

# Siemens Connect Box

Meet the manufacture - Siemens

October 2024

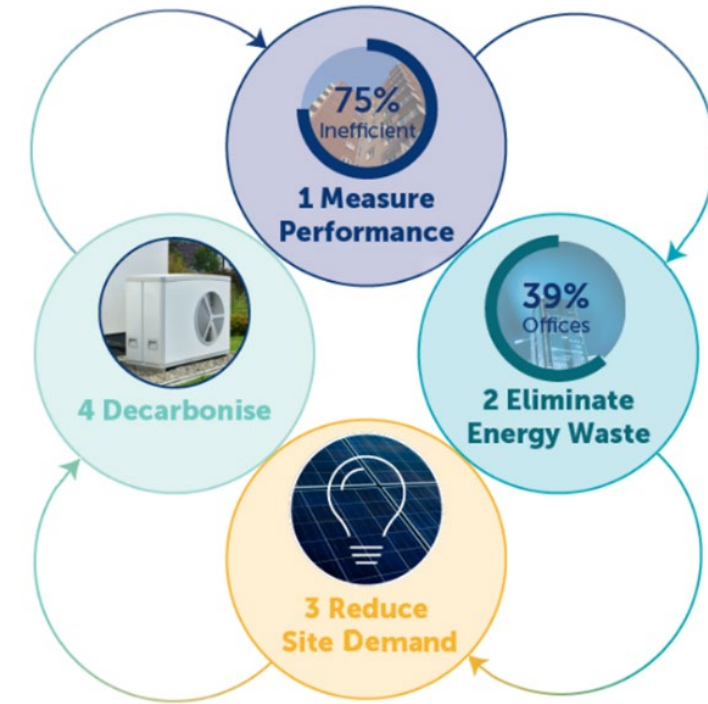


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# Introduction

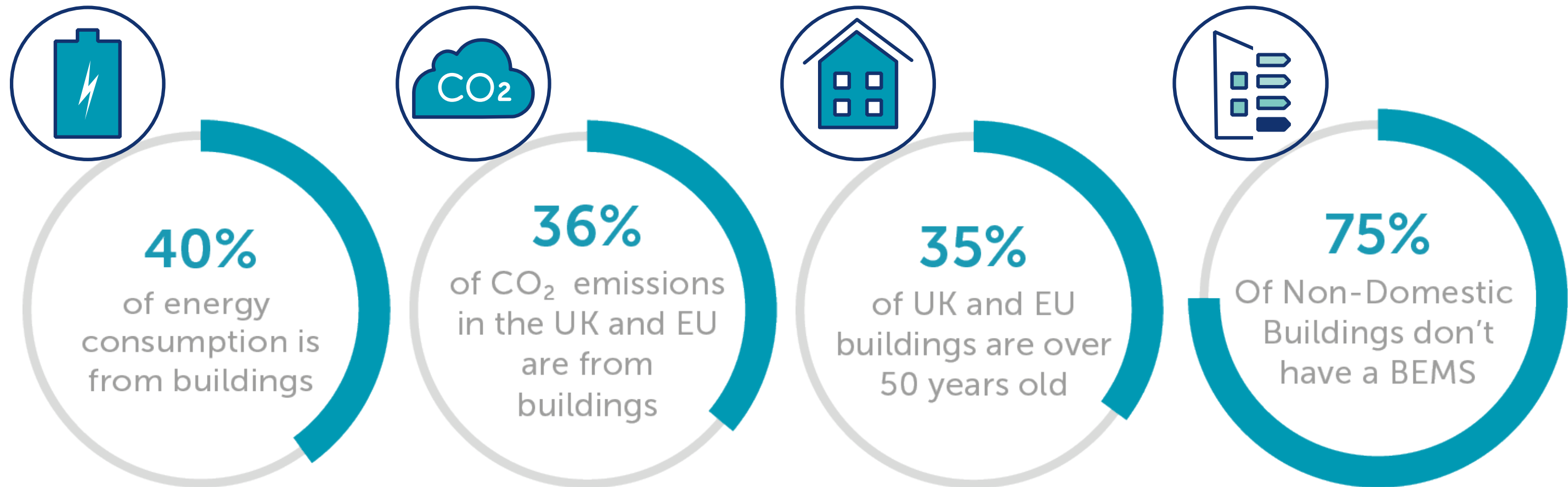
# Topics – 60 mins

1. Welcome – Bob Blincowe
2. What is Connect Box? – Chris Goodman, Product Manager, Siemens Building Products
3. •Live Demonstration of Connect Box – Jess Hone, Project & Service Solutions Sales, SSE Energy Solutions
4. Applications of Connect Box – Steve Loughney, Technical Director, SSE Energy Solutions
5. Thank you and questions – Bob Blincowe



latest news

# Decarbonisation is important



*“It is clear that the UK and European building sector, the largest single energy consuming group has vast potential for energy efficiency gains”*



# Buildings as an Energy System

## 4 steps to decarbonisation



### Measure Performance



- Energy benchmarking
- ISO 52120 survey
- Asset audit
- AM&T - BEI
- Fiscal & Sub Metering

### Eliminate Energy Waste



- Control optimisation
- Sensors & zoning
- Space management
- Edge analytics
- Digital twin

### Reduce Site Load



- LED
- Solar PV
- Battery
- Low Carbon CHP
- Demand-side Flexibility

### Decarbonise



- Heat Pumps
- EV
- Biogas & Biomethane
- 24/7 Green
- CPPAs

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# Connect Box

# Siemens management system positioning

## Desigo CC

The open building management platform to integrate one, several or all disciplines.



Large, complex projects

Pharma, Healthcare  
University campus  
Enterprise systems

## Desigo Optic

The open building management system for single-discipline use, cloud access



Small to medium projects  
HVAC only embedded  
device up to 5,000 points

Offices, Retail  
Education  
Local authority

## Connect box

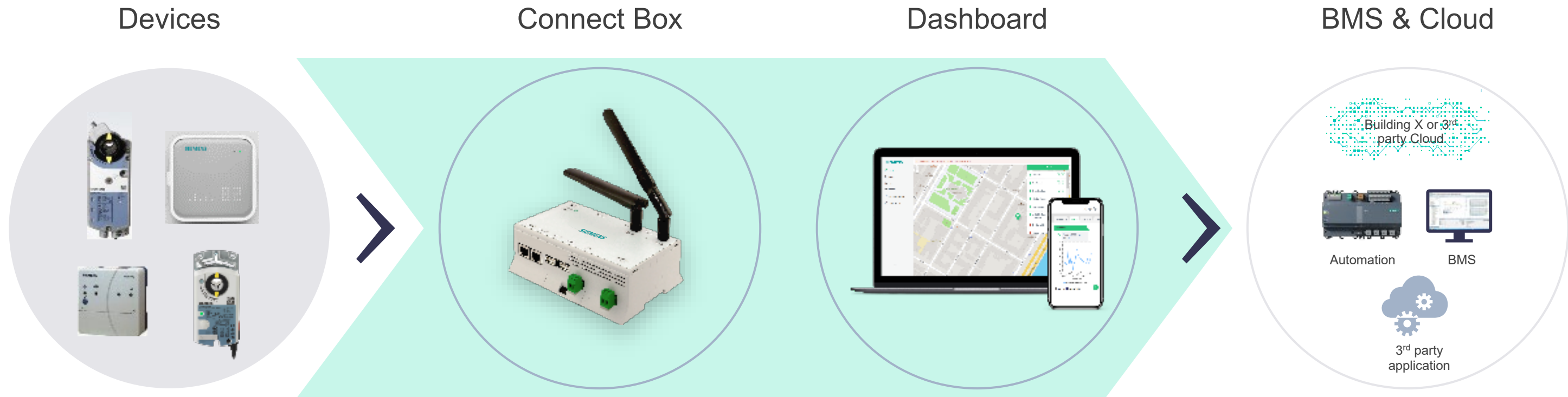
Simple IOT solution to connect, monitor **and control** buildings, cloud access



Monitoring **and control** of  
energy consumption and  
building status –  
recommended up to 2,000  
points but can support up to  
10,000

Small to medium Offices,  
Retail  
Buildings with no current  
cloud connection

# Connect box



There are several different devices in your building using different protocols

Install the Connect Box in your building in less than a day and connect all your building devices

Start monitoring and commanding your building from anywhere through an intuitive dashboard

Expand your building capabilities by integrating Connect Box to 3<sup>rd</sup> party applications, BMS and/or Cloud systems



# Connect Box enables you to:



## Manage all the building activities from one place

- Monitor live building updates and view historical trends
- Be notified on potential issues
- No additional gateways or software needed



## Ensure cybersecurity

- End-to-end encryption
- Outbound-port-only design
- 4G network separation



## Connect anything in your building

- Integrate all your devices, wired and IoT
- Connect direct to cloud or integrate into existing systems
- Enable 3<sup>rd</sup> party integrations and ecosystem through open APIs



## Simple to install and use

- Easy & quick to install – no engineering skills required
- Intuitively monitor and control energy, comfort and other properties
- No training or coding required
- Continuous software updates



## Comply with local regulations

- Fulfil IAQ monitoring requirements
- Achieve new energy and reporting requirements
- Build trust in the community

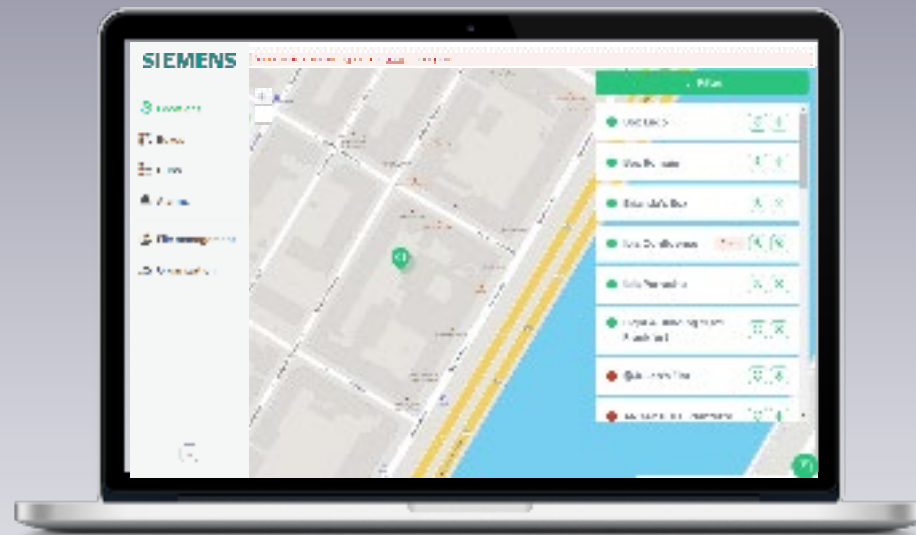


## Leverage your own data

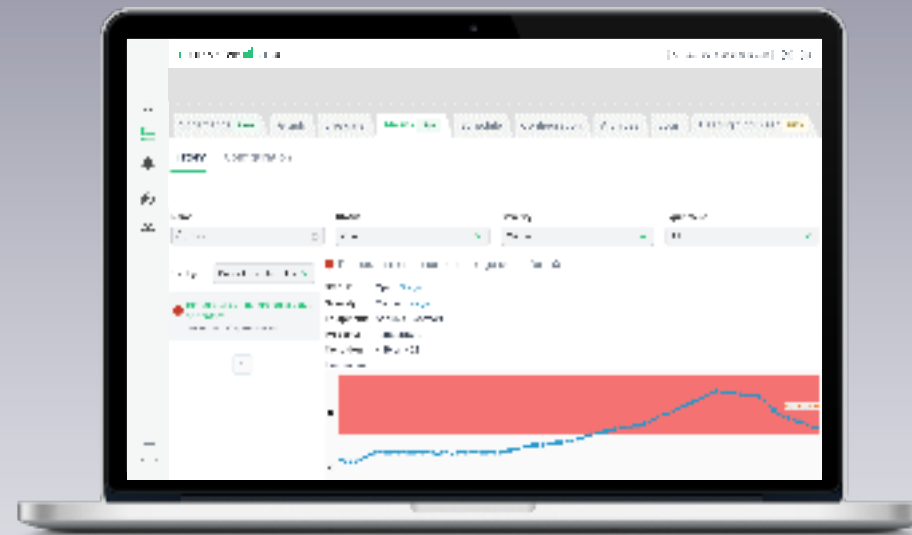
- 100% open
- No hidden fees or external providers
- Use open APIs to share data quickly
- Download your data for free and re-direct it to your cloud



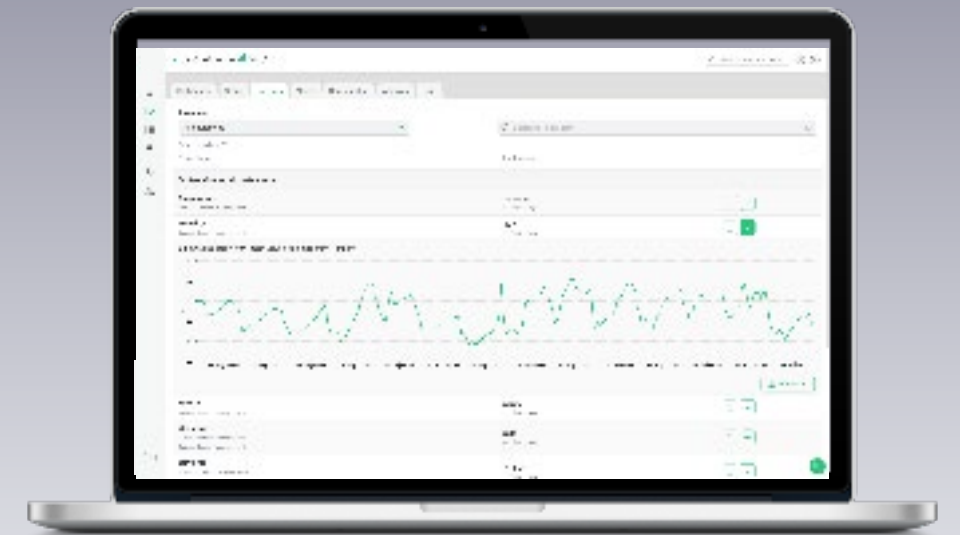
# Connect box functionality



# Monitor & configure your building site remotely and stay in control of your environment



Be immediately notified  
when there are issues with  
your building and personalize  
your alarms



Get **detailed data view**  
and control of your building site  
with an accessible graphic  
mode

# Connect Box offers you:

Dashboards Graph Live data Alarms Configuration Archives Logs

Equipment Networks Connectors Gateways Routing Scheduling **New** Virtual properties

Weekly schedule > Exceptions > Properties & setpoints

### Define the weekly schedule

Name

HQ Schedule 1

Description (optional)

Test

Box timezone ⓘ

⚠ Your timezone and the box's timezone are different.  
Based on your browser, you do not share the same timezone as your box. Your timezone is "Europe/Zurich".  
If it is a configuration issue, change your box's timezone above.  
The schedule will run in the box's local time.

Europe - Paris

Slots ⓘ

|           |                    |                     |   |   |
|-----------|--------------------|---------------------|---|---|
| Monday    | 9:00 am to 5:00 pm | Other               | — | + |
| Tuesday   | 9:00 am to 5:00 pm | Occupé              | — | + |
| Wednesday | 9:00 am to 5:00 pm | Occupé              | — | + |
| Thursday  | 9:00 am to 5:00 pm | Occupé              | — | + |
| Friday    | 9:00 am to 5:00 pm | Inoccupé            | — | + |
| Saturday  | 9:00 am to 5:00 pm | Inoccupation longue | — | + |
| Sunday    | 9:00 am to 5:00 pm | Inoccupation longue | — | + |

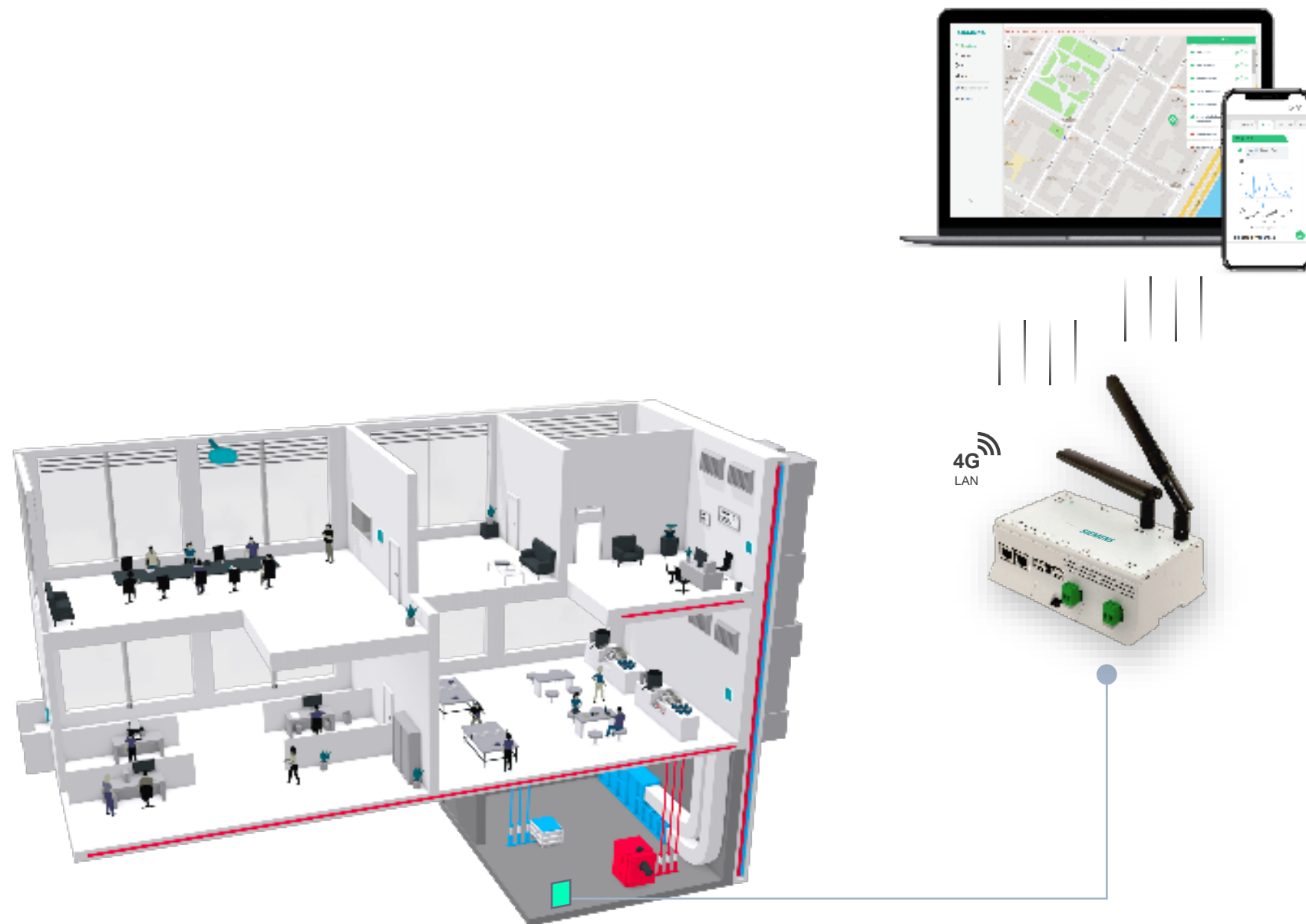
Time slot type in use the rest of the time:

Other



- Scheduler functionality for both Cloud and On-Premise options
- Use to send setpoints based on time of day
- Define exception periods for holidays
- Link schedules to alarms to disable when buildings are occupied

# Connect Box offers you:

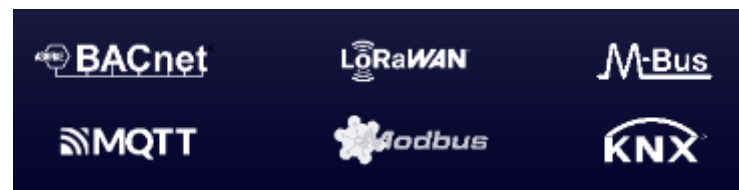


- Plug-and-play installation
- Library of over 500 field devices ready to connect (Siemens and 3<sup>rd</sup> party)
- Scheduler functionality for control of IoT devices
- Smart converter of 11 communication protocols, both standard and proprietary, wired and wireless
- Intuitive dashboard UI on desktop & smartphone
- Over-The-Air updates
- Remote engineering, trend graphical view, alarms notification
- 4G SIM card & data plan for secure and configurable network access
- API management and documentation

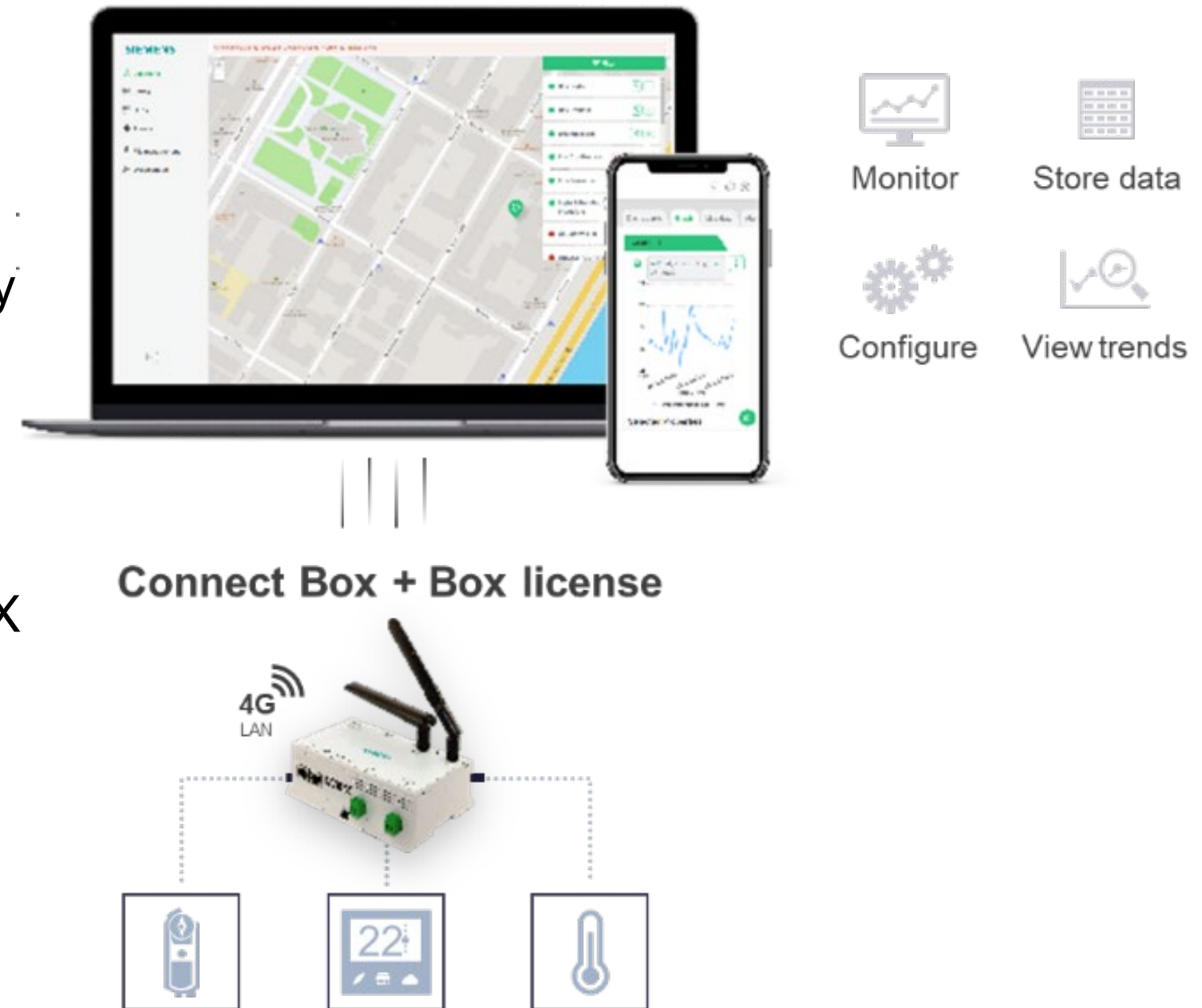


# Connect box in detail

- Easy to install on-premise integration box (needs an enclosure and power supply)
- User interface to monitor sites - BMS user functionality as a hosted BMS
- Built in 4G router for secure communications
- LoRaWAN capability for wireless devices
- Connectors for BACnet (IP and MS/TP\*, Modbus, KNX and M-Bus



\*via a BACnet router



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# Demonstration

# Demonstration

- Supports multiple sites
- Cloud access to read/write data
- Simple dashboards
- Graphical view of plant operation
- Alarms – sent as emails
- Trending – with export function
- Virtual meters

# DEMO



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# Application



# Application



## Bank branch

- 1 x Connect Box with 1 year Box license "Small"
- 5 x IoT comfort sensors
- 2 x occupancy sensors
- 1 x gas meter sensor



## Schools

- 1 x Connect Box with 3 years On-premise license "Medium"
- 15 x comfort sensors
- 1 x heat meter
- 1 x electricity meter
- 1 x water meter
- 1 x IoT gas meter sensor



## Multi-family housing

- 1 x Connect Box with 5 years Box license "Medium"
- 2 x Boilers
- 2 x heating controllers
- 20 x IoT comfort sensors
- 1 x heating meter
- 1 x electricity meter
- 1 x water meter
- 1 x gas meter sensor



## Office building

- 1 x Connect Box with 3 years On-premise license "XLarge"
- 20 x equipment
- 100 x comfort sensors
- 50 x IoT occupancy sensors

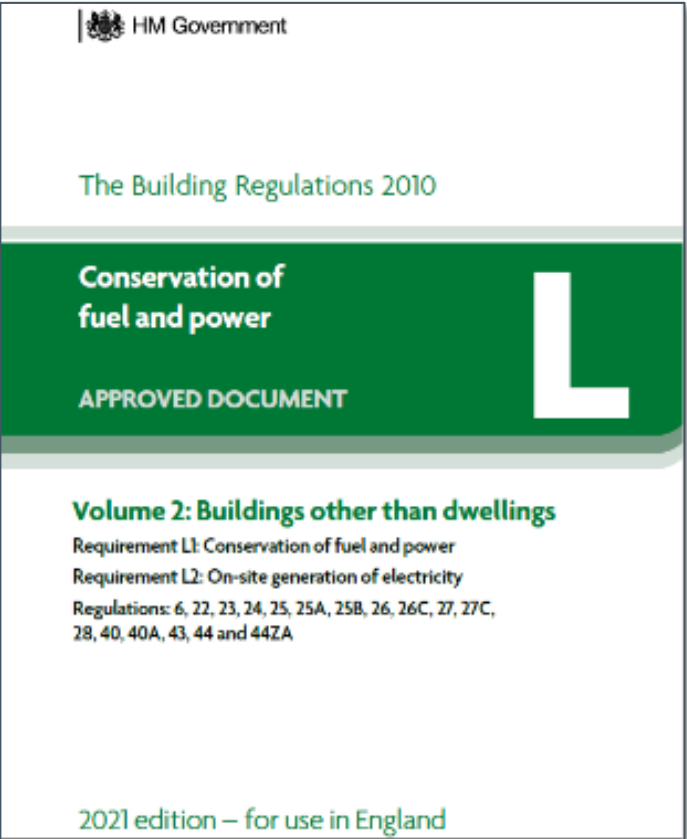
# Decarbonisation applications:

## Assign Ratings to Drive Energy Efficiency

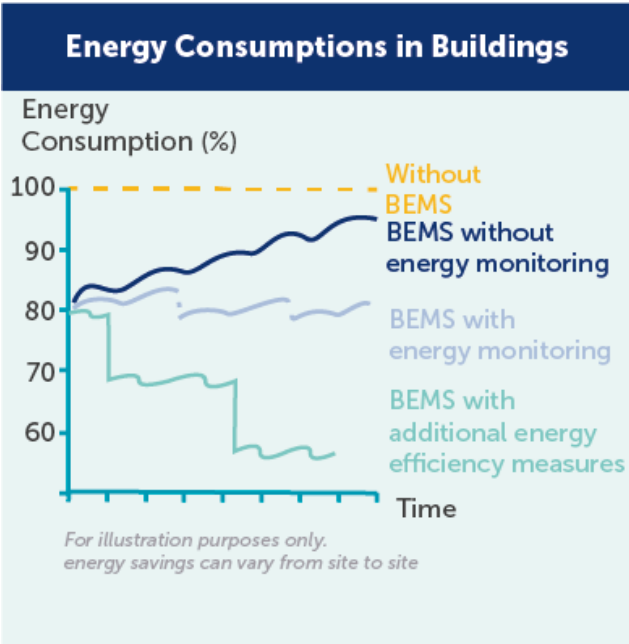


ISO 52120-1:2021

Energy performance of buildings — Contribution of building automation, controls and building management — Part 1: General framework and procedures



“A BS EN15232 Class A rated type system would meet these requirements”



| Class | Energy efficiency   |
|-------|---|
| A     | Corresponds to high energy performance BACS and TBM <ul style="list-style-type: none"><li>Networked room automation with automatic demand control</li><li>Scheduled maintenance</li><li>Energy monitoring</li><li>Sustainable energy optimization</li></ul>   |
| B     | Corresponds to advanced BACS and some specific TBM functions <ul style="list-style-type: none"><li>Networked room automation without automatic demand control</li><li>Energy monitoring</li></ul>   |
| C     | Corresponds to standard BACS <ul style="list-style-type: none"><li>Networked building automation of primary plants</li><li>no electronic room automation, thermostatic valves for radiators</li><li>no energy monitoring</li></ul>  |
| D     | Corresponds to non-energy efficient BACS <ul style="list-style-type: none"><li>Without networked building automation functions</li><li>no electronic room automation</li><li>no energy monitoring</li></ul> <p>Buildings with such systems shall be retrofitted<br/>New buildings shall not be equipped with such systems</p> |

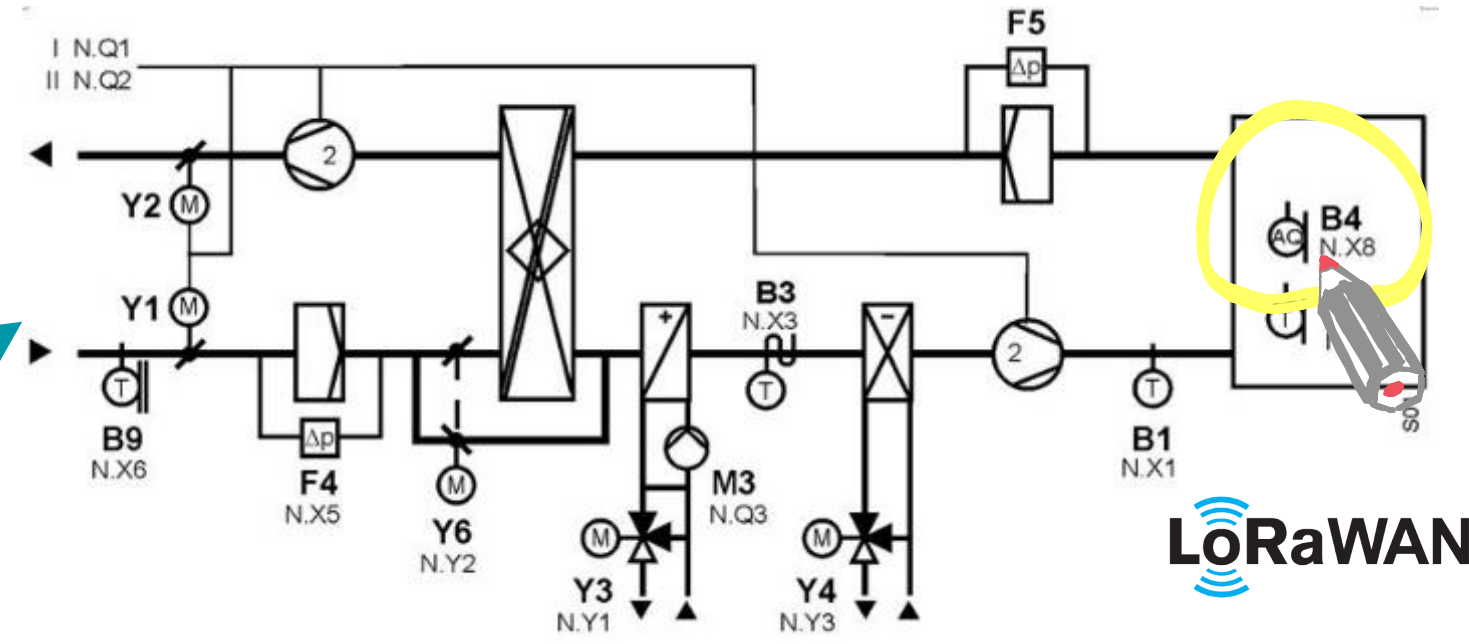
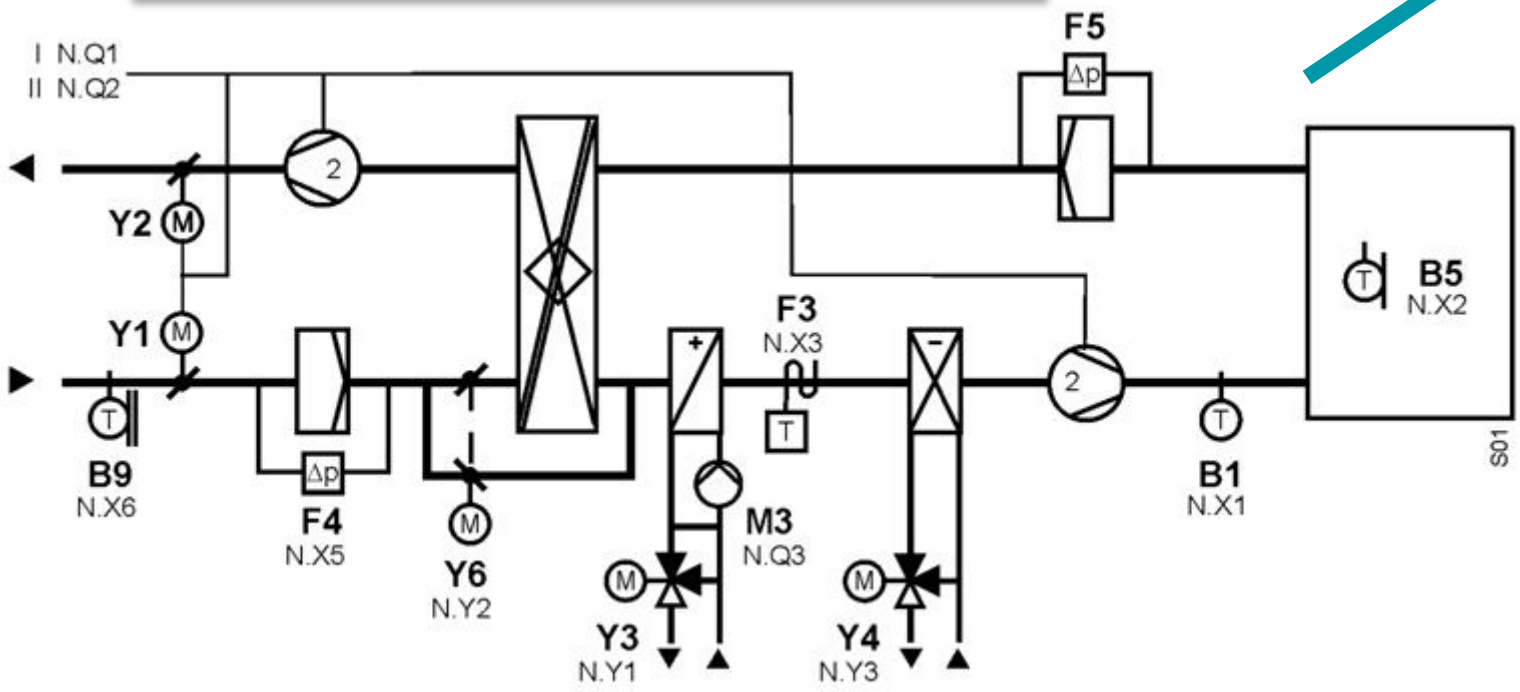
# Enabling Demand-Driven Control with LoRaWAN®

## Of Heating and Cooling

| VENTILATION AND AIR CONDITIONING CONTROL  |   | Definition of classes |   |   |   |                 |   |   |   |
|---|---|-----------------------|---|---|---|-----------------|---|---|---|
|   |   | Residential           |   |   |   | Non residential |   |   |   |
|   |   | D                     | C | B | A | D               | C | B | A |
| Air flow control at the room level        |   | 9, 10                 |   |   |   |                 |   |   |   |
| 0   | No control  |                       |   |   |   |                 |   |   |   |
| 1   | Manual control  |                       |   |   |   |                 |   |   |   |
| 2   | Time control  |                       |   |   |   |                 |   |   |   |
| 3   | Presence control  |                       |   |   |   |                 |   |   |   |
| 4   | Demand control  |                       |   |   |   |                 |   |   |   |
| Air flow control at the air handler level |   | 11                    |   |   |   |                 |   |   |   |
| 0   | No control  |                       |   |   |   |                 |   |   |   |
| 1   | On off time control   |                       |   |   |   |                 |   |   |   |
| 2   | Automatic flow or pressure control with or without pressure reset |                       |   |   |   |                 |   |   |   |
| Heat exchanger defrost control            |   | 12                    |   |   |   |                 |   |   |   |
| 0   | Without defrost control   |                       |   |   |   |                 |   |   |   |
| 1   | With defrost control  |                       |   |   |   |                 |   |   |   |
| Heat exchanger overheating control        |   | 13                    |   |   |   |                 |   |   |   |
| 0   | Without overheating control                                       |                       |   |   |   |                 |   |   |   |
| 1   | With overheating control  |                       |   |   |   |                 |   |   |   |

Class C

Class A



LoRaWAN Gateway

LoRaWAN

LoRaWAN

# Application – No existing BMS controller

Site with a boiler, radiators and packaged AC units

- LoraWan devices sensors and TRVs
- Desigo IO essentials (Modbus) – switch boilers and AC units
- Modbus meters
- Modbus room controllers
- M-bus meters
- Basic time control
- Basic inbuilt LoraWan device functionality

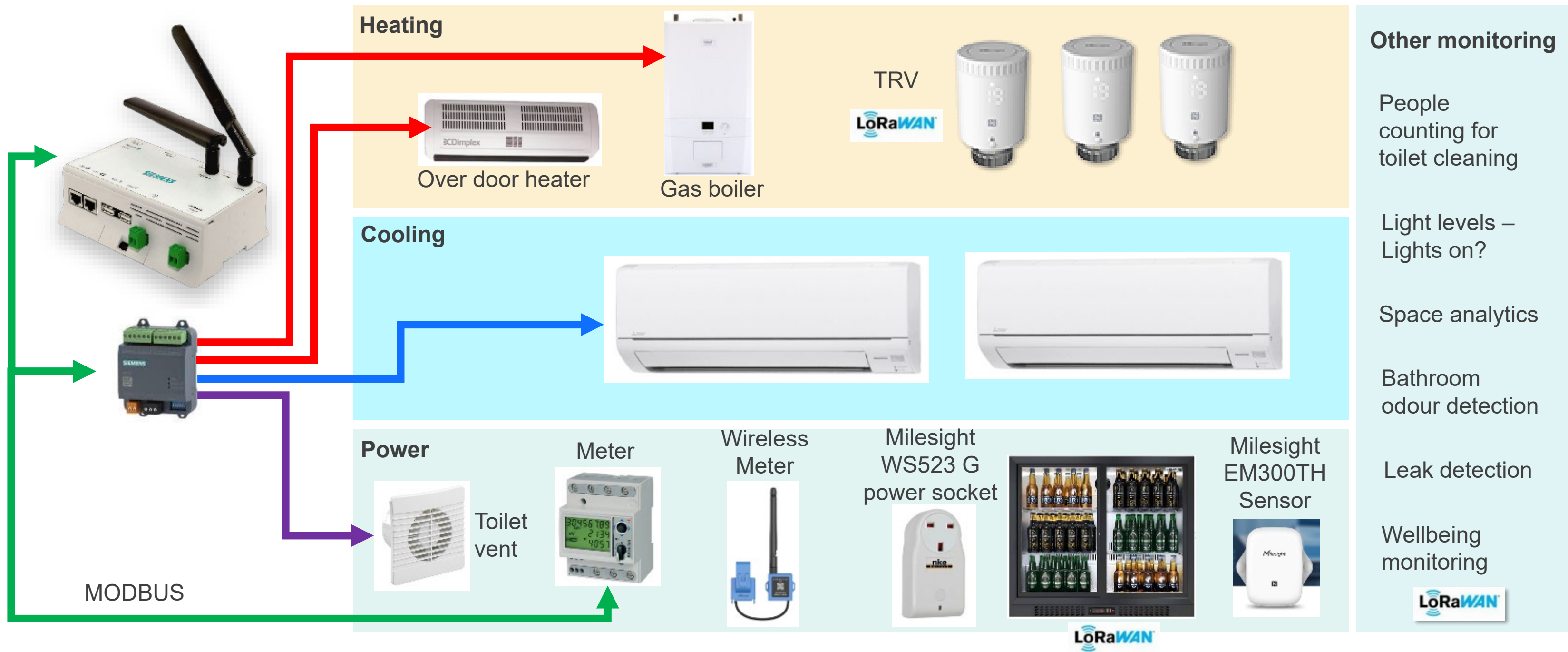


MODBUS room controller





# Application – No existing BMS

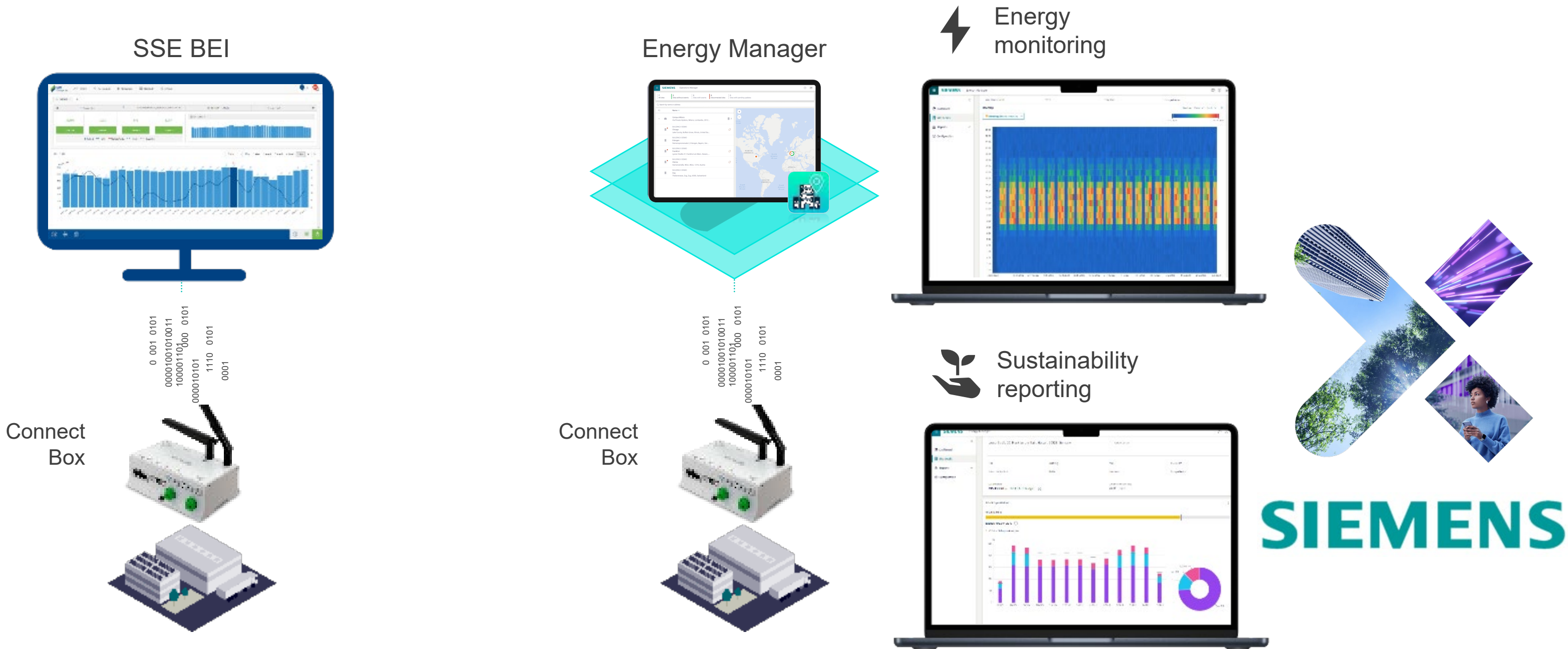


# Application – Existing BACnet BMS

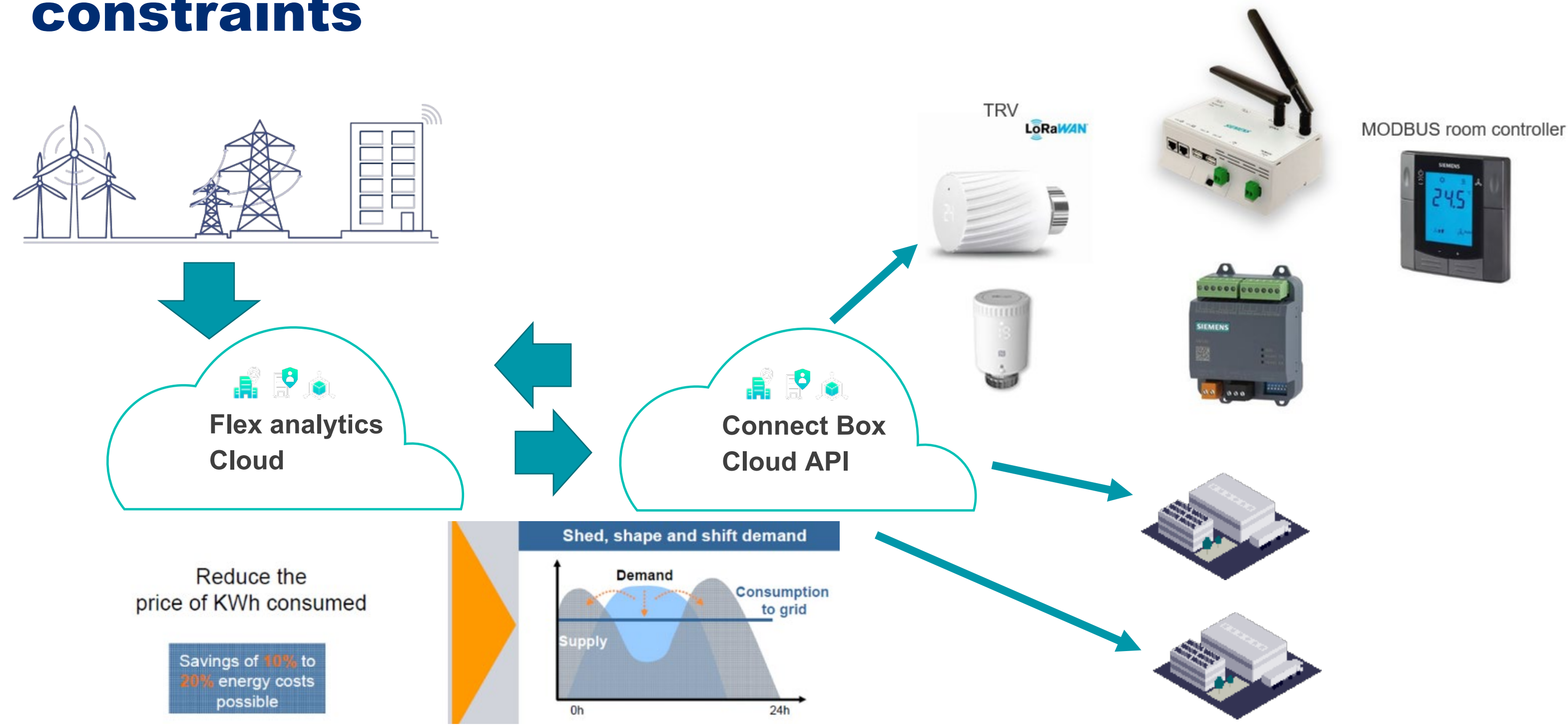
- Works with BACnet and MODBUS BMS
- Can add additional monitoring e.g. M-bus meters, LoraWan etc.
- Typically schools for low cost user interface



# Applications – Remote energy analysis



# Application – managing electricity demand constraints





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# Summary

# Summary

1. Flexible technology to apply to new or existing sites
2. Easy to use and configure user interface to manage one or more sites
3. Important view on buildings to aid energy reduction and decarbonisation
4. An edge platform to allow future data analysis and grid interaction



