FACTBOOK

Hoval UltraGas® 2

The new benchmark.

Hoval | Responsibility for energy and environment

Hoval UltraGas® 2

On course with future-proof technology.

What does sailing have to do with heating using the UltraGas® 2 gas condensing boiler? Not much, you might think. But is that really true? If we take a closer look, sailing and heating have more in common than it may appear at first. Both require first-class equipment that the user needs to be able to rely on 100% – whatever the situation throws at them. And both are all about having the right expertise and cutting-edge technology, arranged in a compact unit. Keeping all the components in a vessel interacting efficiently with one another is the only way to cross the finish line not just at full speed, but also with environmentally friendly, sustainable credentials. And that's why sailing is like heating with the UltraGas® 2 – in both cases, every single component works in perfect harmony with all the others.
Full speed ahead!

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Top performance guaranteed

Hoval UltraGas® 2 - find out more!

What's the secret to sailing success? Having a crew who are in peak physical shape, making sure the vessel's technology works without a hitch, and never wasting a single movement. All this can make the difference between victory and defeat. Something else that's in peak physical shape is the efficient UltraGas® 2. As the heart of the heating system, it determines the cost-effectiveness of the entire plant – a factor that's more important today than it ever has been. Efficient heat generators represent state-of-the-art technology, which means there is a growing focus on operating heating systems in a way that is economical.

For information on heating distributors, see Factbook TransShare

Hoval UltraGas® 2

Gas condensing boilers.

Natural gas has an excellent environmental footprint compared to other fossil fuels, especially if it is combined with the very latest gas condensing technology. As long as the boiler is connected to the network, heat will always be available – at any time and with zero fuss.
In future, blending hydrogen (H_2) and biomethane in natural gas quality into the existing gas network will further improve the environmental balance sheet.

The sophisticated gas condensing boiler for heating and generating domestic hot water. Floor-mounted with infinitely variable power adjustment and Hoval TopTronic® E system controller. Range of applications: blocks of flats, commercial, office and industrial buildings, schools and sports facilities, hotels, local heating networks – for new buildings and renovations.

Cost-effective operation

The UltraGas® 2 is an impressive product whose minor refinements have a major impact. The innovative Hoval TurboFer® heat exchanger allows for operating temperatures of up to 95 °C. It also has a specially developed heating surface that transfers heat even more effectively than other designs.

The separate high-temperature and low-temperature returns are another way to ensure cost-effective operation. This separation means the heating water is returned to the correct place in the boiler, thus producing optimum water-side temperature stratification inside it. Using the high-temperature and low-temperature returns makes the system more efficient.

Added value for your benefit:

- Cost-effective operation
- Secure investment
- Compact transport and installation dimensions
- Extended 10-year warranty for the boiler body
- Straightforward integration into heating systems

A flow temperature sensor optimises operation of the heating system even further. This sensor records the precise flow temperature, enabling it to improve the control response. The through-flow is more constant and the return temperature is lower. The useful heat is utilised in the best way possible. This boiler's increased efficiency and energy savings of up to 20 % compared to a conventional gas boiler enable it to save the customer money.

Secure investment

The Hoval UltraGas® series has been a success story for over 20 years, with owners all over the world appreciating its durability. The secret to its long life can be found in the high-quality stainless steel used on the water side. The UltraGas® 2 handles even large differences between the flow and return temperatures with no problem at all. Hoval provides an extended 10-year warranty for the boiler body, giving owners the confidence to make a long-term investment in a reliable design.
A sound investment also means flexibility in fuel now and in the future.

The UltraGas® 2 can be used with the following fuels:

- Natural gas E
- Natural gas E with a hydrogen content (H_2) of up to 20 %
- Propane according to DIN 51622
- Biomethane according to EN 16723 (proportion up to 100 %)

Compact

The UltraGas® 2 has compact dimensions, making transport easy. It fits through any standard door. It also scores highly when it comes to integration into the heating system, since it features a large water capacity and the two separate returns for low and high temperature. There is no need for system components such as a circulating pump or a hydraulic separator; installation is simpler and takes up less space. The unit for neutralising the condensate that is produced is compact too.

Hoval UltraGas® 2

Also available as a double boiler.

The UltraGas® 2 double boiler is the perfect solution for very high output requirements, if maximum operational safety is required or if there is not much space available for transport and bringing into position. Double boilers have been designed to work as one functional unit with a shared flue gas line.

Two complete boilers communicate with one another via their TopTronic® E controller and split the job of providing heat between themselves. Both boilers run in partial load operation – an excellent, economical operating state – whereas one boiler operating alone would have to go full throttle. This would increase fuel consumption and shorten service life. If one boiler is being serviced by our service technician, the second one temporarily provides heat on its own until its counterpart is ready for use again.

Not only does the Hoval UltraGas® 2 double-boiler solution offer outstanding energy efficiency and low pollutant emissions, it is also easy to integrate into the entire system from a hydraulic perspective.

And although it provides fantastic performance, it requires very little floor space – a huge bonus point where new buildings and, above all, renovation projects are concerned.

Hoval UltraGas® 2

Megawatt power – as standard.

For new and innovative ideas to come through and work as expected, you always need to start from a basis of experience and well-established concepts. Whether an application involves a shopping centre or a power station, it always requires sophisticated and reliable technology in order to run seamlessly, cost-effectively and in a way that is environmentally friendly. The UltraGas® 2 is a tried-and-tested supplier of heat in this megawatt range too. With the TopTronic® E system controller, up to eight boilers can be connected in a cascade and managed centrally, which means cascades of up to 12 MW can be created if this controller is used in conjunction with the UltraGas® 2.

Low fuel and electricity consumption ensure low energy costs and thus rapid amortisation. If the TopTronic® E system controller is connected to the Internet via HovalConnect, the building technology team can monitor the system remotely and access it from anywhere. The HovalSupervisor control software helps to operate numerous – and technically disparate – systems in a way that is efficient and secure thanks to encryption of the associated data.

Added value for your benefit:

- Easy to bring into position
- Highly efficient
- Operational safety
- Remote monitoring and access
- Large modulation range
- Cascades of up to 12 MW

Hoval UltraGas® 2

Combining innovation with established features.

Launched over 25 years ago, the UltraGas® has been the international benchmark for years now with its condensing technology and patented heat exchanger. It guarantees satisfied customers. Continually developed throughout the intervening years and now featuring a new "heart", the TurboFer® heat exchanger, it is high time this new development was given the honour of a new name: UltraGas® 2.

Grown from strong, reliable roots, the UltraGas® 2 is now setting a new standard: cost-effective – safe – compact.

Innovations:

- Hoval TurboFer® heat exchanger
- Suitable for the regenerative fuels of the future
- Operating temperature of up to 95 °C
- Future-proof digital equipment

Tried-and-tested features:

- Separate high-temperature and low-temperature returns
- Large water capacity
- Ultraclean® combustion
- Vertical heat exchanger concept
- TopTronic® E system controller

Hoval UltraGas®

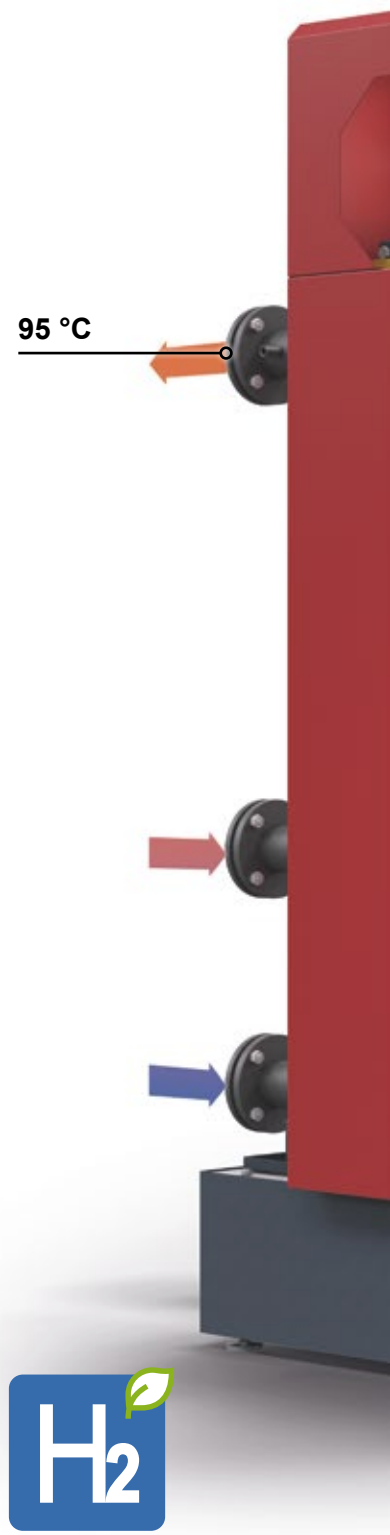
Hoval UltraGas® 2

A look inside
Innovations.

Operating temperature/boiler temperature of up to 95°C with Hoval TurboFer® heat exchanger
The innovative heat exchanger allows for operating temperatures of up to 95 °C, since its specially developed heating surface is able to transfer heat even more effectively than other designs.

Better system efficiency due to an extra flow temperature sensor
The UltraGas® 2 features a duplex sensor for safety purposes. It is positioned slightly above the flow connector in the boiler's water space and serves as a temperature monitor and safety temperature limiter.

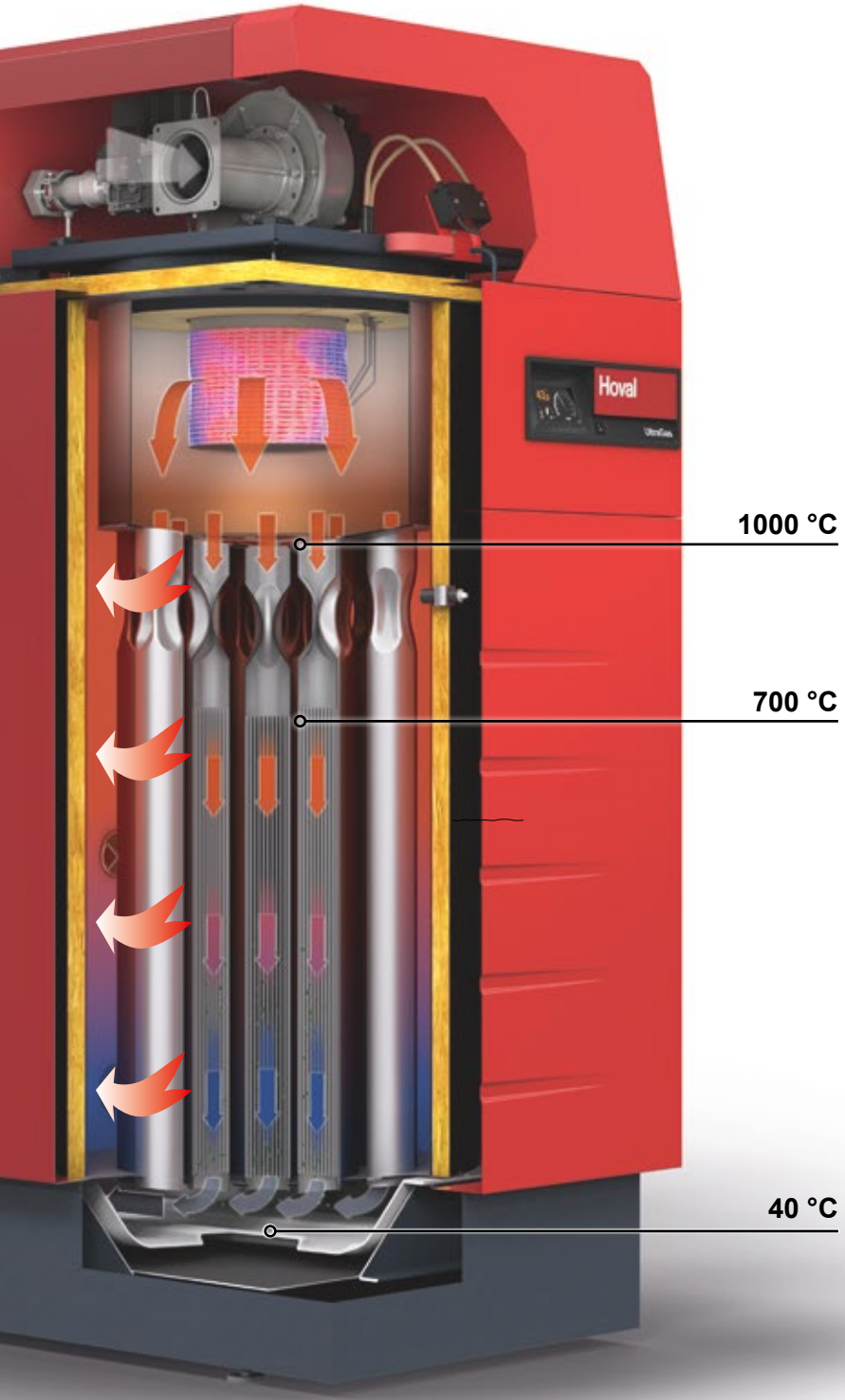
A second temperature sensor (optional) right in the flow itself optimises operation of the heating system even further. It measures the precise flow temperature, which significantly improves the heating system's control response – resulting in a reduced burner operating frequency, a lower flow temperature level and a more constant volume of water flowing through the boiler. For the system operator, this means a system that runs efficiently with low operating costs.



Just like its predecessor, the Hoval TurboFer® heat exchanger has a vertical design, making it different from other heat exchangers. This has a couple of benefits: not only is temperature stratification of the heating water supported, which helps to increase efficiency even further, but the vertical design also enables compact dimensions to be achieved and uses very little floor space.

A secure prospect for the future - suitable for biomethane and hydrogen

The UltraGas® 2 is already suitable for green gas. 100 % biomethane, for example. Moreover, the UltraGas® 2 has the approval certificate for using natural gas with up to 20 % hydrogen added.



Automatic firing device

The automatic firing device is the brain inside the UltraGas® 2. Its software receives information, evaluates it, then issues commands to the burner, for example. It is therefore largely responsible for the operating response. The new hardware provides a whole host of possibilities for new software and digital functions – both now and in the future. It makes life easier for customer service as well.

Hoval TurboFer® heat exchanger with improved heat transfer

To ensure maximum condensation, it is crucial that the hot combustion gas (heating gas) transfers its heat energy to the heating water as quickly and completely as possible. In the UltraGas® 2, this is guaranteed by the patented Hoval TurboFer® heat exchanger. The heat exchanger pipes bring two different heat transfer technologies together. Pipes are pressed together at the top (creating corrugations), thus producing a smaller cross-section in this area. The heating gas speeds up as it flows through these pipes, which then leads to a pronounced swirling effect. The result of all this is more heat being transferred in less space. The tried-and-tested, patented design is once again found in the bottom section – aluminium on the flue gas side, stainless steel on the water side – and delivers top performance that is unparalleled with this technology: blades increase the available surface on the flue gas side five-fold, so more steam is able to condense. Using stainless steel on the water side instead of aluminium extends the service life.

A look inside
Tried-and-tested features.

Large water capacity provides better cost-effectiveness
The UltraGas® 2 does not require a minimum amount of circulating water. There is not usually any need for a feed pump and the low flow resistance allows for the use of a small, energy-saving heating circuit pump. The water stratifies perfectly in the boiler – hot water at the top, cold water at the bottom, with the base of the boiler staying cold. This provides the ideal conditions for condensation to take place and guarantees maximum efficiency at all times. The large water capacity of the boiler acts as a buffer storage tank. This reduces the number of energy-intensive burner starts, leading to lower power and operating costs.

Optimum condensation due to separate high-temperature and low-temperature returns
The UltraGas® 2 also features two separate returns: the high-temperature return at the top and the low-temperature return at the bottom. This allows the return water to flow to the best place, whichever that may be. Temperature stratification in the boiler remains stable. This ensures that the coldest water is always in the bottom section of the boiler. A maximum condensation effect is achieved, while both energy consumption and operating costs are reduced still further.

Condensing technology for maximum efficiency
The condensing technology makes use of a crucial element: condensation. The heating gas contains steam, which stores large quantities of latent energy. When the steam cools to below 57 °C, it becomes liquid (i.e. it condenses). In the process, this latent energy is released and transferred to the heating water.

With the condensation design, the heating gas is cooled from 1000°C right down to 40°C and transfers all of its directly usable heat energy to the heating water. In contrast, low-temperature boilers have considerably higher flue gas temperatures of around 200°C. This means that a lot of the heat energy escapes unused via the chimney. Compared to them, the UltraGas® 2 condensing boiler achieves additional energy savings of approximately 20%.

TopTronic® E system controller for easy integration into systems

TopTronic® E is the standardised system controller for Hoval products. It ensures that systems of this kind interact in the most energy-efficient manner possible. HovalConnect enables the TopTronic® E control system to be accessed online.

Hoval Ultraclean® burner technology with minimal emissions

The UltraGas® 2 combustion system comprises a fan-premix unit, which also controls the output, and the Ultraclean® grid burner. The fan-premix unit produces a finely-tuned, homogeneous gas/air mixture, which is optimised for the subsequent combustion. The output is matched (modulated) to the heat demand using the rotational speed of the fan. This means the burner can run continually in partial load operation and avoid energy-intensive start-stop operation and the associated increase in emissions. Moreover, reducing the speed of the fan lowers energy consumption and means the burner runs very quietly. In the Ultraclean® grid burner, the gas/air mixture is ignited on the surface of a metal fabric and burns gently, virtually without flame. Here, the combustion temperature is consistent and lies within the optimum range for ultra-low pollutant emissions.

System integration

The design of the heat exchanger means the UltraGas® 2 does not require any minimum boiler, return or flue gas temperatures. This makes it simple to integrate into any heating system and is of particular practical value if the boiler needs to be replaced.

Compact down to the smallest detail

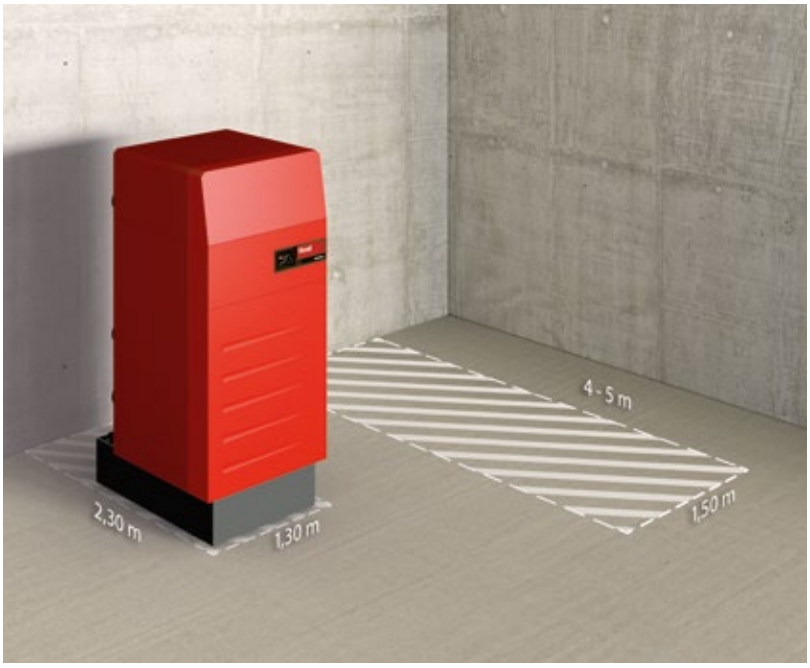
Investing in a small-scale footprint.

Hoval UltraGas® 2

So powerful and yet so small in size.

UltraGas® 2 (125 - 500):
Width for bringing into position smaller than a standard door.

Including its pallet, the width needed to bring the UltraGas® 2 into position measures a maximum of 790 mm. This means that the boiler fits through any standard 800 mm doorway.



UltraGas® 2 (530 - 1550):
Minimum floor space, maximum output

The construction of the UltraGas® 2 as a standing system with upright Hoval TurboFer® heat exchangers reduces the space required to a minimum. The boiler needs less than half the floor space required by common gas boiler units in this operating range. Here's one example of this little space-saving miracle: an output of 1.1 MW needs just 3 m² of space!

Compact dimensions

Delivered and covered.

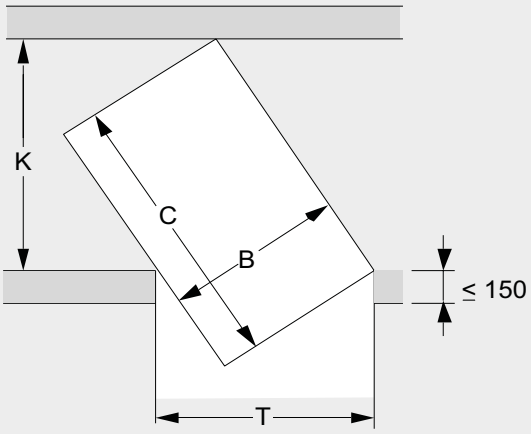
Type	Dimensions for bringing into position		Dimensions with covering	
	View from front	View from left	View from front	View from left
(125) (150)	580	880 / 1765	720	1182 / 1923
(190) (230)	680	980 / 1818	820	1256 / 1968
(300) (350) (400) (500)	790	1330 / 1777	930	1632 / 1923
(530) (620) (700)	970	1420 / 2099	1110	1722 / 2234

About-ship!

Unlike new buildings, renovation projects often have limited space to work with. There must be enough room not only to install the new boiler, but to get it in position in the first place. Its slimline dimensions make the UltraGas® 2 especially easy to manoeuvre in narrow corridors.

Dimensions for bringing into position		Dimensions with covering		Type
View from front	View from left	View from front	View from left	
1150	1606 / 2120	1290	1822 / 2255	(800) (1000) (1100)
1410	1916 / 2255	1560	2200 / 2395	(1300) (1550)
1150	1606 / 2120	1290	1822 / 2255	H (1100)
1410	1916 / 2255	1560	2200 / 2395	H (1550)

All dimensions in mm



$$K = \frac{B}{T} \times C$$

Example of calculating the required corridor width

Door width T = 1000

UltraGas® (700) $K = \frac{970}{1000} \times 1420 =$ Corridor width ≥ 1377

T Door width
K Corridor width
B Boiler width
C Maximum boiler length

Regenerative in myriad ways

Fuel or system.

Natural gas is going regenerative

Alternative gases.

Gas has a future. In years to come, regenerative, gaseous fuels will make up an ever larger share of our gas networks. Switzerland, for example, wants regenerative gas to account for a 30 % share by 2030. The EU is even planning to convert all existing gas boilers by 2050 so that they can run on hydrogen, making them fit for the future.

Biomethane: a twin to natural gas

The characteristics of biomethane make it almost a twin to the fossil fuel natural gas. However, it is produced sustainably by fermenting biogenic waste, which could be kitchen waste, damaged timber, sewage sludge or manure from the agricultural industry. Through a special treatment process, raw biogas is upgraded to biomethane, which can then be fed into existing gas networks straightaway. Zero unit conversion work is required to use biomethane, nor is any power required to produce it (save for that needed to control the plant).

Hydrogen

When hydrogen combusts, by contrast, it only produces steam and very small amounts of nitrogen oxide as a reaction to the natural nitrogen content in the air. The method of production determines how sustainable hydrogen fuel actually is. In principle, hydrogen can be produced from water by electrolysis. It is how the power used in this process was generated that decides how environmentally friendly the resulting fuel is. It is very likely that we will start adding more and more hydrogen to natural gas, then feeding this into the gas networks, and this means that the burner concepts we rely on today will have to be adapted. It goes without saying that the UltraGas® 2 is equipped for the ongoing energy transition from natural gas as the energy source to hydrogen.

Power-to-gas

Since it is not possible to fully switch over to hydrogen without further ado, natural gas can also be replaced in public networks by methane. The power-to-gas (P2G) process is a way of producing methane regeneratively. First of all, hydrogen is produced from renewable energy. Then a chemical process synthesises this hydrogen
(H_2) into methane (CH_4) using the carbon dioxide (CO_2) present in the atmosphere. This methane then has the same characteristics as natural gas once more, so no unit conversion work is required.

Green hybrid systems
Sophisticated combinations save money.

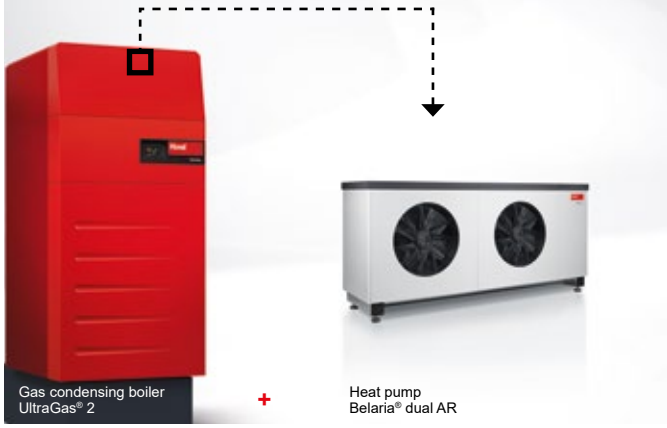
National laws within Europe often stipulate that a large percentage of the energy used for heat generation must come from renewable sources. With the Hoval UltraGas® 2, you can ensure compliance with these legal requirements whilst also enjoying the benefits of condensing gas technology. Hybrid systems from Hoval are the solution for energy transition laws.

The UltraGas® 2 also stands out due to its flexibility: it can easily be combined with any type of heat generator and solar energy system. The TopTronic® E standardised system controller provides the basis for these combinations. It ensures that everything interacts like clockwork throughout the entire system, producing more efficient results than the individual modules separately. For larger buildings, combinations with wood pellet boilers are virtually the only way to achieve the required percentage of renewable energy. Hoval provides complete systems from a single source – perfectly coordinated and controlled centrally with the TopTronic® E system controller.

What is “Renewable Ready”?

Experts use the term “Renewable Ready” to refer to the upgrading of a gas condensing boiler by adding an environmentally friendly heat generator – within a predetermined time-frame.

Combined with a heat pump – a fair wind heading into the future.



System technology – with nature's power, right on course for the future.

System technology with solar power – right on course for the future.

Hoval UltraGas® 2 for heating networks

Heating centres gather pace.

UltraGas® 2 – ideal for heating networks.

Current moves to expand existing local and district heating networks (and, to a lesser extent, to set up new ones) mean higher outputs and increased cost-effectiveness are required at the same time. In years to come, regenerative, gaseous fuels will also make up an ever larger share of our gas networks. The low-temperature boiler, used so frequently until now, is no longer fit for requirements.

With the UltraGas® 2, Hoval has got its tried-and-tested gas condensing boiler in great shape for heating networks. It reaches a flow temperature of 95 °C, is suitable for biomethane and in the near future will be able to run on hydrogen too. It really comes into its own in renovation projects, due to the compact amount of floor space it requires.

For an output of up to 500 KW, it fits through a standard door of 800 mm; and for an output of 1.5 MW, this little space-saving miracle needs just 3.3 m² of floor space. There is even room for an additional CHP plant. Communication is handled by the shared TopTronic® E system controller. One single contact, from consulting to products and customer service – everything from a single source.

Added value for your benefit:

- Flow temperature of up to 95 °C
- Biomethane
- Minimum floor space
- Easy system integration
- Remote monitoring and access
- Everything from a single source

Heat distribution

1 Heating centre
2 Primary school, nursery and indoor swimming pool
3 Former workers' housing (now administration building, children's day-care centre)
4 Secondary school, sports hall
5 Nursing home
6 St. Mamertus support centre
7 Blocks of flats

A flagship project par excellence.

Hoval supplied two combined heat and power (CHP) plants, two heat pumps, one gas condensing boiler, one oil condensing boiler and one heat transfer station, and was responsible for commissioning these units. The whole gamut of energy generation and energy supply systems, all from the same expert source.

Hoval TopTronic® E

The controller for intelligent systems.

Efficient energy systems from a single source.

The UltraGas® 2 is equipped with the TopTronic® E system controller. It is easy to use, seamlessly combining all the system components into one reliable and efficient entire system. The gas condensing boiler can also be integrated into the higher-level building management system via interface modules available for this purpose or connected to a heating network via the HovalSupervisor control software.

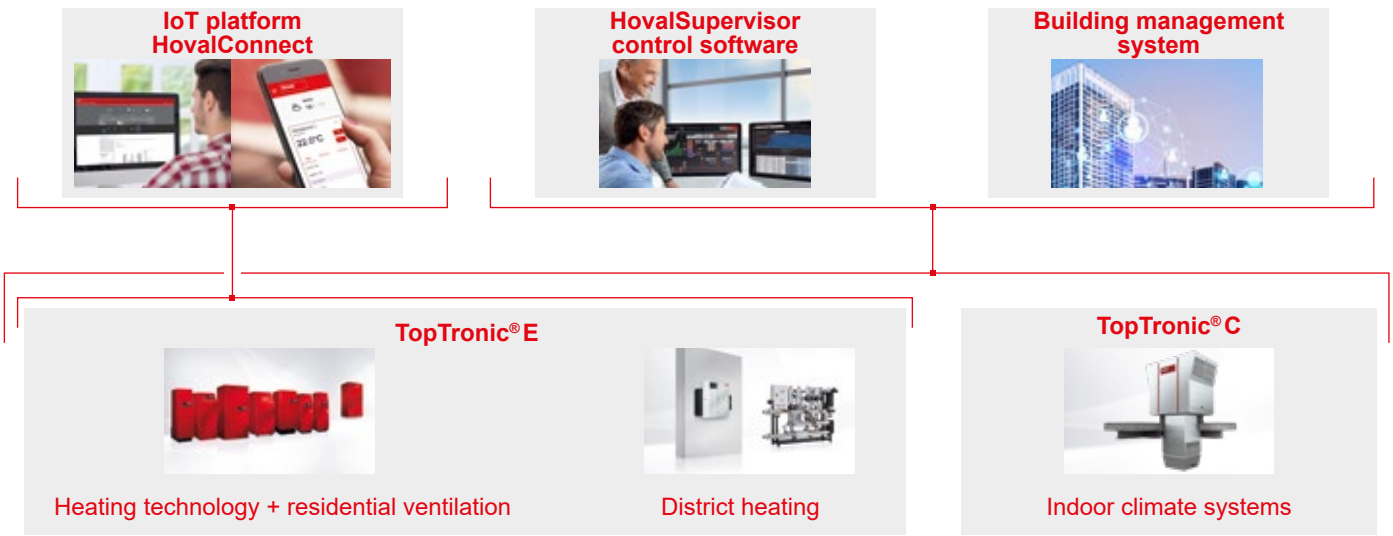
Heating, ventilation or hot water.
The TopTronic® standardised system controller is the key to a system where all components work together and complement each other perfectly to ensure outstanding energy efficiency. Thanks to the modular design, the system can be expanded quickly and easily – even at a later date.

HovalSupervisor – control software

The HovalSupervisor control software helps to operate numerous – and technically disparate – systems efficiently. The large-scale system is displayed as a schematic, enabling it to be monitored and optimised. HovalSupervisor software collects all of the performance data for the heating system and prepares it for analysis to allow for further optimisation of the large-scale system and its operation. It is the most important tool for a professional system operator.

Added value for your benefit:

- A standardised system controller
- Can be expanded with modules
- Cascades as standard
- State-of-the-art interface standards
- Remote monitoring and access
- Everything from a single source

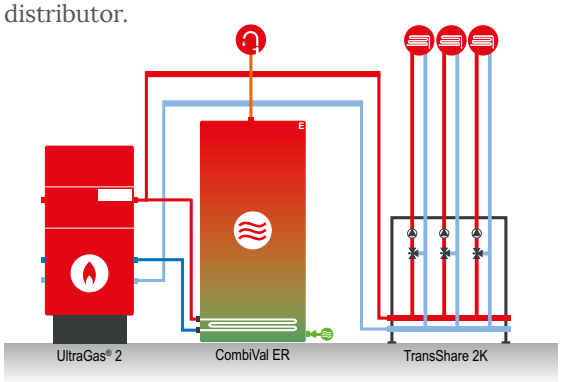


Hoval UltraGas® 2 as part of a system

Hydraulic combinations.

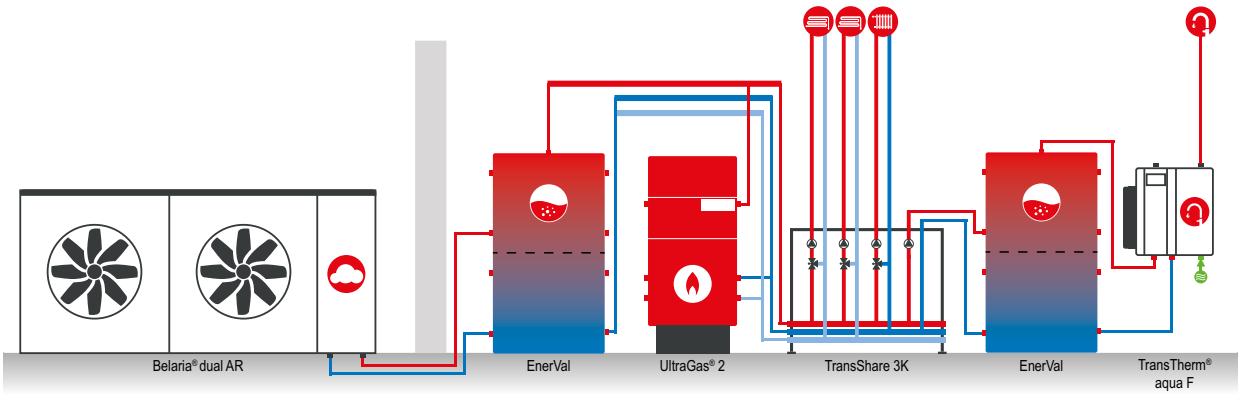
Efficient system with high-temperature and low-temperature returns.

The UltraGas® 2 gas condensing boiler provides the heat for the underfloor heating system and for heating domestic water, at two different temperature levels. The returns from the heating and the storage tank flow at different temperatures and, therefore, to the corresponding positions in the boiler. The return from the underfloor heating flows back to the low-temperature return, while the return from the storage tank coil flows back to the high-temperature return once the heat has been transferred to the domestic water. Ideal conditions for condensation and thus the most efficient condensing operation. The heat for the underfloor heating is sent to the individual heating circuits via the TransShare heating distributor.



Dependable, environmentally friendly system with high hygiene standards for hot water.

The UltraGas® 2 gas condensing boiler integrates with the Belaria® dual AR (60) air/water heat pump. The heat pump covers up to 80 % of the low-temperature range, whilst the gas boiler takes care of the high-temperature range and peak loads. So you get two benefits at once: operational safety and partially renewable energy. A great side effect is that the heat pump is smart grid-ready and can cool as well as heat.

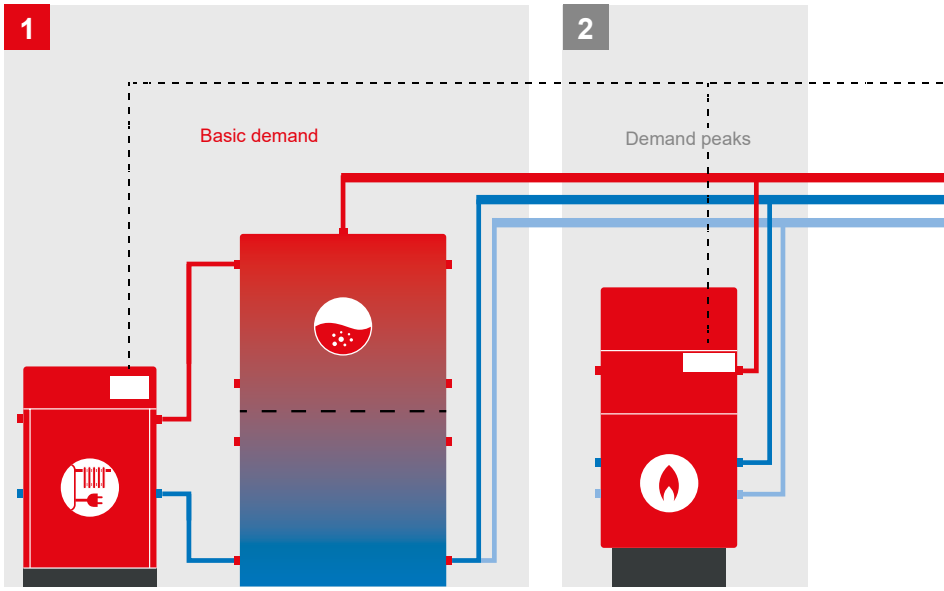


Energy systems

Combining to increase efficiency.

Hoval energy systems

These systems are made up of individual modules, each of which has a specific task to perform and which combine to create a complete modular solution. The TopTronic® E system controller serves as the basis for virtually any combination of modules. It ensures that all the modules interact perfectly within the system as a whole, which runs more efficiently than the individual modules alone.

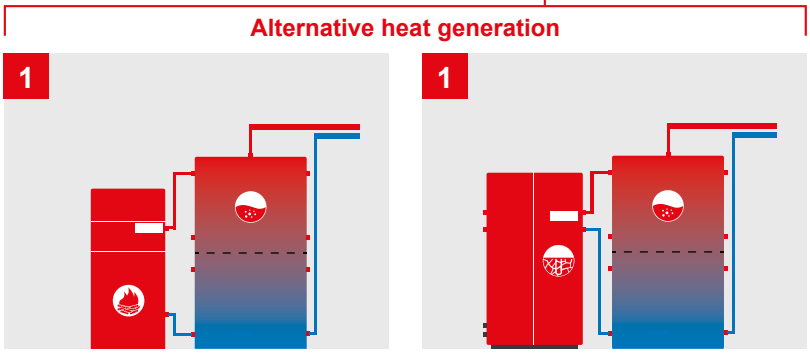


PowerBloc

Heat and power in the smallest of spaces.
CHP plants provide heat and power reliably and cost-effectively.

UltraGas® 2

State-of-the-art heat generator.
Gas condensing boiler with stepless output adjustment and maximum efficiency.



BioLyt

System solution with wood pellet boiler.
Meets the relevant legal regulations (the "Renewable Energies Heat Act", or EEWärmeG, and the "Model cantonal provisions in the energy sector", or MuKEn); base load is covered by the wood pellet boiler.

Thermalia® dual H

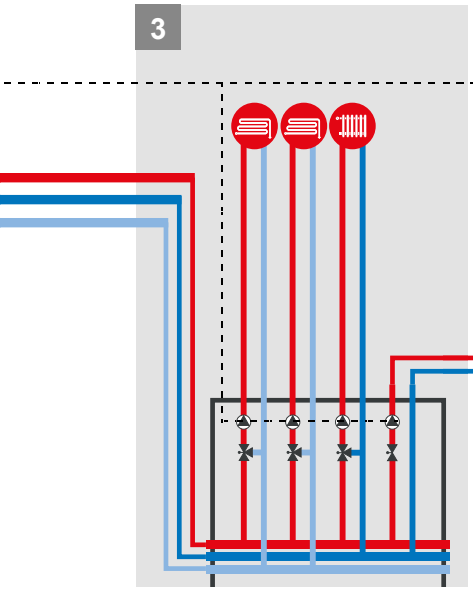
Hybrid system with renewable energy.
Use of renewable energy (geothermal heat pump). Base load is covered by the heat pump.

HovalConnect

HovalSupervisor

Hoval TopTronic® system controller
All Hoval products have a standardised controller, allowing them to be combined quickly to form a customised and efficient energy solution. Simple, standardised operation and connection to the Internet or a control system for remote access.

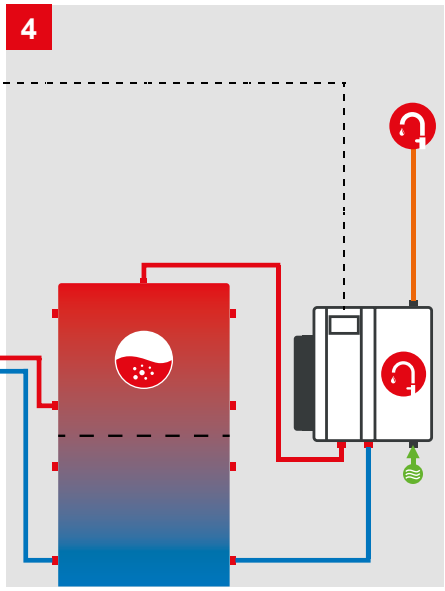
Heat distribution



TransShare 3K

Ready-to-connect distribution systems.
Standard distributor or configurable distributor systems.

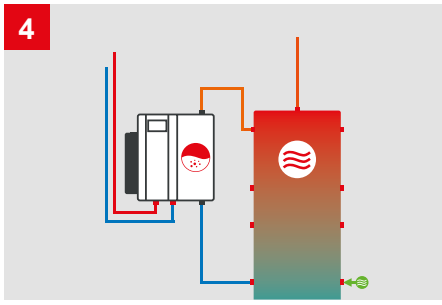
Domestic water system



TransTherm® aqua F

Instantaneous calorifier with buffer storage tank.
High hygiene standards because there is no storage of domestic water, excellent protection against legionella bacteria.

Alternative domestic water system



TransTherm® aqua L

Buffer storage solutions in conjunction with charging heat exchangers.
Storage and heating during draw-off of heat exchanger (output allocation).

Hoval quality.
You can count on us.

Hoval

As a specialist in heating and climate technology, Hoval is your experienced partner for system solutions. For example, you can heat water with the sun's energy and your rooms with oil, gas, wood or a heat pump. Hoval ties together the various technologies and also integrates room ventilation into the system. So you can save energy while looking after the environment and your costs – and still enjoy the same level of comfort.

Hoval is one of the leading international companies for indoor climate solutions. More than 75 years of experience continuously motivate us to design innovative system solutions. We manufacture complete systems for heating, cooling and ventilation to more than 50 countries.

We take our responsibility for the environment seriously. Energy efficiency is at the heart of the heating and ventilation systems we design and develop.

Responsibility for energy and environment

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