


E

HOT WATER GUIDE
FOR HOUSE CONSTRUCTION

Efficient decisions.



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What hot water requirement [Page 8-9](#)

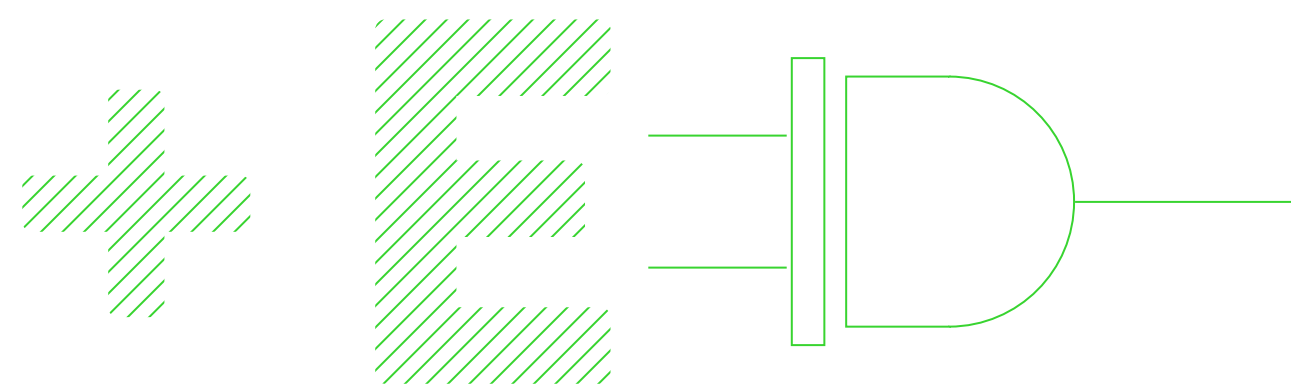
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What goes into the new house? **Building a house means making the right decisions in good time.** One of them we want to make simple for you. **Your hot water supply!** Comfortable, efficient and future-oriented. How? **With electric instantaneous water heaters!**



↑
E-mini instantaneous water heater
for washbasins

↑
E-compact instantaneous water heater
for the kitchen

↑
E-comfort instantaneous water heater
for shower and bath



1.

Electricity is getting “greener”

Renewable energy is steadily gaining importance, many areas of our daily life are electrified, we drive e-cars and e-bikes. Why not use regenerative energy for the hot water supply instead of limited fossil fuel sources? Almost half of electricity is already renewable.

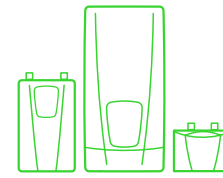


2.

Separating heating and hot water

The heating requirements of buildings are steadily decreasing. And providing 60 degrees Celsius only for hot water is a waste of energy. So it seems to make sense to separate the two systems.

Why actually use electricity for hot water generation?



3.

Electric instant water heaters are the future

They are comfortable, space saving and offer instantly hot water. They heat the water to the desired temperature only when needed. Storing and distributing hot water in the house with inevitable heat loss is completely eliminated.



4.

Sustainable, efficient and economical

This means not generating losses and producing only what is actually needed. For this, we rely on green electricity!



5.

Replace old devices and plan for new ones

So what are you waiting for? Become an energy saver and update your outdated technology. Include electric instantaneous water heaters when you start planning your next bathroom remodelling project.



Watch the company film:



We are thought experts in the field of decentralised hot water supply. The “E” in CLAGE is accentuated because it stands for efficiency! This is what we stand for as an owner-operated industrial company for more than 70 years. Our electric instantaneous water heaters are developed and produced in Lüneburg. Design, high comfort and an economical operation distinguish the devices. Highest quality standards are ensured in our modern production.




6.

We are the specialist



Made in Germany

What is the hot water requirement in the house?

			
→ 2 min	— 4 l/min	— 35°C	
	→ 5 min	— 8 l/min	— 38°C
	→ 12 min	— 10 l/min	— 40°C





Shower and bathroom



On average, we shower for 3–5 minutes, even though the process usually seems much longer to us. Here, too, we quickly want the personal “feel-good” temperature: just open the tap, without long setting and mixing.

Would you have thought that?



One person consumes about 40 liters of hot water per day. With instantaneous water heaters, that's about 400 kWh per year, since no losses are generated.

			
→ 2 min	— 5 l/min	— 48°C	



Kitchen

At the kitchen sink, the need for hot water is manifold. Washing a pan, filling a glass of water, washing hands before preparing food, or cleaning fruit and vegetables. These are applications in the kitchen. With E-compact instantaneous water heaters, you can get your desired temperature at the touch of a button without mixing of cold water. In addition, E-compact instantaneous water heaters are also space-saving and therefore easy to install under the sink.

			
→ 20s	— 2 l/min	— 35°C	

Washbasin



Most washbasins can be supplied by the other instantaneous water heaters. In the case of remote taps, e.g. in guest toilets, it makes sense to use a E-mini instantaneous water heater. It supplies the washbasin at the right temperature, hygienically and comfortably.

Which hot water supply would you choose?

Take a look at the comparison



Long water lines

Central

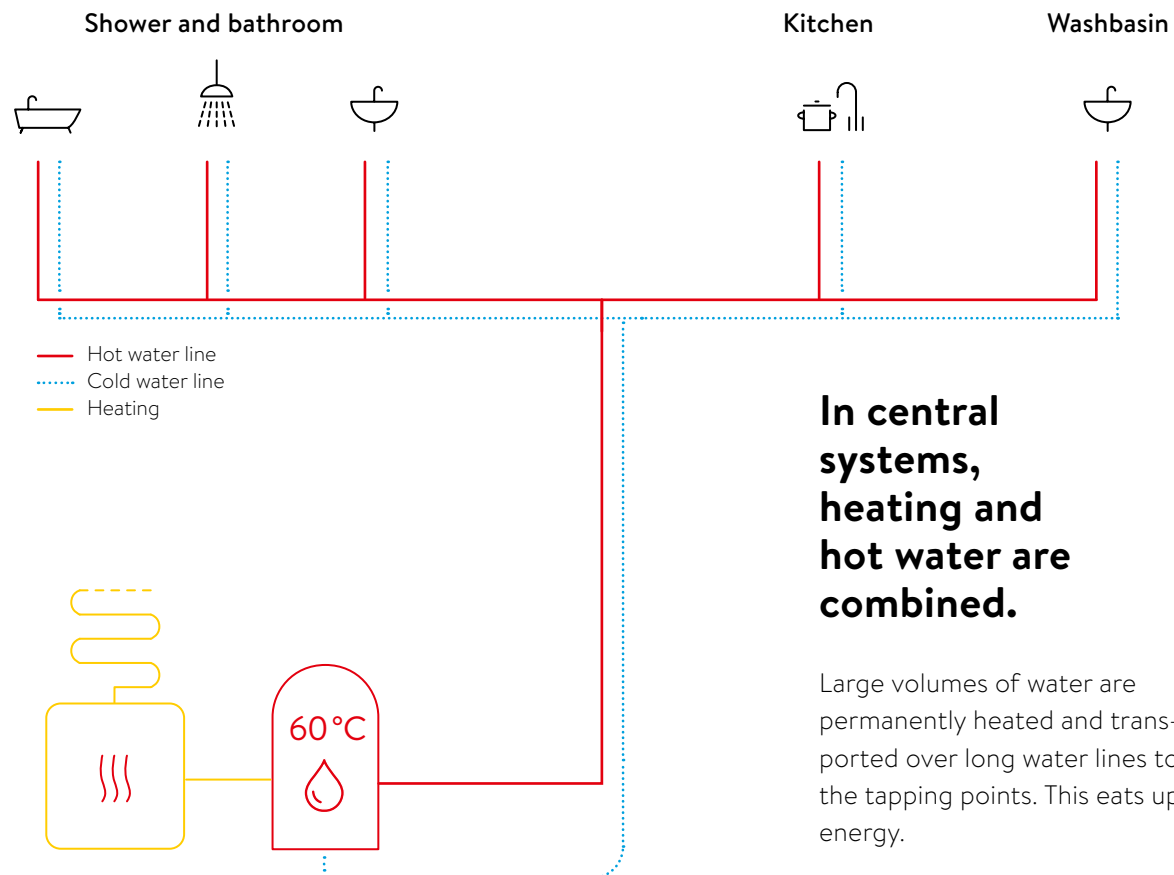
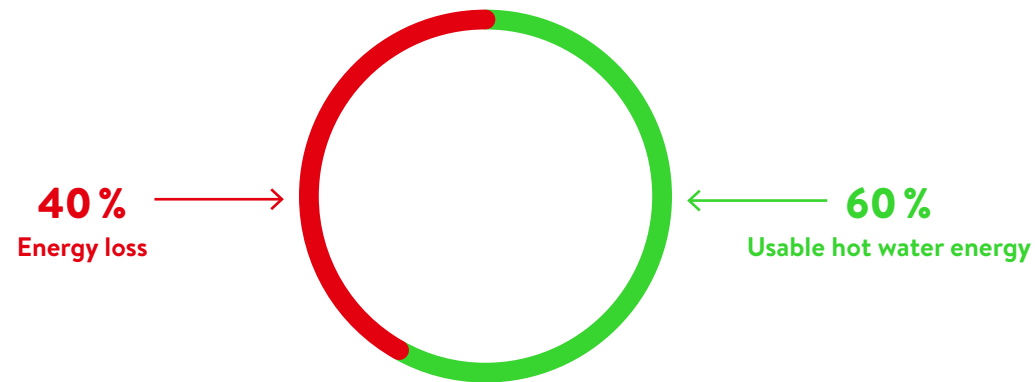


Short water lines.

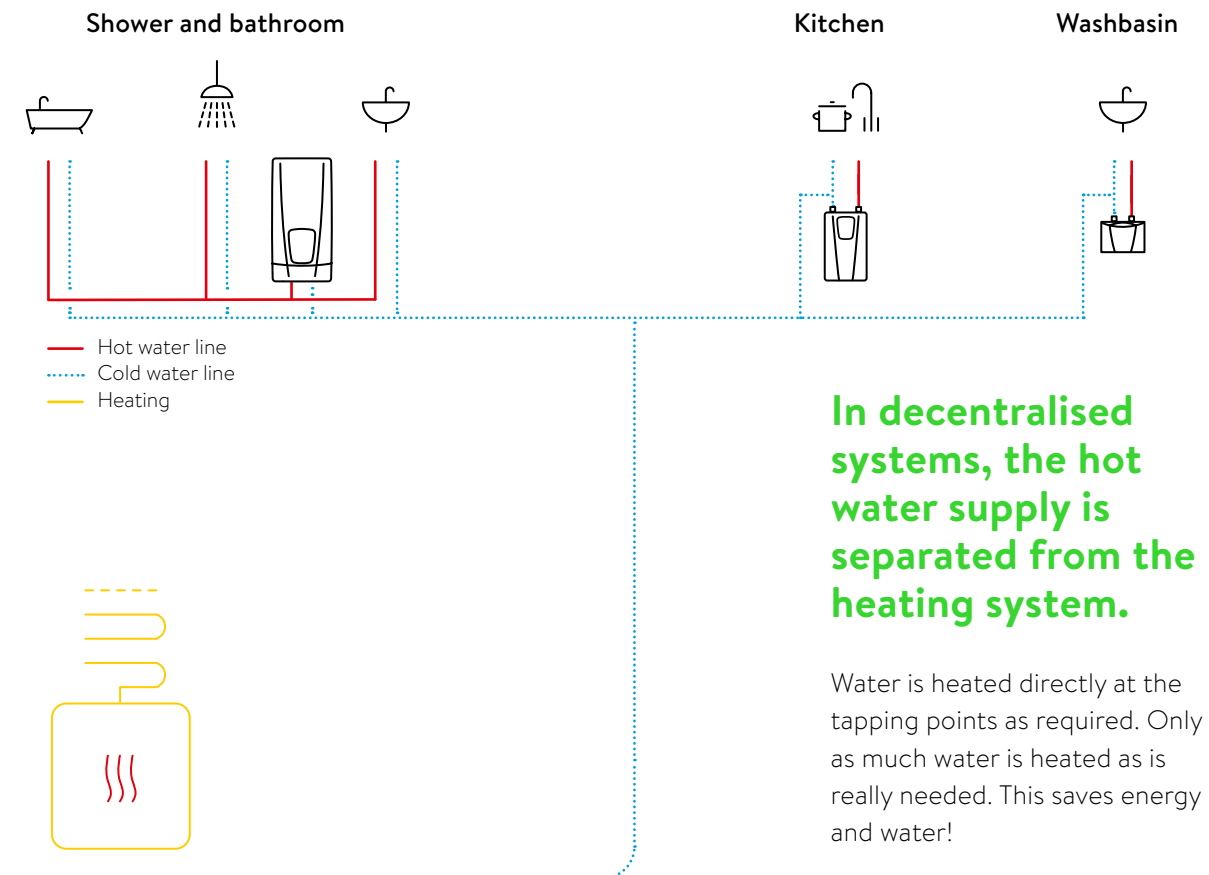
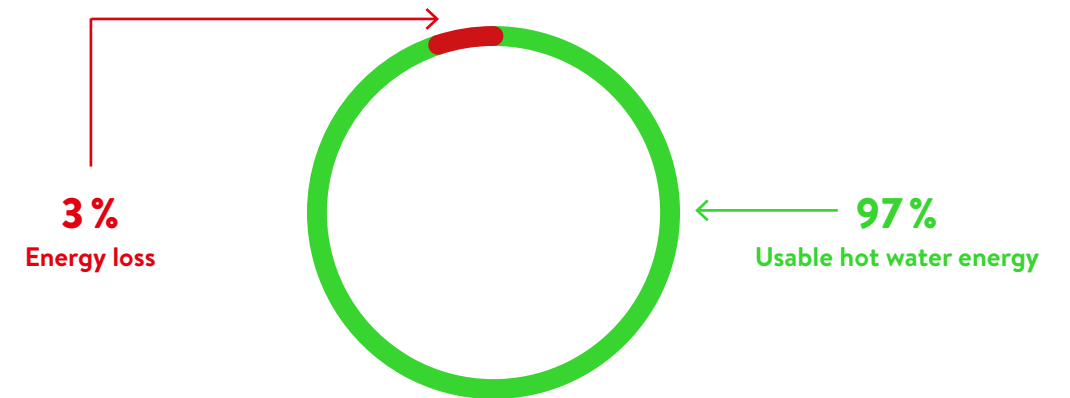
Decentral

The materials shown are only to be understood as examples for use in a single-family home. The amount and choice of materials to be installed depends on the individual requirements and the size of the property.

Central – with high energy losses.



Decentral – energy efficient.

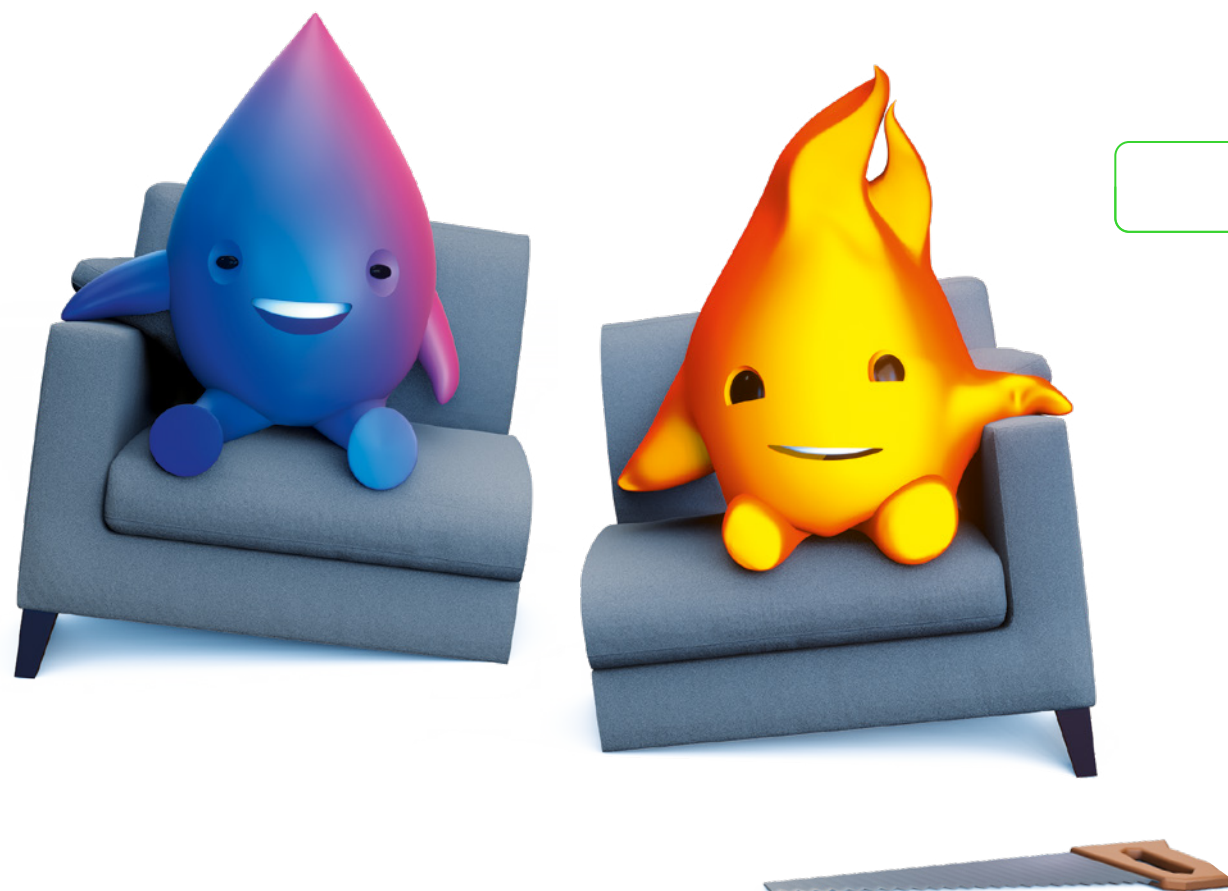


Rethink now! Separate heating and hot water.

In the past, a central gas heating system was used for heating and hot water with the support of solar thermal energy. This required a gas connection and chimney. The boiler room had to be made larger, long waterways with circulation lines had to be run through the house for the hot water supply, and a large hot water buffer tank was needed. Gas heating also had to be used in the transition period or in the winter months when the solar thermal energy was insufficient. The provided hot water temperature

of 60 degree was far too high for normal use and the user had to mix cold water. In addition, the central heating could not be switched off in the summer due to the need for hot water. Today we question if all this is necessary. It is advisable to look at the actual use of hot water (see page 08).

Decentralised hot water supply with electric instantaneous water heaters is the solution! Heating and hot water just don't fit together!



On the road to climate neutrality.

And one more thing: The heating requirement of the building stock in Germany is steadily decreasing as a result of energy-efficient new construction and renovation. Another reason to separate heating and hot water from one another. This saves installation costs since no long hot water lines have to be laid and the heating system can be designed significantly smaller. Instantaneous water heaters heat only the water that is actually needed directly at the point of use.

The room heating runs separately with lower temperatures e.g. via a heat pump. **This makes buildings independent of fossil fuels – an important step towards climate neutrality.**



For kitchen, shower and bathroom
E-module instantaneous water heater
ISX

ISX. Hidden in the wall.



3D view

Installation options can be found on page 25



For the future of modular construction. You can't see, but you can feel. The ISX was developed as a fully electronically controlled instantaneous water heater. The ISX is designed for concealed/pre-wall installation and is equipped with state-of-the-art electronic safety systems. The smart device can be integrated into the building and energy management system via Modbus RTU / REST API. In this way, the ISX acts as an actuator in the higher-level system. If required, the power consumption of the ISX can be variably influenced. Of course, your ISX can also be easily controlled by remote control or smartphone.



ECO
Fosters energy-saving behavior



Integrated Modbus interface



Integrated Wi-Fi function



Solar-ready, suitable for reheating



Smart Control ready

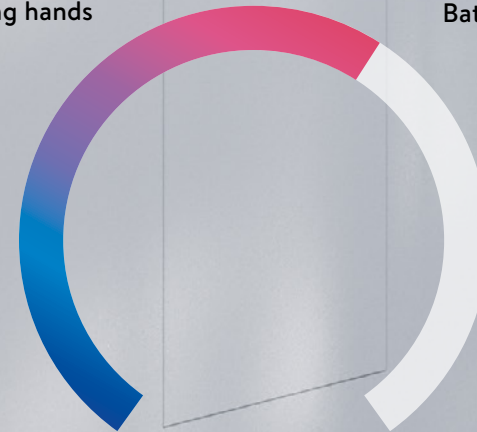


Bluetooth remote control (included)

35 °C
Washing hands

38 °C
Showering

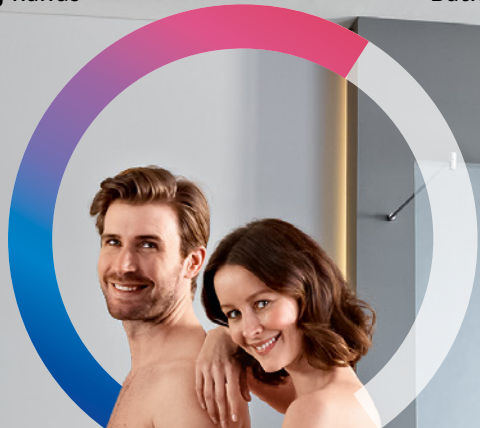
40 °C
Bathing



35 °C
Washing hands

38 °C
Showering

40 °C
Bathing



**No lengthy mixing,
shower right away.**

For shower and bathroom
E-comfort instantaneous water heater
DSX Touch



3D view

Installation options can be found on page 25

E-comfort instantaneous water heaters are suitable for any type of bathroom and heat the water energy-efficiently and comfortably.

A wonderfully warm shower or a soothing bath are a real pleasure, especially when unlimited hot water is available exactly at the desired temperature. The DSX Touch as a fully electronically controlled instantaneous water heater offers this comfort with low energy consumption. One “touch” is all it takes for the water to be at the right temperature – in seconds and without adding cold water.



Watch the spot

- Fosters energy-saving behavior
- Integrated Wi-Fi function
- Solar-ready, suitable for reheating
- Smart Control-ready
- Bluetooth remote control (included)

At the kitchen

E-compact instantaneous water heater
CFX-U

Don't wait any longer, wash up now.

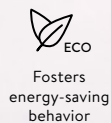


3D view

Installation options can be found on page 24



Our E-compact instantaneous water heaters make washing dishes, hands and cleaning fruit or vegetables comfortable by setting the optimum temperature. The CFX-U is the smart solution for energy-efficient hot water supply to the kitchen sink. The compact unit is installed under the sink to save space. This avoids distribution and heat losses. The remote control allows convenient temperature setting. The desired temperature can be preselected cost-efficiently and with degree precision.



Solar-ready, suitable for reheating



Smart Control -ready



Bluetooth remote control (included)



Watch the spot





35°C
Washing hands

Wash your hands and save energy.

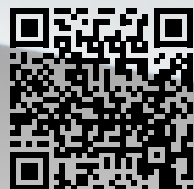
At the washbasin
E-mini instantaneous water heater
MCX



3D view

Installation options can be found on page 24

What do you do if you have a guest toilet in the house, which is far away from other taps and still needs to be supplied with hot water efficiently? Of course we have something for you too! E-mini instantaneous water heaters are energy savers and the efficient hot water solution at the washbasin. The water is not preheated, but heated directly at the sink. Wash hands quickly and easily at the perfect temperature. The MCX is also available as a set with a touchless tap - for optimal hygiene and comfort.



Watch the product video



Smart Control -ready (optional)



Solar-ready, suitable for reheating



Bluetooth remote control (optional)

Concealed installation. Easy to use.



Space saving!
Fits under any sink:
29 × 18 × 11 cm



E-compact instantaneous water heater CFX-U.
In the kitchen, the compact unit disappears into the kitchen base cabinet thanks to its flat design. The temperature can be comfortably set via remote control or “Smart Control” app.



E-mini instantaneous water heater MCX.

Almost invisible! E-mini instantaneous water heaters are installed directly under the sink and are not visible from eye level. The units can also be installed in base cabinets to save space.



Tiny!
Hides under any basin:
19 × 14 × 9 cm



E-comfort instantaneous water heater DSX Touch.

One bath and many possibilities. E-comfort instantaneous water heaters are suitable for almost every bathroom. Whether on the wall at eye level, discreetly in the lower wall area for even shorter water lines, hidden in bathroom furniture or behind an inspection flap – the devices comfortably supply washbasins, showers and bathtubs.



Really slim!
Has space in every bathroom:
47 × 24 × 10 cm



E-module instantaneous water heater ISX.

You see nothing. The ISX is installed in the pre-wall, in the utility room, in the service duct, or in the basement. More space for designing your rooms. The ISX can be operated by remote control, Smart Control application or via Modbus RTU or REST API through the building technology. For the future of modular building. You can't see it, but you can feel it.

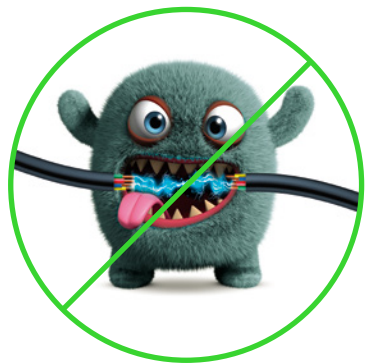


Hidden installation!
More space for designing your rooms:
40 × 28 × 10 cm



Via smartphone or tablet. Our innovation for modern hot water control! The energy-saving instantaneous water heaters are installed concealed and the temperature can be comfortably regulated by smartphone, tablet or voice control. Individual consumption values can also be displayed. With the “Smart Control” app for iOS and Android, the entire hot water supply in your home can be controlled digitally.

Calculated! No power guzzlers.

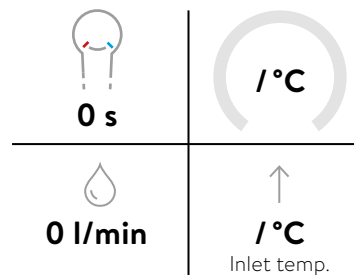


A day with
hot water

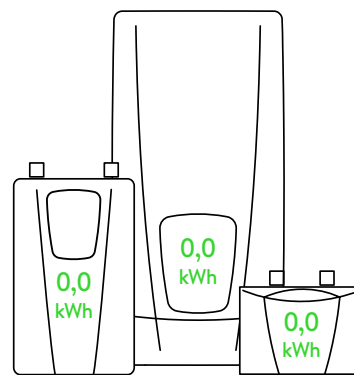
Thanks to flow heating, no warm water is stored, but heated directly in the flow. Advantage: Unlimited use at the optimal temperature.

Sleep mode

Instantaneous water heaters have no energy losses due to circulation, distribution and storage of the water. But the devices are always ready!

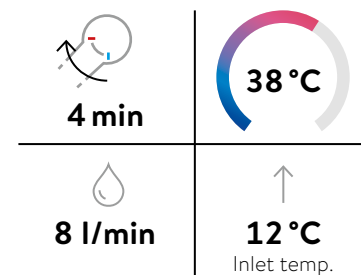


No power consumption

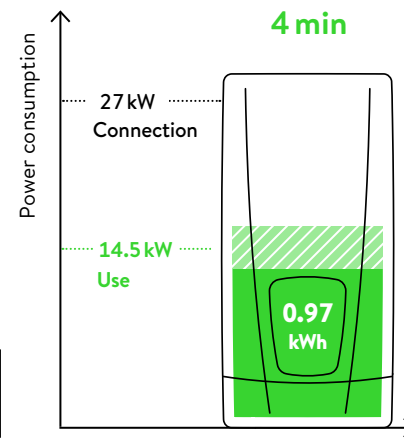


+ Showering

Simply select desired temperature and set the lever to full temperature. The energy consumption depends on the inlet temperature, the desired temperature and the flow rate!



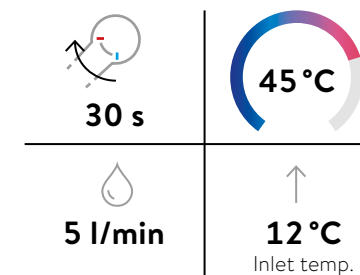
1 x daily
4 min



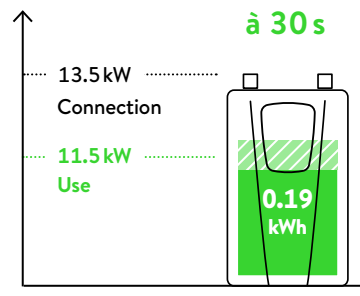
Usage time
 $8 \text{ l/min} \times 4 \text{ min} \times 1.163 \times 26 \text{ K} = 967 \text{ Wh} = \mathbf{0.97 \text{ kWh}}$

+ Washing up

The device is waiting under the sink to be used. Regardless of whether it is a short pre-wash or a complete wash-up – the E-compact instantaneous water heater is always ready.



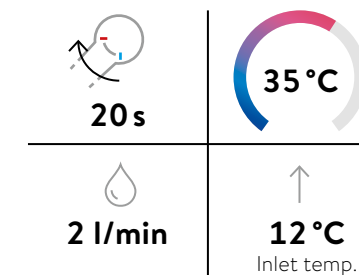
2 x daily
à 30 s



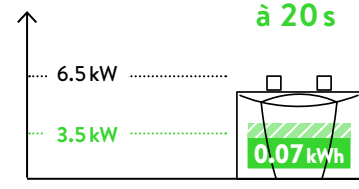
$5 \text{ l/min} \times 0.5 \text{ min} \times 2/d \times 1.163 \times 33 \text{ K} = 191 \text{ Wh} = \mathbf{0.19 \text{ kWh}}$

+ Washing hands

Even in the distant guest toilet, the E-mini instantaneous water heater provides hot water immediately.



4 x daily
à 20 s



$2 \text{ l/min} \times 0.33 \text{ min} \times 4/d \times 1.163 \times 23 \text{ K} = 71 \text{ Wh} = \mathbf{0.07 \text{ kWh}}$

Total Hot water consumption per person

40 l warm water per day

1.23 kWh per day

x

330 days

=

406 kWh per year



Calculated! No effort.



Less investment

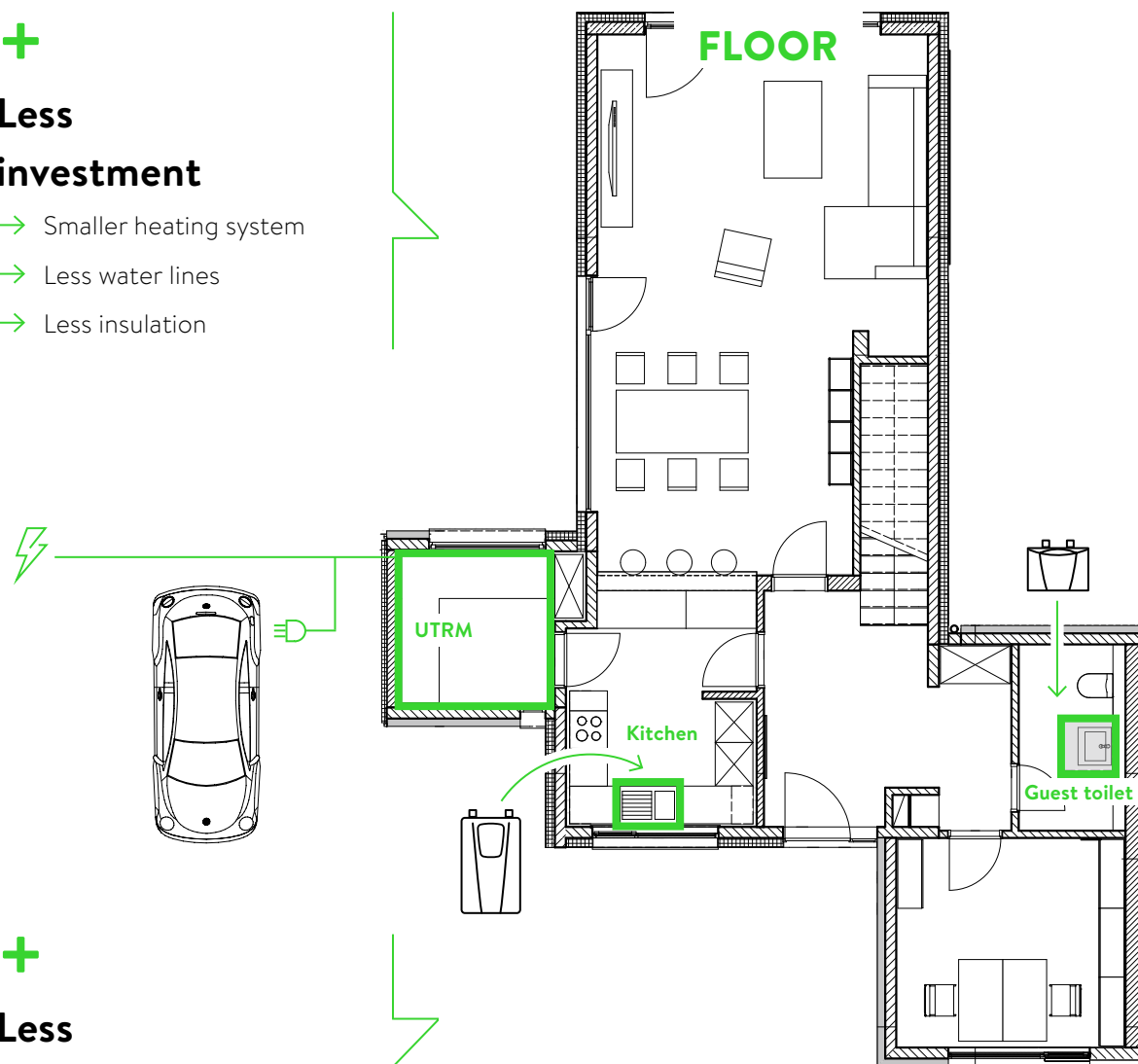
- Smaller heating system
- Less water lines
- Less insulation



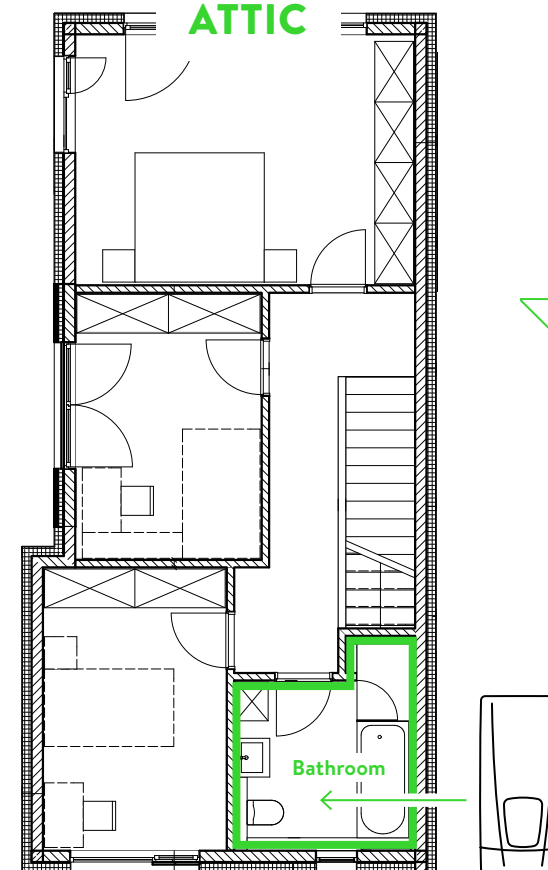
Less space

- Large storage tank not required
- Use utility room for other things

GROUND FLOOR



ATTIC



Avoid long long water lines

- Installation directly at the tap
- No circulation line from the utility room (UTRM) to the tap.
- No waiting, instantly at the right temperature
- No “fiddling” with the tap, no mixing of hot water



Availability

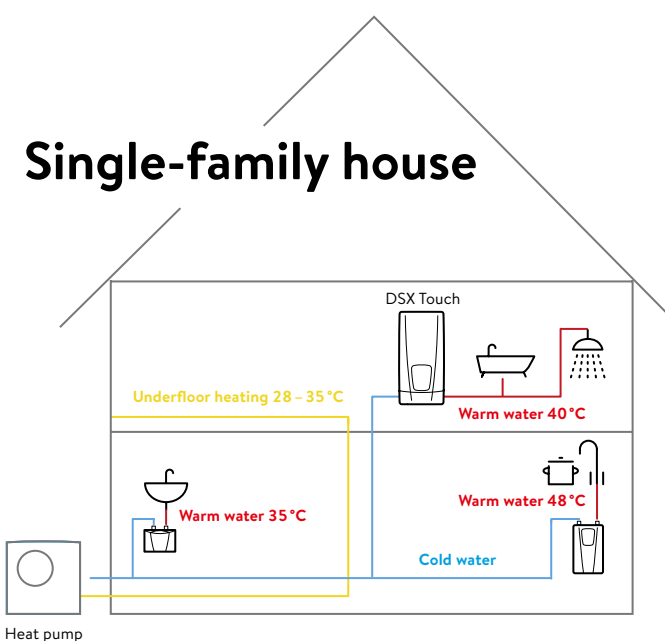
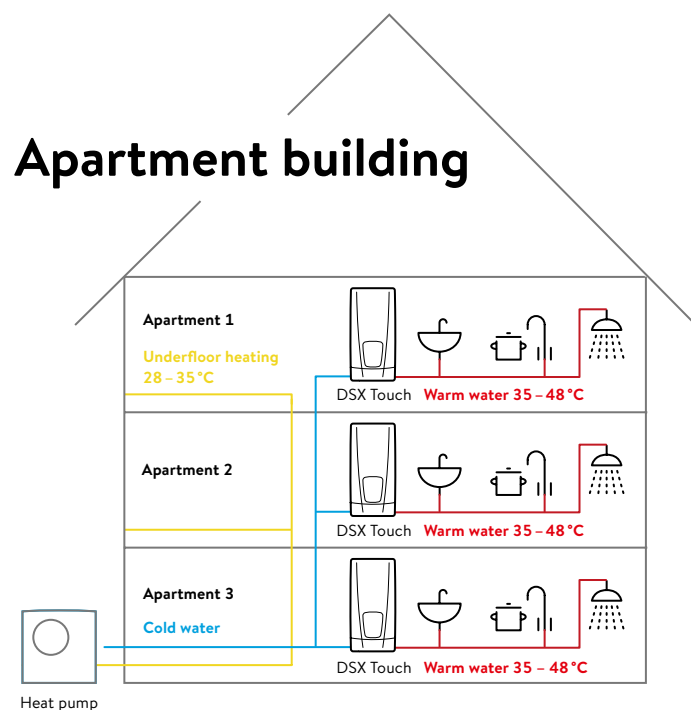
- Available all year round, even if the heating is switched off in summer
- No matter how long you shower



No problem with the E-installation!

- When using heat pumps, e-cars, etc., $3 \times 63A$ are common in single-family houses (apartment buildings $\geq 3 \times 80A$) and are also completely sufficient for instantaneous water heaters.
- In general, the electrical connection is not a problem for the electrician.
- Even in larger buildings, a number of instantaneous water heaters can be installed.
- The simultaneity factor is low due to the short usage times!

Do you Of course also for also use state electric instantaneous water heaters subsidies?



Federal funding for efficient buildings in Germany.

Overall measures to an efficient house

(new construction and renovation)

Within the overall measures, the electric instantaneous water heater is part of the building concept. Various efficiency house levels with decentralised hot water supply via electric instantaneous water heater are possible. A system combination to achieve high standard is, for example, an air-to-water heat pump for heating, one (or more) electric instantaneous water heater(s) for hot water, a ventilation system with heat recovery and a photovoltaic system with battery storage system.

Individual measures

(renovation)

Individual measures relate to renovation, e.g. replacement of the heating system. If the heating system is replaced, the decentralised hot water supply via electric instantaneous water heaters is also eligible for funding, e.g.:

- > **35% subsidy** when replacing an old gas heating system with a heat pump with electronically controlled instantaneous water heaters.
- > Even **50% subsidy** when homeowners replace a heating system that is at least 20 years old with a modern heating system.

Source: KfW 2024.

BEG - Systems for heat generation. Status 01/24

The trend is towards instantaneous water heater!

In existing buildings, hot water is often still supplied by a fossil-fuelled gas heating system. In this centralised system, hot water is stored in the utility room. The distribution to the individual taps starts from here. For reasons of convenience, a circulation line is often installed. The permanent storage and distribution of hot water causes high energy losses.

In a decentralised system, hot water is produced close to the taps, just in time, and directly at the desired temperature. To reduce dependence on fossil fuels and to reduce energy losses and costs, it is also worthwhile to retrofit the hot water supply in existing buildings by decoupling it from

the central heating system and using instantaneous water heaters as a low-investment measure.

Switching to decentrally installed instantaneous water heaters makes you independent of fossil energy sources and saves on operating costs. The German Building Energy Law (GEG) regulates that 65% of heating systems should be powered by renewable energies in future. Electric instantaneous water heaters from CLAGE fulfil these requirements for hot water preparation without additional measures! Compared to heat pumps, the use of instantaneous water heaters is easy to realise and requires little investment. *See comparison on the right.*

There are many options:

The choice of which system is used for space heating remains open in terms of technology. According to the GEG, a variety of energy-efficient system combinations are possible, e.g:

- > Connection to a (district) heating network
- > Installation of an electric heat pump
(e.g. air-to-air heat pump, air-to-water heat pump, brine-to-water heat pump, water-to-water heat pump, ground source heat pump, hybrid heat pump)
- > Installation of direct electric heating in buildings with low heating requirements
(e.g. infrared heating, heating mats, heating panels, underfloor heating, radiators, etc.)
- > Installation of biomass heating
- > Installation of hybrid heating
(combination of heating with renewable energies and gas or oil boiler)

- > Heating based on solar thermal energy
- > Installation of gas heating
(with conditions)

The advantages:



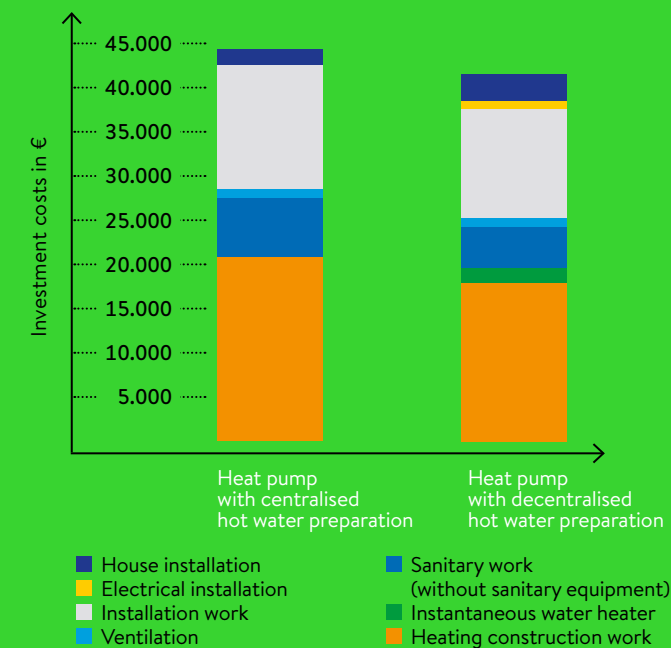
- > The heating system can be designed smaller and works more efficiently if electric instantaneous water heaters heat the water separately to the desired temperature.
- > Up to 40% energy can be saved!
- > The heating system can be switched off in the summer.
- > Higher annual COP (Coefficient of Performance) of the heat pump and increased efficiency when combined with electric instantaneous water heaters
- > Electric instantaneous water heaters are subsidised under the subsidy programme.

*The comparison of operating costs was based on the example of the „Wohnen am Oelzpark“ property. Only the hot water supply with guest WC, kitchen sink and bathroom was analysed.

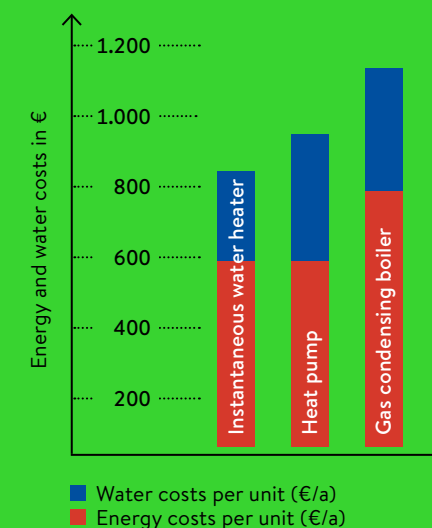
Profitability comparison

Centralised and decentralised water heating in a single-family house

Investment cost comparison



Comparison of operating costs*

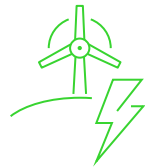


GEG –
Have you heard?
In the future, **65%** of heating systems should be with renewable energies powered by renewable energy.



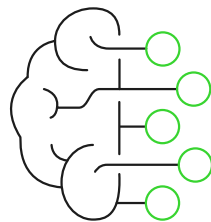
When heating and hot water are separated, then it works!

The advantages at a glance!



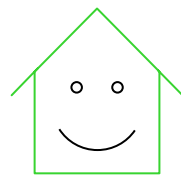
More green electricity, less CO₂

The amount of renewable energy in the electricity mix is growing as CO₂ emissions which are generated by burning fossil fuels are reduced. A decentralised hot water supply reduces CO₂ emissions by up to 35% compared to centralised gas or oil systems.



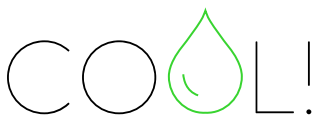
Always smart

Electronically controlled instantaneous water heaters react technology-based and without a learning phase exactly to the user's demand (real-time power control based on temperature needed and water volume).



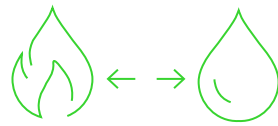
Use funding

The future belongs to electric instantaneous water heaters, so you can benefit from various government subsidy programs.



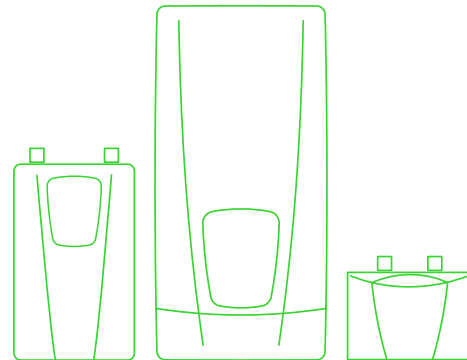
Conserving water

That's pretty cool, right? No wasted water. Hot water is immediately available with electric instantaneous water heaters. It is not necessary to run water for a long time or mix cold water and too hot water to obtain the desired temperature. In centralised systems with 15 metres long water lines, for example, about 4.8 litres of water are wasted.



Downsize space heating

Instantaneous water heaters make it possible to separate heating and hot water. In this way, you can also design your heating system smaller and also save on investment and consumption costs.



Climate-neutral production

CLAGE has always focused on sustainable products and environmentally friendly actions. Since 2021, the devices have been produced completely climate-neutrally according to Scope 1 + 2.



Short water lines

Electric instantaneous water heaters are installed directly at the point of use. Long water lines are avoided. Water is heated more quickly and there is barely any heat loss.



Energy efficiency

Electric instantaneous water heaters only heat the amount of water to the desired temperature that is currently required. Adding cold water to reduce the temperature is not necessary. The water is no longer preheated and stored in large amounts. That saves energy. Energy monitoring, real-time "eco" feedback, and the power save function also encourage energy-saving user behavior.

Precise

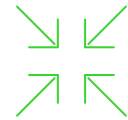
Comfort in ideal temperature

On many units, each user can set his or her individual temperature preference precisely. Directly at the unit, by remote control or via app. This also provides more security by avoiding scalding accidents.



Lowering costs

Electronic instantaneous water heaters use up to 85% less energy than conventional storage heaters.



Space saving

With their small dimensions, Instantaneous water heaters fit everywhere. They also save a lot of space that a buffer tank would take up in a central system.



Instantly hot water

As soon as you open the tap, the water flows with your desired temperature. The water is only heated in the amount and for the time you actually need it. Due to short water lines and modern technology.

More hygiene

Electric instantaneous water heaters heat up the cold water to the perfect temperature within seconds, directly at the tap, as it flows through the unit. The heated water is used immediately and unused water is avoided in the water line systems. This is what makes decentralised water heating more hygienic and efficient.

Questions and answers.



What do I have to look out for in new construction and renovation?

For a climate-neutral building stock in 2045, fossil fuels such as oil and gas should be avoided and energy losses should be reduced to a minimum. Electrical house heating technology is suitable for this, such as the combination of a small heat pump for low heating requirements and electric instantaneous water heaters for hot water supply without losses.

What does climate-neutral mean?

A building is climate-neutral if it does not influence the climate through its operation, i.e. no greenhouse gases are emitted or these are fully compensated for.

What contribution can a decentralised hot water supply make?

Instantaneous water heaters make their contribution to the energy transition through energy efficiency. Only the warm water that is actually needed is produced. It couldn't be more efficient! The devices are small and can be installed close to consumption. Depending on your needs, an electric water heater supplies the bathroom, for example, and another device the remote kitchen sink. The temperature is selected individually to the degree by remote control or voice control. Since the heating is no longer required for the hot water supply, it can be designed smaller and only needs to provide low flow temperatures. And instead of a solar thermal system for heating and hot water, a photovoltaic system for electricity generation can be better installed on the roof. Because electricity is always needed.

Is electricity as an energy source climate-friendly?

Electricity is becoming increasingly climate-friendly due to the rising share of renewable energies. Did you know that the proportion of renewable energies in the electricity mix is currently already more than 50%? If you want to be climate-neutral ahead of time, you can switch directly to a green electricity contract. Those who already rely on electricity as an energy source make themselves less dependent on fossil fuels and their building almost climate-neutral by 2045. The electric instantaneous water heaters from CLAGE are also produced with green electricity!

What does showering with an electric instantaneous water heater cost?

On average, we need about 40 litres of hot water per person per day. With instantaneous water heaters, that's about 400 kWh of useful energy per year. In addition, there is a decisive development: The electricity price is to be further relieved politically in the next few years. At the same time, the rising CO₂ price and the desire for independence from fuel imports are causing price levels on the fossil energy market to rise.



From a hygiene point of view, is decentralised hot water supply advantageous?

Decentralised instantaneous water heaters installed close to the tap are preferable from a hygienic point of view. Decentralised hot water heating avoids long hot water and circulation lines. The water-wetted area is reduced and stagnation is avoided - because water has to flow!

Does the house connection have to be specially adapted?

In general, the modern house connection is suitable for the use of electric instantaneous water heaters. Nevertheless, the design of the house connection should also be checked, for example, with regard to the use of electric heat pumps and the charging time of e-cars. Modern electric instantaneous water heaters are only used for a short time and therefore have only a low simultaneity factor.

Do I also get subsidies

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The federal subsidy for efficient buildings allows subsidies for individual and overall measures in Germany. In many countries the combination of renewable heating systems and decentralised hot water supply via instantaneous water heaters is eligible for funding in new construction and renovation. Please consult your local energy advisor.

And, already +Decided?





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Certified to:

- ISO 9001 : 2015
Quality management
- ISO 14001 : 2015
Environmental management
- ISO 50001 : 2018
Energy management

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