Wavin Heat Networks
Application manual

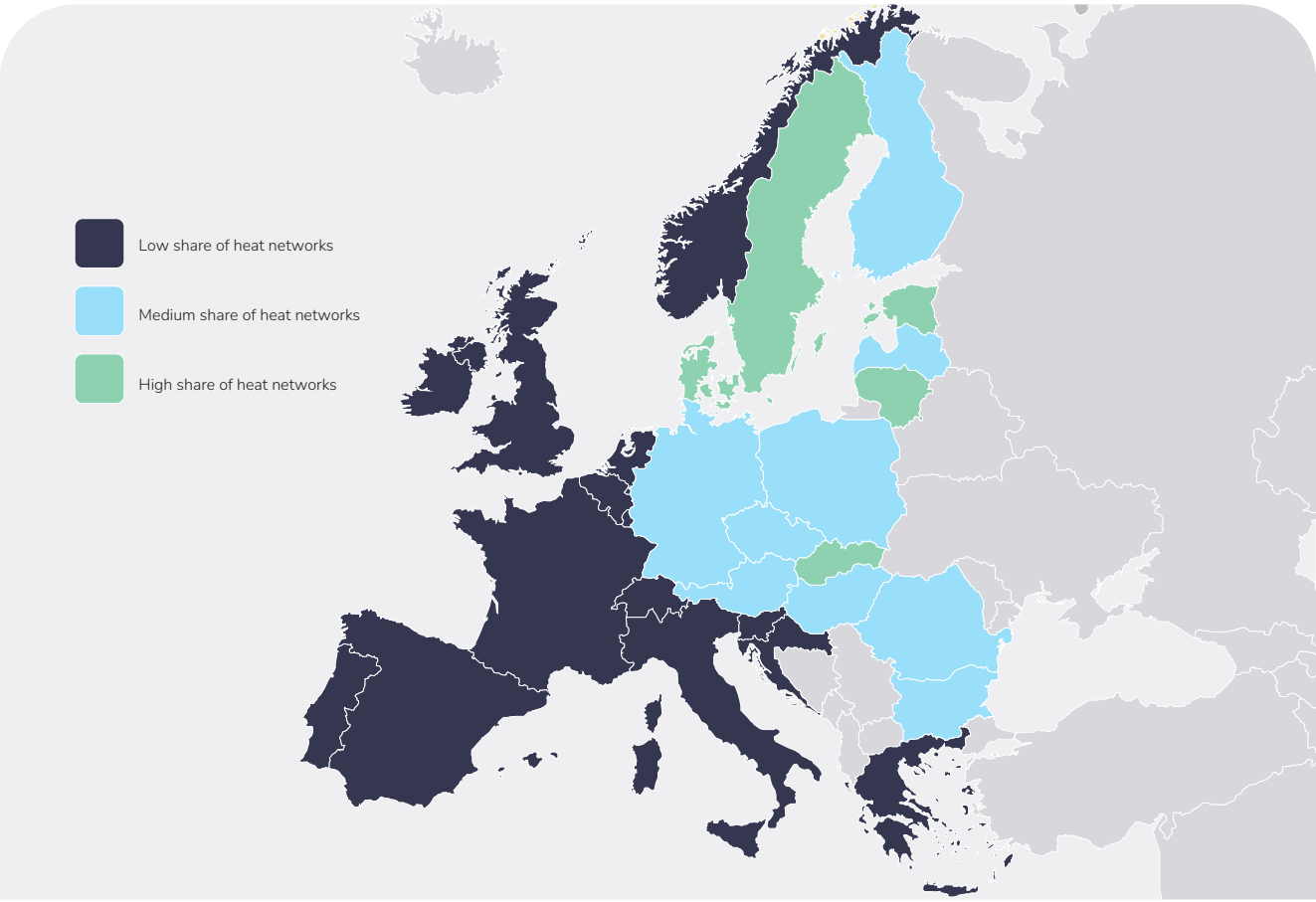
Calefa II Low temperature heat networks

A Calefa II application manual

wavin
An Orbia business.

Heat networks

Contents



Heat network prevalence in Europe 2020 - Source: https://www.wedistrict.eu/interactive-map-share-of-district-heating-and-cooling-across-europe/

More climate-friendly heating with heat networks

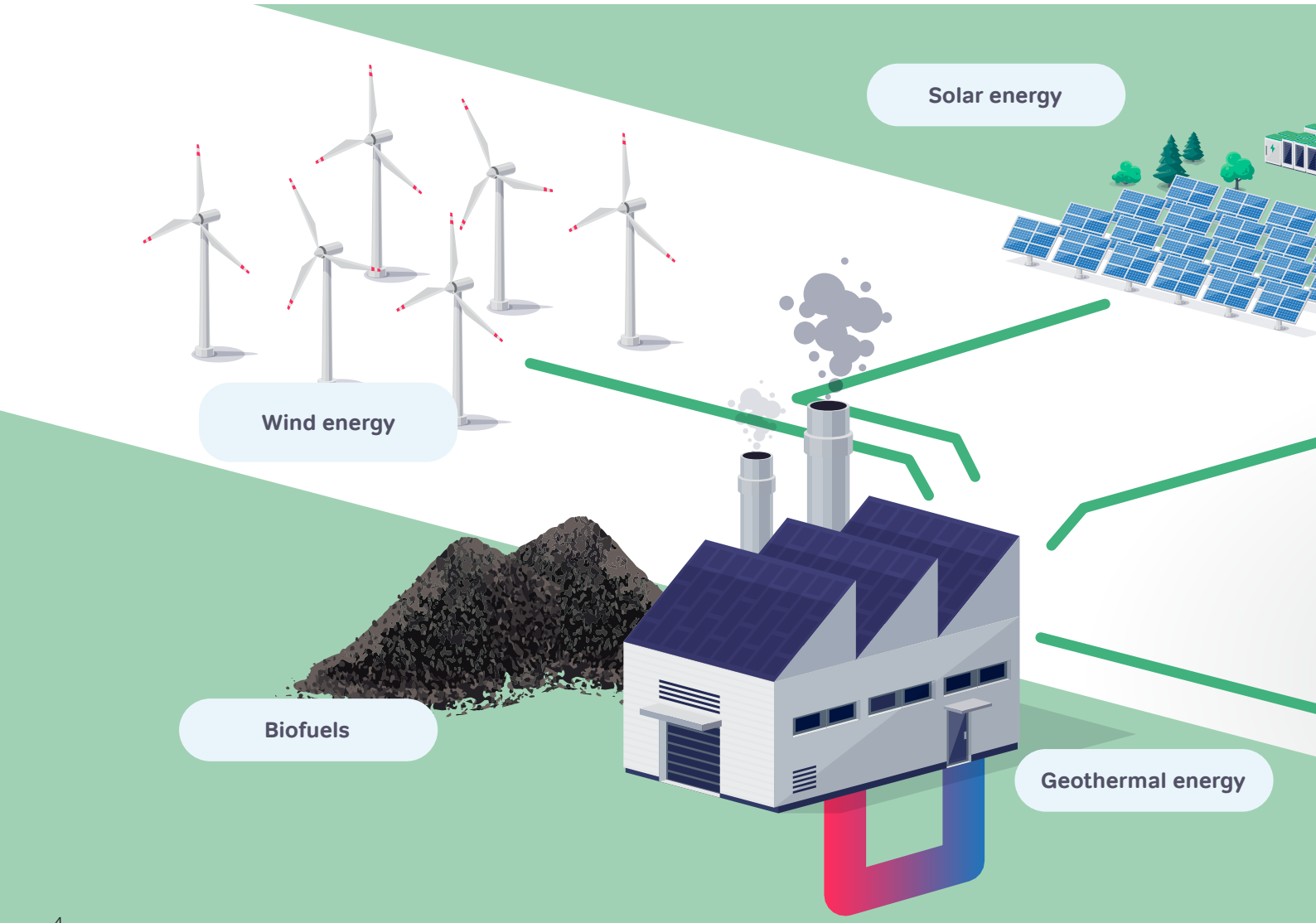
At a time and in a world where climate change and sustainability are in focus, the choice of heating source for heating and domestic water plays a crucial role in construction projects. Developers, architects and engineers have a responsibility to choose energy-efficient and environmentally friendly solutions that can help reduce CO_2 emissions and minimise a building's overall environmental impact. One of the options often considered is heat networks.

According to figures from the EU, around 40% of total energy consumption in the EU is for residential heating (including about 1/3 for domestic hot water production) or cooling of buildings. At a time when climate agreements and other political and economic goals require energy production to be as climate-friendly as possible, residential heating must also emit less CO_2 – and this goal can be achieved by increasing the share of heat networks.

The benefits of heat networks have resulted in widespread political support for heat networks in Europe. The EU aims to promote Europe's transition to a low-carbon society, which includes a sustainable energy sector in which heat networks are an important factor.

The statistics speak for increased focus on heat networks in many parts of Europe:

According to a report by Euroheat & Power, the European industry association for district heating and cooling, more than 3,900 terawatt hours (TWh) of district heating were produced in Europe in 2019. This is an increase of approximately 30% from 2010, when production was around 3,000 TWh, as evidence of significant growth in district heating production over a decade.

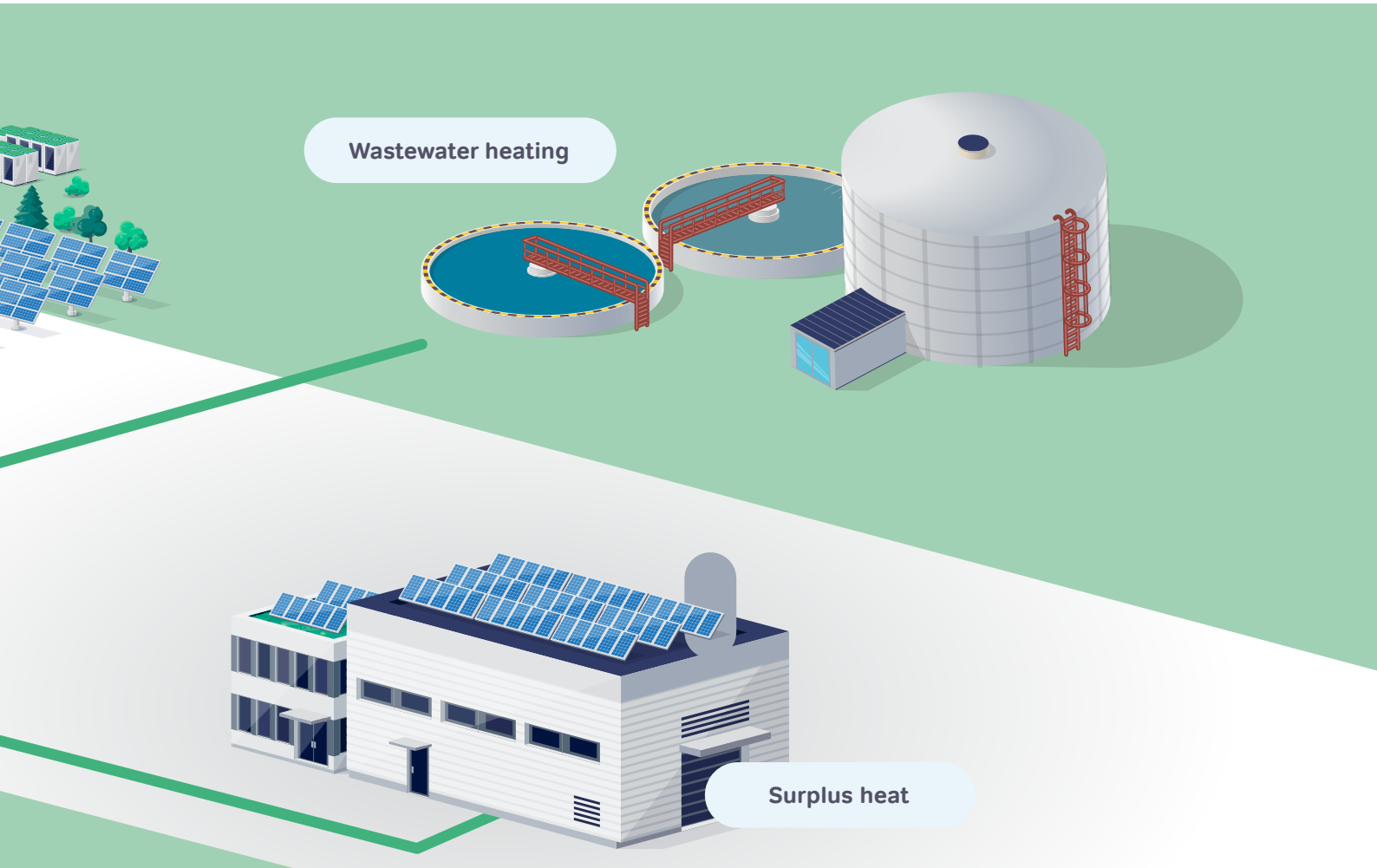


Heat networks have not only become more widespread, but are also increasingly based on renewable energy. According to the report by Euroheat & Power, renewable energy sources such as biomass, waste incineration, geothermal and solar heat accounted for more than 60% of total district heating production in Europe in 2019; demonstrating increased use of sustainable energy sources in European heat networks.

There is massive potential for further expansion of heat networks. According to State of Green, urbanisation in the EU is expected to reach nearly 84% by 2050, which will expand the heat network market, which functions most efficiently in densely populated areas. The potential for expansion lies in establishing heat networks in new urban areas and in expanding the use of heat networks in existing urban areas.

The prevalence of heat networks varies from country to country and region to region in Europe, and there are differences in the rate at which district heating has expanded in different countries. In general, however, heat networks have seen an increase in Europe and are thus helping to meet the increasing demands for sustainable energy production and reduction of CO_2 emissions.

Heat networks offer a number of environmental benefits that make them an attractive choice in sustainable building projects. Heat networks can be easily integrated with other sustainable technologies. When based on renewable energy sources to create a hybrid heating system that maximises source utilisation, heat networks contribute significantly to reducing CO_2 emissions. By replacing fossil fuels with green energy, heat networks can reduce total CO_2 emissions and cut our climate impact.



Applications

Centralised or Decentralised solution?

General construction principles for apartment buildings

Efficient heating and hot water supply in multi-storey dwellings requires well-considered planning and implementation of heating systems. There are two basic approaches: a centralised heating system, with the manifold located centrally, and a decentralised heating system, where a small heating system is installed in each home. This section explores the structure and organisation of these two systems and highlights the main differences between them.

The choice between a centralised and decentralised district heating solution constitutes the primary installation engineering principle. Both approaches have advantages and disadvantages that require careful consideration.

Centralised district heating, 5-pipe solution:

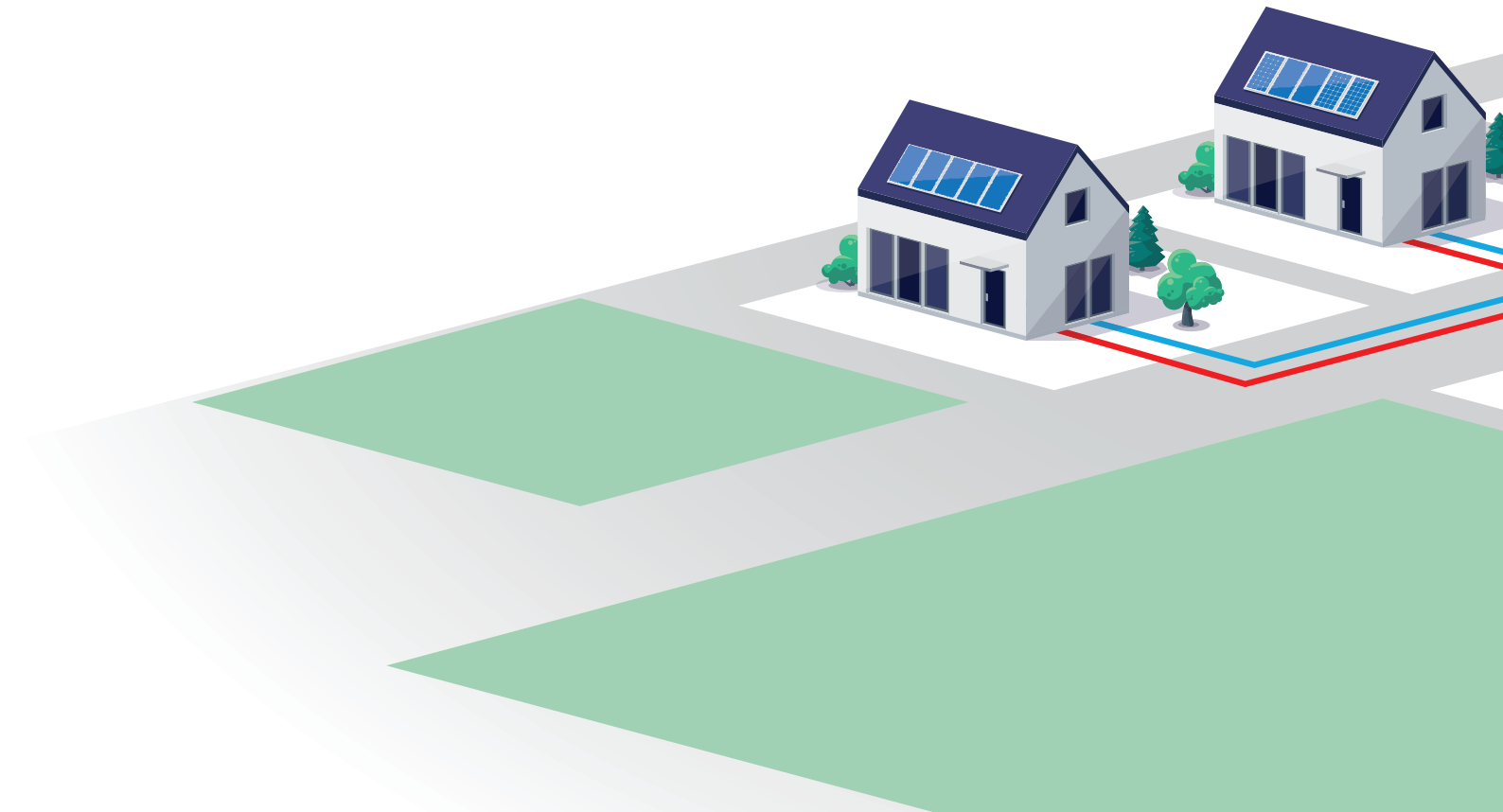
This approach involves the establishment of a common unit in the building, normally in a machine room in the basement, which supplies heating and domestic hot water to the individual homes. Each home is equipped with a distribution unit that circulates the heat to the respective radiators or underfloor heating circuits. Domestic hot water is produced centrally and distributed via pipelines to all apartments. Heat meters are located centrally, which simplifies investment costs, but imposes a responsibility on the property manager to distribute the heating costs between the homes.

Decentralised district heating, 3-pipe solution:

This approach involves the installation in each home of a district heating unit from which heat is supplied directly. Domestic hot water is produced individually in each home as required. This solution frees up space in the basement, eliminates the need for a central unit and increases flexibility for property managers when any conversions are made. Although the investment costs are higher, individual meters allow for direct consumption measurement and eliminate the need for third-party billing. This approach also gives residents control over their heat consumption and incentives for energy savings.

Advantages of decentralised heat network solutions:

- Easy installation and conversion with fewer pipes and more flexible routing.
- Limited consequences of technical problems affecting only one home.
- Greater freedom for residents to regulate their heat consumption.
- Detailed consumption overview and incentive for savings.
- Lower total cost of ownership during the life of the property.



Energy efficiency and environmental benefits:

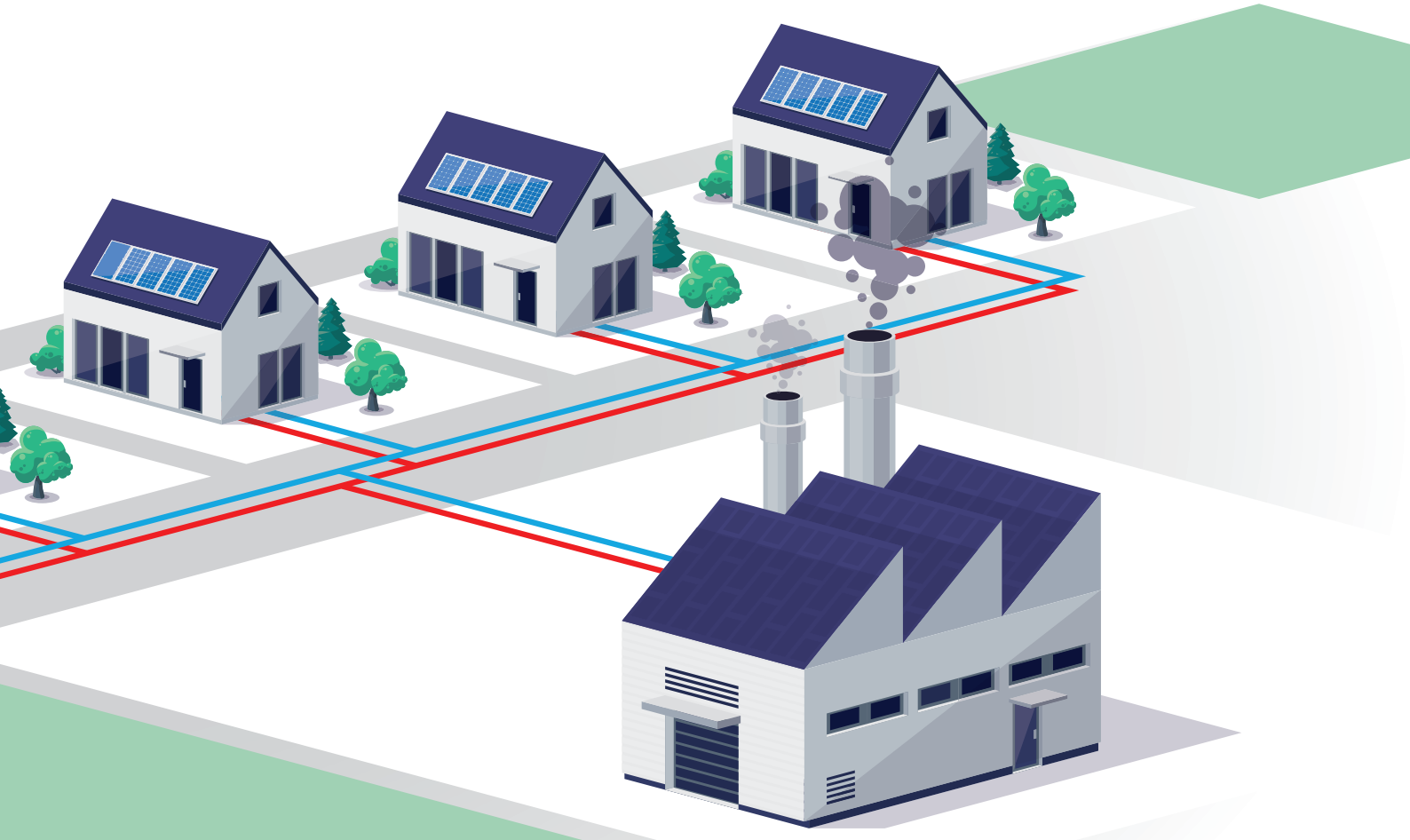
- Reduced heat consumption in the housing stock enables more energy-efficient operation of the heat network.
- The capacity to regulate heat curves in a decentralised heat network optimises energy supply and contributes to CO_2 reduction and environmentally friendly production and distribution of heat.

In the transition to the green heat network sector, the regulation of heat curves plays a central role in sustainable and efficient heat production and distribution.

The size of the European heat network market

In 2023, the European district heating market was valued at USD 85.6 billion. The market is expected to grow at an annual rate (CAGR) of 3.4% from 2024 to 2032. Favourable government policies and programmes aimed at net zero emissions, together with national targets for the integration of renewable energy, are expected to give a positive boost to the industry. Growing concerns about decarbonising energy systems and greater integration of renewable energy sources such as geothermal, solar and thermal energy are expected to have a positive impact on the business outlook.

Source: https://www.gminsights.com/industry-analysis/europe-district-heating-market

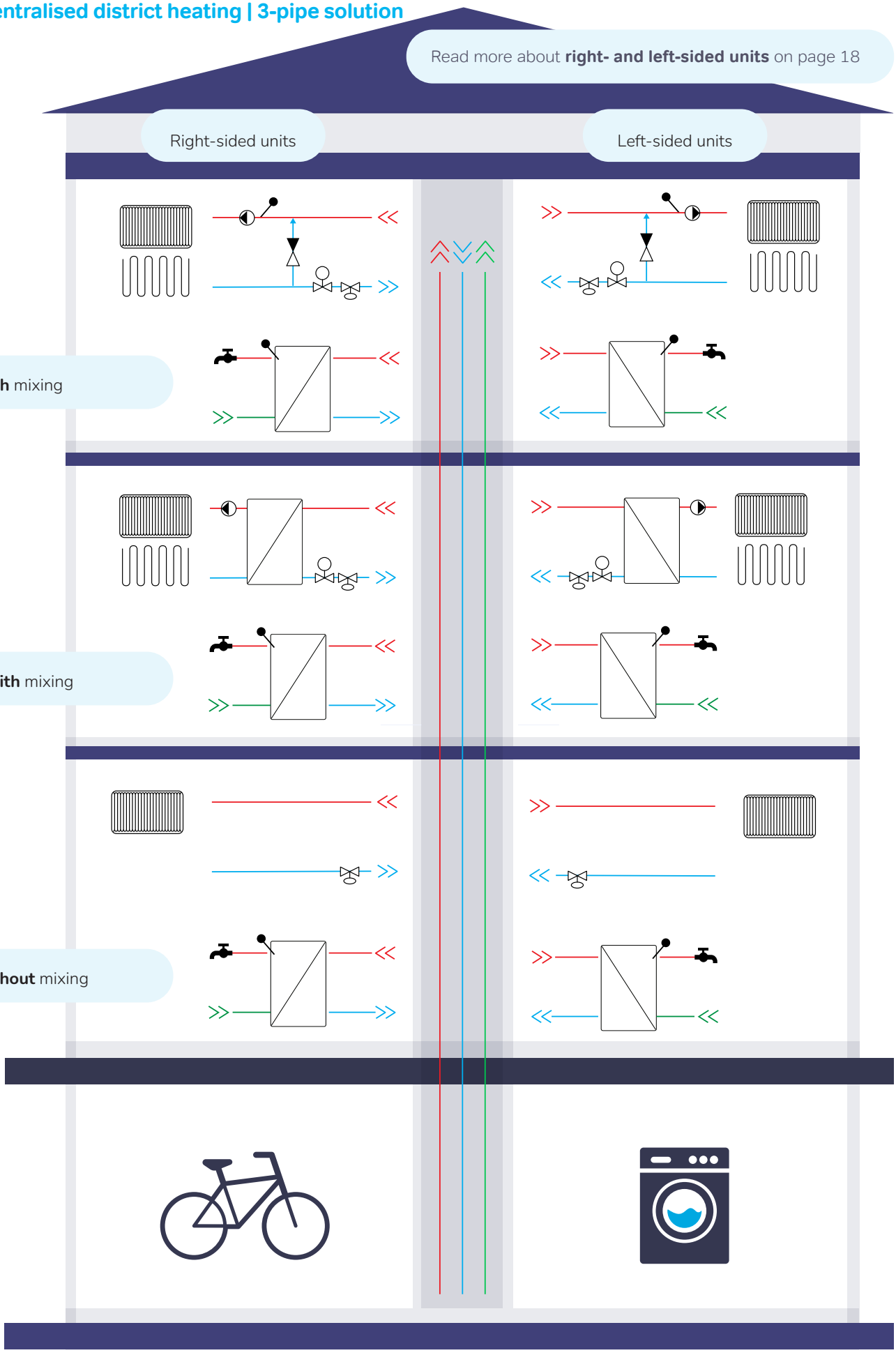


Considerations – decentralised vs. centralised solution

	Decentralised solution// 3-pipe		Centralised solution// 5-pipe	
	Benefits	**Drawbacks**	**Benefits**	**Drawbacks**
Project design	Less space required in riser. Fewer pipes (and when using Calefa also smaller pipe dimensions).	Unit in each apartment.	No space requirement for unit in apartment.	Centralised solution in basement. Complex dimensioning and tapping programs.
Establish-ment	Possibility of direct billing with heat network. Wireless outdoor sensor that can be shared with several units.	Space requirement in each apartment. Individual setup of unit per apartment. Higher investment contribution. Heat metering system expensive to establish.	Less expensive to establish a central installation than many small installations. Inexpensive to establish individual billing. Central balancing.	Space requirements in basements/communal areas that are often congested. A centralised solution with high complexity makes demands of competence and knowledge of installations. Individual billing is expensive to operate. Higher heat losses due to longer internal supply lines.
Service	Simple troubleshooting on standardised unit. Possibility of settings and optimisation per apartment. Customer issues can be handled easily, e.g. by phone (tenants have access to the installation).	Access to apartment. The tenant has access to the installation.	Access to installation. Typically a higher degree of monitoring and remote control. Central energy optimisation is easy to implement.	All apartments are affected. Different comfort needs cannot be met energy-efficiently. Risk of complaints.
Comfort	Individual needs can be met. Different layouts and sizes/ types of apartment can be accommodated. Option of a service plan.			All apartments share the same comfort setting. Everyone is affected by service and maintenance.
Safety	Production of hot water close to point of use – smaller amount of hot water in the pipework. No risk of dead legs. Low complexity for anti-Legionella measures. Redundancy within the heat exchangers.	Heat exchanger require-ments.	Tried and tested with long experience in the market.	Risk of dead legs. Complicated installation in relation to Legionella. Higher risk of failure in longer circulation pipe-runs. Breakdowns and service affect all tenants.
Energy efficiency	Optimisation and monitoring per apartment Access to consumption monitoring from plants Standardised installation that can be individually optimised Optimisation can be carried out without affecting all tenants	Access to apartment	Central monitoring Access to the installation	Longer circulation pipe-runs Energy efficiency driven by individual billing Highest comfort requirement becomes common denomi-nator High demands of installation knowledge Optimisation attempts affect all tenants

Decentralised district heating | 3-pipe solution

Read more about **right- and left-sided units** on page 18



Read more on the next page

Deployment challenges

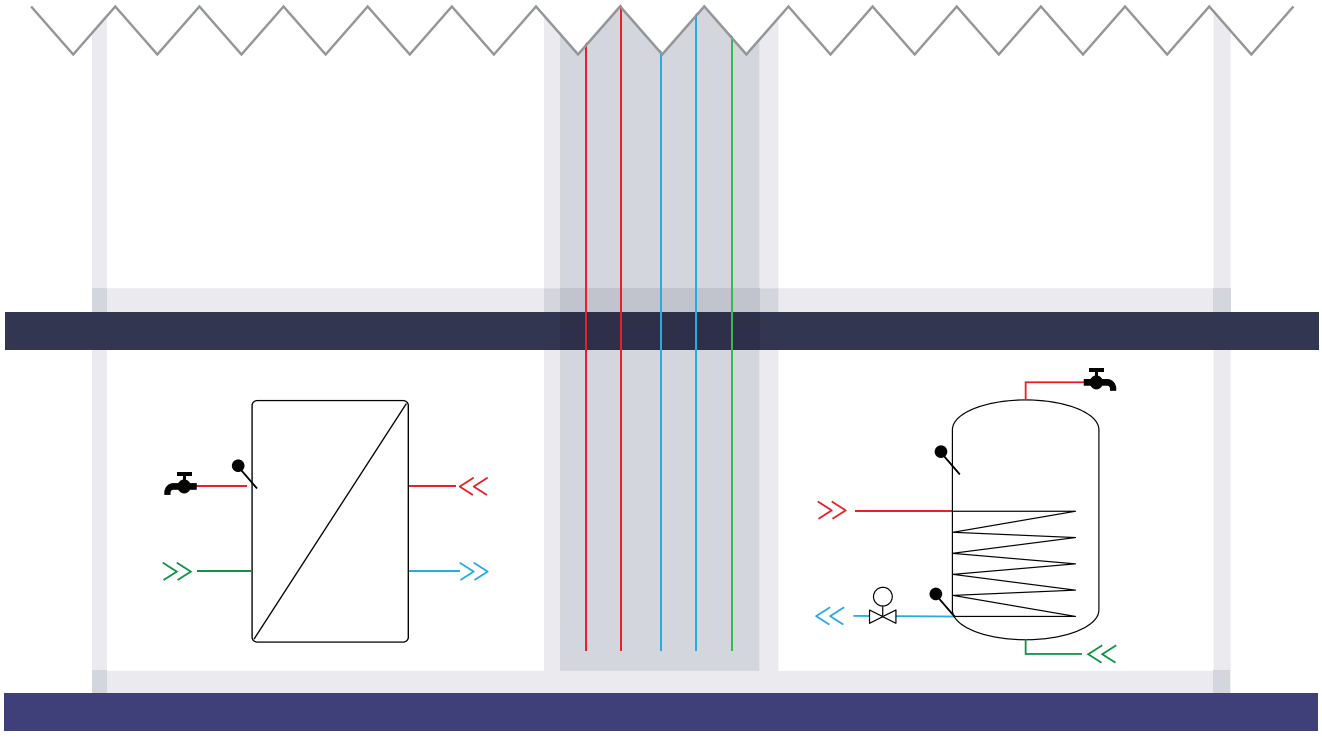
An investment in a heat network can present a number of challenges for the parties involved. One of the more general technical challenges is the flow temperature in the heat network. In line with increasing demands for efficiency and reduction of CO_2 emissions, the flow temperature must be relatively low. Most new houses can be heated with a flow temperature of 60°C (or below), and this requirement can therefore be met in most cases without reducing comfort (since a return temperature of below 30°C and heating to 20°C are aimed for in the homes).

The challenge lies in the need for domestic hot water: Due to the risk of Legionella, the temperature in the heat exchanger in the centralised or decentralised heat interface unit must be 60°C. There is a limit to how far the flow temperature can be lowered while still achieving this target. Most consumers also want their domestic hot water to reach the required temperature. Resolving this challenge requires technical solutions capable of achieving the desired domestic hot water temperature without the risk of Legionella, even with a lower flow temperature in the network.

For a centralised heating system, with a central heating installation located centrally in the building (typically in the basement), a more complex installation is required, with heat exchangers, mixing circuits and pressure systems to supply heat and hot water to the entire property. This requires the dimensioning of shafts with 5 pipes while the basement space is used for technical systems.

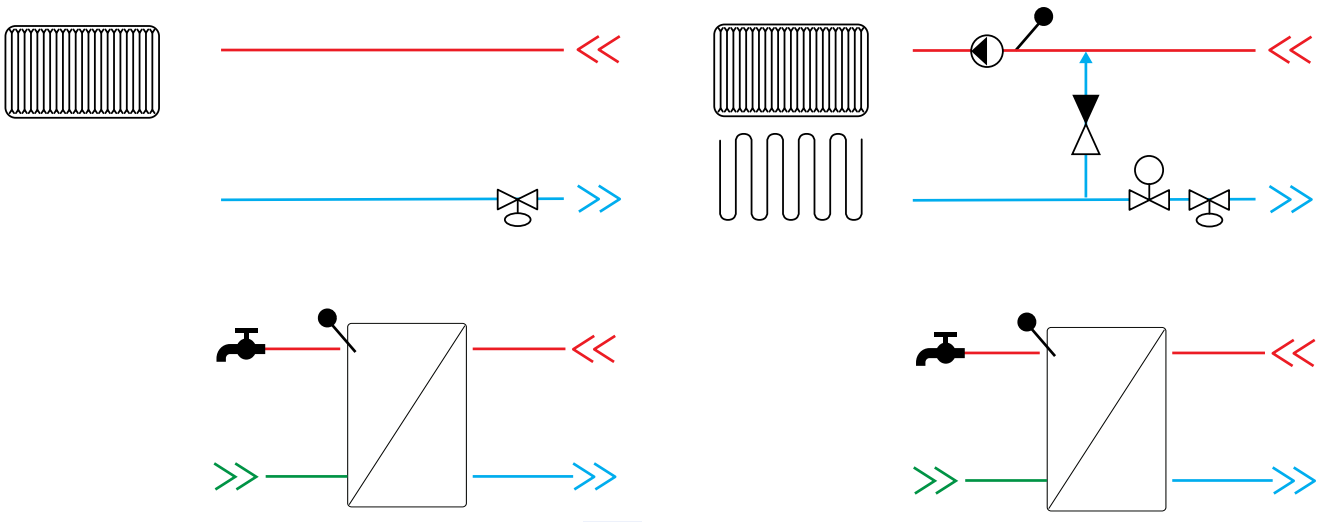
A decentralised heating system requires less complex installations, where each home has its own heating system. These units, usually prefabricated, are adapted to individual needs and supplied with hot water production systems. Shafts must be dimensioned for 3 pipes, and the system ensures flexibility and the possibility of using the basement for variable purposes as required.

Centralised district heating | 5-pipe solution



Which solution is the right one?

The right solution depends on a number of factors, including finances, safety and operational reliability. In general, it must be considered whether a direct or indirect solution is required to heat the home. Wavin has a complete programme that supports any system solution and takes account of different heat sources and the home's heating system.
The following sections describe these solutions, where the benefits and drawbacks of the applications are examined.



Direct without mixing

With the direct solution, the home's heating system is connected directly to the heat source's distribution system. In a heat network, the central plant's hot water is fed directly into the home's heating system. This usually means that the home's heating system must be designed to withstand high temperatures and fluctuating pressure in the system. If heat sources other than district heating are used, the direct system without mixing can be particularly suitable. In systems where the heat source is designed as a heat pump or boiler system, the pressure and temperature will always be stable and adapted to the home's heating demand. However, it will usually be a prerequisite that the home's rooms are heated by radiators, as systems with underfloor heating require individual adjustment of the temperature in each home. See section: Direct with mixing

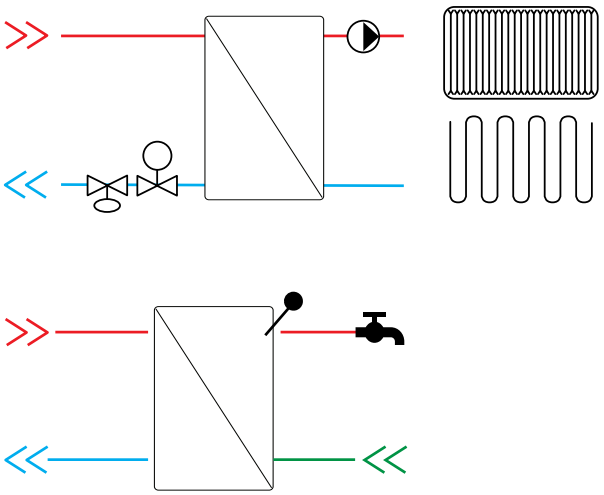
A direct system without mixing is the easiest solution to install and operate. It is cheapest to install and maintain. The entire heating system is controlled centrally, which makes operation of the system simple and straightforward. Operating costs are minimal, since with the right balancing, the system will cool better than an indirect system where a heat exchanger is installed in each home. See section: Indirect with mixing.

Direct with mixing

In a direct solution without mixing, the home heating system is connected directly to the heat source's distribution system. See also "Direct without mixing".

In systems where the heat source has a high installation temperature, such as heat networks, mixing may be necessary for the individual home's heating system. The heat is circulated in the home's heating system by a circulation pump. The flow temperature to the heating system can be adapted to any heating system, including underfloor heating or radiator systems. It is an advantage to use automatic flow temperature control to optimise comfort and minimise heating costs.

A direct system with mixing is the most flexible and popular solution if optimal operation for the entire lifetime of the system is required. The individual adjustment to the home's flow temperature and needs optimises comfort and is absolutely necessary for underfloor heating if a heat network is used. If underfloor heating is to be installed, a heat network with direct mixing is the least expensive solution in terms of installation and operating costs.



Indirect with mixing

With indirect heating, the home's heating system is completely separated from the heat source. The indirect system is typically used for heat network supply where high pressure or a high temperature in the home's heating system is not required. The heat network water passes through a heat exchanger that transfers the heat to the home's heating system. The heat is circulated in the home's heating system by a circulation pump. The flow temperature to the heating system can be adapted to any heating system, including underfloor heating or radiator systems. It is an advantage to use automatic flow temperature control to optimise comfort and minimise heating costs.

The benefits of indirect heat networks include operational reliability. Leaks or seepage will rarely cause major damage to the home or fittings, as the water content is limited compared to a direct heating system. Unlike a direct solution, a leak in the home heating system will not affect the rest of the property's heating system.

Consumer behaviour is important

Transition to greener heat networks requires a change in behaviour: Heating customers quite simply have to contribute to saving energy. This can be ensured through financial incentives and technical solutions to provide the required transparency, and to give each customer a clear overview of consumption and trends, motivating consumers to save more energy.

Incentives lead to behaviour changes

When consumers are aware of the price of heat, they are more likely to try to reduce their bills. Digital, intelligent solutions that automatically turn down the heating during certain periods (e.g. during the daytime when residents are not at home) can facilitate this process.

For the heat network sector, there is great potential in promoting savings on both heating and hot water for consumers whose habits, settings and choices can have a significant impact on energy efficiency and CO_2 emissions in buildings. As previously mentioned, up to a third of the energy from the heat network supply is used to heat domestic water. The need for savings is not restricted to heating the home via underfloor heating and radiators, since domestic hot water consumption also affects total emissions. Today's modern homes are so well-insulated that they retain heat better and longer. The percentage of energy used for domestic hot water is therefore increasing as less energy is used to heat the home – simply because people do not shower or wash their hands less often just because their home is better insulated.

In short, this means that the more consumers can be persuaded to save heating and hot water, the better it will be for the environment. In other words, we should make better use of the energy supplied from the heat network to our homes. This also means that greater transparency regarding the consumer's individual heat and hot water consumption, and better guidance on reducing the home's energy use, will give individual consumers a greater incentive to save energy where possible.

A modern heat interface unit offers highly energy-efficient operation, and with decentralised district heating solutions in single-family houses and multi-storey buildings, accurate, individual metering data is available to the individual consumer, giving them a clear incentive to make better use of the energy from the network plant.

Statistics from the Danish District Heating Association

1,843,774 Danish households are currently supplied with district heating. In total, this corresponds to 66% of all households and around 3.7 million people.

In total, there are around 60,000 kilometres of district heating networks – 30,000 kilometres of flow and 30,000 kilometres of return. These networks hold around 1 billion litres of hot water.

Wavin Calefa II

Optimise your district heating with Wavin's Calefa II

A solution for more efficient and sustainable heat supply

Wavin has accumulated expertise and experience over many years to partner with utility companies, housing companies and consulting engineers on the design and construction of heat network solutions – thereby contributing to achieving district heating's potential as an important element of the green transition.

In this respect, Wavin's Calefa II district heating unit is an impressive technological innovation that entails a number of advantages. With advanced technology, energy efficiency, customised comfort options, ease of use and environmentally friendly operation, Wavin Calefa II is an attractive option for anyone who wants to optimise their heat network system.

Optimum efficiency and energy savings

The ability to deliver energy efficiency is one of the main advantages of Wavin's Calefa II heat interface unit. By combining advanced technology with intelligent control, Calefa II optimises space heating and domestic hot water supplies. This entails significant energy savings and reduced heating costs in the long term.

Wavin Calefa II is equipped with an electronic controller, hot water prioritisation, adaptive learning for the bypass function and weather compensation. This system operates without a domestic hot water valve, which results in lower pressure losses as the district heating water supplied passes directly through the exchanger in the Calefa II unit. In addition, installation is remarkably easy and fast.

Reduced return temperature – beneficial for supply and consumer

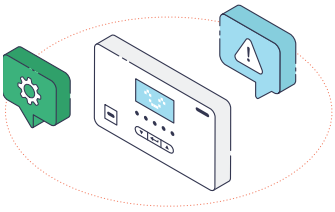
On the heat network side, Calefa II is designed with a valve that can deliver a significant amount of water without limitations, with regulation of the valve's opening. The regulation takes diversity into account, since not all consumers in an apartment building turn on their taps at the same time. This allows for real-time adjustment of the pressure based on the current consumption.

Calefa II is designed with:

- Optimised energy efficiency via intelligent control
- Electronic control for easy operation
- Quick and easy installation
- Wireless outdoor sensor/outdoor sensor
- Adaptive learning – bypass function
- Intelligent hot water prioritisation

Read more on the following pages.

Electronic controller unit



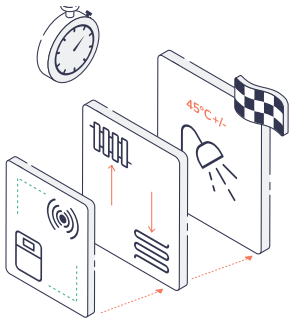
The electronic controller is the brain of Wavin Calefa II. The domestic water temperature is easily adjusted on the front panel of the controller. The control unit also collects data from temperature sensors and flow meters, after which a signal is sent to the motor and main valve. It is also the controller unit that controls the 'keep-warm' bypass. The consumption pattern is continuously analysed, which makes it possible to automatically reduce the bypass temperature during periods when there is a low need for hot water.

By running demand-controlled bypass, less heat loss in the pipework and reduced consumption are achieved.

The digital display on the control unit makes it easy to set the unit for precise domestic hot water control. The hot water temperature is adjusted with a single tap on the control unit.

The consumer can easily read the status of their system on the electronic display. If there is no hot water, for example, an alarm will indicate that something is wrong and needs to be corrected The installer can easily assess whether the fault requires a call-out or whether the homeowner can be helped remotely to adjust the system, based on the guiding instructions on the display.

Quick and easy installation



Wavin Calefa II offers a quick and easy installation process that can be carried out with ease in any home. Calefa II is available as right and left-sided versions, simplifying pipe installation in different parts of an apartment building. Installation is easy: Connect the power supply, remove the protective tape and position the outdoor sensor.

The system is preset for underfloor heating with a configured heat curve. The heat curve can be adjusted in a few seconds. Since installation does not require cable connections and tools, the risk of incorrect installation is minimised, which saves time.

Complete package from your supplier

Wavin Calefa II is supplied as a complete package and is available from Wavin. As a leader in underfloor heating, we offer a solution that is easy to install and offers benefits in terms of efficiency and energy savings.

Wireless outdoor sensor

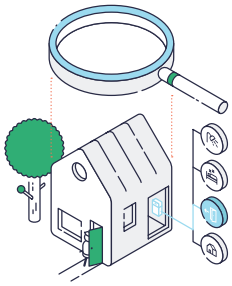
The Wavin Calefa II is equipped with a wireless outdoor sensor that allows for the connection of multiple devices. There is no need to run sensor cables. This saves both time and money for the installer, as no time and money has to be spent on wiring what may be difficult cable runs.

With premium wireless connectivity with Sentio, you have the flexibility to choose the optimal mounting position and confirm the signal strength with a standard room sensor.

One outdoor sensor for the whole apartment block

An added benefit is that you only need to buy one sensor for multiple apartments, reducing investment costs and providing a more elegant aesthetic design, with just one sensor instead of several.

Adaptive learning – bypass function



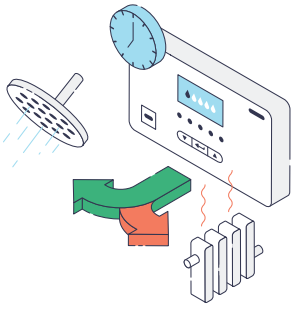
Wavin Calefa II's electronic control unit implements an advanced bypass function that automatically and intelligently analyses and recognises a household's consumption patterns. This function ensures that water heating is only activated in accordance with the expected hot water consumption. In other words, the intelligent auto function in the Wavin Calefa II control unit can automatically identify the home's current consumption pattern. After just two weeks, Calefa will have built up an extensive database of consumption patterns. Based on this data, the bypass function is only maintained when water consumption is expected. These consumption patterns are continuously updated and users also have the option of defining individual time intervals manually. This guarantees an optimum user experience and more efficient energy management.

Savings for utility companies and end users

By implementing this advanced technology, heat network operators can reduce their annual consumption by 1.2°C. At the same time, end-users can see savings of around 1 kWh per day and up to an impressive 85% reduction in waste heat (idle losses) during periods of non-use.

In a centralised heat supply solution, a home's heat network connection is heated constantly, as the system does not have the ability to predict when one of the potentially hundreds of apartments will need hot water. The collective behaviour in the property dictates the savings potential. With a decentralised solution, all of the apartments can benefit from reduced circulation in the heating pipework and minimise the heat loss during periods of non-use. This is done by adapting to the individual consumption pattern in each apartment.

Intelligent hot water prioritisation



Domestic hot water prioritisation plays a crucial role in a heat network, to ensure a stable hot water supply, increase energy efficiency and optimise the system's capacity. Implementing hot water prioritisation in the heat network results in an improved user experience, energy savings and more sustainable operation of the system.

Thanks to hot water prioritisation, smaller branch pipes ensure that the heat supply is interrupted when hot water is used on demand. Hot water prioritisation makes it possible to adapt to changes in the demand for hot water. During periods of lower demand, the system can use less energy to heat water, enabling more flexible operation and more efficient resource management.

This significantly improves energy efficiency. During the relatively short periods, closing the heat supply will not significantly affect the general temperature level in the home. This ensures a consistently high water flow with the right temperature in the system, without the user experiencing any loss of comfort. The system is thus able to identify when hot water prioritisation is needed and react accordingly. The built-in hot water prioritisation ensures constant access to hot tap water for everyday needs such as showering, washing up and other hot water applications. This maintains a high level of comfort and convenience in the building, but also contributes to significant energy savings.

Optimisation of capacity requirements

By prioritising hot water, the heat network can reduce the need for excessive capacity to heat buildings. This optimises the size of the system and helps to reduce investment and operating costs. Utility companies can ultimately use the network capacity far more efficiently

Flexibility and customisation

Left- or right-sided

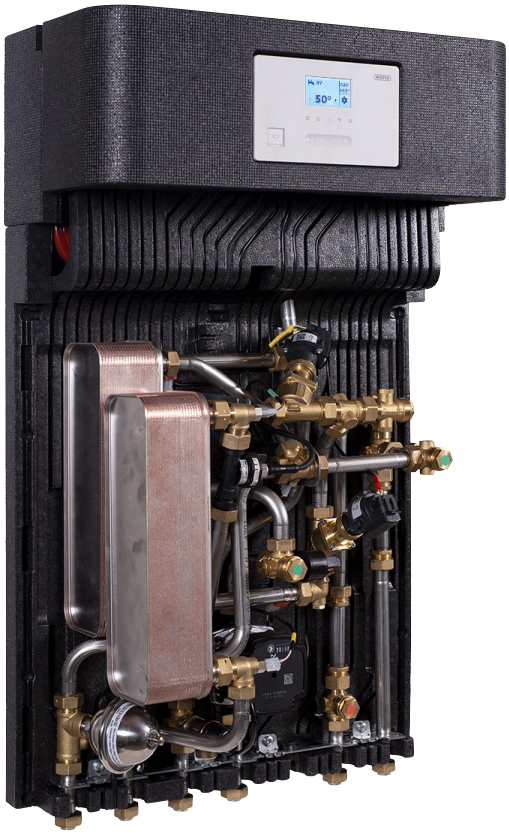
When implementing a heat network, flexibility and adaptability play a crucial role in the efficiency and financial viability of projects. Wavin's heat interface units offer this necessary adaptation by presenting units in right and left-hung configurations. This design choice has a number of advantages that should be considered from a technical perspective.

Minimising resources and waste

By presenting heat interface units in right- and left-hung versions, the Wavin Calefa II system can be adapted to existing infrastructure and building structures. This reduces the need for extensive conversions or adaptations, which is of great importance for minimising resource consumption and waste.

By offering right- and left-hung heat interface units, installers can easily adapt the units to existing conditions and confined installation spaces. This can reduce the need for complex installation techniques and shorten the installation period. The choice of right- or left-hung units allows installers to optimise positioning in relation to the existing piping and building structure, which can release valuable space for other purposes.

Wavin Calefa II ensures a significant degree of customisation and flexibility. The delivery of units in right- and left-hung configurations addresses the needs of developers, consultants, installers and consumers to reduce waste and use of resources, which is a significant environmental benefit. It also ensures more efficient installations, as well as space savings, which are all critical factors in complex building projects and heat network implementations.



About weather compensation

When it comes to ensuring efficient and energy-efficient operation of a heat network, weather compensation is a crucial factor. By adapting the temperature of the heating water in relation to the outdoor temperature, weather compensation systems can achieve more precise regulation of the heat supply. Weather compensation is crucial for achieving optimal temperature control, energy savings, greater user comfort and a longer lifetime of the district heating system. By implementing intelligent weather compensation technology, you can achieve more efficient and sustainable operation of your heat network.

Optimum temperature control

Weather compensation allows the heat network to adapt to changes in outdoor temperature. When it is cold outside, the weather compensation system automatically increases the temperature of the heating water, so that users get enough heat to maintain a pleasant indoor temperature. Similarly, the temperature is reduced gradually when it is warmer outside. This ensures more precise and efficient heating of buildings, as the system reacts to the actual heating demand, based on the weather conditions.

Energy savings

Weather compensation contributes to significant energy savings in the heat network. By adapting the heat supply to the outdoor temperature, overheating of buildings and energy waste are avoided. The system automatically regulates the temperature to suit the current demand, resulting in more efficient use of energy and reduced heating costs.

Increased user comfort

Weather compensation systems contribute to higher comfort for building users. By adjusting the heating temperature based on the outdoor temperature, extreme temperature fluctuations are avoided and a more even and comfortable heat supply is created. This results in a more comfortable and stable indoor temperature, no matter how the weather changes.

Longer heating system lifetime

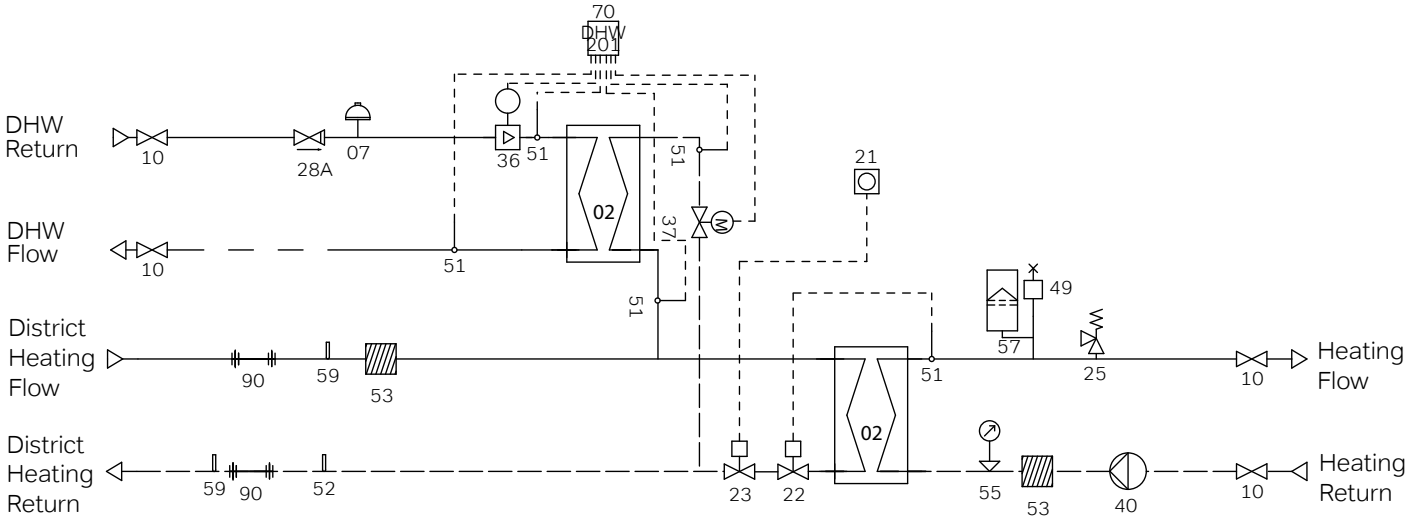
Weather compensation also helps to extend the lifetime of the heat network. Avoiding excessive heating or stress on the system reduces wear and unnecessary stress on the components. This leads to fewer faults and reduced maintenance costs, which extends the lifetime of the heating system.

Environmentally friendly

By optimising the heat supply and reducing energy waste, weather compensation helps reduce CO_2 emissions and environmental impact. By using energy more efficiently and precisely, the heat network will be more sustainable and contribute to a greener future.

Wavin Calefa II with built-in weather compensation regulates the flow temperature according to the season and outdoor temperature, to ensure minimum energy consumption and optimal comfort.

Schematic diagram Calefa II V



Schematic diagrams

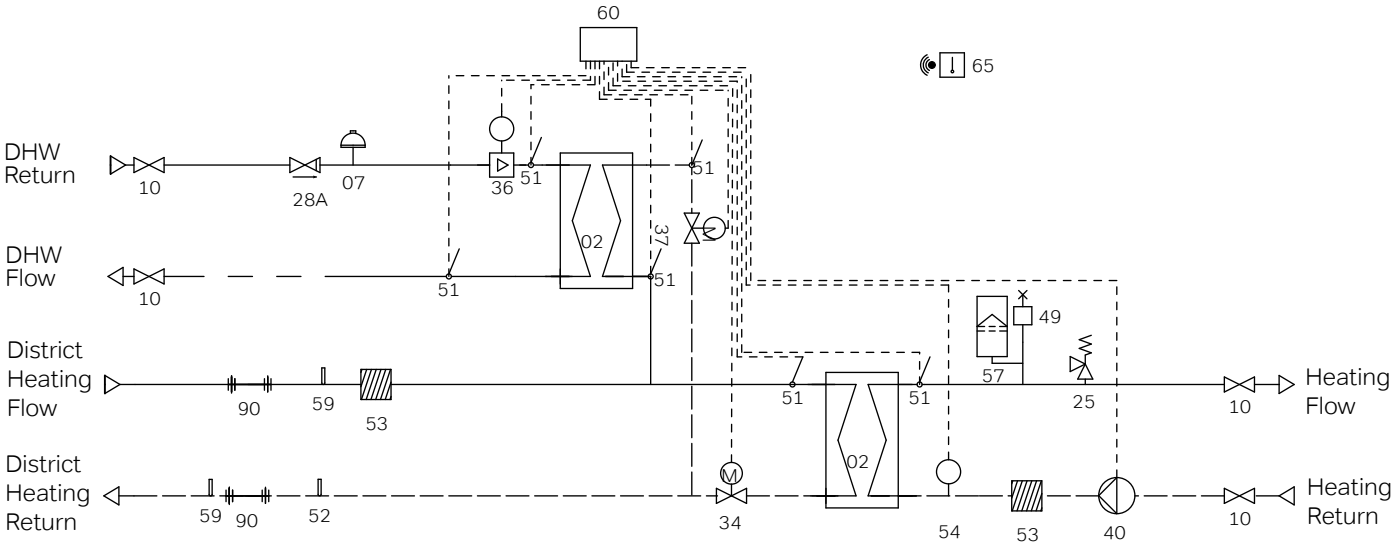
The above schematic diagrams are technical illustrations of the two standard unit types in Wavin's Calefa II portfolio; indirect, with and without weather compensation.

The diagrams give an overview of the flow directions of the heat interface units for hot water and heat transfer in the system, which helps to show how the heat circulates through the unit and is distributed to consumers.

In addition, the diagram gives a visual overview of the components and a basic understanding of how the heat network operates.

On the next page there is an overview of the different components of the Wavin Calefa II units.

Schematic diagram Calefa II V ITC



02	DHW Heat exchanger	28A	Controllable non-return valve	54	Pressure transmitter
07	Pressure reducer	34	PICV	55	Pressure gauge
10	Shut-off valve	36	Flowmeter	57	Expansion vessel
21	Room thermostat (supplied separately)	37	DHW motorised valve	59	1/2" sensor pocket
22	Temperature-controlled PICV	40	Circulating pump	60	Calefa DHW 212V ITC Control
23	Thermostat-controlled heating valve	49	Air vent	65	Wireless outdoor sensor
25	Safety valve, Heating	51	System sensors	70	Calefa DHW 201 domestic water controller
28	Non-return valve	52	1/2" pressure outlet or sensor pocket	90	3/4" x 110 mm meter
		53	Strainer		

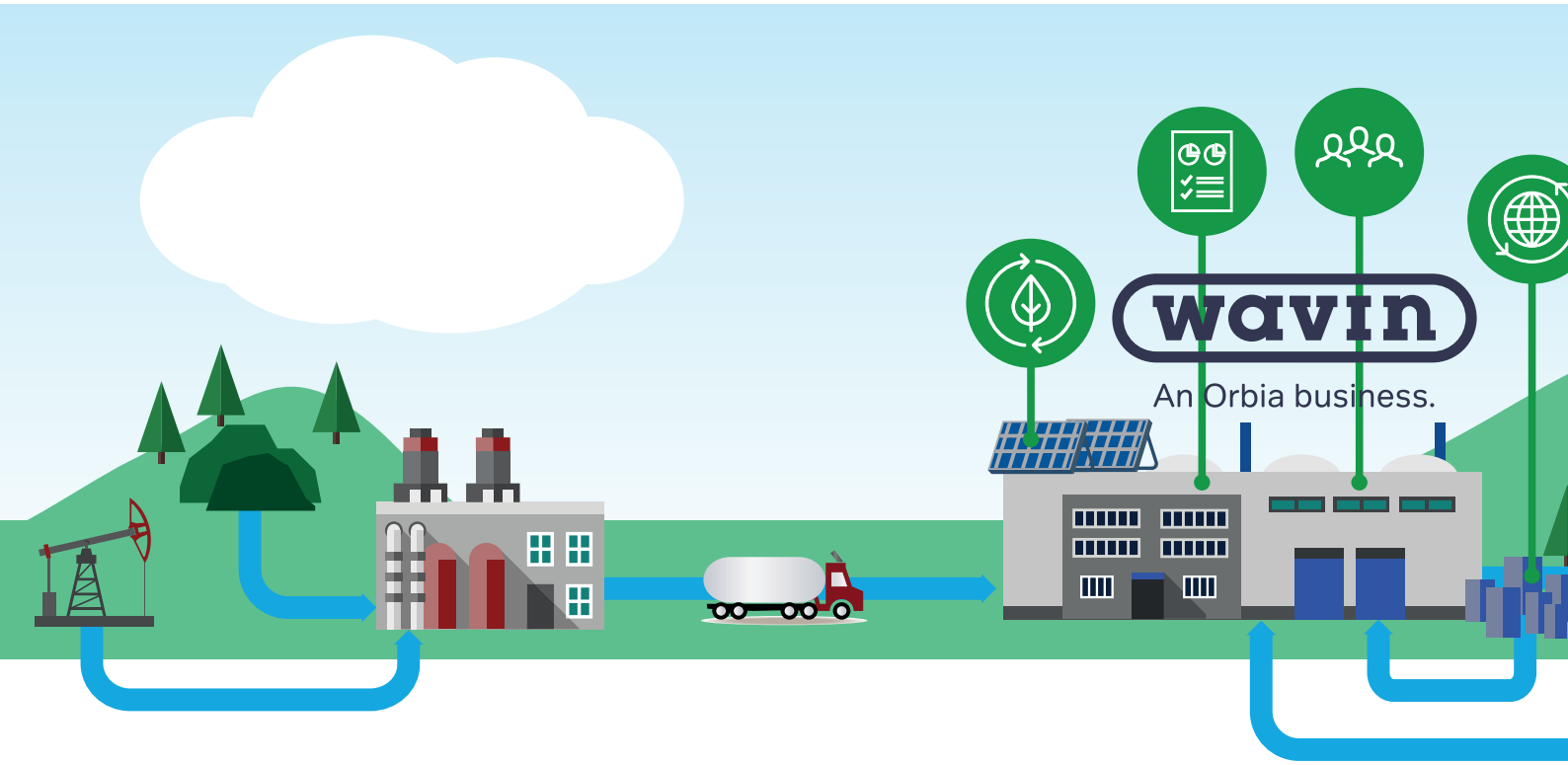
Wavin's role in the green transition

As one of the leading players in the construction and infrastructure industry, we aim to be at the forefront of our industry by 2025 with our adopted sustainability goals. We support these goals through significant investments, concrete initiatives, measurable results, true leadership and collaboration with our customers, users and suppliers to achieve CO_2 neutrality by 2050.

Our commitment to a more sustainable world stems from our vision and corporate culture. As a global market player, we strive to be the leader in sustainable solutions and want to make a positive difference. We are committed to creating healthy and sustainable environments, including within district heating. Sustainability is an integral part of our operations and we work actively to make sustainability a reality. It is therefore up to us to play a central role in the green transition, in cooperation with other players.

We develop systems that promote cleaner and safer environmental practices, and our products optimise heating customers' opportunities to reduce heat and water consumption. With our experienced position in the market, we can work closely with housing companies, developers, utility companies, trades and consulting engineers to identify and implement the most appropriate solutions.

Our commitment to sustainability is reflected in everything we do. From production and transport processes to innovation and installation, as well as our overall business operations and human resources management. Our journey towards sustainability is well underway at Wavin.



Innovation

We continuously develop innovative solutions for safe and sustainable water consumption that support vulnerable communities and help our customers meet the challenges of climate change.

Social inclusion

We create a positive impact on (local) communities by improving accessibility to basic human needs such as education and clean water in regions where infrastructure is inadequate.

Circular economy

Our materials and products are designed to be recycled and reused to maximise environmental value. To close the materials loop, we continuously improve our sourcing processes and contribute to increasing the use of recycling.

Reporting

Clear goals are the key to our sustainability programme. We want to create full transparency and openness towards all stakeholders, so that we develop tools, processes and skills to collect high-quality data.

Environmental impacts

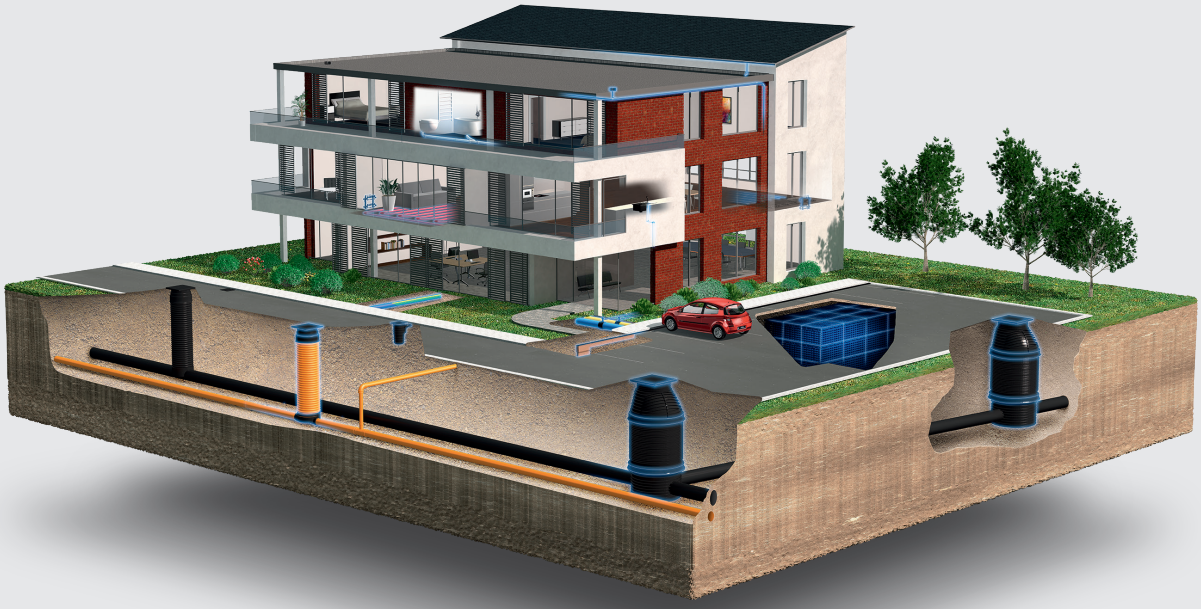
We continuously optimise our production and value chain processes to reduce greenhouse gas emissions. This is achieved with sustainable energy, SMART solutions and other innovative fine-tuning.

Public affairs

We are actively involved in the political debate and are building strategic alliances to promote sustainability, act on it and further increase awareness.

Discover our broad portfolio at wavin.com

- Water management
- Heating and cooling
- Water and gas distribution
- Waste water drainage



wavin

orbia

Wavin is part of Orbia, a community of companies working together to tackle some of the world's most complex challenges. We are bound by a common purpose: To Advance Life Around the World.

Orbia's Building and Infrastructure business Wavin is an innovative solutions provider for the global building and infrastructure industry. Backed by more than 60 years of product development experience, Wavin is advancing life around the world by building healthy, sustainable environments for global citizens. Whether it's to improve the distribution of clean drinking water, to make sanitation accessible for everyone, to create climate resilient cities, or to design comfortable living spaces, Wavin collaborates with municipal leaders, engineers, contractors, and installers to help future-proof communities, buildings and homes. Wavin has 12,000+ employees around 65 production sites worldwide, serving over 80 countries through a global sales and distribution network.

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