

SPACES Study Day: 20 June 2019

SPACES Innovation award 2018

AK Connect

BMS user interface prototype, Bere Regis Primary School.

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Dorset Property

Economic Growth & Infrastructure

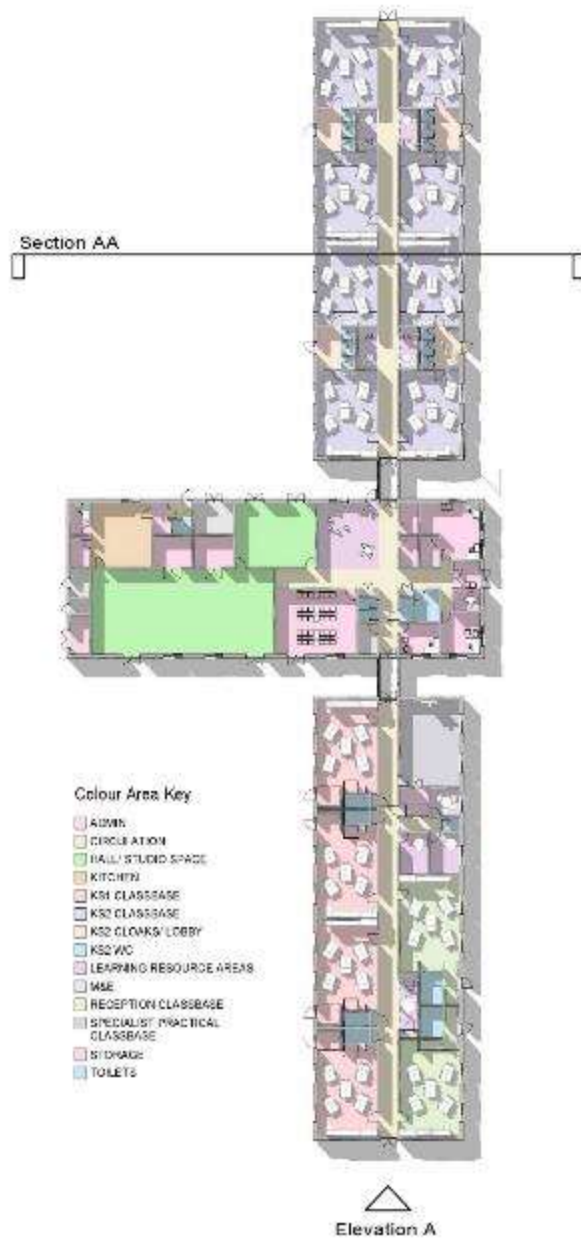


How did it all start?

- 2010 James Review of Education Capital (Post BSF)
- 2012 EFA Baseline Designs initiative
- Challenging net target cost £1,113/m²
- Stringent environmental performance parameters set



The Dorset Generic Design



Elevation A



Section AA

Downlands Primary School, Blandford

New class bases, internal modelling and new hard play areas



- A six classbase extension from 1.5 (FE) to 2.0 (FE)
- Two reception class bases, four key stage 1 classrooms and ancillary accommodation
- Alterations within existing school
- Main Contractor: ISG Construction Ltd

AK Controls. Review of possible cost savings

AKConnect General Overview
AK Controls Ltd
17 Fleetsbridge
Business Centre
Upton Road
Poole
(+44)1202 660061
office@akcontrols.com



www.akcontrols.co.uk

Fragmented control systems

- BMS Control System
- Energy recording, T&M systems
- Underfloor individual room temperature control
- High level window control.
- Classroom CO₂ and temperature monitoring

AK Controls Solutions

Traditional BMS Solution

- Big increase in inputs and outputs required in main controller.
- Extensive wiring costs taking cabling back to central BMS panel.

Genic Modbus controllers with onboard processors and memory

- More cost effective than using traditional BMS solutions by using local controllers, master and slave units.
- Modbus connections for meters, daisy chained together.
- Controllers link back to main BMS via cat 5 cabling
- Cabling for the system vastly reduced with shorter cable runs back to local controllers.
- More resilience. Active memory to run simple systems if communication lost to main controller.

Drivers for Development of AK Connect

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Development wish list

Visual, simple user interface to allow primary school staff to:

- Monitor boiler plant and to be to see how the system is operating.
- Operate plant overrides and adjust operation times.
- Check operating temperatures and CO₂ levels.
- Method of monitoring energy usage.

Plus

- Cost effective add on to main BMS system.
- Should be able to work with other BMS systems and retrofitted to existing systems
- More robust method of connecting remotely to the system.
- Development of YouTube tutorials.

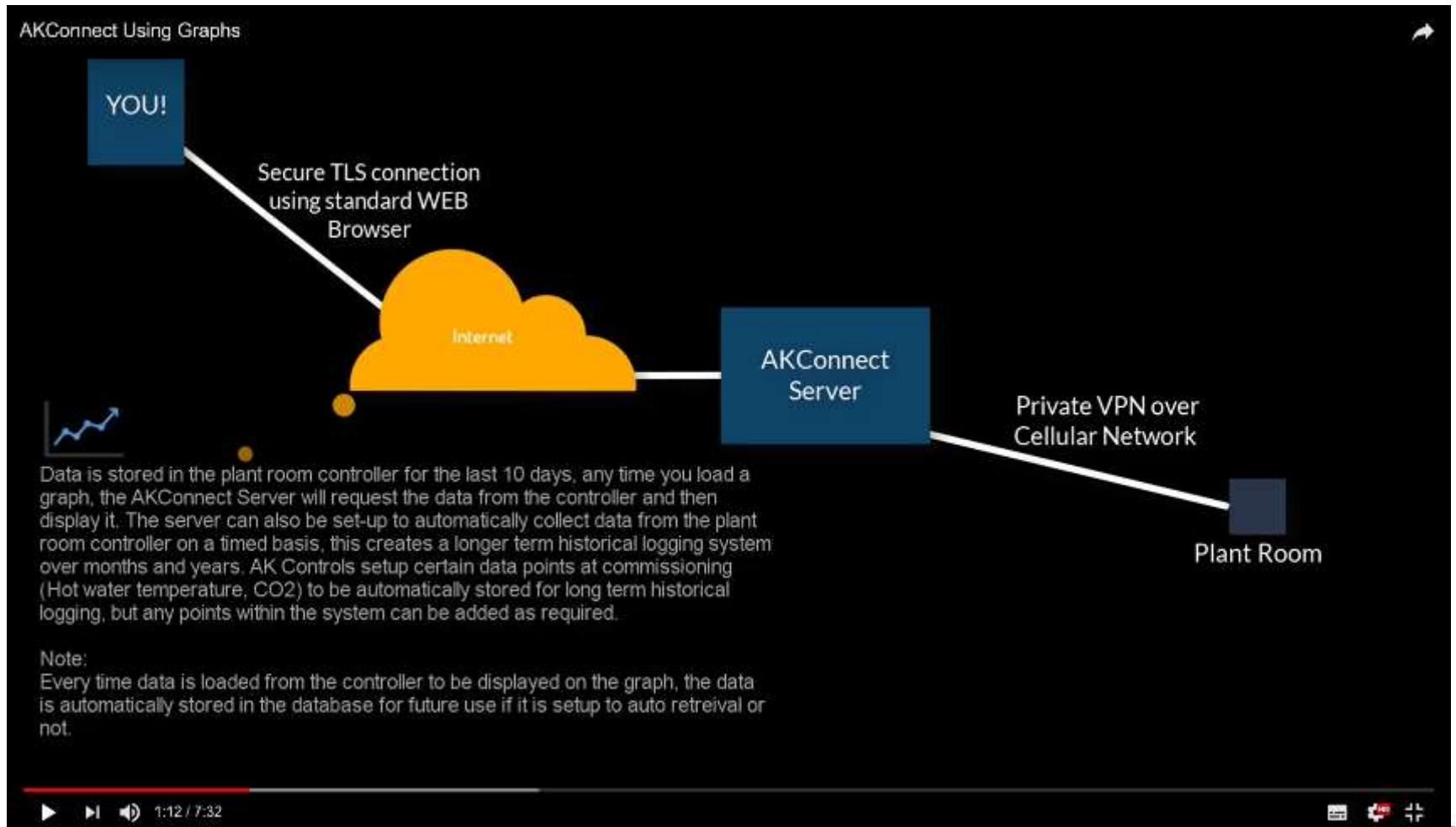
Bere Regis Primary School and Pre-School

Five class bases, hall, games court, grass playing field and pre-school facility



- Funded from savings from the Purbeck Reorganisation Programme
- A new 0.85 (FE) Primary School for 170 pupils
- Five classbases, hall and ancillary accommodation
- Completed November 2016
- Main Contractor: Morgan Sindall

Remote connection to the interface.

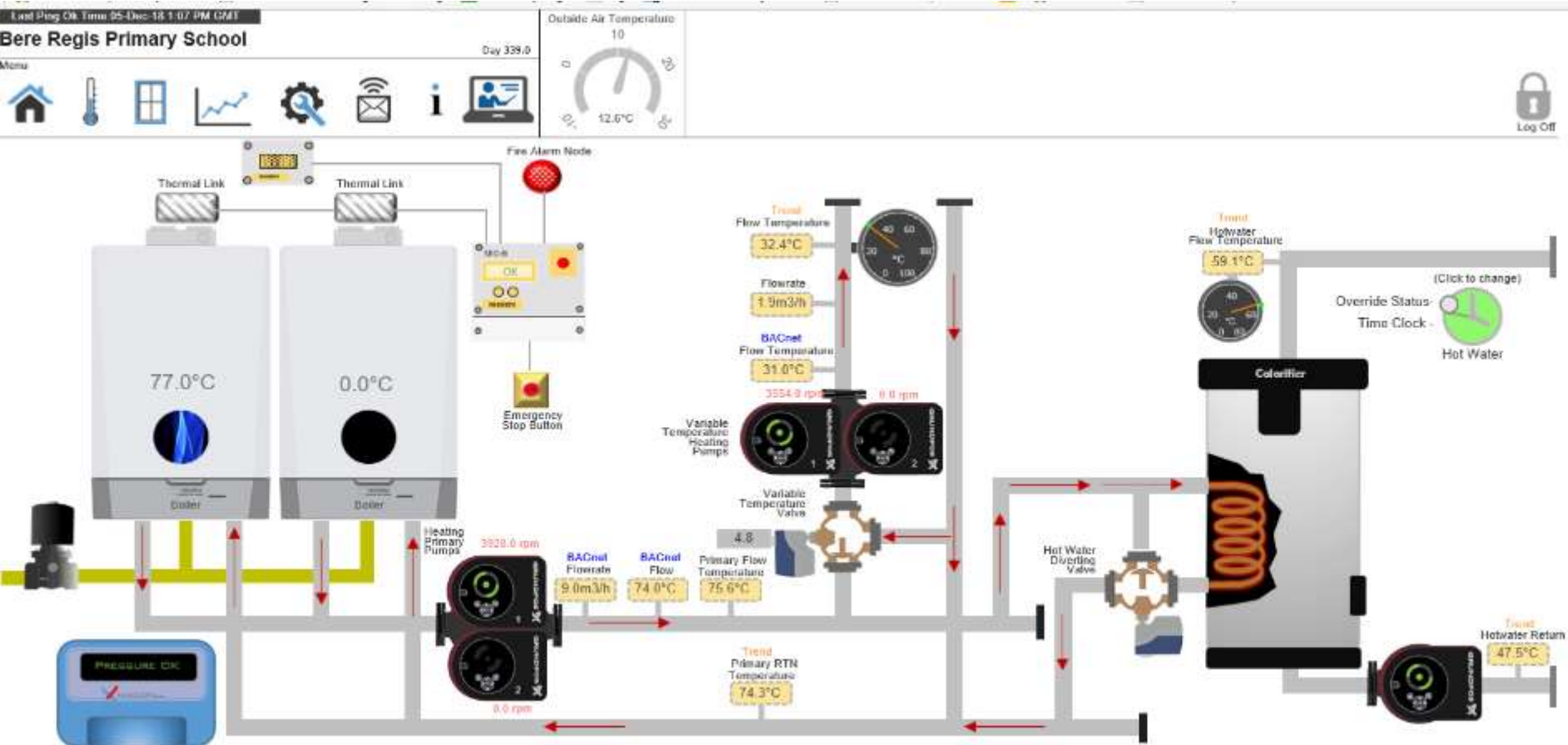


Bere Regis Primary School Boiler Room



AK Connect

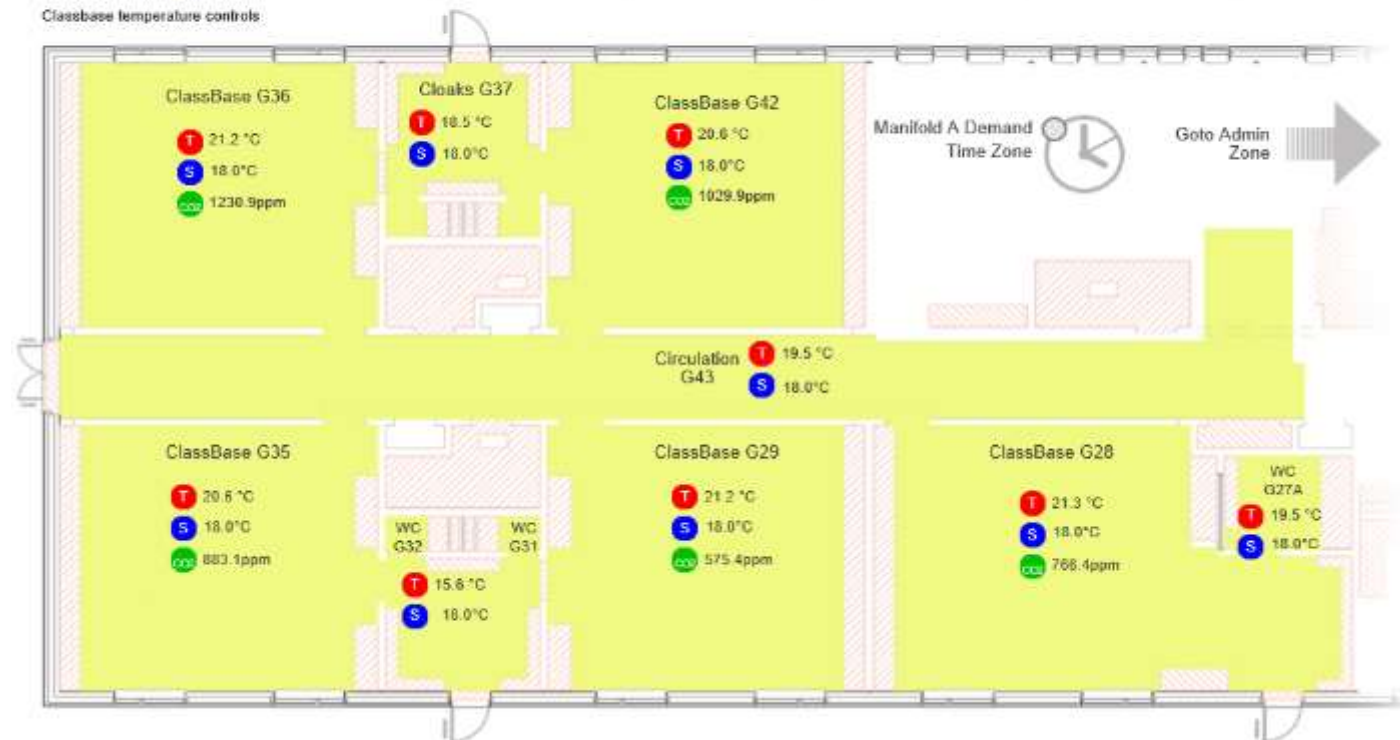
Bere Regis Primary School Main home page



AK Connect Temperature and CO₂ overview

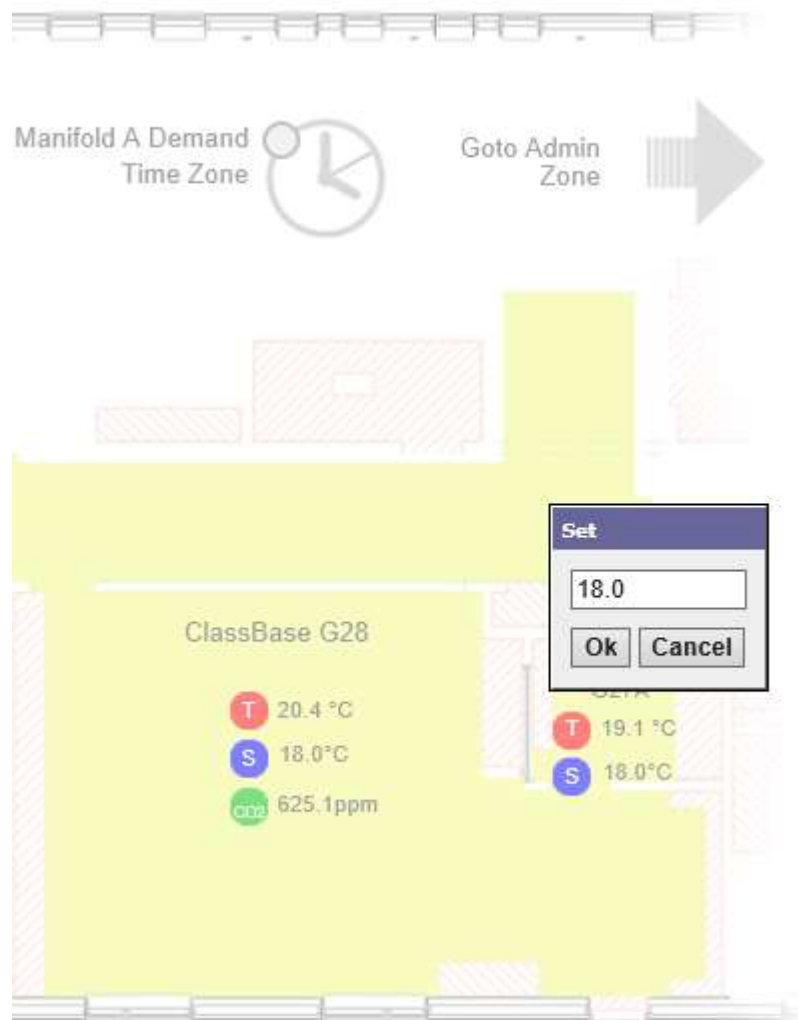


Classbase temperature controls:

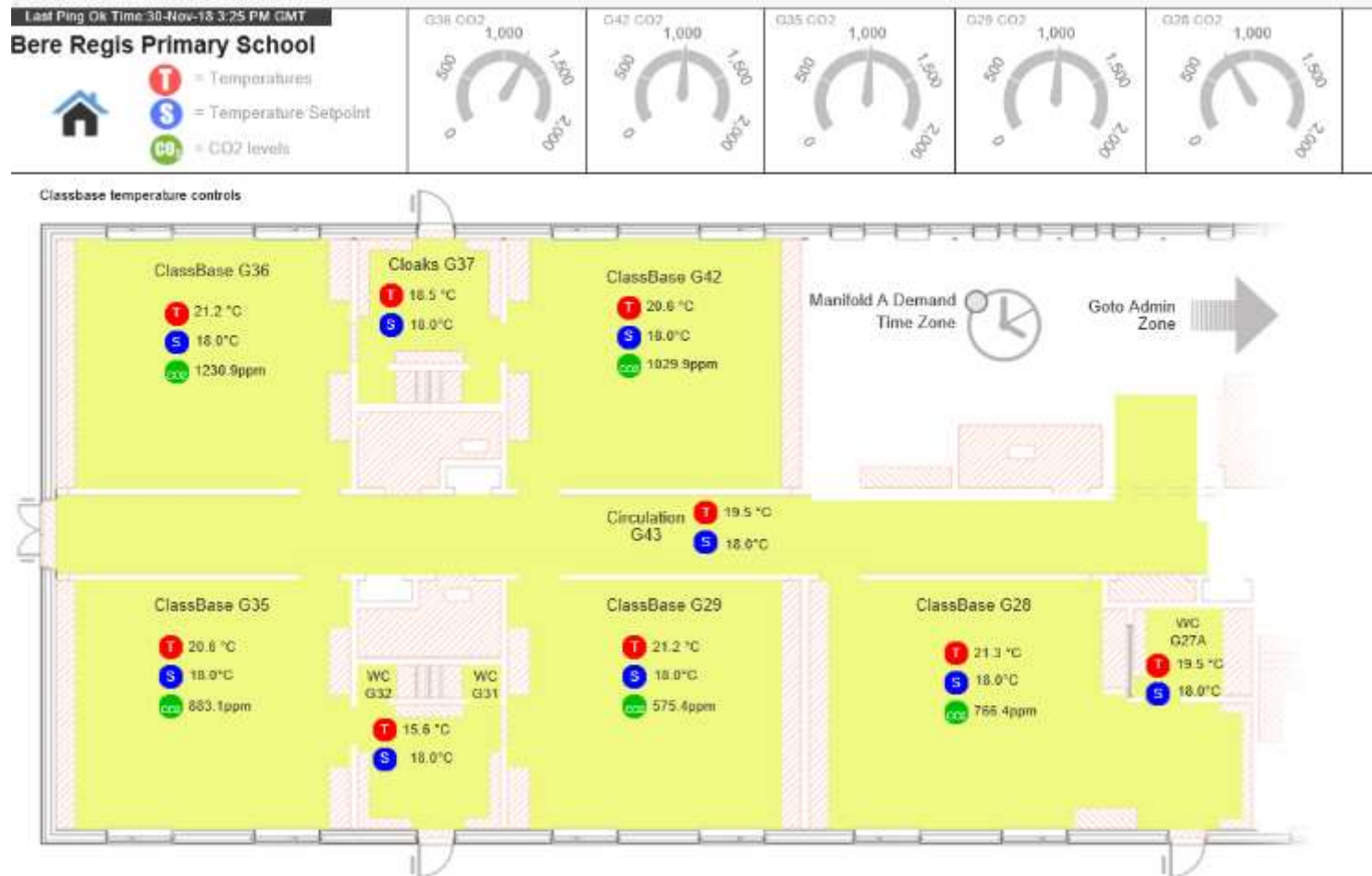


AK Connect



Temperature set point adjustment



AK Connect Temperature and CO₂ overview



AK Connect Time Zone Adjustment

<p>Bere Regis Primary School</p>  	Time Zone Control State: Idle Status: {ok} Last Updated: 22-Oct-18 10:59 AM BST Last Success: 22-Oct-18 11:00 AM BST <input type="button" value="Update"/>
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Classbase heating times

Weekly Schedule
Special Events

X [Icons]
[X] [Icon]

Sun	Mon	Tue	Wed	Thu	Fri	Sat
<div style="text-align: right; width: 10%;">12:00 AM</div>						
<div style="text-align: right; width: 10%;">3:00 AM</div>						
<div style="text-align: right; width: 10%;">6:00 AM</div>						
	true					
		true				
			true			
				true		
					true	
<div style="text-align: left; width: 10%;">12:00 PM</div>						
<div style="text-align: right; width: 10%;">3:00 PM</div>						
<div style="text-align: right; width: 10%;">6:00 PM</div>						
<div style="text-align: right; width: 10%;">9:00 PM</div>						
<div style="text-align: right; width: 10%;">12:00 AM</div>						

Start: 12 ▾:00 ▾ AM ▾ GMT

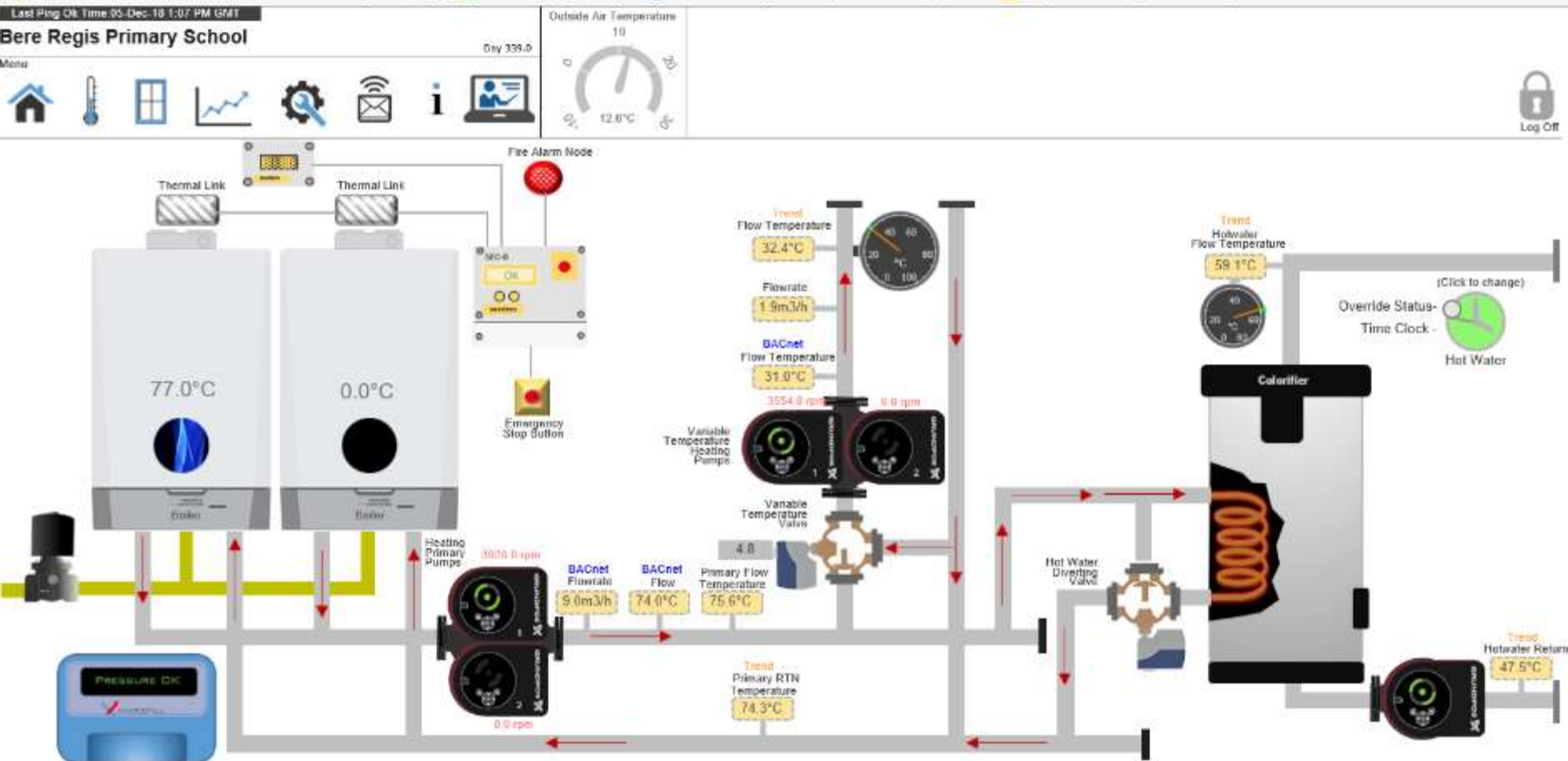
Finish: 12 ▾:00 ▾ AM ▾ GMT

Output: ☒ null ☐ true ▾

The Default Output for this Schedule is currently set to "false {ok}".

AK Connect

Bere Regis Primary School Main home page



Clearstory Window Control

Last Ping Ok Time: 05-Dec-18 1:07 PM GMT

Bere Regis Primary School (Demo)



TimeClock



Rain Sensor: 22.5

Heavy Rain



Pos(°C):

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

2.0

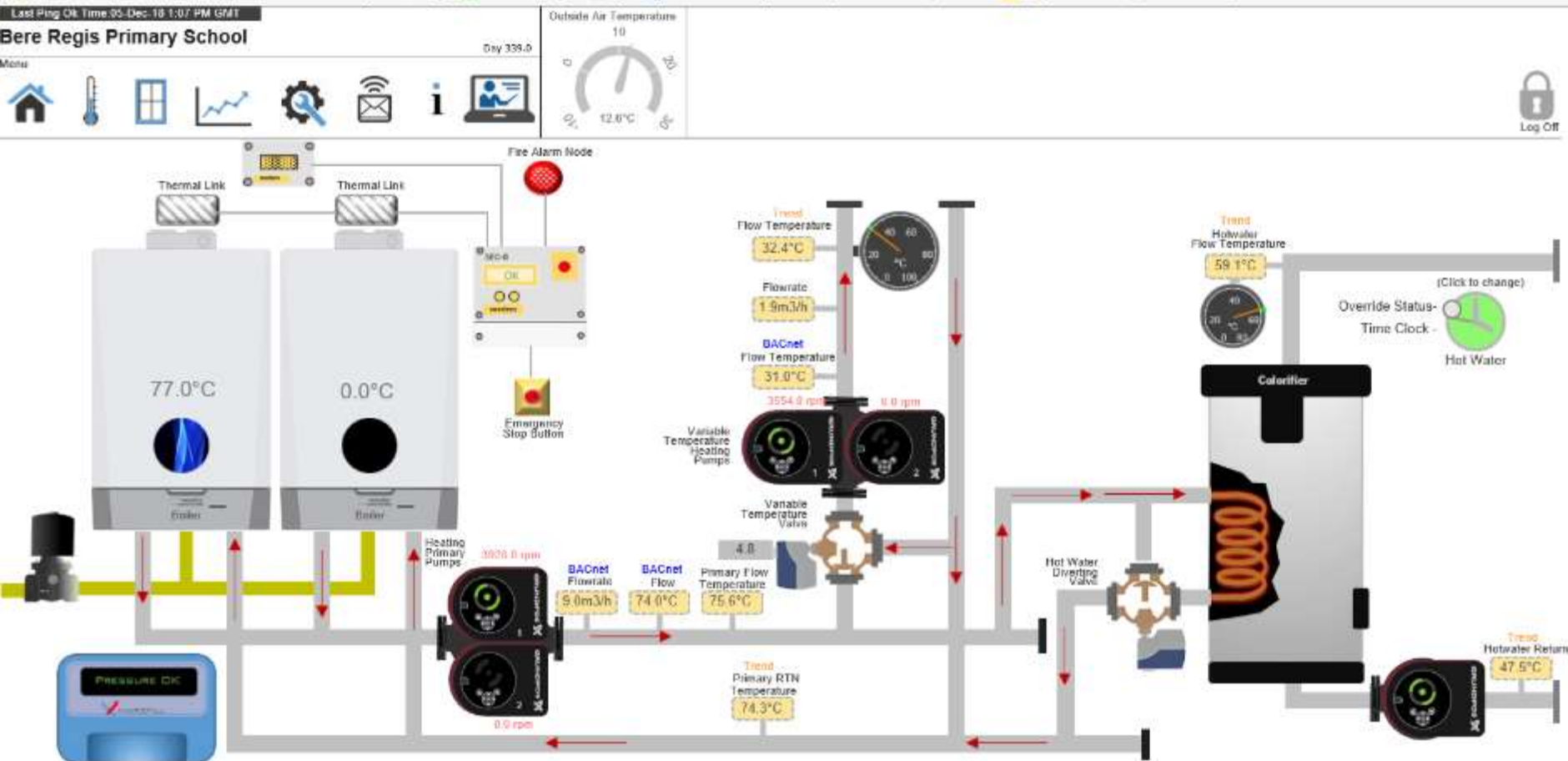
Corridor Temperature: 19.3°C



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Bere Regis Primary School Main home page



Graphical Information

Last Ping OK Time 30-Nov-18 4:56 PM GMT

Bere Regis Primary School



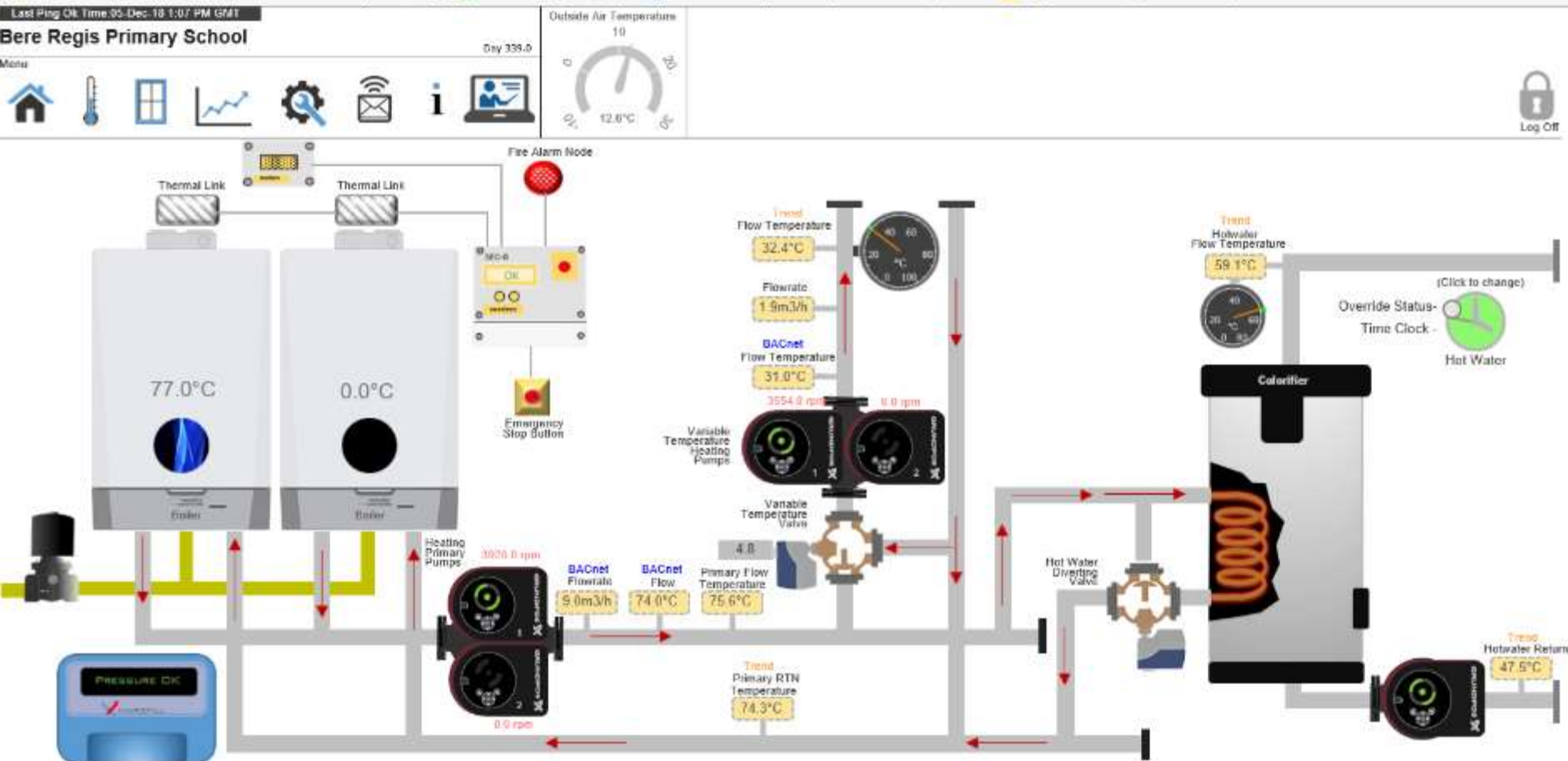
Today

P001_OutsideAir@15mins

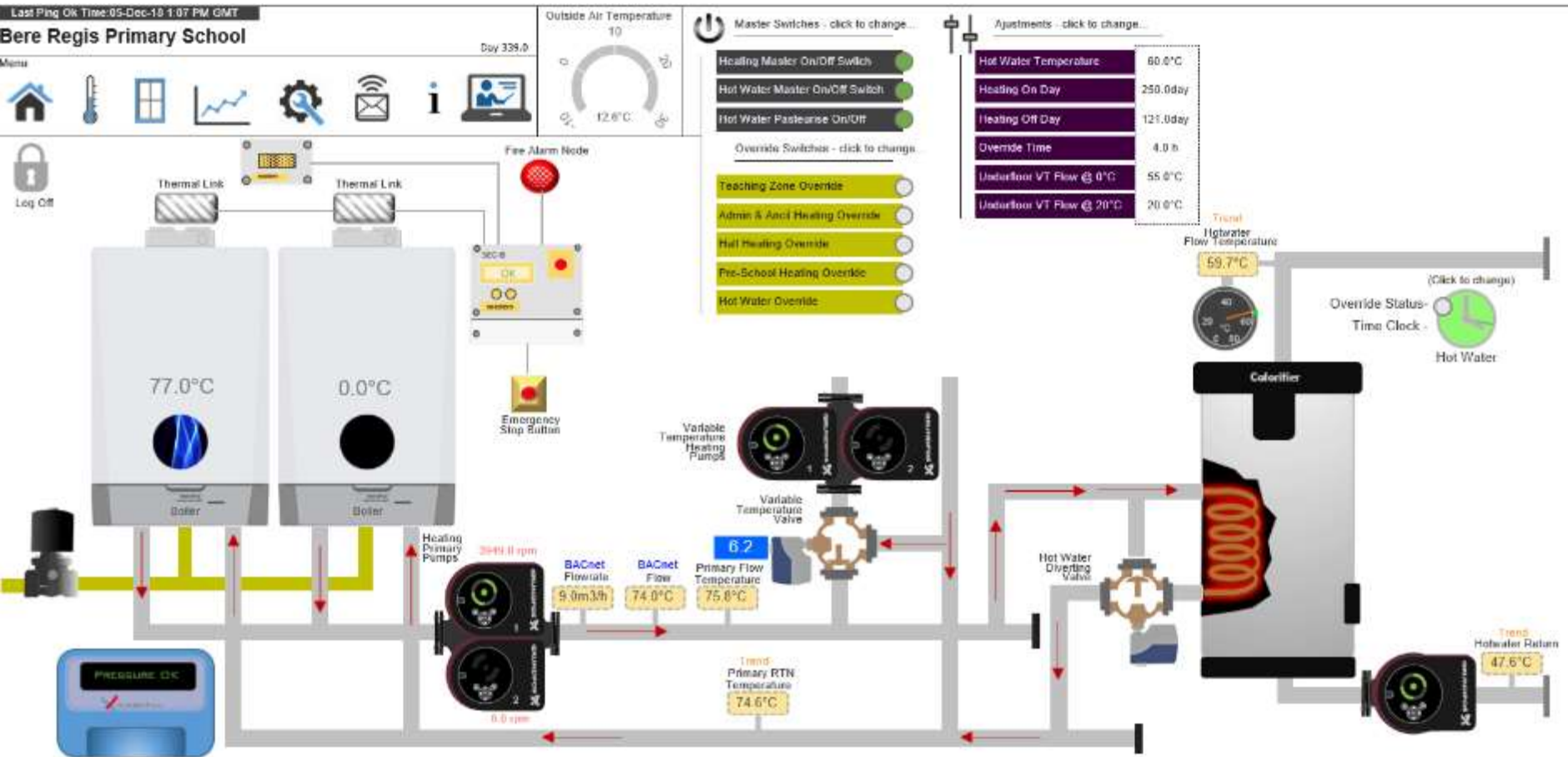


AK Connect

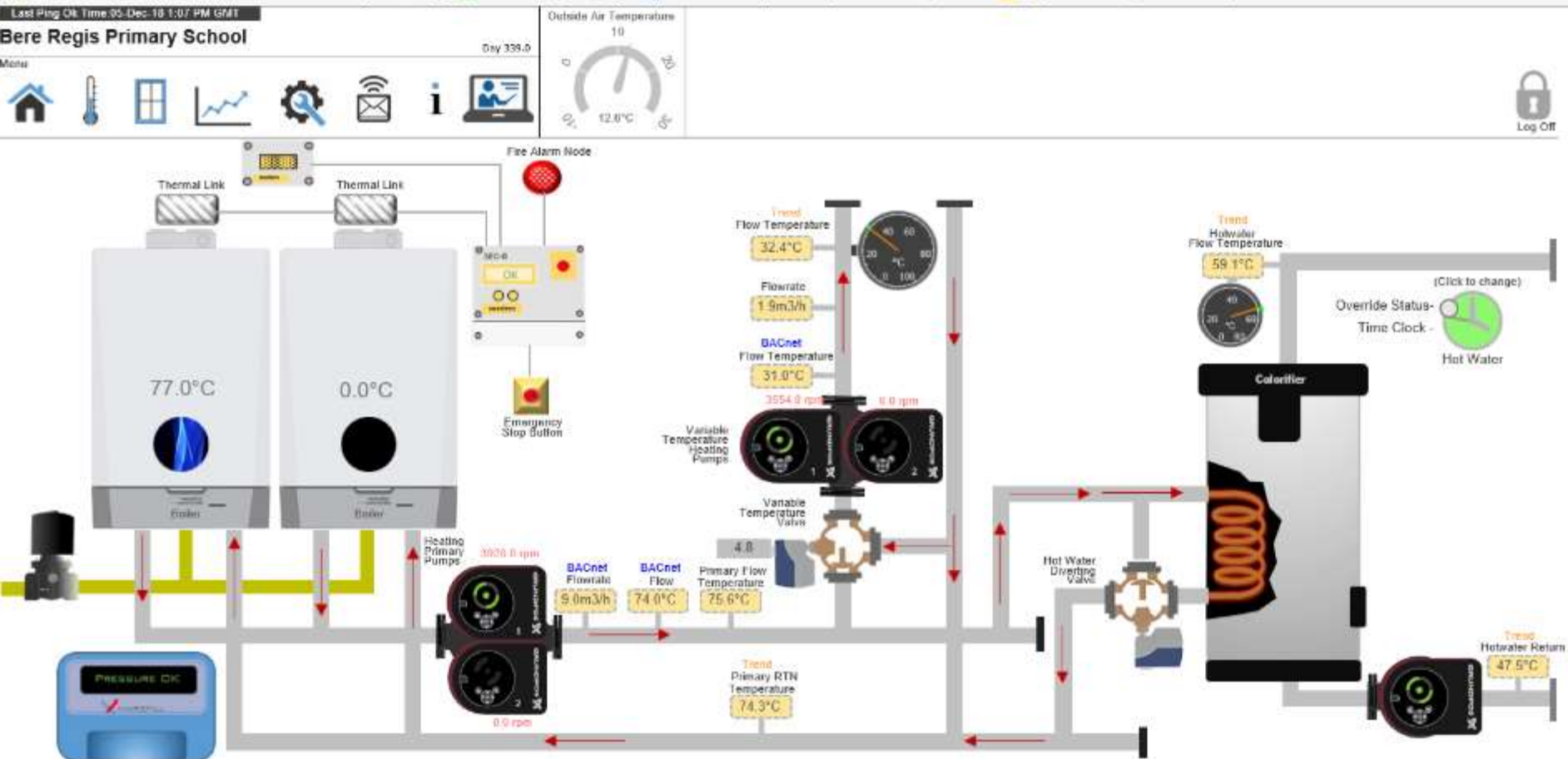
Bere Regis Primary School Main home page



AK Connect Settings Page



AK Connect Email Alerts, Information and Help Video Links



St Osmunds School, Dorchester

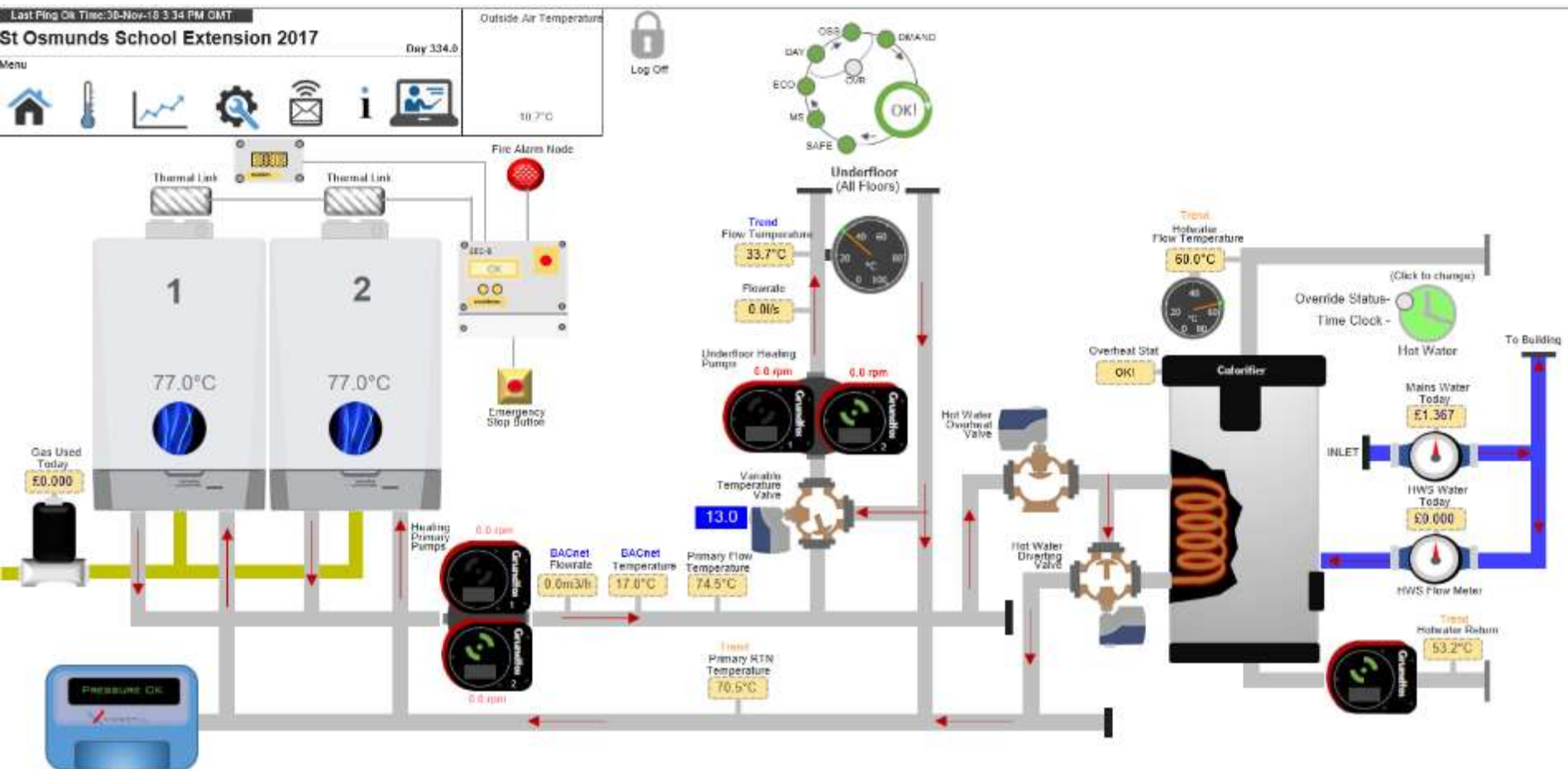
A new two storey detached building



- A new two storey block including 5 (FE) school to 6 (FE) for 720 pupils
- Four classrooms, multi-purpose resource teaching space and new dining hall and kitchen
- Completed: December 2017
- Main Contractor: Morgan Sindall

AK Connect

St Osmunds School Boiler Room Main Page



Boiler Demand Process Wheel



SAFE: Gas system, heating system pressure, fire.

MS: Master Heating Switch

ECO: Economy off, shuts heating down if system above 17C

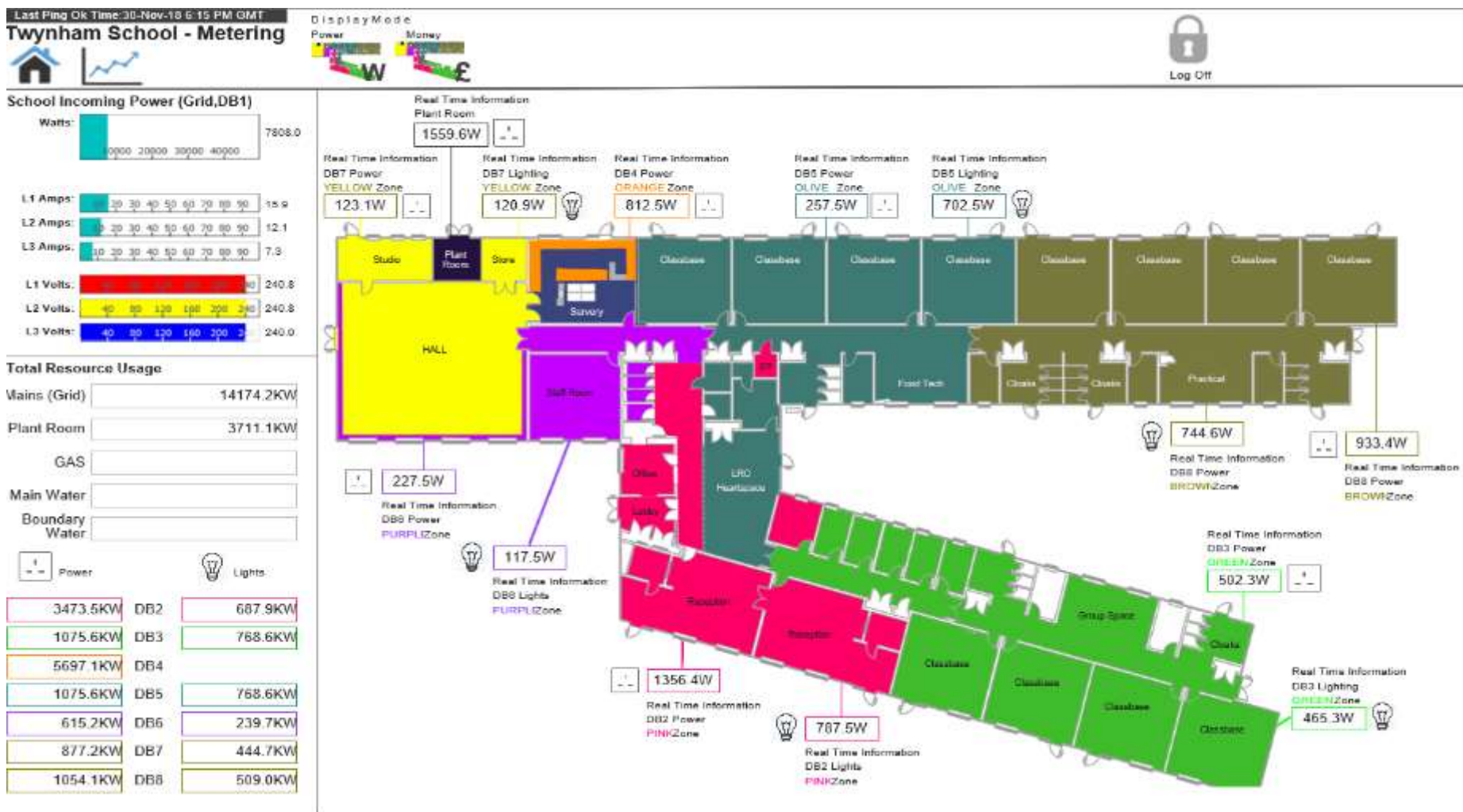
DAY: Is the date within the normal heating period.

OSS: Optimum start/stop

OVR: Override activated

DEMAND: Either a heating or DHW demand

Twynham School. Energy monitoring



Lighting Yesterday

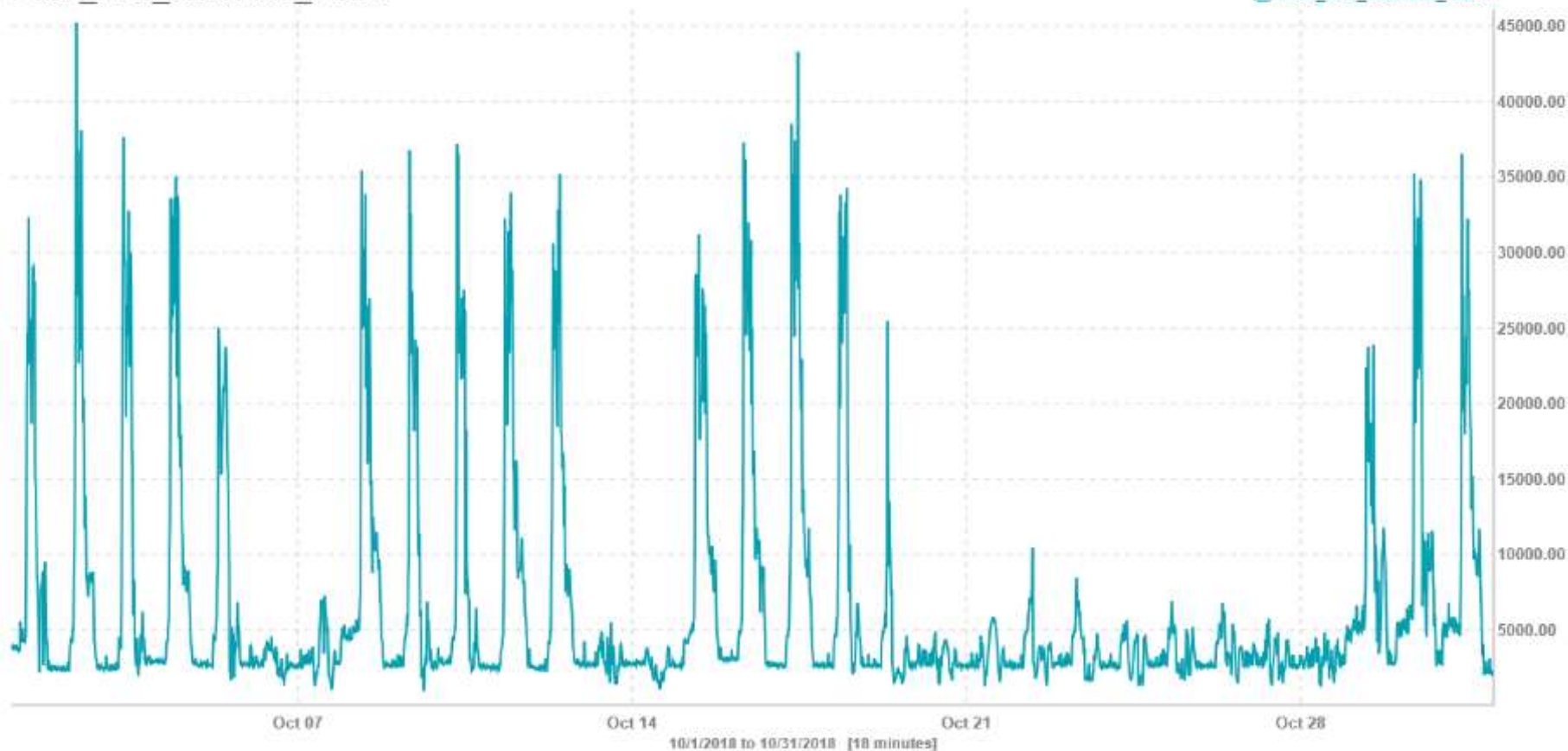
Power Yesterday



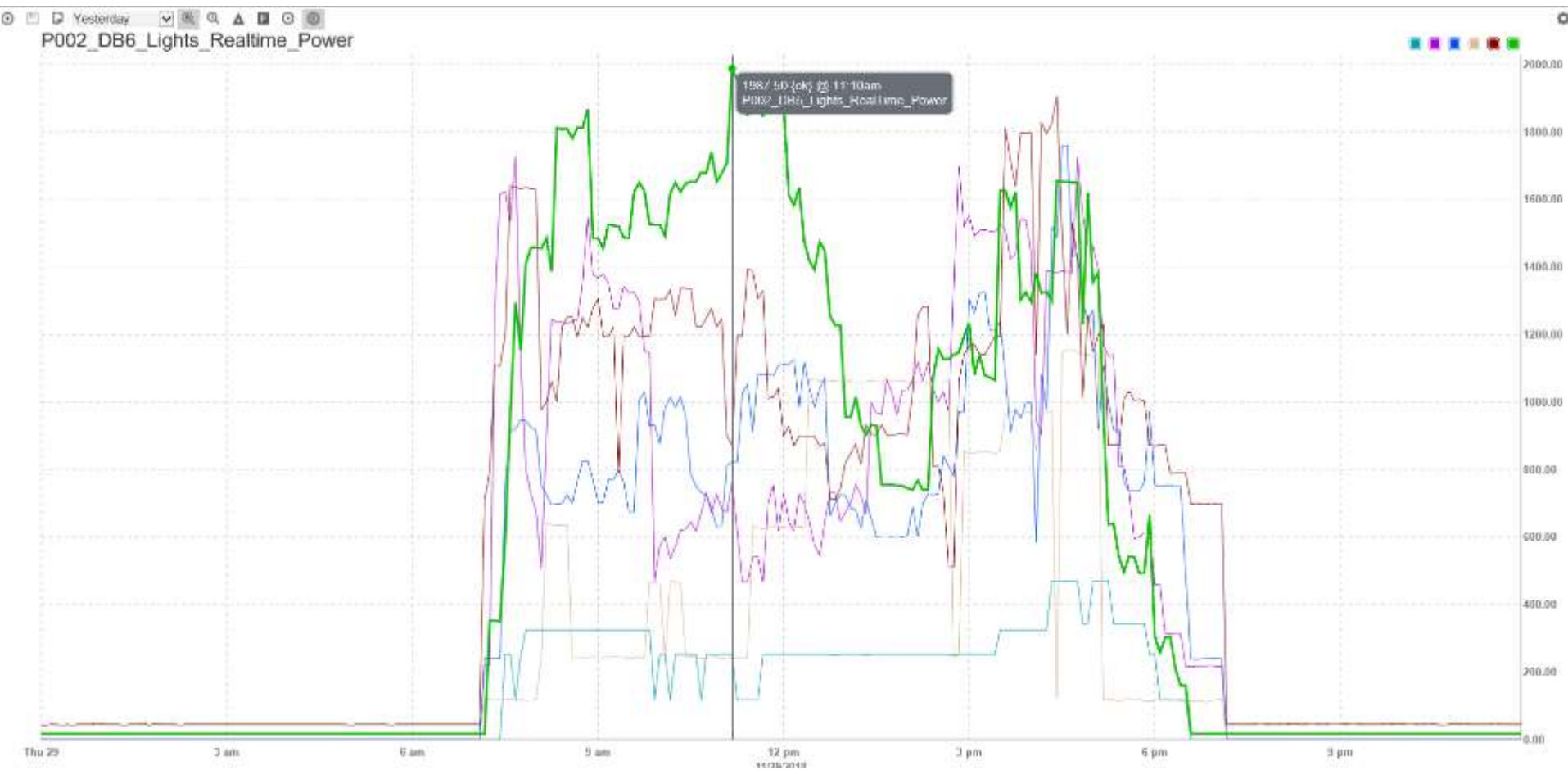
⊕ Ⓜ Last Month 🔍 🔍 ⚙️ ⌂ ⌚ ⌚

P002_DB1_RealTime_Power

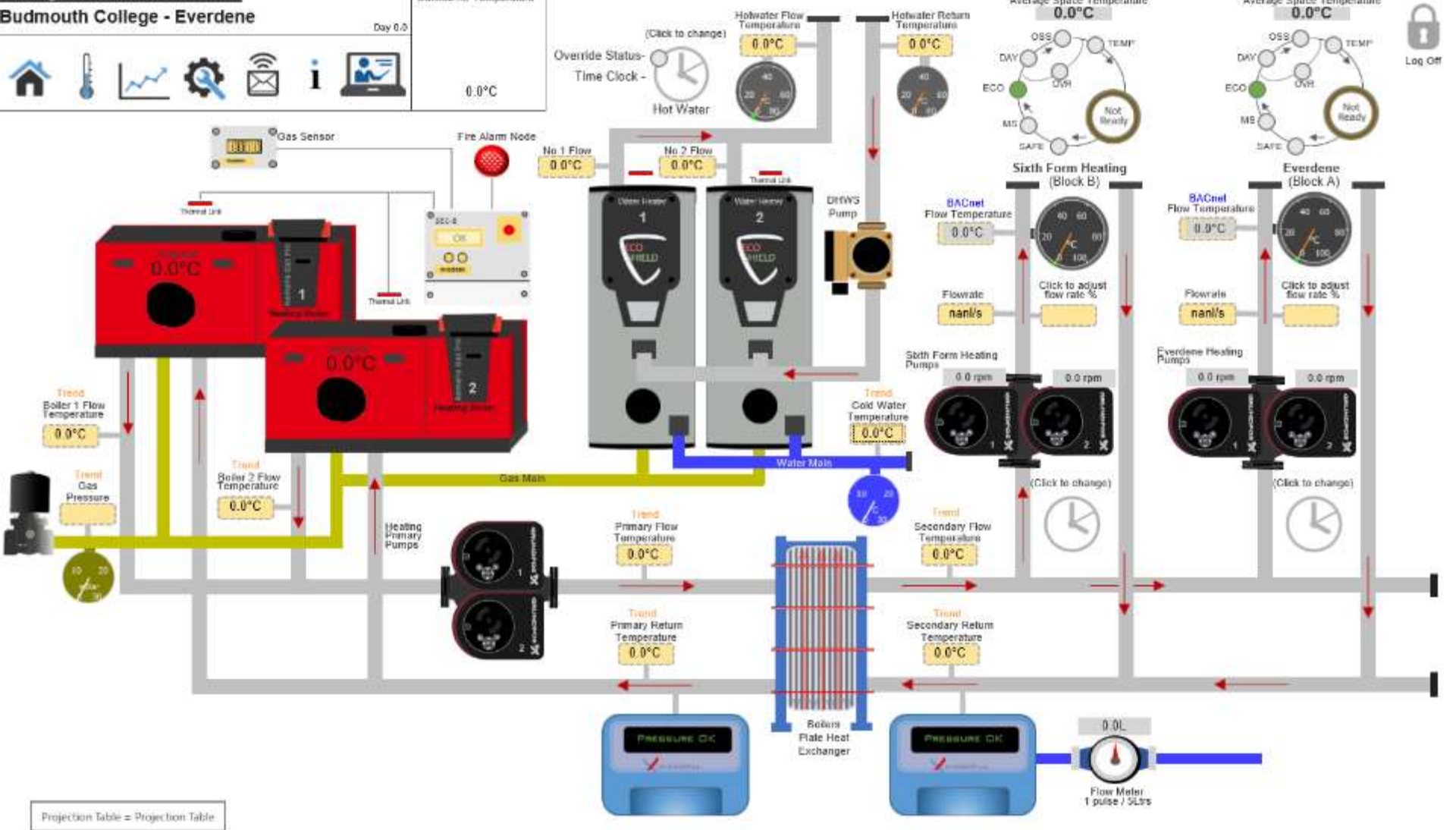
■ P002_DB1_RealTime_Power



Dorset
Council



Last Ping On Time 23-Oct-18 10:04 AM BST	Outside Air Temperature	Average Solar Temperature	Average Shade Temperature
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Budmouth. Site layout. Google Maps

Last Ping Ok Time:23-Oct-18 10:04 AM BST

Budmouth College - Everdene

Menu



Email Alerts; Gas pressure monitoring

AK Controls Ltd

Gas Monitoring
Automatic Report

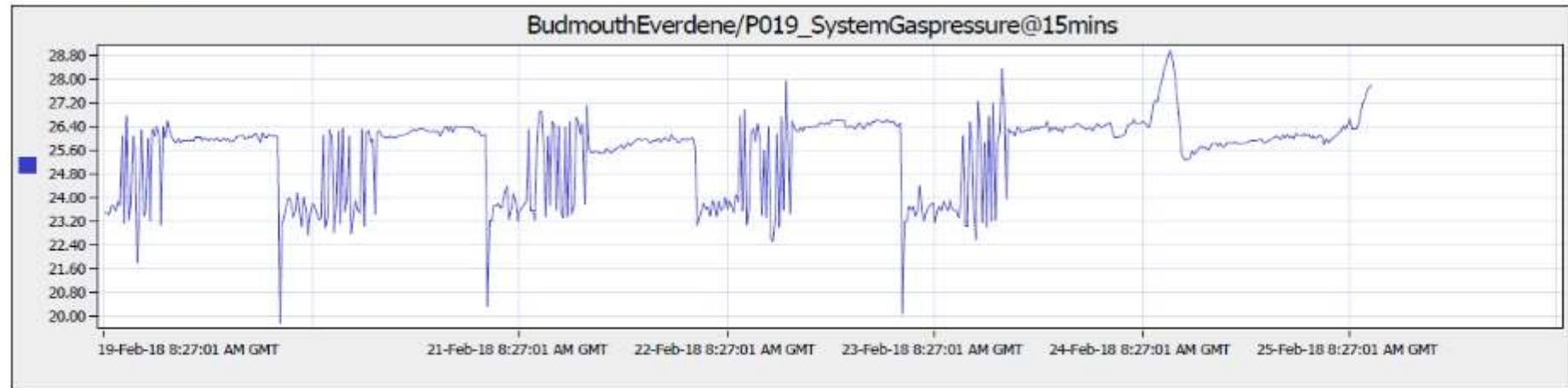
Budmouth College
Chickerell Road
Weymouth
DT4 9SY

Station Date/Time: 26-Feb-18 8:27 AM GMT
Station MAC Address: 00:10:70:0E:51:28
Reporting Period: Weekly

Maximum Pressure	Minimum Pressure	Average Pressure
26.95	19.75	25.51

Below are records over the past week in graph and tabular form relevant to gas pressures.

System Gas Pressure



26-Feb-18 8:27 AM GMT

Email alerts : Safe Water Temperatures

AK Controls Ltd
Safe Water Monitoring
Automatic Report

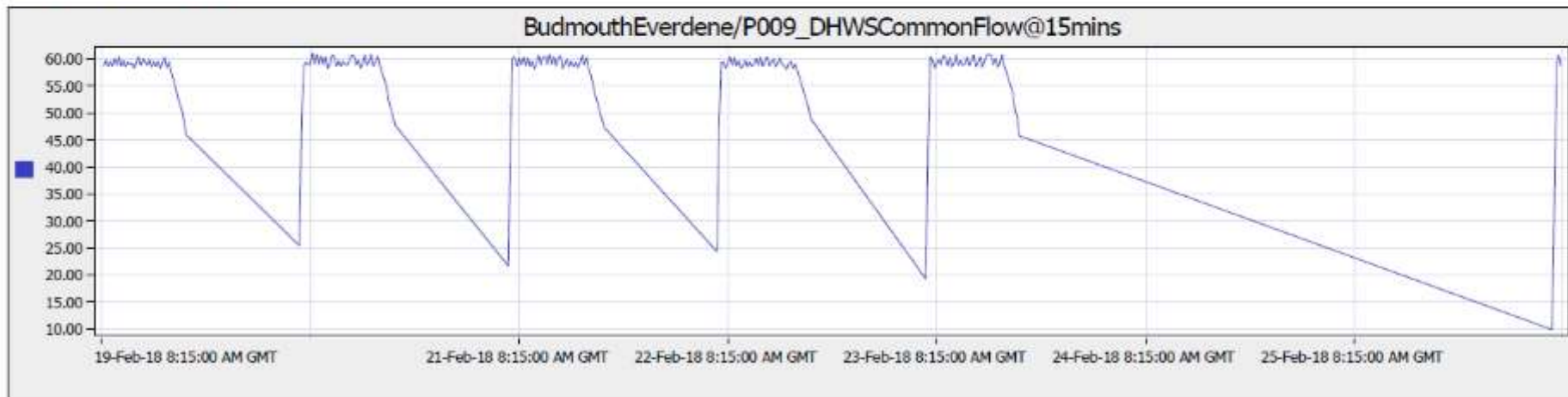
Budmouth College
Chickerell Road
Weymouth
DT4 9SY

Station Date/Time: 26-Feb-18 8:15 AM GMT
Station MAC Address: 00:10:70:0E:51:28
Reporting Period: Weekly

Maximum Temperature	Minimum Temperature	Average Temperature
61.12	9.73	34.72

Below are records over the past week in graph and tabular form relevant to domestic hot water temperatures.
The data table displays all temperature samples that are greater than 60°.

Calorifier Common Flow Temperature



26-Feb-18 8:15 AM GMT

Questions

Links

www.akconnect.co.uk

Help Video Link

<https://youtu.be/wPHqY-rg7Xw>