

KNOW
HOW
CREATES

professional
controls for
underfloor
heating



ENHANCE
THE PERFORMANCE
OF EVERY SYSTEM



FLOOR HEATING
HYDRONIC

FLOOR HEATING
ELECTRIC

HVAC
CONTROLS & POWER

OJ Waterline™

3RD GENERATION WATERBASED UNDERFLOOR CONTROL



**KNOW
HOW
CREATES**

system
brain power



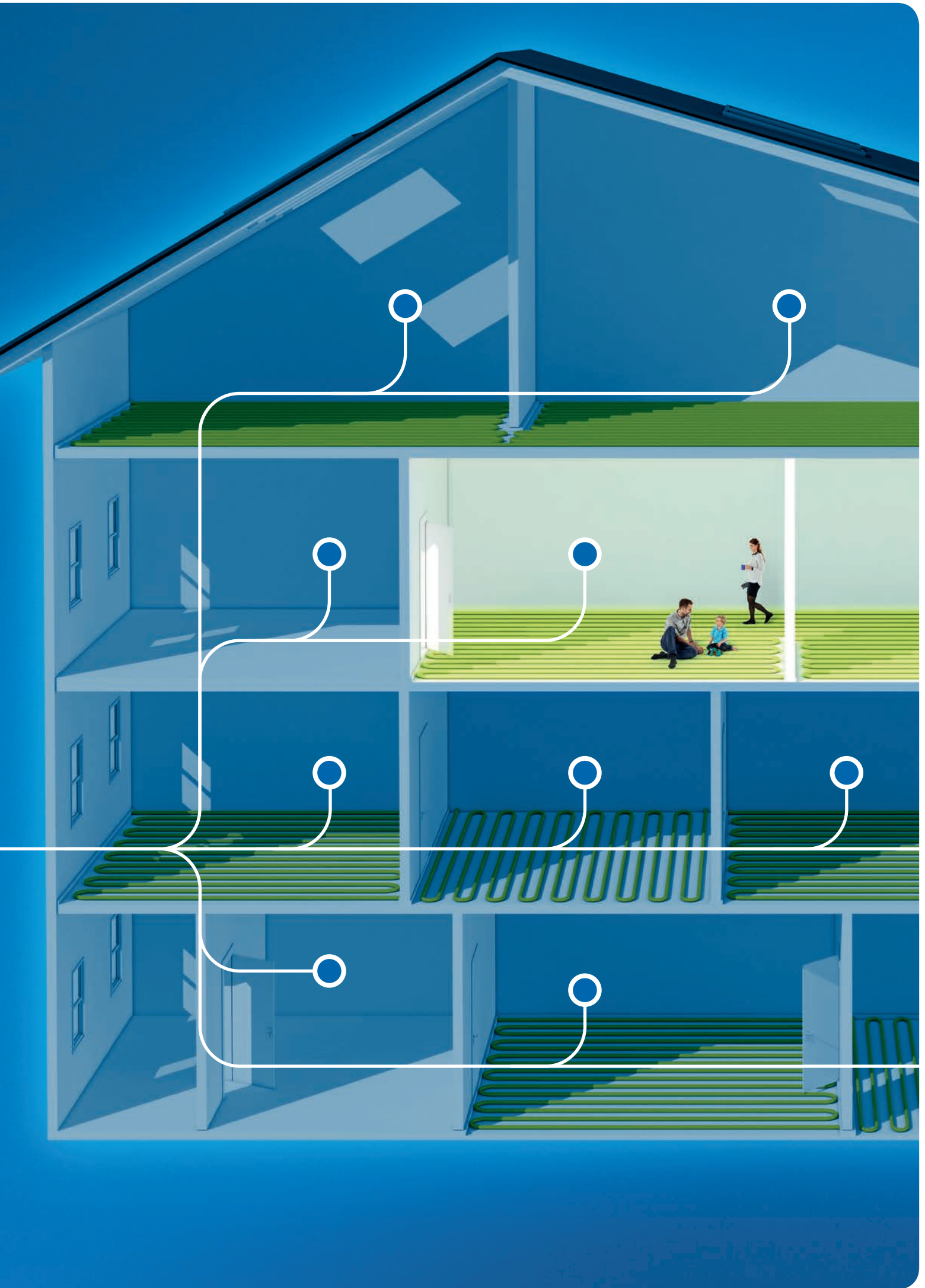
HEATING APPLICATIONS WITH BRAINS AND BRAWN

The OJ Waterline™ Control System sets the standard in smart professional floor heating solutions. It has been developed to deliver you industry-leading intelligence to maximise system efficiency, maintenance and control while providing an easy-to-install thermostat that improves home climate control.

Our master devices, room controllers and room sensors have been designed with technical insights to help create control systems which function effortlessly for both heating and

cooling needs. This helps you build a smarter and more flexible heating solution for applications of any size.

With numerous additional features such as domestic hot water heating, valve and radiator control, system checking and networking possibilities you can now create systems that work not just efficiently, but intelligently. The OJ Waterline™ delivers you industry-leading, value-adding results.



Working with the heart of your system

The OJ Waterline™ Master Control System ensures intelligent operation of building temperature and system control components while offering a standard MODBUS interface for Building Management Systems (BMS). In addition the OJ Floor Managing System (FMS™) provides a total user interface for flexible local and remote monitoring of Waterline™ floor heating.



BRINGING MULTIPLE SYSTEMS TOGETHER

There is an increasing need for systems in commercial applications that meet the requirements of intelligent building management. The Waterline™ Control System offers a MODBUS

interface to promote simple integration of several applications in modern buildings, ensuring your clients have easy and central access to maintenance building controls.

The OJ Waterline™ BMS and FMS System offers:

- Centralised access for maintenance of building controls
- Masters that can be easily set, limited and activated for individual rooms and floors
- System balance ensuring multiple systems work together
- Status read-outs
- Override functions to support testing
- Communication with all masters in an OJ Waterline™ network through a single connection point - the OJ Waterline™ FS network master



**OJ WATERLINE™
MASTER**

**FMS CONNECTION OPTIONS
(ANDROID, iOS, WINDOWS)**



FMS GATEWAY



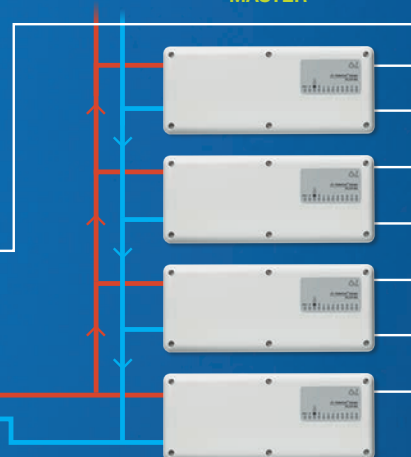
**OJ WATERLINE™
MASTER
(BMS VERSION)**



BOILER



**SECONDARY
MASTER**



A centralised FS master can control multiple areas in large buildings by communicating and relaying information easily and effectively among other masters.

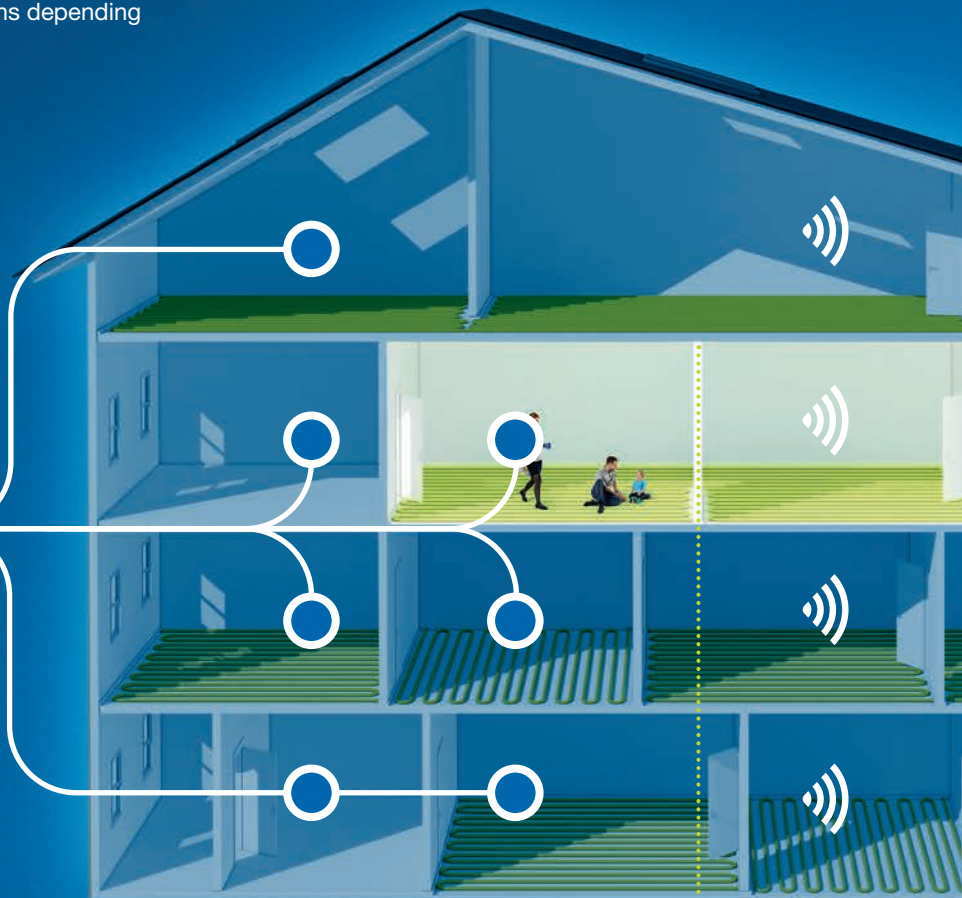
- A “Network Master” controls, mixes and supplies water
- “Secondary Masters” can then be added to the network to create additional zones
- “Secondary Masters” control local pumps and mixing valves and are connected as network strings representing the different stocks in a building.
- Up to 15 strings, each containing up to 9 masters, can be connected to form a network supporting very large installations

Power with wired connectivity...

The OJ Waterline™ Master is a universal controller that can be used for both wired and wireless communications depending on your design needs.



**OJ WATERLINE™
MASTER**



CONTROLLER



WIRED COMMUNICATION

The OJ Waterline™ Control System gives you the power to install masters that ensure proper area control through standard 2-core cables wired to low-voltage sensors (only 5 volts) and controllers which guarantee end-user safety. Wired connections can be up to 300 metres with up to 100 metres between any two units.

AREA CONTROL FOR COMFORTABLE LIVING

Buildings can be divided into areas, each with similar patterns of usage.

Room controllers can be set up to manage other individual sensors for centralised convenient temperature control. This makes managing temperature settings, timing and energy efficiency simple.

A single system can combine as many as 24 units, offering intelligent control of up to 14 zones.

By networking masters, you can support more than 1,800 zones.



...or wireless freedom



RECEIVER



**OJ WATERLINE™
MASTER**

WIRELESS COMMUNICATION

Wireless connection to room controllers/sensors can be established with the same masters by simply connecting a receiver. Wireless offers very high flexibility when either retrofitting current systems or if you need to add additional zones to an existing installation.

A woman with brown hair tied back, wearing a grey sweater over a plaid shirt and a dark blue skirt, is walking on a green floor. She is holding a blue mug in her left hand and a white object in her right hand. The floor is made of green rectangular tiles. A red line runs horizontally across the bottom of the image, with a white circle containing the text "the perfect temperature" and a yellow circle containing the text "KNOW HOW CREATES".

**KNOW
HOW
CREATES**

**the perfect
temperature**

HEAT THE WAY THEY WANT IT...

Underfloor heating requires special demands of a control system as users are in direct contact with the heating surface. It can be unpleasant if the floor temperature remains excessive for too long and comfort is lost if temperature falls too low. Not only this, but poor floor temperature control can lead to significant damage to certain types of flooring.

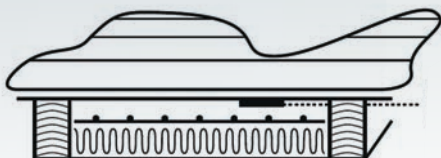
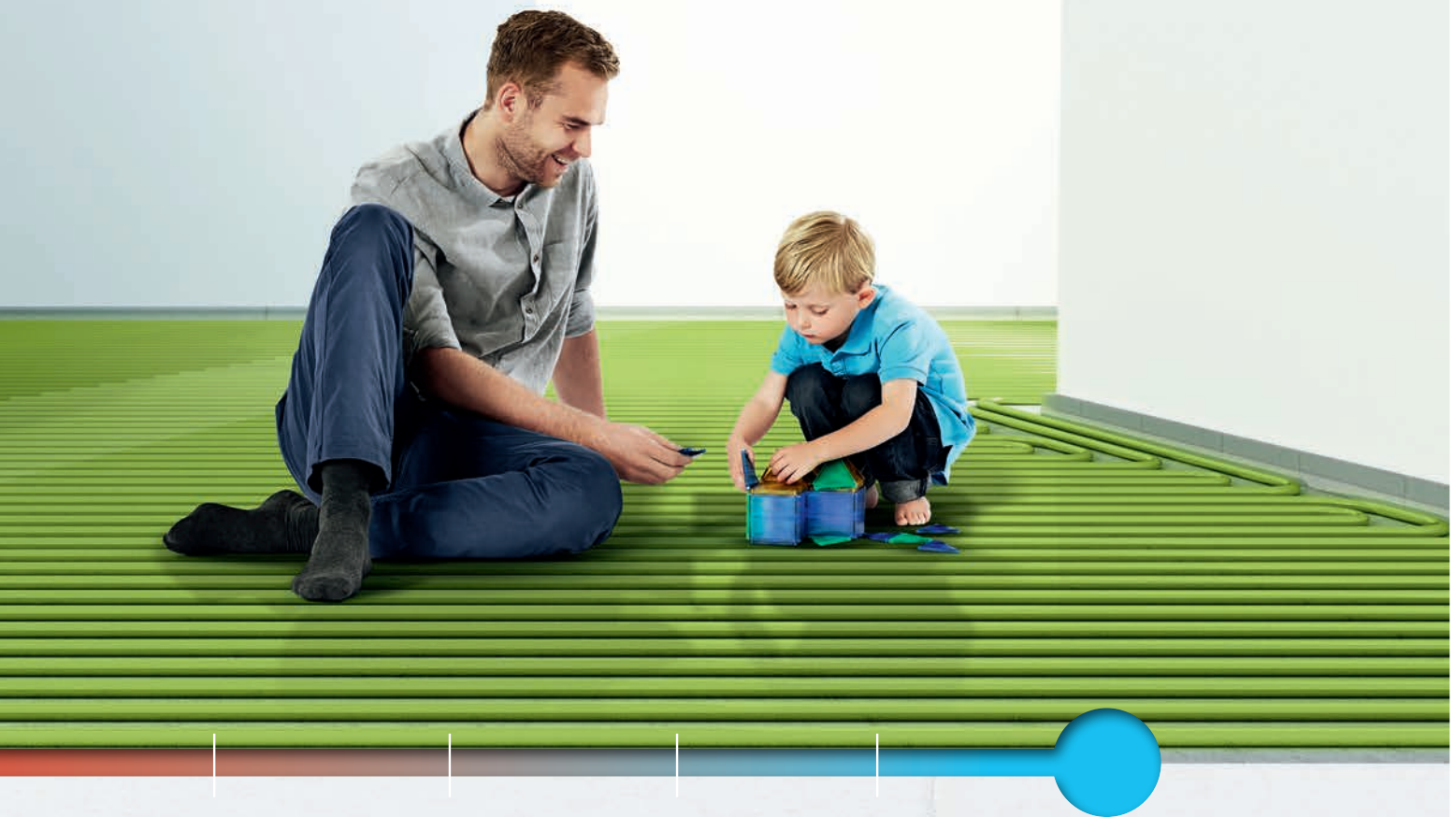
The OJ Waterline™ system provides true comfort through floor temperature limitations and precise control. OJ Waterline™ always ensures optimal energy and savings through its advanced control of the boiler, pumps and sensors in one intelligent system.

... AND COOL WHEN THEY NEED IT

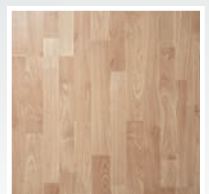
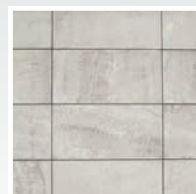
In addition to controlling heating, OJ Waterline™ masters have the ability to control the system for cooling. Our system works by sensing the ambient temperature in the room and cooling the floor to a lower temperature than the surrounding air. Optionally, it can also ensure that condensation and humidity are always kept in check through real dew-point calculations. This solution provides cost effective energy efficiency while giving homeowners the comfort they desire.

Heat well. Cool well. Feel well.

The OJ Waterline™ system gives you the ability to provide heating and cooling temperature control for any size room. You can now provide heating and cooling through the same pipework in the floor or through two different manifolds e.g. heating in the floor and cooling in the ceiling. This ensures the best possible comfort conditions.



Floor sensors provide additional comfort on tiled floors and protection of wooden floors





Advanced control is more than degrees – it is savings

All of our systems handle a range of different energy saving functions. Heating solutions using modern piping, insulation and floor construction can mean significant energy, environmental and cost savings for homeowners.

**Energy savings are compared to centrally controlled heating systems without individual room temperature control. They are made under the common assumption that every extra unnecessary degree adds 5-10% of wasted energy.*



SAVE 30% WITH INDIVIDUAL ROOM TEMPERATURE CONTROL

Without individual room control, temperatures are often set higher than needed. By adjusting the energy needed to maintain independent indoor temperatures, energy savings can be as high as 30%.

PI CONTROL BENEFITS – SAVE UP TO 20% ON ENERGY

Simple ON/OFF thermostats have the tendency to over or undershoot the desired temperature by 1 to 2°C which means wasted energy. PI controlled thermostats adjust energy and maintain temperatures resulting in savings of up to 20%.

OUTDOOR TEMPERATURE COMPENSATION – UP TO 10% IN SAVINGS

Underfloor heating loses heat during transportation, and a higher supply water temperature means more energy loss. Outdoor temperature compensation ensures that the supply water temperature is reduced to a minimum, while still maintaining the desired temperature. This has the possibility to create up to 10% additional savings.

10% SAVINGS WITH TEMPERATURE SETBACK

It is more energy efficient to lower temperatures during the night or when rooms are unoccupied. Our system offers time-based temperature fluctuation based on your clients' needs and can account for an additional 10% savings on average.

Up to 55% savings in total:
Compared to a system without the above features, the full combination of these in an OJ Waterline™ system can save homeowners up to 55% in energy and costs.

Brains...





INTELLIGENT DESIGN FOR EASY INSTALLATION

We design our products with the needs of those who service and install them in mind. Our intuitive design supports installation with many benefits to ensure your work is as simple and easy as possible, such as:

- Right-side up installer instructions for easy installation
- Plug and play for easy integration
- Reliable and trouble-free results

easy
installation



SYMBOL	TIME	TEMP.	EXPLANATION
	06:00	21°C	MORNING: The day begins
	08:00	19°C	OUT: At work, school; etc.
	16:00	22°C	HOME: The family returns home
	23:00	17°C	NIGHT: Bedtime

**KNOW
HOW
CREATES**

intuitive
operation

...with beauty

DESIGNED FOR COMFORTABLE LIVING

The modern thermostat provides so much more than simple temperature control – it's a personalised and intuitive device designed to put a greater degree of control in the hands of the user.

- Easy temperature adjustment
- 4-event timed temperature control
- Intuitive user interface with large backlit display and supportive dial size



MATCH THE RHYTHM OF DAILY LIFE

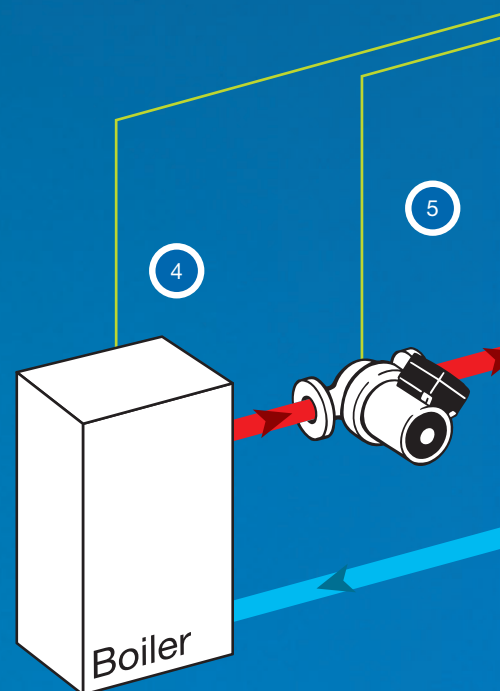
The Room Controller has many functions to help conserve energy. For example, the controller can automatically lower the temperature at night and during weekday daytime hours.

The thermostat comes pre-programmed with comfort and setback periods that can be changed to suit personal desires, and event periods are displayed with simple, logical symbols.

FULL-SERVICE SUPPORT AND ADDITIONAL FEATURES TO SAVE ENERGY AND PROLONG SYSTEM LIFETIME

One-for-all room controllers with special settings can also handle the below applications:

- Domestic hot water using a temperature probe in the water cylinder
- Radiator heating through an alternative control method
- Heating with an additional boost step (2-step heating)



1

System check

Correct operation of the system can be checked using a special "Install Mode". This enables the installer to quickly test and validate the system.

2

Humidity control

The master can also control one or more de-humidifiers to continue cooling in high humidity situations.

3

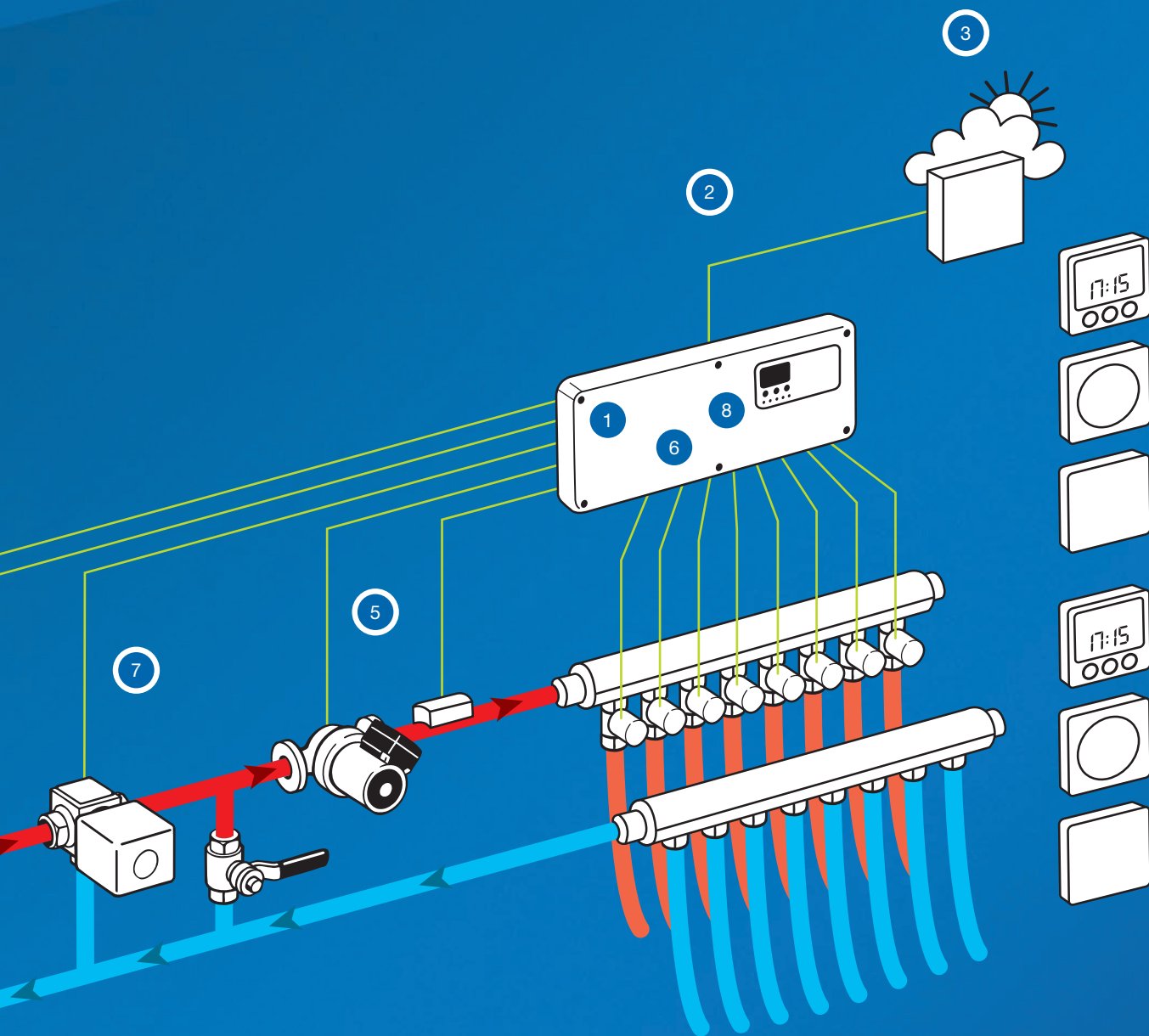
Outdoor temperature compensation

The digital master is capable of compensating for outdoor temperature. All that is needed is the outdoor compensation module and a supply temperature sensor to be connected.

4

Boiler control

OJ Waterline™ masters have an output to activate the heating source, such as the boiler, heat pump, etc.



5

Pump control

All OJ Waterline™ masters are fitted with pump outputs that work with both single and multiple pump systems including a variety of heating sources.

6

Dew point control

In cooling mode, humidity sensors help the master control the mixing valve and/or reduce the actuator outputs in order to prevent condensation on floors at high humidity.

7

Mixing valve control

To obtain controlled supply water temperature, the digital master provides a 24 V AC, 0-10 V output for the mixing valve. Control action is P + I with parameters adjustable in the master.

8

Commissioning mode

Digital masters include a special "commissioning mode", which allows supply water to be controlled in order to help dry out newly laid concrete floor.

KNOW HOW CREATES

For over half a century, OJ Electronics has specialised in the design and development of electronic controls for HVAC and underfloor heating systems.

With a reliable yet flexible supply chain, we take pride in providing superior quality and performance in all our systems. We understand the challenges our customers face and work closely with them to find original solutions. And by channelling our insight, we create new opportunities for professionals throughout the industry.

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