



Control.  
Visibility.  
Intelligence.

**irus** ecoSystem

Central control  
Building energy management system



Take control of **Energy, Safety, Compliance, Maintenance and Welfare**  
with a system **designed specifically** for **multi-occupancy accommodation**.

The provision of multi-occupancy accommodation presents many challenges. Safety, comfort and affordability being top of the list.

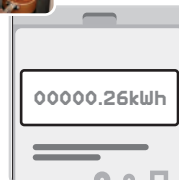
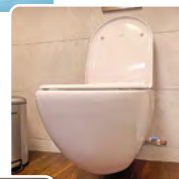
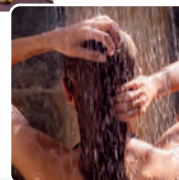
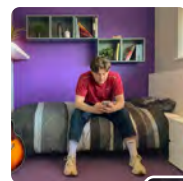
Since 1997 we have been developing products and specifically for this sector.

Our core focus is to deliver systems that help our customers provide **comfortable, safe, and compliant** accommodation while maximising operational efficiency.

**Prefect Irus** is a centrally controlled building energy management ecosystem, initially designed to monitor and manage energy consumption at point-of-use. Over time, hardware and software development has expanded the capabilities of the system.

Data collected from each room is analysed to provide recommendations for additional efficiencies, and the ability to pinpoint potential issues. Interventions can then be made to avoid escalating problems. The data helps inform strategic energy management decisions.

Building operators gain **control, visibility and intelligence** remotely via a secure internet portal.



### SpaceHeat

Room heating control and environmental conditions monitoring

### SmartTank

Water heating and control

### LeakDetect

Leak detection

### WaterSense

Water heating and control

### HobSensus

Kitchen safety

### UtilityMeter

Electric and water metering

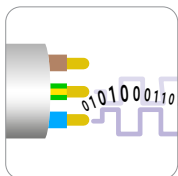
## irus ecoSystem

**Central control**  
Building energy management system



### Internet based portal

The user friendly, intuitive web based portal provides access to the system and control from anywhere with internet connectivity. Managers have complete control of individual environments without ever having to set foot in a room.



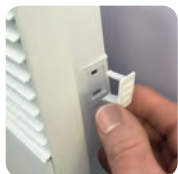
### Mains Borne Signalling (MBS)

The system uses the existing electrical circuits within the building to transmit data via the Earth and Neutral wiring. MBS makes installation quick, and negates the need for additional data cabling or extensive interference with the building's infrastructure.



### Window-open technology

If windows or doors are opened, the ControlSensor will detect a sudden drop in temperature and Irus will reduce heat input. This prevents thermostats from being set to maximum and left on while heat escapes.



### EnergyLock

Our patented key enables 'no controls' electric panel heaters and fluid-filled radiators to be installed that comply with LOT20 legislation.



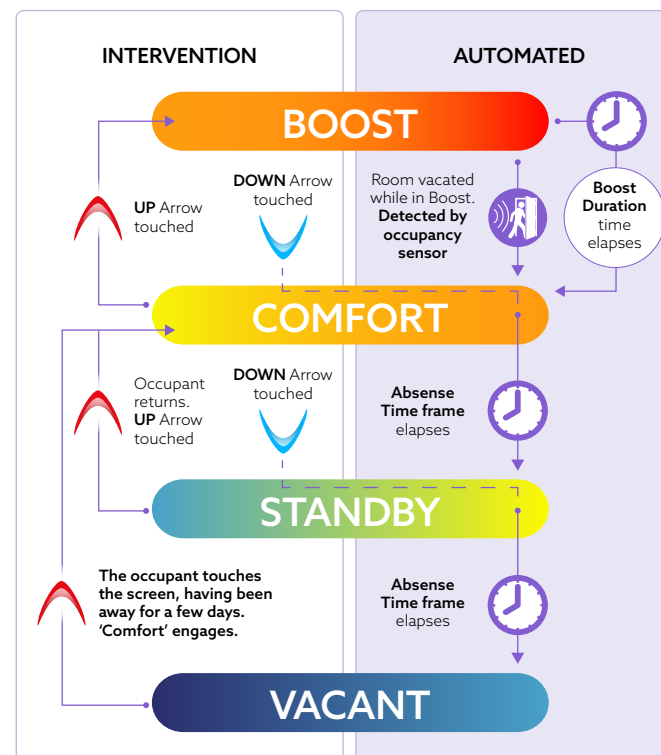
### Resident welfare

It's not all about energy savings with Prefect Irus – light, humidity, CO<sub>2</sub>\* and sound pressure levels are also monitored. This means issues such as damp, noise or air quality are reported before they become a major problem. Alerts are sent by text or email. (\*Optional)



### Maintenance

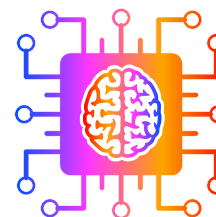
Maintenance teams are sent email and/or SMS messages so they can pinpoint works that need to be carried out. Irus identifies the fault, sends the message, records and reports data to generate a minute by minute log of the issues found, and actions taken.



## The 4-State Stages

Temperature and time settings are programmed on the portal for four states - **Boost**, **Comfort**, **Standby** and **Vacant**. Room occupants have control over their environment but only within these pre-set parameters. **Comfort** maintains a comfortable temperature. For more warmth the 'UP' arrow is touched to enter **Boost**. When the pre-set time elapses **Comfort** re-engages.

This diagram shows how Irus is always striving to save energy.



## Machine learning and AI

Remote control is a given with Irus, but our new generation makes Dynamic Remote Control possible. Energy input is determined by occupant behaviour and actual usage of the system as opposed to a prescriptive profile approach.

AI is employed to interrogate Irus' vast data bank to present insight that answers very specific questions from users. These could relate to issues or characteristics that affect the property.

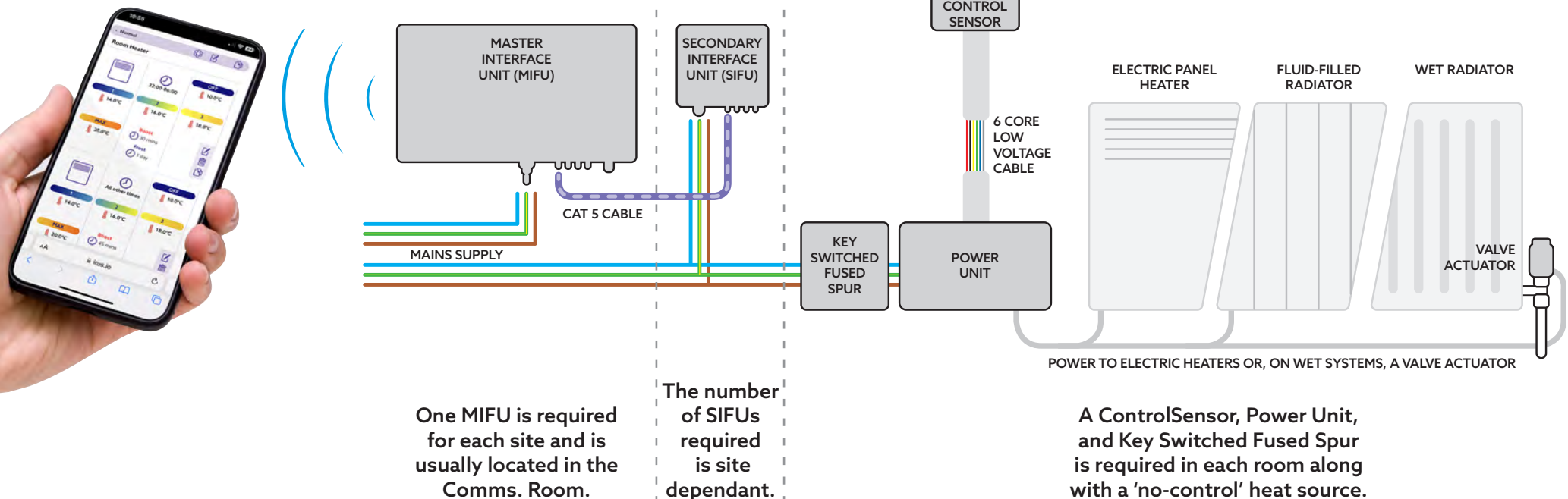
The diagram illustrates a typical layout for the Irus hardware. Data is transferred between the room controller and Secondary Interface Unit via the Earth and Neutral wiring of the existing electrical circuits. The SIFU boosts the signal and sends the data along Cat. 5 cable to the Main Interface Unit. The MIFU processes the data, returns instructions to the controllers, valves and any connected devices. Information from the MIFU is presented to the Irus Portal.

## Installation and Commissioning

Installation is quick and efficient. When all hardware fitting is complete, one of our Project Managers will install the MIFU, test, and commission the system. Time and temperature parameters, or profiles, are set and the project is complete.



### Typical site layout



The ControlSensor is used to receive instructions within the room from the Irus Portal and affect the energy input to the heat source.

The intuitive interface enables the room occupant to increase the room temperature by touching the 'Up' arrow which moves it to the next State. Touching the 'Down' arrow takes the control to the next lower state.

The heater/flame symbol indicates whether the heat source is on or off. The current state is displayed between the arrows.

### Occupancy sensor

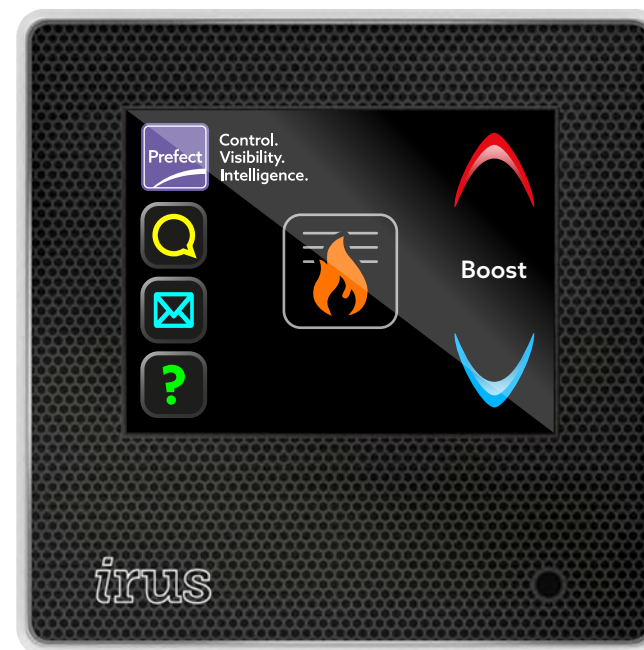
The ControlSensor has an integrated microwave sensor that detects movement. If no movement is detected within a pre-set time frame, heat input is reduced.

### A warm welcome

The ControlSensor can be customised by displaying your company's logo and a personalised welcome message

Heater/Flame symbol shows if heat source is on or off

Up and Down arrows for heat input adjustment



Nudges



Messages



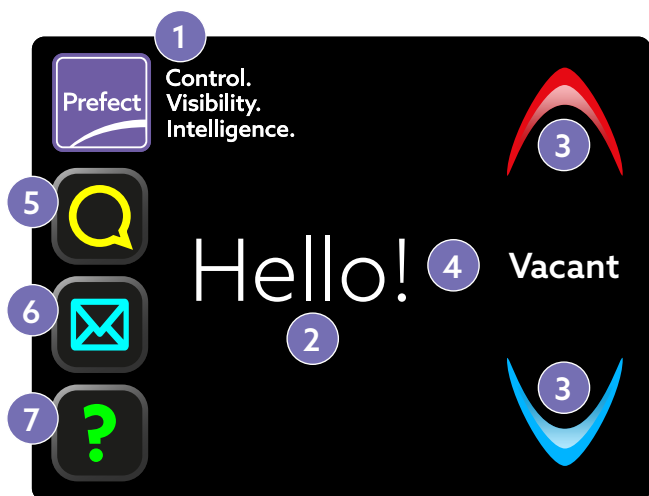
Instructions

### Direct-to-Room communication

The ControlSensor displays communications sent from the portal. The symbols on the left hand of the screen provide communication to occupants. Either directly to individual rooms or en masse.

**No 'free-type' communication can be sent from one individual to another.**

All communication is generated either; using data gathered from the system that is then interpreted using intelligent machine learning; or, from templates chosen by the system user to inform room occupants of upcoming event/notifications.



- 1 Customer logo
- 2 Welcome message
- 3 Control arrows (Up and Down)
- 4 Current state
- 5 Nudge communication access button
- 6 Message communication access button
- 7 Instruction information access button



## Nudges

**Nudges** are information generated from individual room data collected by the **Irus System**.

Nudges are designed to encourage energy/utilities efficiency by affecting behavioural change.

The Irus System does not know a room occupant's identity and cannot link a room with an individual.

The messages contain information pertaining to consumption, room conditions or are simply advisory.

Any of the data collected by Irus can be used to trigger a nudge i.e. **energy use, humidity, light, sound pressure, occupancy, CO<sub>2</sub>\* etc.**

The dots under the text indicate how many Nudges there are to read. Subsequent nudges are read by swiping the screen.

Nudges will remain viewable until the featured issue/condition (i.e. humidity) is resolved, or when a specified time frame elapses.

(\*Optional)



## Messages

**Messages** are information generated by **Irus System Users** for room occupants.

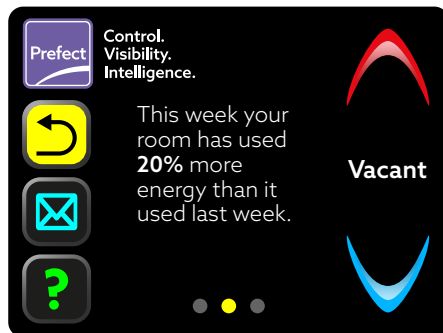
For example; Awareness of maintenance schedules/fire alarm drills, or that a parcel has been left in reception.

Templates are created for each message type. Administrators then customise the message with specific details, such as dates and times before sending to specific rooms or 'All'.

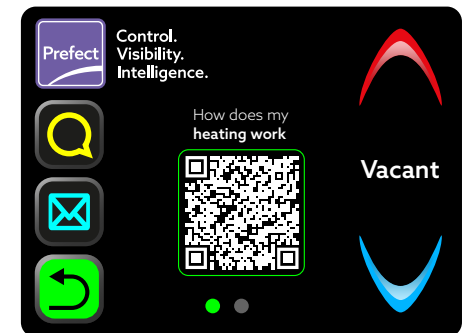
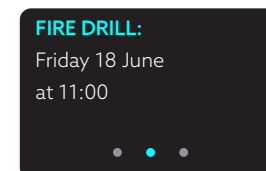
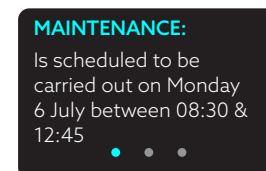
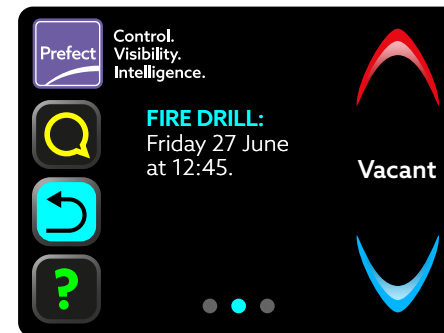
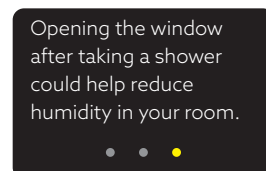
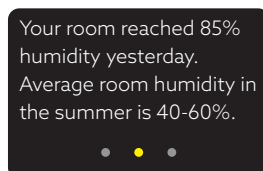
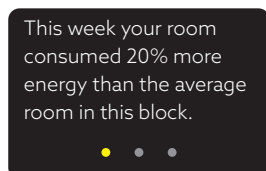


## Instructions

**Instructions** are information to help occupants understand how their heating system works and why it is necessary. This can be a QR code leading to a video explaining the system or on-screen information about the control buttons etc.

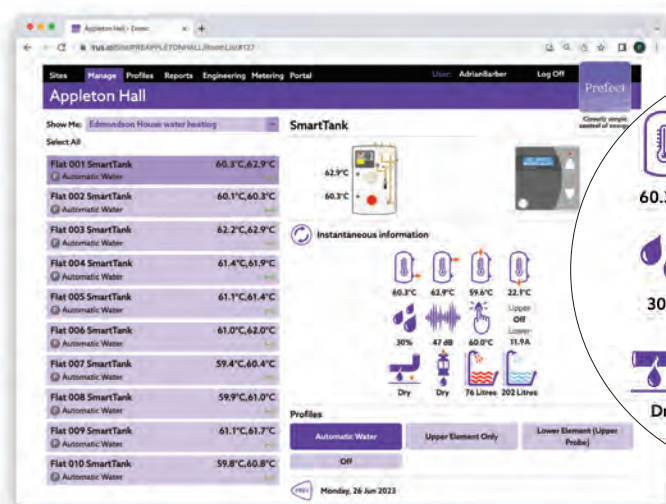


*The highlighted Nudge/Message/ Instruction icon indicates which type of communication is being displayed.*



*Typical Nudge/Message examples, however, these can be customised to site requirements*

Monitoring the volume and temperature within a hot water system provides data that is used to develop strategies for efficiency. Irus SmartTank is the ultimate hot water control which monitors volume of incoming and outgoing water, and the temperature of incoming cold, outgoing hot and the water within the tank around the upper and lower elements. There is a temperature sensor for return water, if required. A sensor alerts to water flow through the tundish and leak detection pads can also be connected.



## Reporting

Information is easily exported from the Irus Portal and is used to produce many and varied reports/displays of real-time data regarding consumption of both water and energy.

All temperatures are recorded, and this effectively compiles a log of evidence to prove compliance with water safety plans to guard against the risk of Legionella formation.

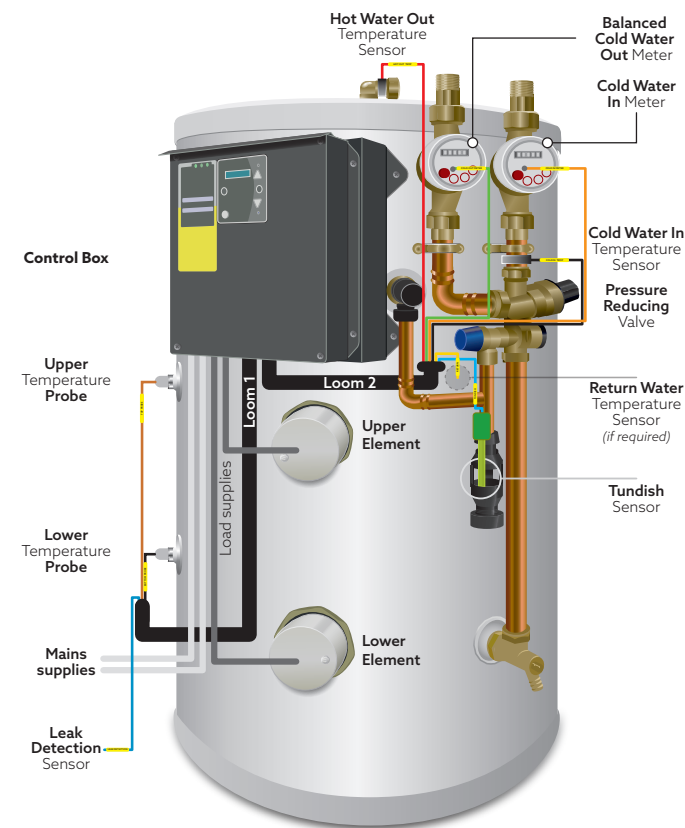


## Installation

SmartTank is the only pre-plumbed, pre-wired hot water cylinder with on-board controls. Pipework, wiring, meters and sensors are factory fitted.

Mechanical installation is simply connection to the mains water and cold/hot pipes. Electrical wiring requires connection to the incoming mains supply and cylinder elements.

Factory fitting, testing, and quality control means all tanks can be installed identically ensuring consistency across the entire site.



## Retro-fit water control

For situations where new tanks are not required there is a hot water tank kit that includes sensors for attachment to existing tanks. The kit also comprises a power unit and all necessary hardware, leads and a ControlSensor for connection to the Irus system.

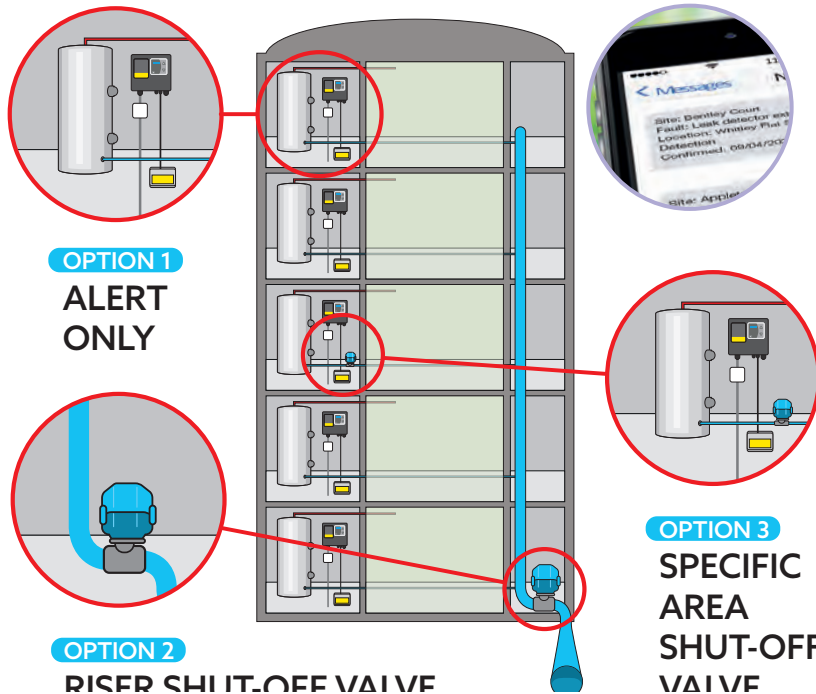
## Leak detection

Irus keeps buildings safe by monitoring leak detection pads and pipe sensors. It automatically sends alerts while closing off water supply. Wherever there is potential for water escape, i.e. in the vicinity of hot water cylinders, in kitchens or under shower pods, Irus will keep watch.

There are three levels of action that can be taken to minimise damage when leaks occur. For all options, leak detection sensors are positioned where leaks are most likely to occur. In the event of a leak the Irus Portal sends an alert in the form of either email, SMS or both, to designated addresses and numbers detailing location and intensity of the incident.

### Alerts

SMS or Email messages or both, are sent to designated personnel detailing the location and intensity of the leak.

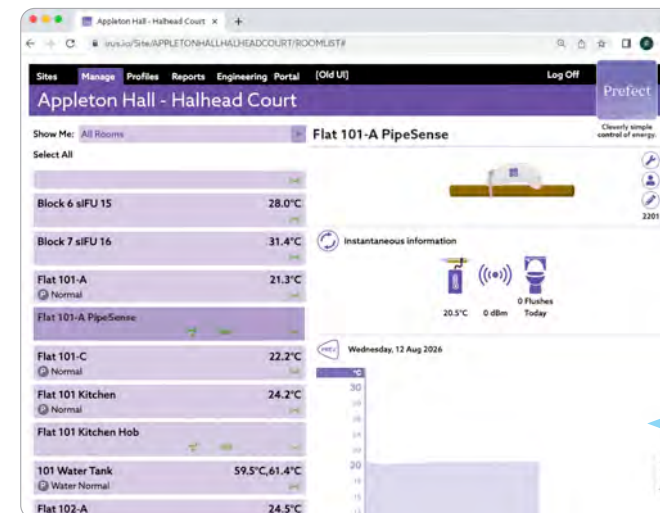


## Water wastage and temperature monitoring

Saving unnecessary consumption of water can have a significant effect on the bottom line of businesses that providing multi-occupancy dwellings. If left unchecked, dripping taps and faulty cisterns can be contributors to major water wastage. Remote temperature monitoring takes the legwork out of water safety testing.

### PipeSense

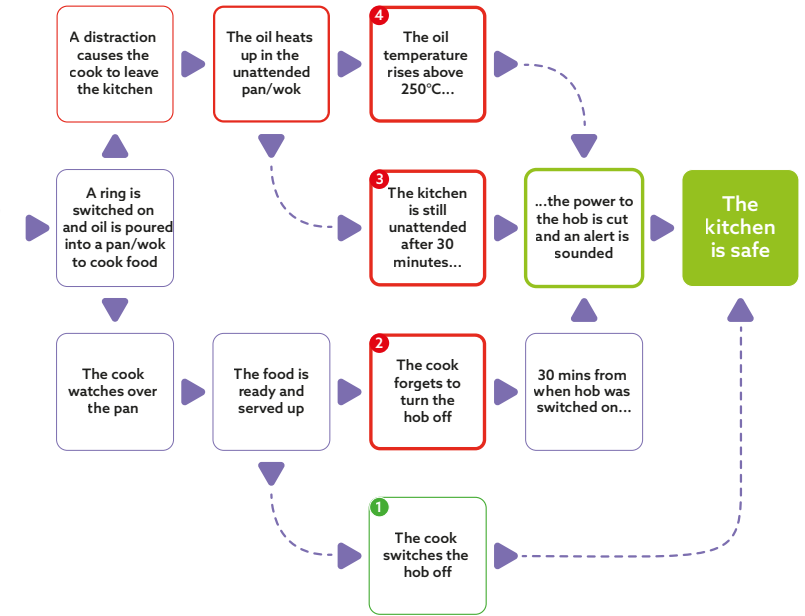
PipeSense has two sensors, one for pipe temperature, the other, room temperature. A differential between the two readings signifies water flow. This could be as little as five litres per hour. When attached to water outlet pipes, PipeSense reads and reports water temperature.



## Making kitchens safer

HobSensus alerts residents to unattended pans on a hob. The Sensor Head monitors the cooking surface and if the temperature approaches a dangerous level, the power to the hob will be cut.

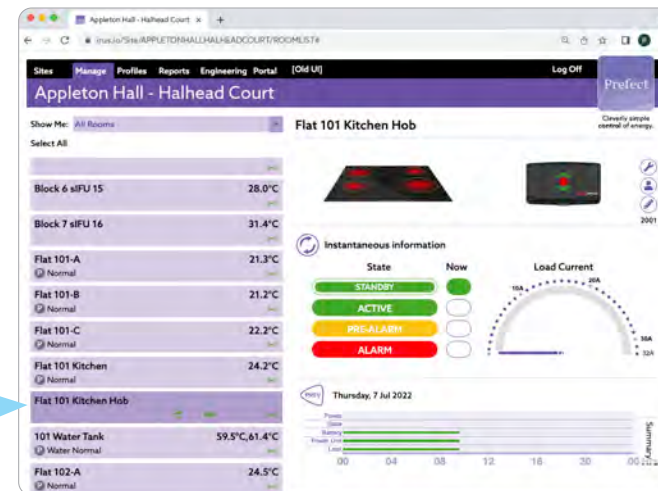
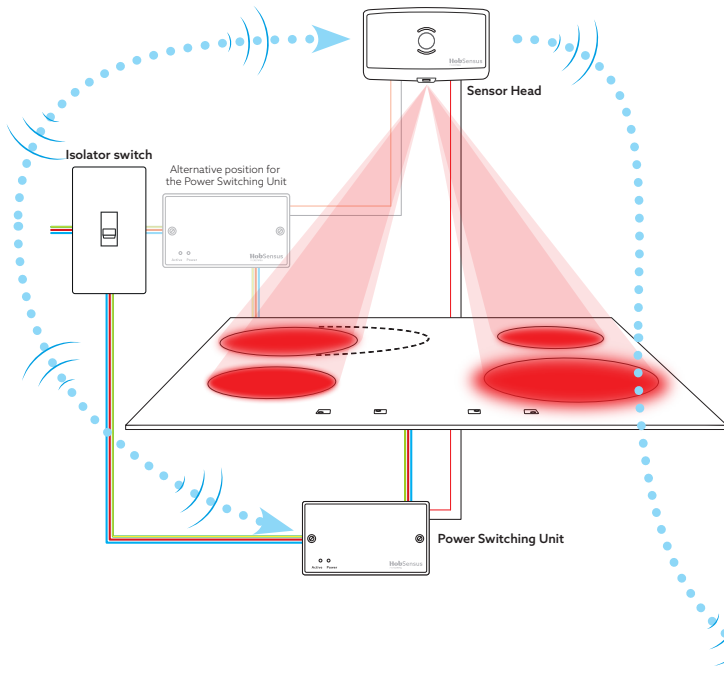
Likewise, if the kitchen is left unattended while the hob is switched on, even if the surface doesn't reach dangerous temperatures, after the pre-set time\* elapses, the hob will be made safe by the power being turned off.



## Installation and operation

The Sensor Head is affixed to the wall behind the hob. The Power Switching Unit is installed close to the isolator switch, either on the wall or below the hob in a kitchen cupboard.

Bluetooth technology provides communication between the two units, and to the closest ControlSensor, thus linking it to the portal.



## Reporting

The portal enables remote monitoring of each HobSensus unit to show;

- Current state
- Standby
- Active
- Pre-Alarm
- Alarm
- Tamper status
- Setting switch position
- Real time current flow
- Signal strength
- Battery level
- Leak detection
- VFC status

The versatility of the irus building services management system provides easy connection for a variety of metering solutions to monitor both electricity and water consumption. Room, flat, floor or block utilities usage is displayed and recorded on the secure portal.

### Pulse Output Meter (iPOM)

iPOM is an affordable solution and ideal for retrofitting as it utilises existing Irus heating control equipment which connects to a MID approved pulse output meter.

### MODBUS Metering Unit (iMMU)

iMMU uses MODBUS connection between the meter(s) and the ControlSensor. Metering information is sent via Mains Borne Signalling to the Irus Portal using Irus central infrastructure. Multiple meters can be read and displayed.

### SMART Meter Module (iSMM)

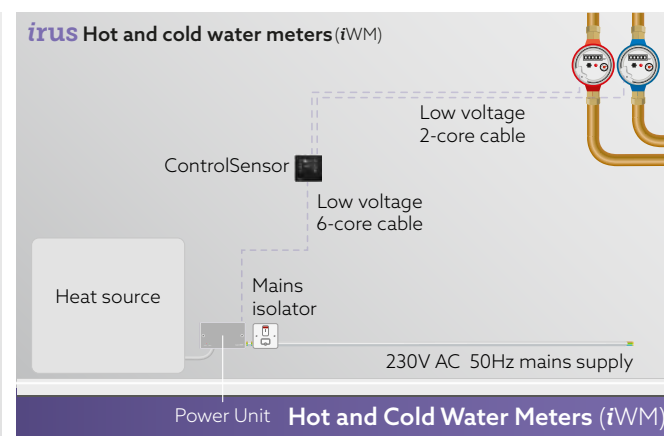
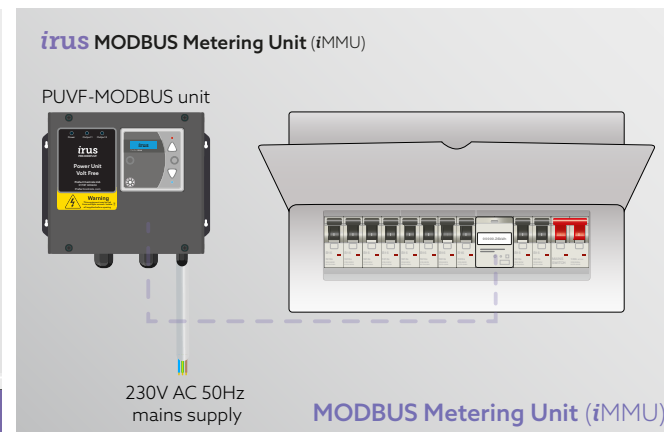
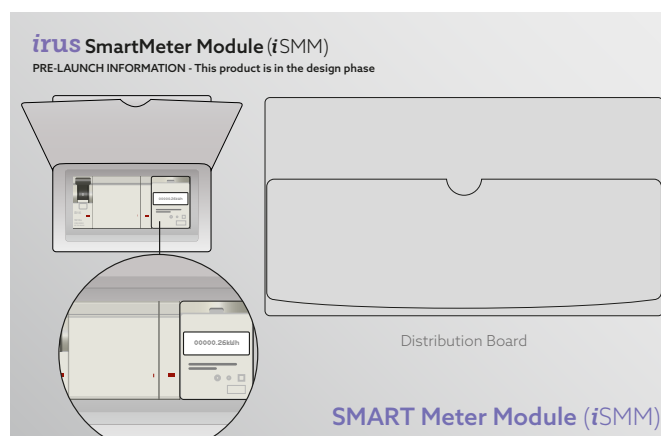
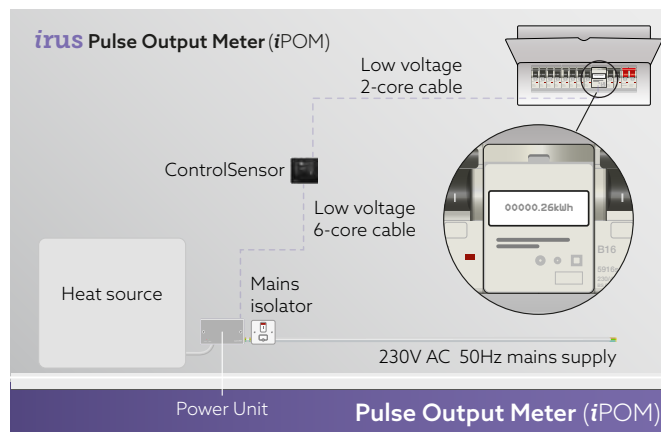
iSMM provides a bespoke Irus metering solution. The iSMM unit contains the metering module and the meter. Connection is via MODBUS and communication with the Irus Portal via Mains Borne Signalling on the Irus central infrastructure. Multiple meters can be read. If there is room within the distribution board the meter and module can be DIN Rail mounted.

### Hot and Cold Water Meters (iWM)

iWM measures use of hot and cold water. using Pulse Output meters. Low Voltage connection between the ControlSensor and the meters collects data which is then sent via Mains Borne Signalling to the Irus Portal where insight is provided of high usage per room, flat, floor or block.

#### FEATURE/BENEFIT

|                                                 | iPOM | iMMU | iSMM      | iWM |
|-------------------------------------------------|------|------|-----------|-----|
| Suitable for retrofitting                       | ●    | ●    | ●         | ●   |
| Connects to room ControlSensor (CU3/CU4)        | ●    |      |           | ●   |
| Hard-wired to ControlSensor (trunking required) | ●    |      |           | ●   |
| Disaggregated energy use reading                |      | ●    | ●         |     |
| DIN rail mountable                              | ●    | ●    | ●         |     |
| MODBUS protocol (100%                           |      | ●    | ●         |     |
| Pulse reading (reliant on reliable comms.)      | ●    |      |           | ●   |
| Water measuring                                 |      |      |           | ●   |
| Available for immediate installation            | ●    | ●    | Late 2025 | ●   |



## Data at your fingertips

The portal is the heart of the Irus system.

This secure, intuitive interface provides complete visibility of all your property, whether a single block or a national estate.

This **Landing Page** shows all the buildings you have access to. You can choose the software tool you need to use to explore your site. News about the portal can be viewed here along with training and 'how-to' instructional videos.

Click on the **Controller** button and you can see the current conditions in any individual room; Make adjustment to temperature and time profiles; View historical data, and even test the heat source in a specific room.

Choosing the **Reporter Suite** within Controller provides access to custom reports, from where, for example, average temperature data is collated, or issues such as humidity become very clear.

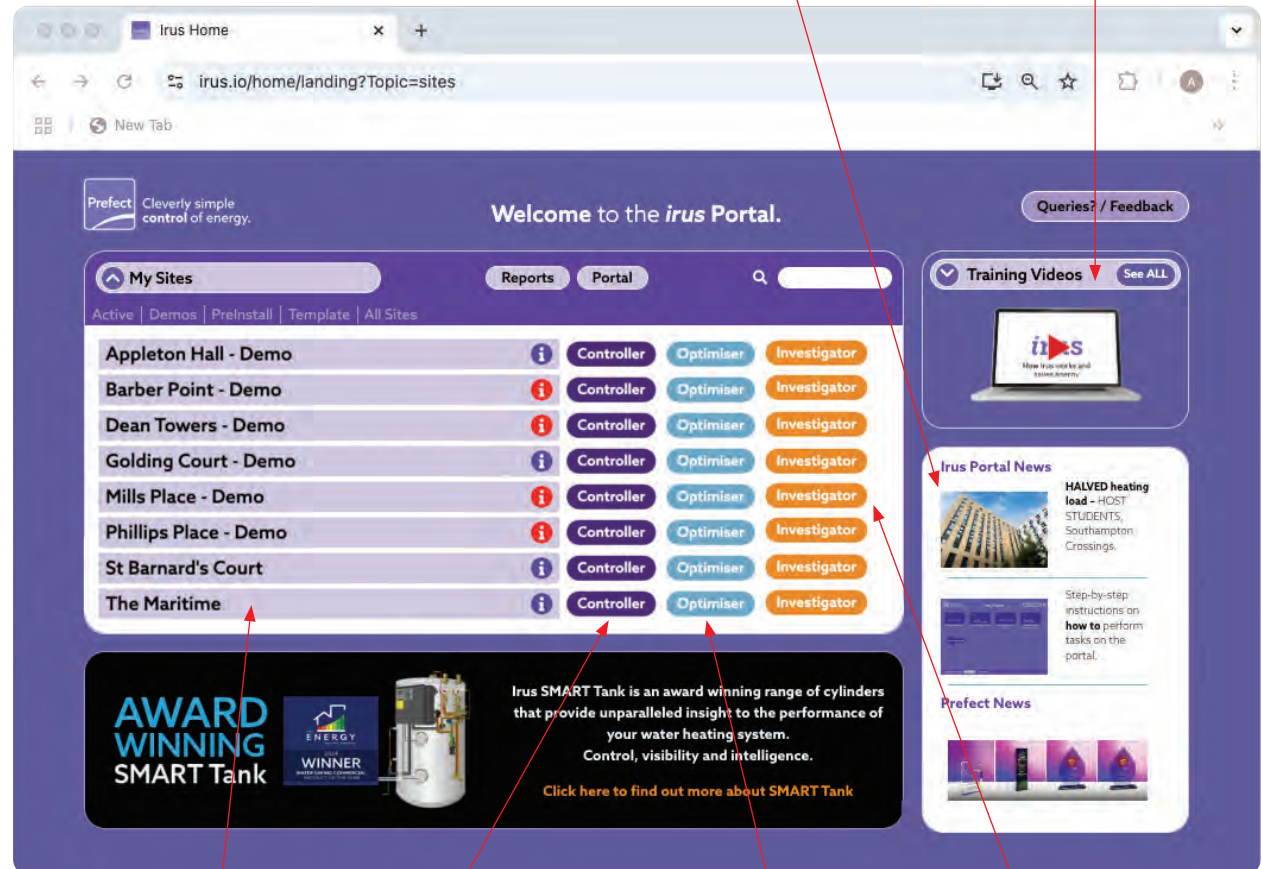
The **Optimiser Dashboard** provides suggestions for 'quick-wins' such as highlighting unoccupied rooms using an unsuitable profile. Switching these will instantly improve energy efficiency.

The **Investigator\*** tool presents a birds-eye view of your site. Specific observations let you drill down from block, to floor, to flat, to room to identify issues such as the use of supplementary heaters, high humidity, or an overview of occupancy.

\*Investigator is a subscription service.

The news section keeps users up to date with Portal developments.

An archive for instruction and training videos.



These are all the sites this user has access to.

**Controller** is the control tool for room conditions, water heating, leak detection, hob safety etc.

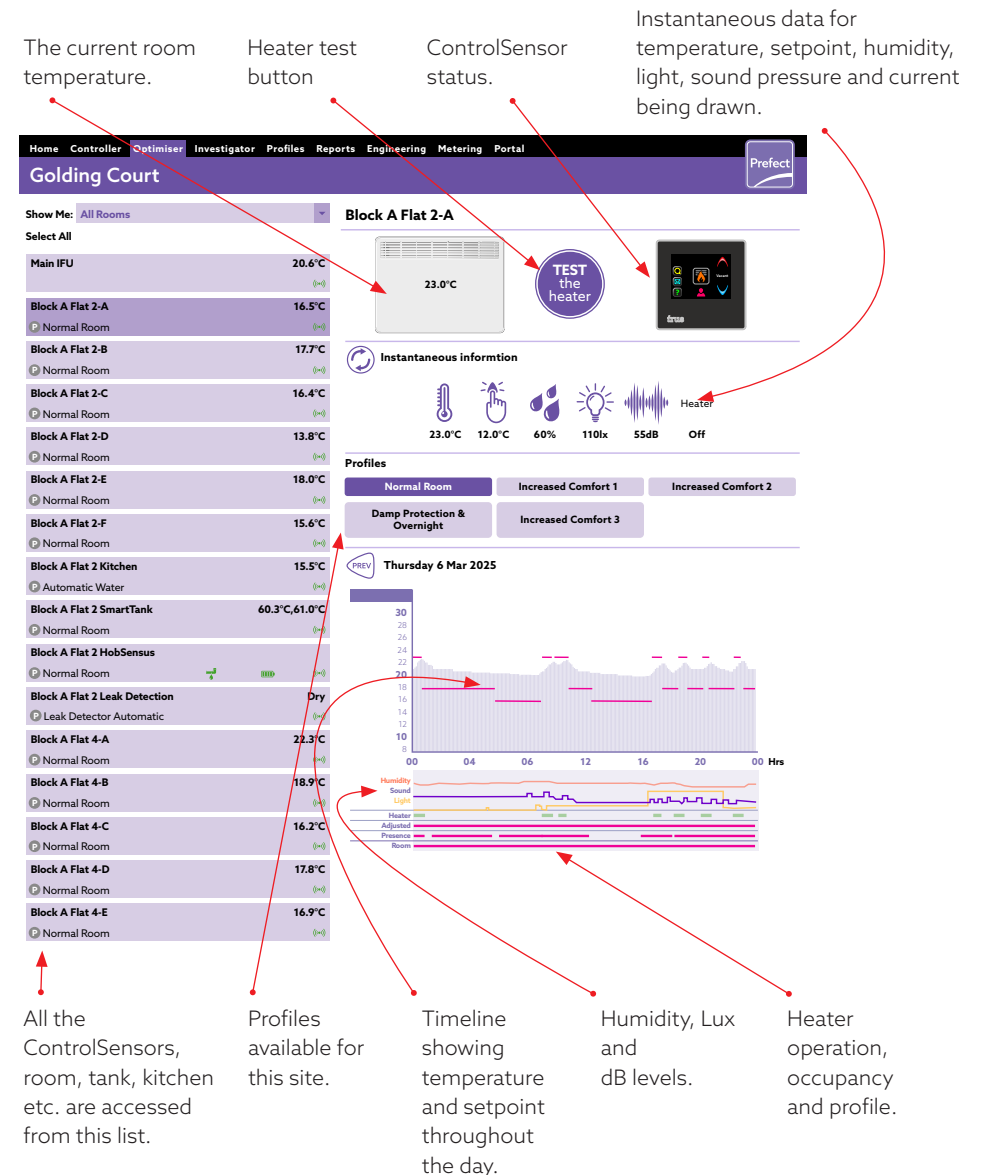
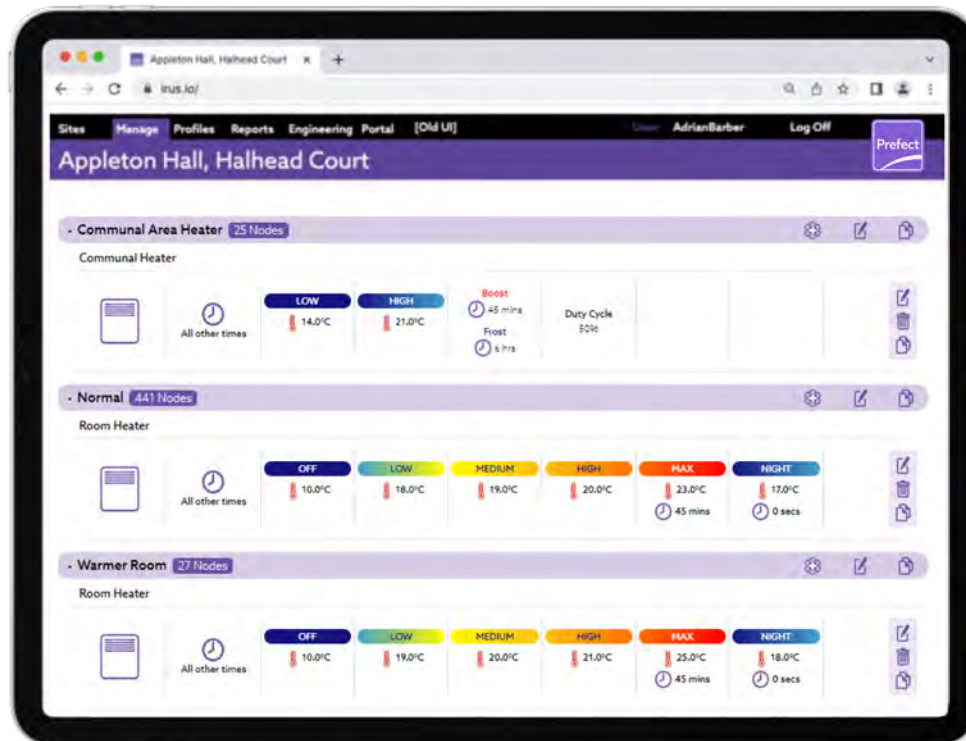
**Optimiser** is a tool that analyses data and makes recommendations for how to maximise operational efficiency.

**Investigator** is a tool that provides an overview of the site, but pinpoints where issues may be arising.

**Controller** presents all the information gathered from individual rooms and other control devices within the ecosystem in one easy to understand dashboard.

From here you view the rooms current temperature, test the heat source, view instantaneous environmental data, and see whether the room is occupied.

Profiles can be adjusted and a timeline graph shows the days performance of heating and environmental conditions within the space.



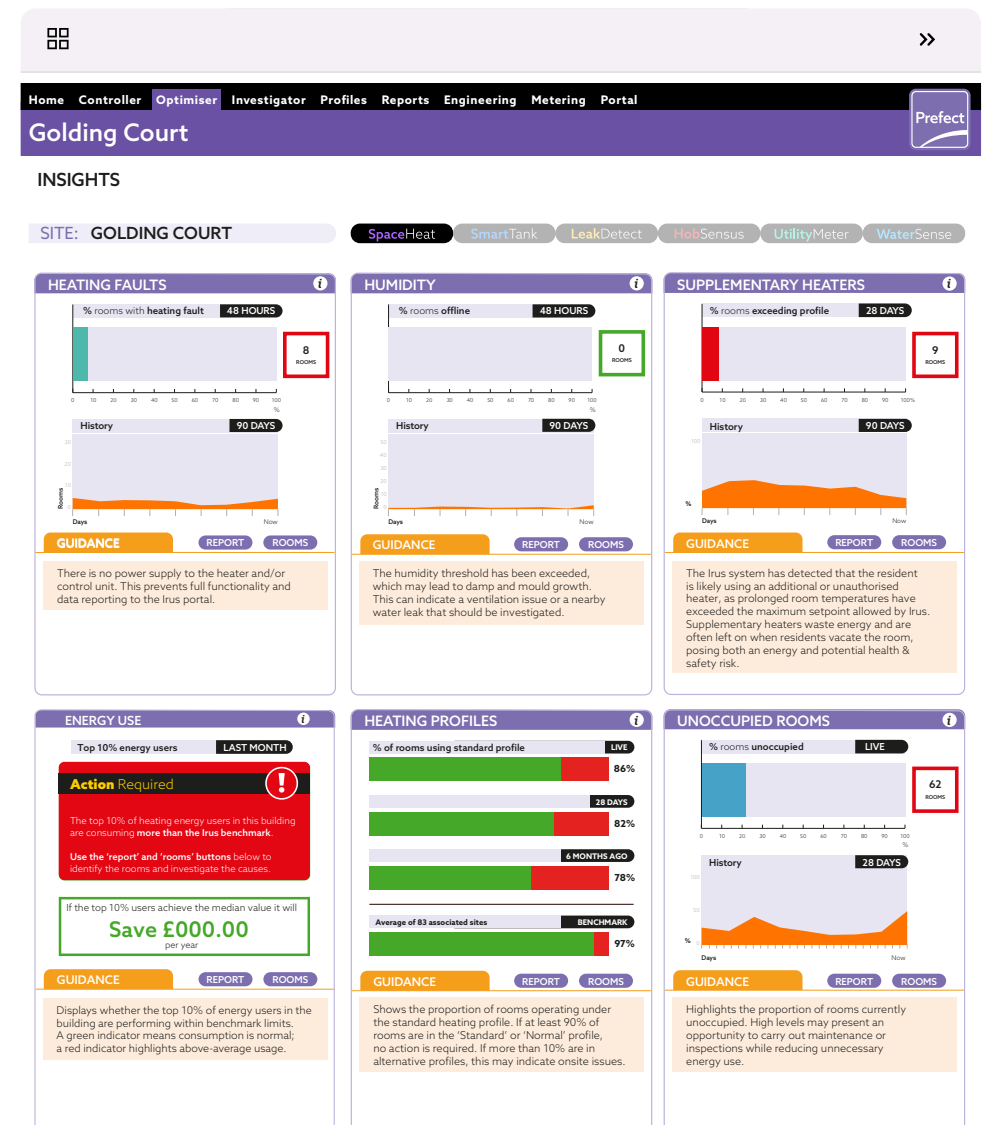
**Optimiser** provides a prioritised list of the most pressing issues affecting your site's efficiency. It highlights 'quick wins' and offers clear recommendations to address problems such as:

- Unusually high energy consumption
- Rooms exceeding the maximum temperature set by the heating profile i.e. rooms that may be using supplementary heaters
- Heating faults or offline rooms

Quick access to metrics, including:

- The number of rooms deviating from the standard heating profile
- The percentage of unoccupied rooms
- Benchmarked energy consumption

Using this data, Optimiser suggests easy-to-implement actions that maintain efficient use of utilities and keep your building in optimal condition, while helping to focus and streamline maintenance issues and improve operational efficiency.



**Investigator** provides a snapshot of real time data and enables you to pinpoint where issues may be occurring.

All alerts can be viewed in one place along with the ability to generate reports for each data point. This helps to understand where hot or cold spots are within a building, occupancy patterns, noise levels, and trend analysis to target problematic areas.

Investigator can be used locally to address specific issues and understand intra-building issues but also centrally to help guide policy direction and decisions.

Rooms with issues highlighted on plan.

Choice of elevation or plan view.

Highlighting the floor location of issues.

Choice of floors to view.

Plan view.

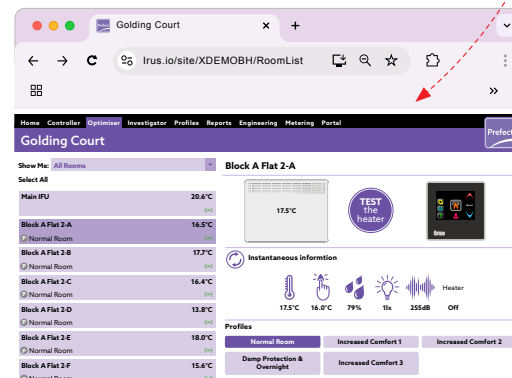
Supplementary heaters detected.

Observation pane to choose from:

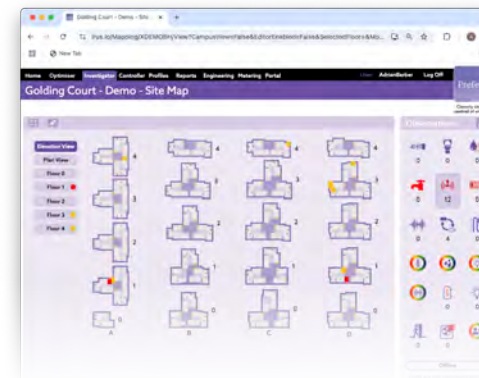
- faulty elements
- leaking cisterns
- water hygiene compliance
- scalding risk
- offline controls
- low batteries
- high noise level
- lights left on
- energy consumption
- water setpoint failure
- supplementary heater
- vacant room
- alternative profile.

Plus colour maps for

- room temperature
- humidity
- light level
- high noise level
- room occupancy.



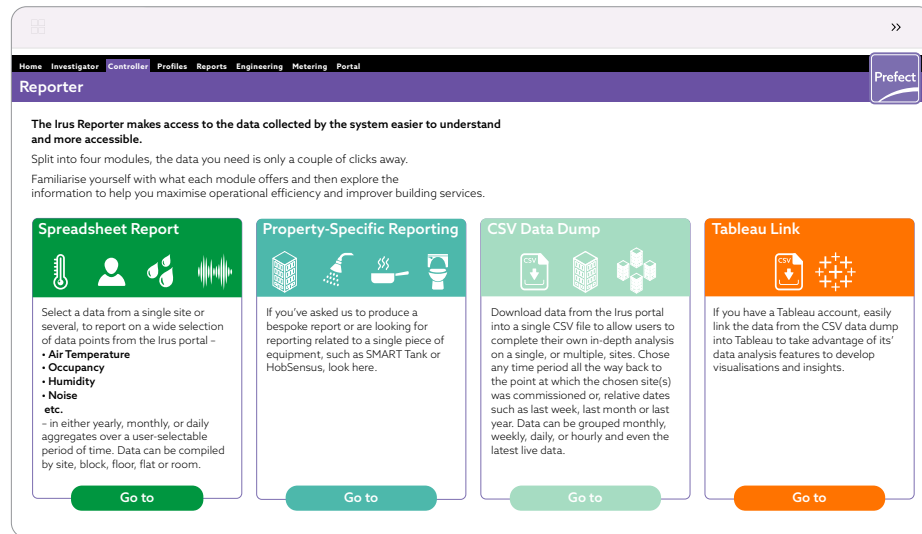
Controller view of the specific room



Alternative Elevation view of the site

The ability to go to the Controller view of the specific room.

The ability to generate a report of issues detected.



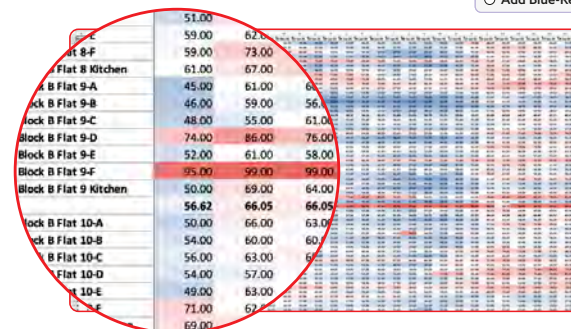
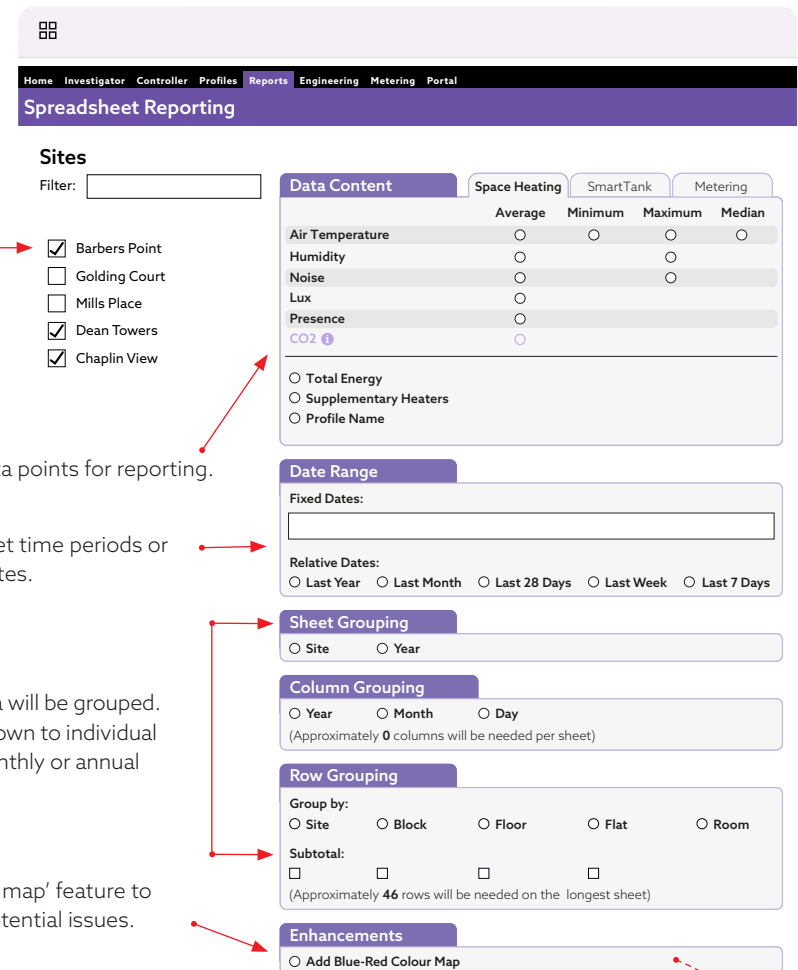
**Reporter** provides easy access to data from the Iirus system. Four useful categories helps you grasp and handle the information you need in only a couple of clicks.

**Spreadsheet Report** gives you the opportunity to choose datapoints, timeframes, and whether you want to view a single site or compare multiple sites. Compare your own sites, or benchmark across the entire Iirus UK estate.

**Property-Specific** reporting is where you can generate bespoke reports you have requested us to build.

If you are proficient in compiling masses of data into meaningful reports, use the **CSV Dump** to access raw data.

Finally create comprehensible visual displays of data by linking to the **Tableau** platform.



EXAMPLE: The report generated for average humidity on a particular floor shows clearly there is an issue in **Block B, Flat 9-F**, where the humidity has consistently been high for many days.

# The *irus* ecoSystem

