rotation is engaged in order to prevent stagnation in the inactive water heaters. This causes all the heating units to automatically become active in alternating fashion so as to avoid hygiene risks.



// **Avoiding stagnation in the cold-water pipe:**
During periods of non-usage (e.g. holidays or lockdown), the cold water in the pipes leading to the water heater often stagnates over several weeks, presenting a high potential risk to hygiene. This risk can be eliminated by the KTS Water Heater's controller by triggering automated flushes thanks to a KHS Flush Point.

// **Hot water "on demand":**
The KTS Water Heaters only heat drinking water when needed and only heat the amount that's actually required. This does away with the need to store hot water and eliminates the risk of stagnation associated with this.

More efficient

// **Energy savings of up to 10%:**
Thanks to its powerful performance, the system only needs an over-temperature of 2K. So, hot drinking water can be output at 60°C even if the flow temperature on the primary side is reduced down to 62°C. The KTS Water Heater's smart controller identifies unnecessarily high flow temperatures and indicates when it should be lowered.

// **More efficient heat pump usage:**
To make the use of the heat pumps noticeably more efficient, the flow temperature can be reduced.

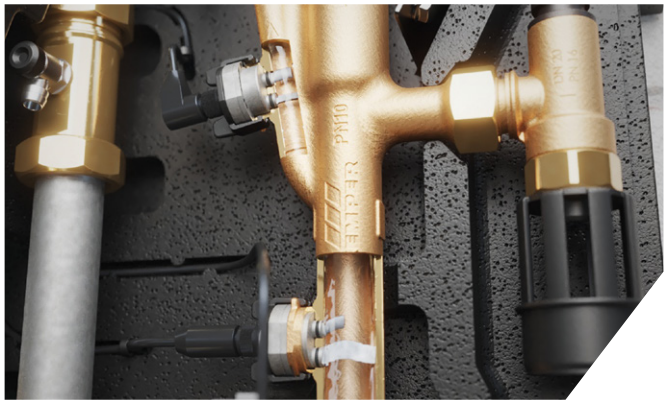
// **Power-to-Heat ready:**
The KTS Thermo-Tank Figure 965 is designed to be able to be retrofitted with heating elements. So any photovoltaic systems available can support the load of the heat buffer tank with solar energy.

// **More efficient storage of heat energy:**
Load and unload KTS ThermoTanks with low turbulence thanks to specially developed baffle plates. This increases the energy efficiency of the heat energy storage.

More innovative

// **Getting the most out of a pump's lifespan:**

A patented chimney system ensures a constant airflow, whereby the performance-optimised pump is cooled effectively. The thermal load relief feature of the pump electronics allows you to get maximum efficiency throughout the pump's lifespan.



// **Huge performance spectrum:**

With a new, patented measuring track that responds 55% more effectively, you can register the smallest of requests even in larger systems. Starting from 1.6 l/min, the KTS Water Heater boasts an outstanding performance range. Thanks to its powerful components, it reaches a maximum hot water supply flow rate of 960 l/min.

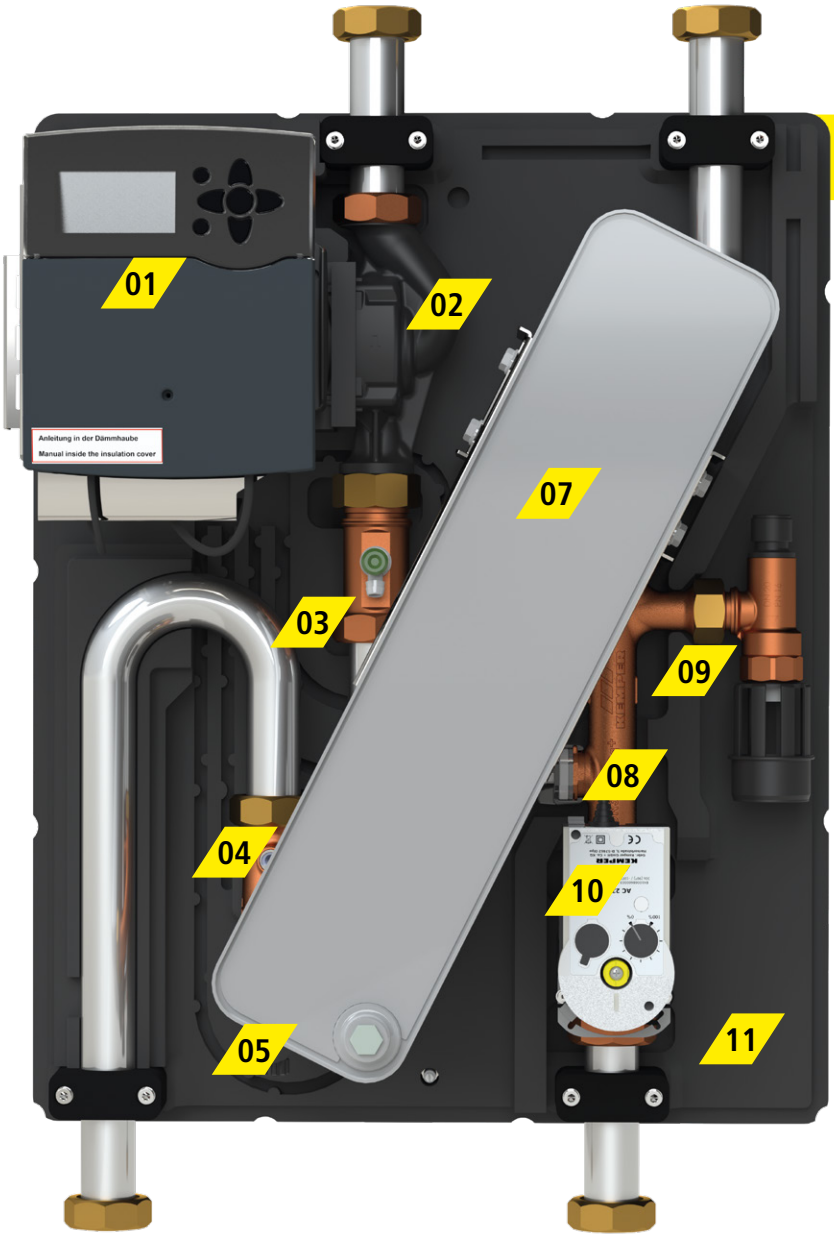
// **Integrated data logger:**

According to the German Drinking Water Directive (Trinkwasserverordnung) operators are required to record and analyse operating states. To this end, the controller is equipped with a 32 GB data logger which records operating data over several years.

// **Standard BMS compatibility:**

The new KTS Water Heater is pre-equipped with an RS485 interface (modbus-RTU) at the factory, which allows it to directly communicate with an available building management system.

Product illustration and technical components



KTS Water Heater

// Improves performance by over 200%
// 50% less pressure loss
// Response improved by 55%

01 Controller
// Adaptive controller with high control quality
// Standard BMS compatibility
// Integrated data logger
// Commissioning wizard
// Optimisation function for lowering the flow temperature
// Pump capacity automatically adapted on property-specific basis

02 Pump
// Pulse width modulation
// Anti-locking function

03 Gravity break
// With ventilation function and optimised response behaviour

04 PT 1000 temperature sensor
// Quickly detect even the smallest of temperature changes directly in the medium

05 Sampling point
// Drain valve as standard, sampling valve can be retrofitted

06 Pump chimney
// Patented chimney system effectively cools the pump, achieving maximum efficiency throughout its lifespan
// Pump electronics thermally separated from heated areas

07 Plate heat exchanger in different designs (copper solder and stainless steel)
// Stainless steel for all levels of drinking water quality according to the Drinking Water Directive
// Copper-soldered version up to 500 µS/cm el. conductivity can be used

08 Measuring track in accordance with vortex principle
// Innovative, patented measuring method from 1.6 l/min

09 Pressure relief valve
// Integrated 10 bar membrane pressure relief valve

10 Quarter turn stop valve
// Stop valve with actuator in cascade units for automatically executing cascade rotation
// Single stations are switched in and out of operation according to demand so as to balance the capacity of all cascade units

11 Insulation shell
// Hot and cold areas strictly separated, minimising effects of heat loads on cold water detrimental to hygiene

KTS product video

KTS Water Heater

Technical data and accessories

	M station	L station
PWH flow rate[1)]	1.6 l/min - 75 l/min	1.6 l/min - 120 l/min
PWH temperature	30 - 70°C	30 - 70°C
Thermal disinfection	70 - 90 °C	70 - 90 °C
Max. performance[1)]	262 kW	418 kW
Dimensions H1 x L1 x D1	749 mm x 550 mm x 388 mm	749 mm x 550 mm x 388 mm

[1)] Values are based on storage temperature of 80°C and hot water temperature of 60°C

	Copper solder	Copper solder	Stainless steel	Stainless steel
	M station	L station	M station	L station
Single unit	9152010100	9153010100	9252010100	9253010100
2-stage cascade	9152000200	9153000200	9252000200	9253000200
3-stage cascade	9152000300	9153000300	9252000300	9253000300
4-stage cascade	9152000400	9153000400	9252000400	9253000400
5-stage cascade	9152000500	9153000500	9252000500	9253000500

Water Heater temperature sensor set

Part No.	9160202100

KHS Flush Point 230 V

Part No.	6840401500

Gunmetal sampling valve

Part No.	1870000600

BACnet gateway for Water Heater

Part No.	9160202200

3-way valve, DN 32 to DN 50

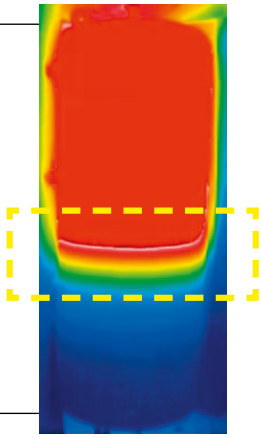
Part No.	**DN 32**	9160203200
	DN 40	9160204000
	DN 50	9160205000

3-way valve DN 65 to DN 80

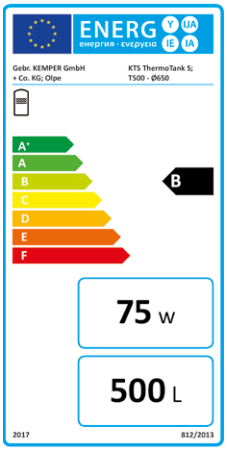
Part No.	**DN 65**	9160206500
	DN 80	9160208000

KTS ThermoTank

KTS ThermoTank



Thermographic image of the KTS ThermoTank



Energy efficiency label for KTS ThermoTank in accordance with EU Regulation 812/2013

Benefits at a glance

// Enhanced energy storage innovations thanks to KEMPER's expertise

// Load and unload KTS ThermoTanks with low turbulence and mixing action thanks to specially developed baffle plates

// Generous sizing and number of connections

// Power-to-Heat ready: heating elements can be integrated (Figure 965)

Technical data and accessories

KTS ThermoTank S buffer tank with baffle plate

Type	Volume (l)	Tilted size (mm)	Ø without insulation (mm)	Ø with insulation (mm)	PN 6, Figure 960 (part no.)	PN 10, Figure 970 (part no.)	PN 6[2], Figure 965 (part no.)	Standby heat losses (W)	EEC[3]
T500 S	500	1700	650	850	9600050000	9700050000	9650050000	75	B
T850 S	850	2250	750	950	9600085000			101	C
T1000 S	1000	2250	790	990	9600100000	9700100000	9650100000	110	C
T1001 S[1]	1000	2050	850	1050	9601100000			118	C
T1500 S	1500	2400	1000	1240	9600150000	9700150000		143	C
T2000 S	2000	2450	1100	1340	9600200000			160	C

[1] like T1000 S, but overall height reduced by 210 mm.
[2] Buffer tank with three additional, connections for electric heating elements with an offset arrangement.
[3] EEC = energy efficiency class according to EU Regulation No. 814/2013

KTS connection sets for ThermoTank	When using a 3-way valve	When not using a 3-way valve
500 l	9550501000	9550601000
850 l / 1000 l	9550502000	9550602000
1500 l / 2000 l	9550503000	9550603000

Existing installations on customer sites

Our new KTS water heater in use

Hospital Lüdenscheid-Hellersen

Design	2023
Building type	Hospital
Product group	KTS

Paulmannshöher Strasse 14
58515 Lüdenscheid

// 900-bed capacity
// 30 treatment departments

Ward block: 5-stage cascade L stations
Treatment: 3-stage cascade M stations

VAMED Hospital Hagen-Ambrock

Design	2022
Building type	Hospital
Product group	KTS

Ambrocker Weg
58091 Hagen

// 250 rehab patients
// 88 intensive care beds

Hospital and residential homes:
4-stage cascade L stations

Roche Real Estate Mannheim GmbH

Design	2022
Building type	Pharmaceutical industry
Product group	KTS

Sandhofer Strasse 116
68305 Mannheim

// Series-type shower systems for 60 employees

Industrial plant changing area:
2-stage cascade M stations

OTTO FUCHS KG

Design	2023
Building type	Industrial plant
Product group	KTS

Derschlager Strasse 26
58540 Meinerzhagen

// Series-type shower systems with 13 showers

Industrial plant changing area:
M single station

You can find more examples of
our building technology in use at:

Service and consultation

To adjust water heating systems for optimal energy usage and costs, the building needs to be considered as a whole. Not only the domestic hot water system, but the heating system as a whole is important for this.

Consultation and design support
Get in touch with our field sales team. We can support your design process to help you plan your KTS system in line with the relevant standards.

www.kemper-group.com/en-en/company/contact/

KTS Webtool
Do you already know the KTS Webtool? From now on,
KEMPER water heater can be sized online in just a few clicks.

https://kemper.pdod-tools.de/en/kts

Service hotline
If you have any technical questions or need troubleshooting, on-site service or commissioning services please get in touch with our service hotline.

Tel: +49 2761 891888 | serviceGT@kemper-group.com

Notes

KEMPER

DRIVING PROGRESS

KEMPER UK & Ireland Limited
Office Address
2 Ripple Court Brockeridge
Brockeridge Business Park
Twyning / Tewkesbury
Gloucestershire, GL20 6FG
Great Britain

Tel. +44 1684854932
sales@kemper-group.com
www.kemper-group.com/en-uk/

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