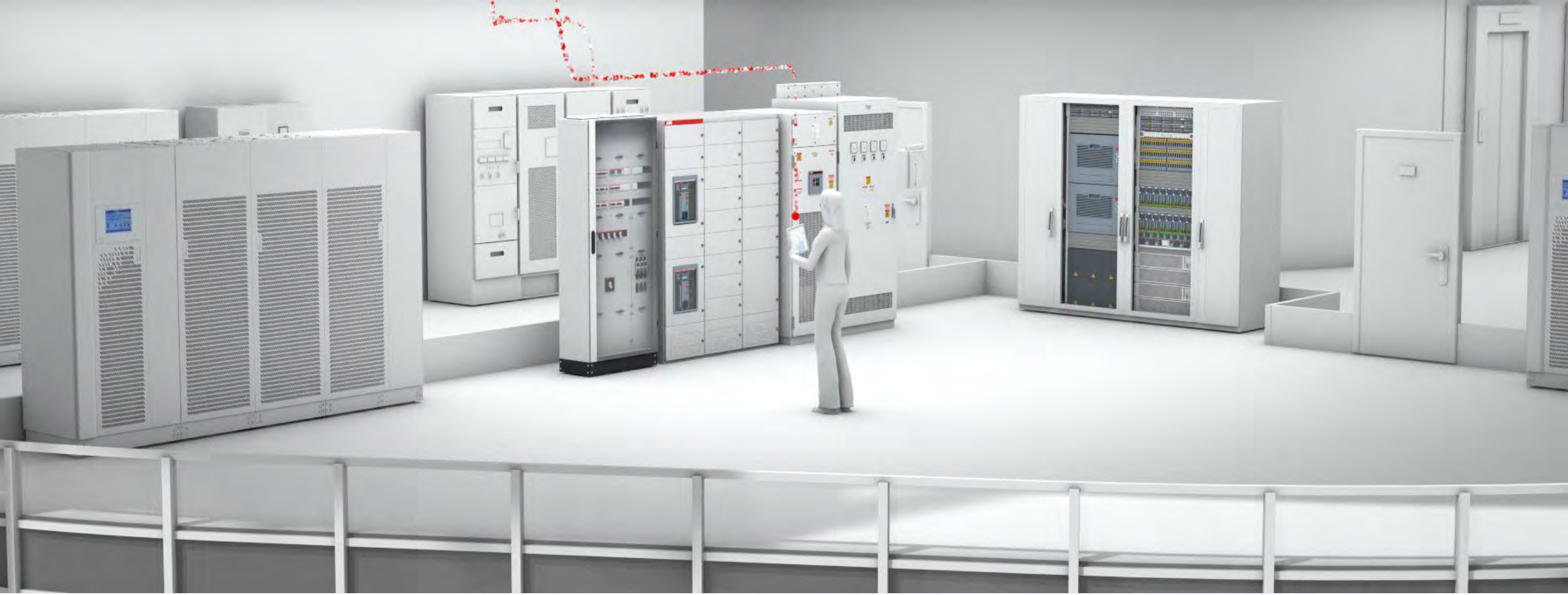
ELECTRIFYING THE WORLD

In a safe, smart and sustainable way

ELECTRIFICATION AT A GLANCE

ENGINEERED TO OUTRUN



Meters & Circuit Monitoring System

System Overview

Andrew Ward

ENGINEERED
TO OUTRUN

1.8 MILLION

ENGINEERED
TO OUTRUN


ABB Purpose
We enable a low-carbon society
We are committed to reaching net zero by 2050 and to partnering with our customers to avoid emissions.
Integrity
We promote social progress
We take care of our people and promote social progress with our partners, suppliers and communities.
Transparency
We preserve resources
We embed circularity in our products, reduce waste, protect water and biodiversity, and use land responsibly.

The Stonehouse case study – Energy Management

From kilowatts to cost savings: ABB Ability™ Building Analyzer supercharges energy efficiency at ABB Stonehouse facility

Findings

Five critical areas were identified as major contributors

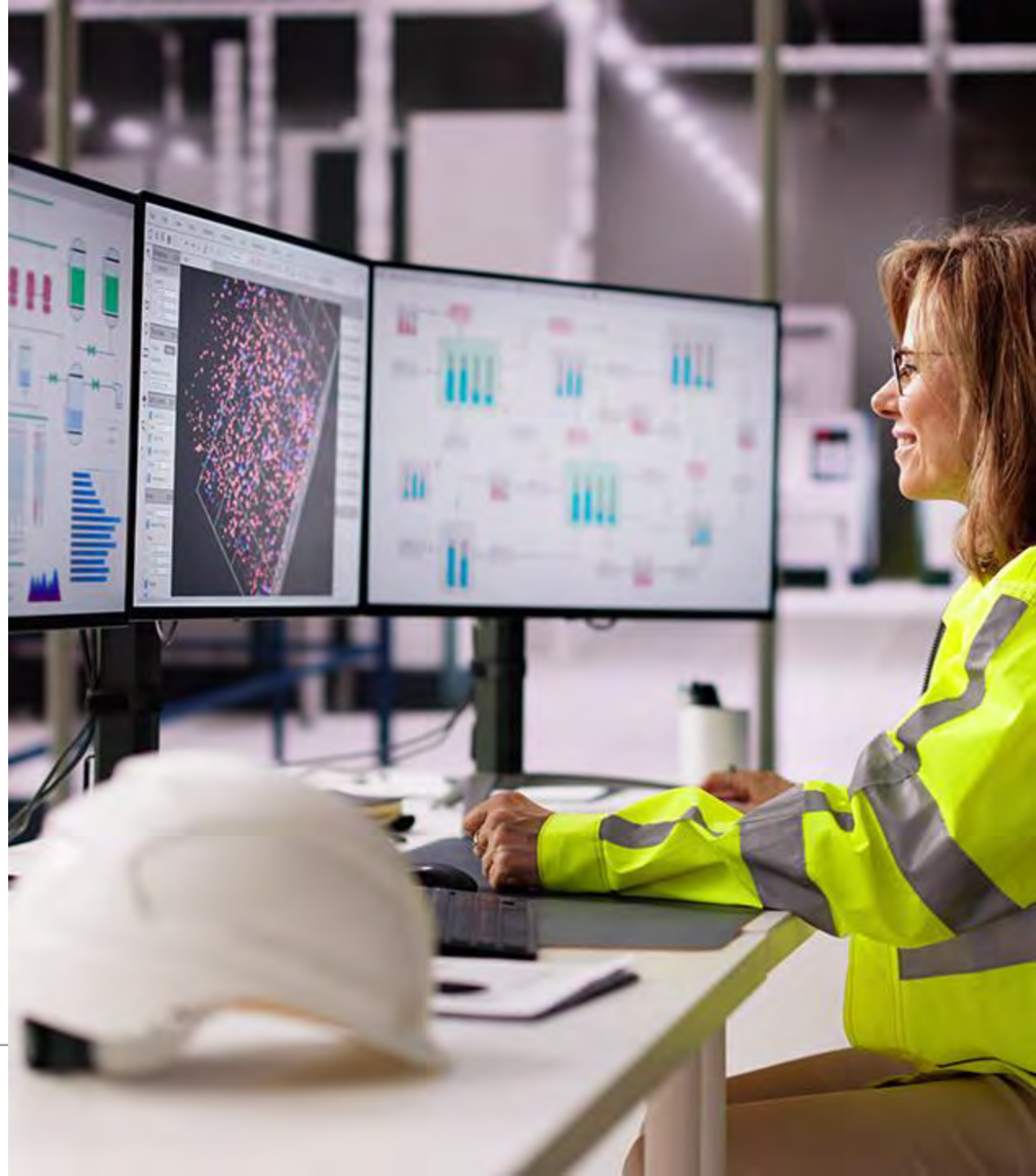
Hot water heater optimization

Canteen heating settings

Optimizing air compressor usage

Large calibration pump operation

Christmas deep shutdown



Large calibration pump operation

Analysis – Pumps run differently between day and night shift

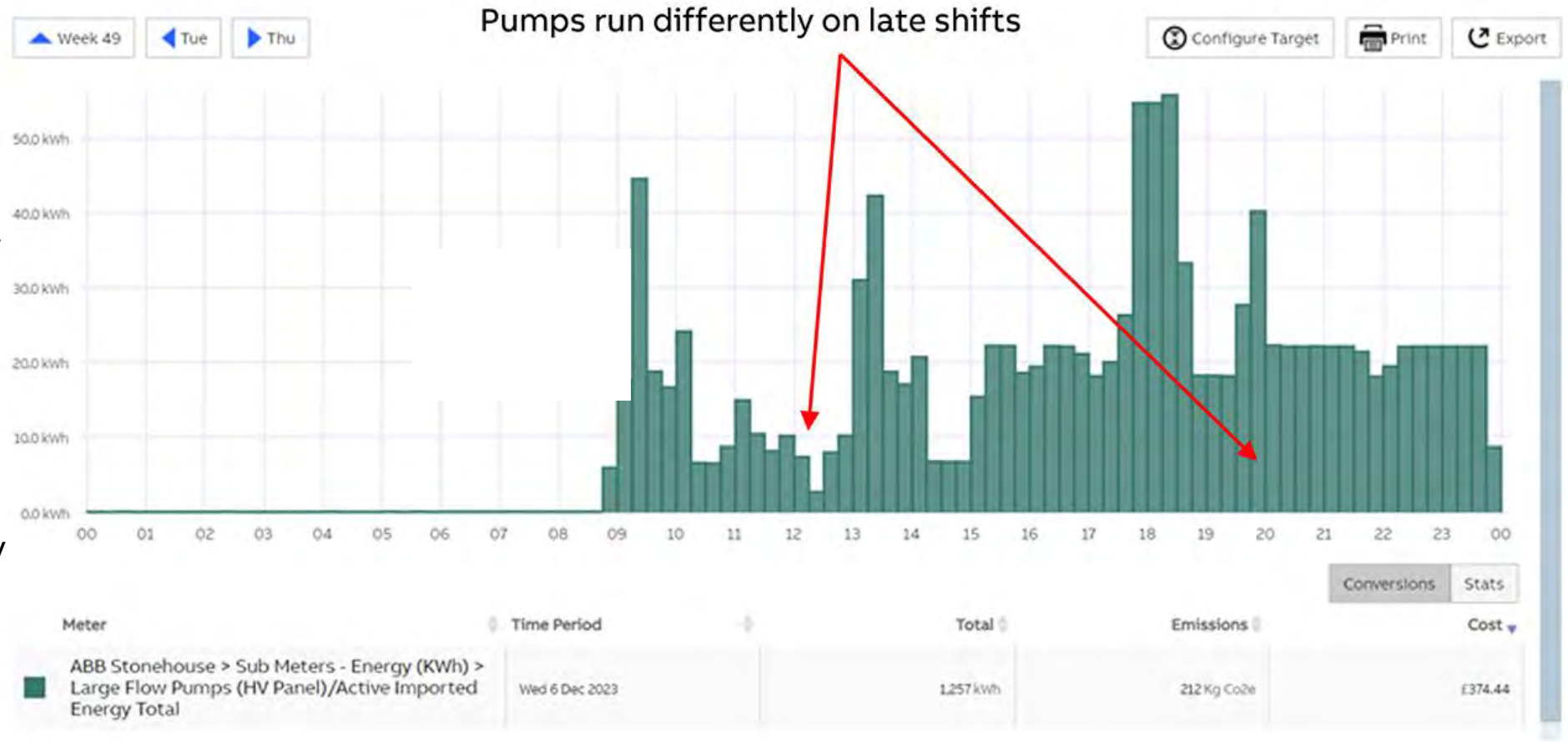
Cause - One team member adjusted the pump speed to vary the flow, while the other ran the pumps at full capacity and controlled the flow using the bypass valve.

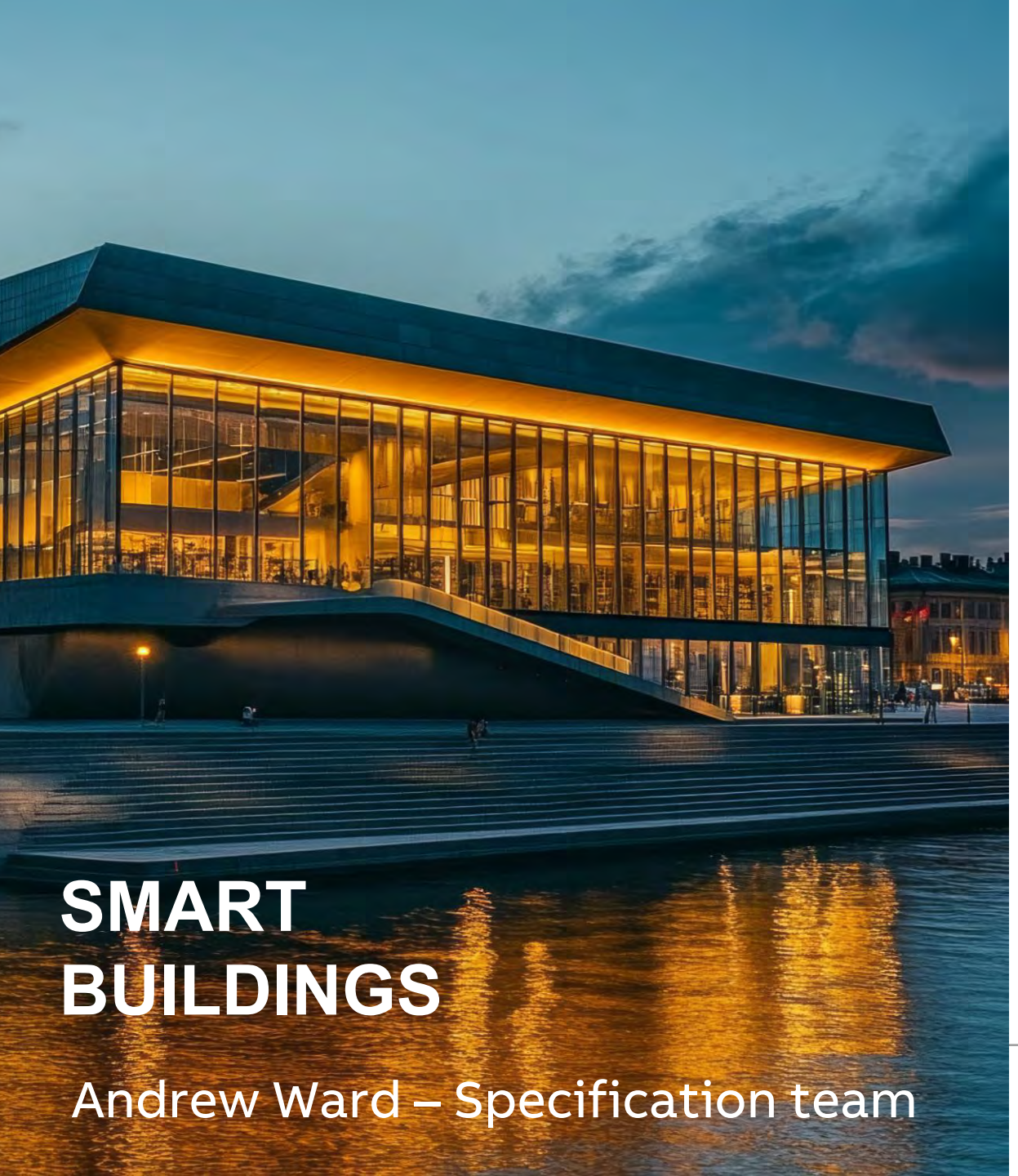
Potential savings:

500 kilowatt-hours (kWh) per day

280 opp. days per year.

140,000 kWh per year = £43,500





SMART BUILDINGS

Andrew Ward – Specification team

100+ Countries

11,700+ Employees

28 Manufacturing locations

33 R+D facilities

Comprehensive energy distribution and building automation systems for single-family homes, multi-dwellings, commercial and industrial buildings.

Offering

- Smart Home
- Building Control
- Door Entry Systems
- Access Control + Security
- Emergency lighting + Battery Systems
- Wiring Accessories
- Industrial Plugs + Sockets
- DIN-Rail Products – Protection Devices
- Distribution Enclosures

01

Need for Metering

The Need for Metering - Sustainability Accreditations

ESG-Environmental

- Calculate and report your total energy consumption

- Identify your areas of significant energy consumption (account for at least 90% of your total energy consumption)

Compliance with Building Regs

Regulatory Context: Section 6.61: Lighting Metering Requirements

What Section 6.61 Specifically Requires*

01

General and display lighting must be **metered separately**

02

Metering must provide **usable consumption data**

03

Systems must support **ongoing energy management**

04

Meter values must be accessible to the **building user/operator**

**Please refer to latest edition for amendments*

02

EQ –Meters (Din Rail)

Divide EQ meters into four segments

Meters made simple

	Direct connected	Transformer connected
Single phase	1  D11 B21 A41	2  A42
Three phase	3  D13 B23 A43	4  B24 A44

03

Panel Meters

M4M network analyzers

Sensing. To manage power

State-of-the-art Network Analyzer

- **Full connectivity**
- **Real Time Supervision**
- **Intuitive interface**
- **Energy Efficiency**

M4M 20

M4M 30

M4M network analyzers

Communication protocols

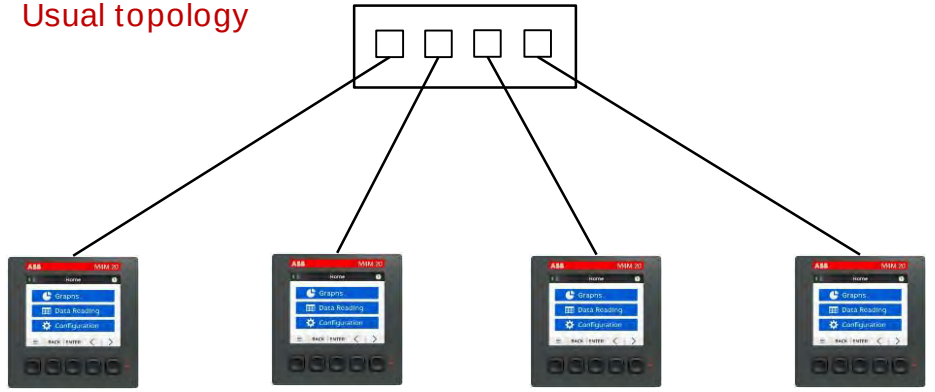
Availability of embedded communication protocols for all main applications, with dedicated product versions.

Wide possibility of integration thanks to complete set of communication protocols, increasing possible applications (e.g. building automation through BACnet TCP/IP).

- Modbus RTU
- Modbus TCP/IP
- Profibus DP-V0
- BACnet TCP/IP

MODBUS TCP/IP

Usual topology



Daisy-chain topology

No need for Ethernet switch in case of Modbus TCP/IP thanks to daisy-chain connection through 2 RJ45 ports on M4M 30 Ethernet

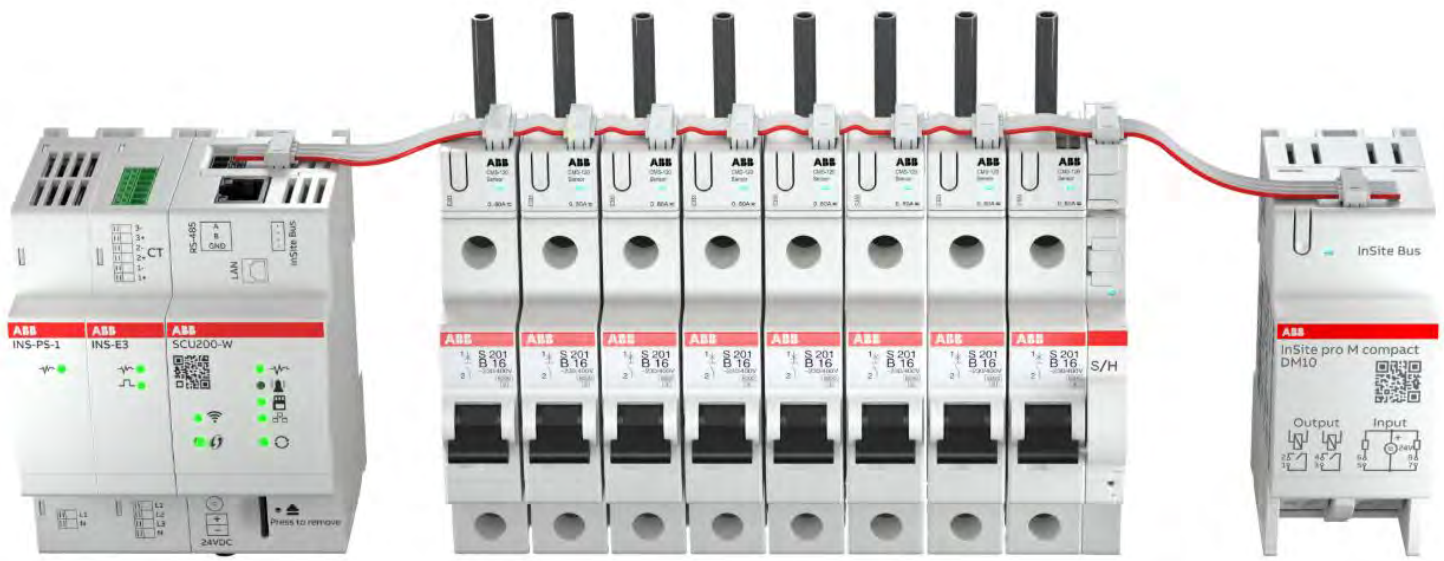
04

InSite - Circuit Monitoring System

Circuit Monitoring System - CMS

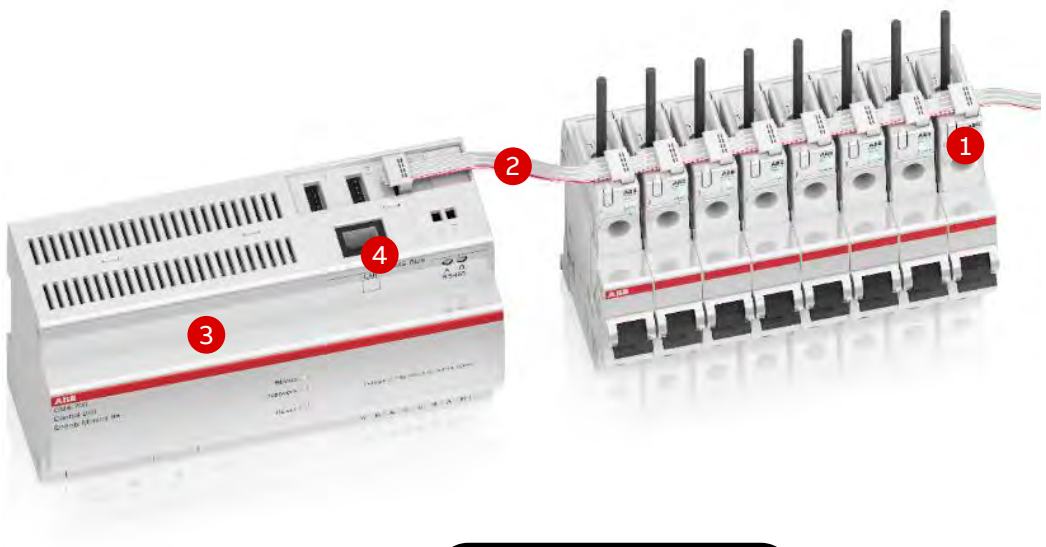
Brief description

Circuit Monitoring System – CMS is an ultra-compact and high-performance multichannel measurement system for AC and DC branch monitoring.
It represents a complete solution for monitoring electrical parameters in distribution panels, enabling power monitoring and energy efficiency analysis in buildings and critical power applications.



Circuit Monitoring System - CMS

How the CMS system works



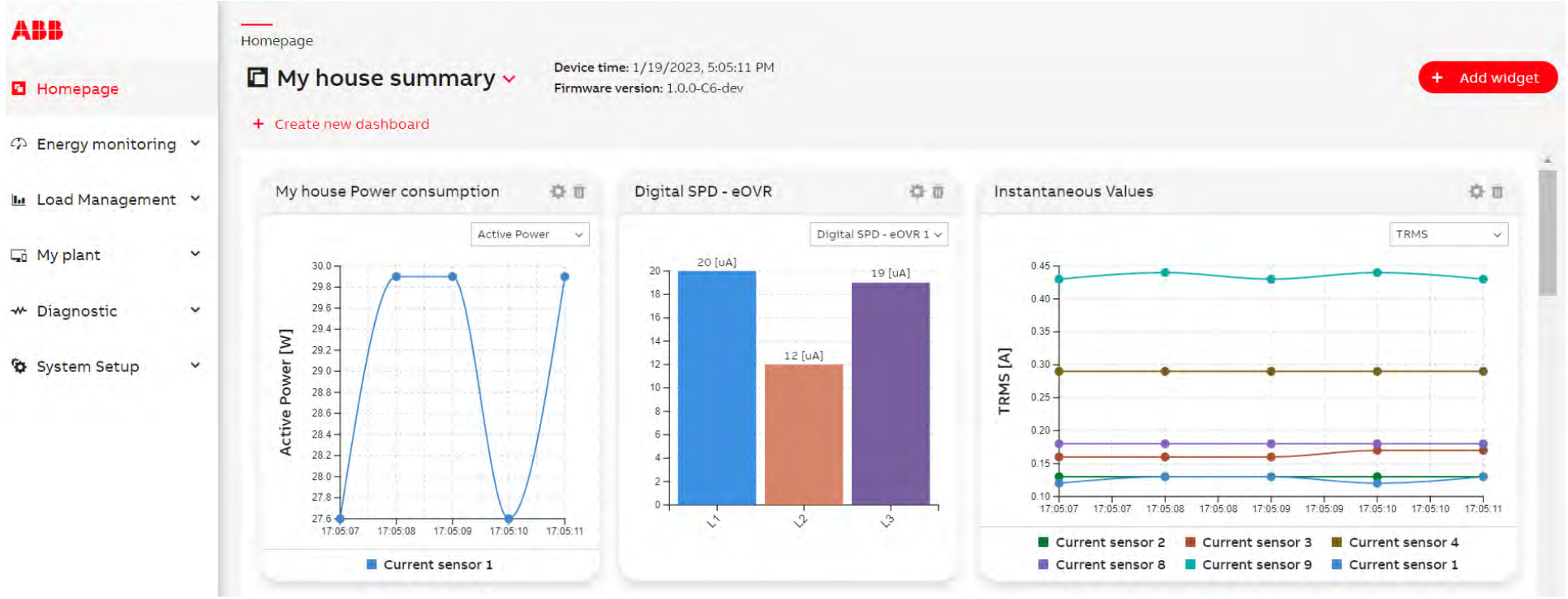
1. CMS sensors allow both AC and DC branch monitoring, providing clear visibility of energy consumption for each single line.
2. Sensors are connected to the Control Unit by means of a flexible flat cable, with fully customizable positioning of sensors where needed.
3. The Control Unit evaluates the measurement data picked up by the sensors and makes it available via the built-in interfaces.
4. Depending on the unit, several embedded communication protocols are available for smooth network integration: Modbus RTU, Modbus TCP/IP, SNMP v1/v2 and encrypted v3.
5. The built-in Web UI of SCU allows the complete commissioning of the system, as well as visualization and easy export of the measured data.

The System Evolution

NEW InSite energy management system – WebUI

Webserver

- New WebUI with updated design guidelines
- User friendly interface for an optimized usage
- New menu structure based on new functionalities given by the system
- Increased number of widgets dedicated to specific devices (e.g. SPD-eOVR)



InSite energy management system

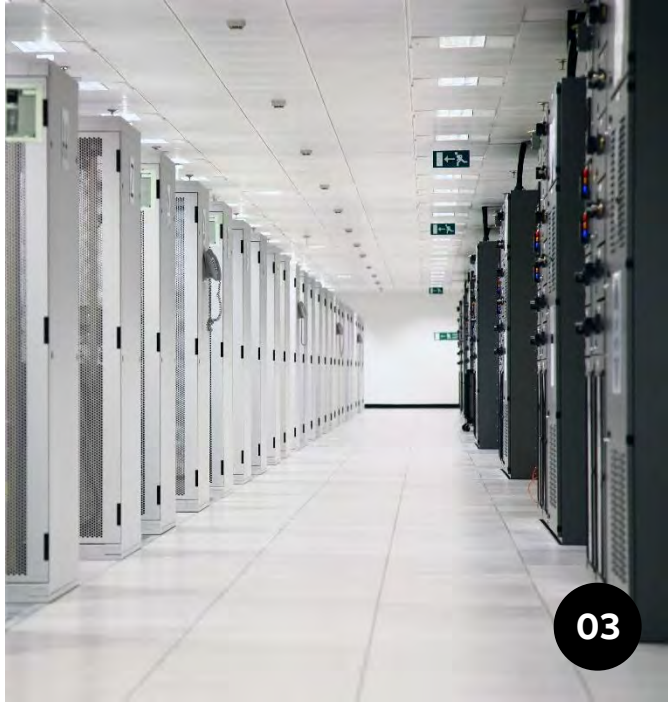
Main applications

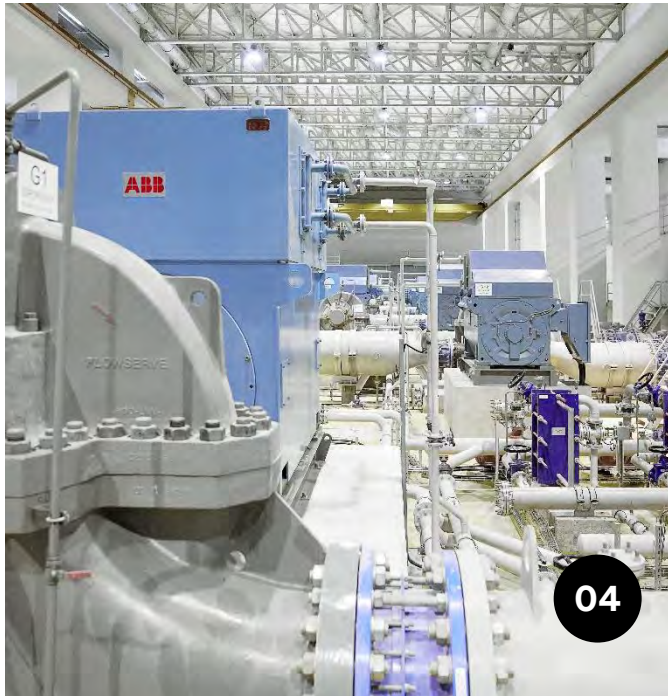
01. Residential buildings

02. Commercial buildings

03. Data centers

04. Industrial/unmanned substation





05

InSite
Range overview

Circuit Monitoring Systems - CMS

The range at a glance

CMS 600

CMS700

SCU100

SCU200

2008 2011 2020 2023

InSite – NEW Control unit

Side by side comparison

SCU100

SCU100

Vac supply L1-N

- 3 x InSite bus ports for up to **96** connections (CMS sensors and IO modules)
- 1 x InSite bus port for Modbus adapter
- 1 x RS-485 port for Modbus RTU
- 1 x RJ45 port for Modbus TCP
- Up to 16 Modbus RTU/TCP devices

SCU200

SCU200

24 Vdc

- 1 x InSite bus ports for up to **32** connections (CMS sensors, IO modules
- 1 x RS-485 port for Modbus RTU
- 1 x RJ45 port for Modbus TCP
- Up to 16 Modbus RTU/TCP devices
- 1 x WiFi client mode interface
- 1 x WiFi access point interface

Once connected a Modbus RTU device to SCU200 the only available protocol to connect the system to upper level is Mo

System pro M compact® InSite

Sensor Installation.

Sensors for ABB devices

System pro M installation, SMISSLINE
The sensors of the CMS-120LA and CMS-120FH series can be used for easy retrofit installation on S200 MCBs, SMISSLINE devices and E90 fuseholders (1000VDC).

Mounting on S800 devices
The sensors of the CMS-100S8 and CMS-200S8 series can be mounted on all S800 high-performance switches with cage terminals.

Universal sensors

Mounting on DIN-Rail
The sensors of the CMS-120DR, CMS-100DR and CMS-200DR series are installed directly on a DIN rail using an enclosed adapter.

Clamp mounting on the cable
If space is a problem, the sensors of the CMS-120CA series, CMS-CMS-100CA and 200CA can be fixed directly on the cable to be measured using clamps (not supplied).

InSite CMS

Ease of Ordering

- Pick the unit
- Do you want to monitor the main incoming A/V
  - INS-E-5 required for SCU200
- Pick the length of the ribbon cables
  - 5m/10m/30m (Cables can be cut)
- Pick the connectors
  - They come in a bag of 35pcs
- Pick the sensors depending on current rating
  - 20A/40A/80A/160A (note they are 1Ph sensors)

Just 5 components to create a system

1. Control unit
2. Metering module
3. Ribbon cable
4. Connectors
5. Current sensors

Basic architecture – single distribution board

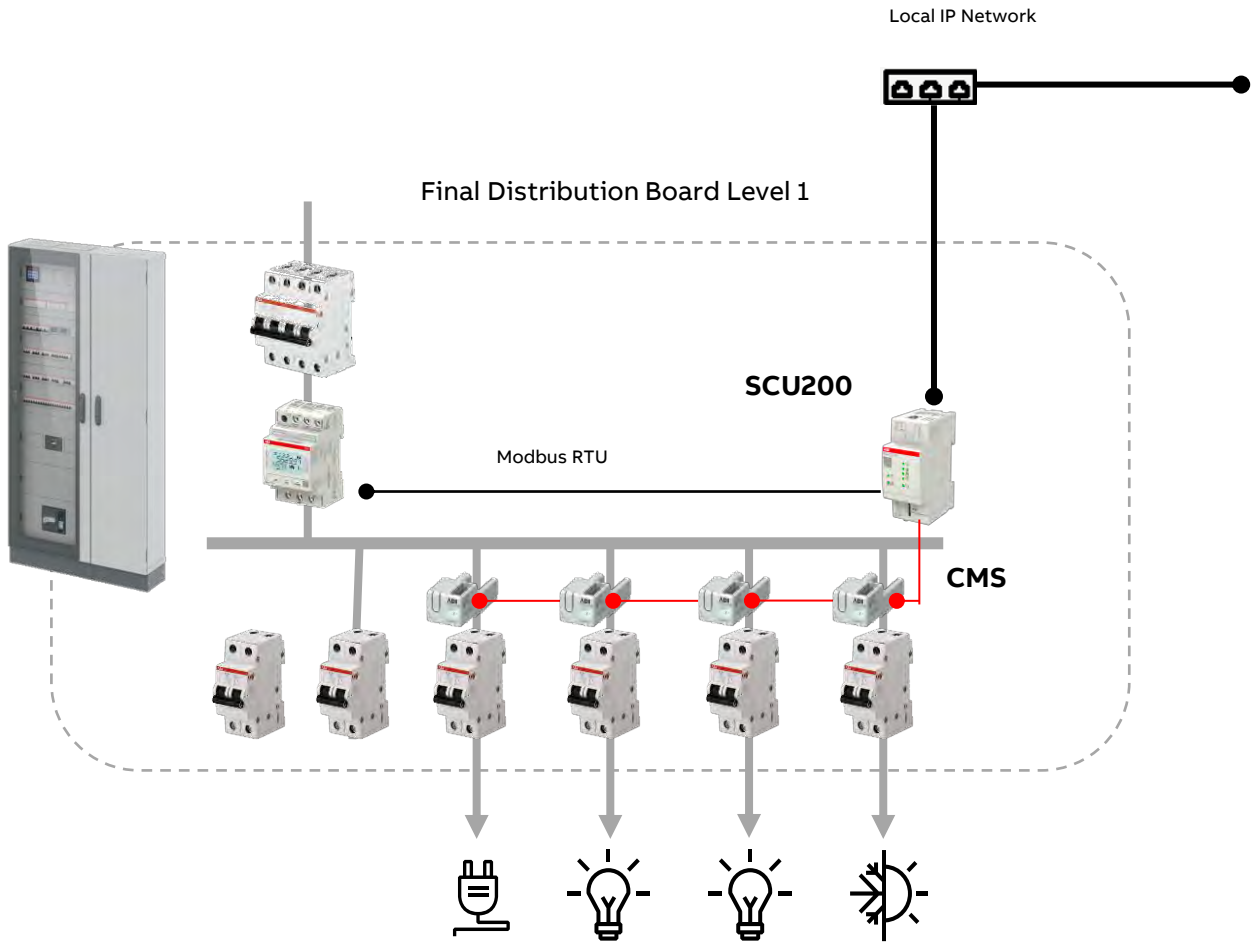
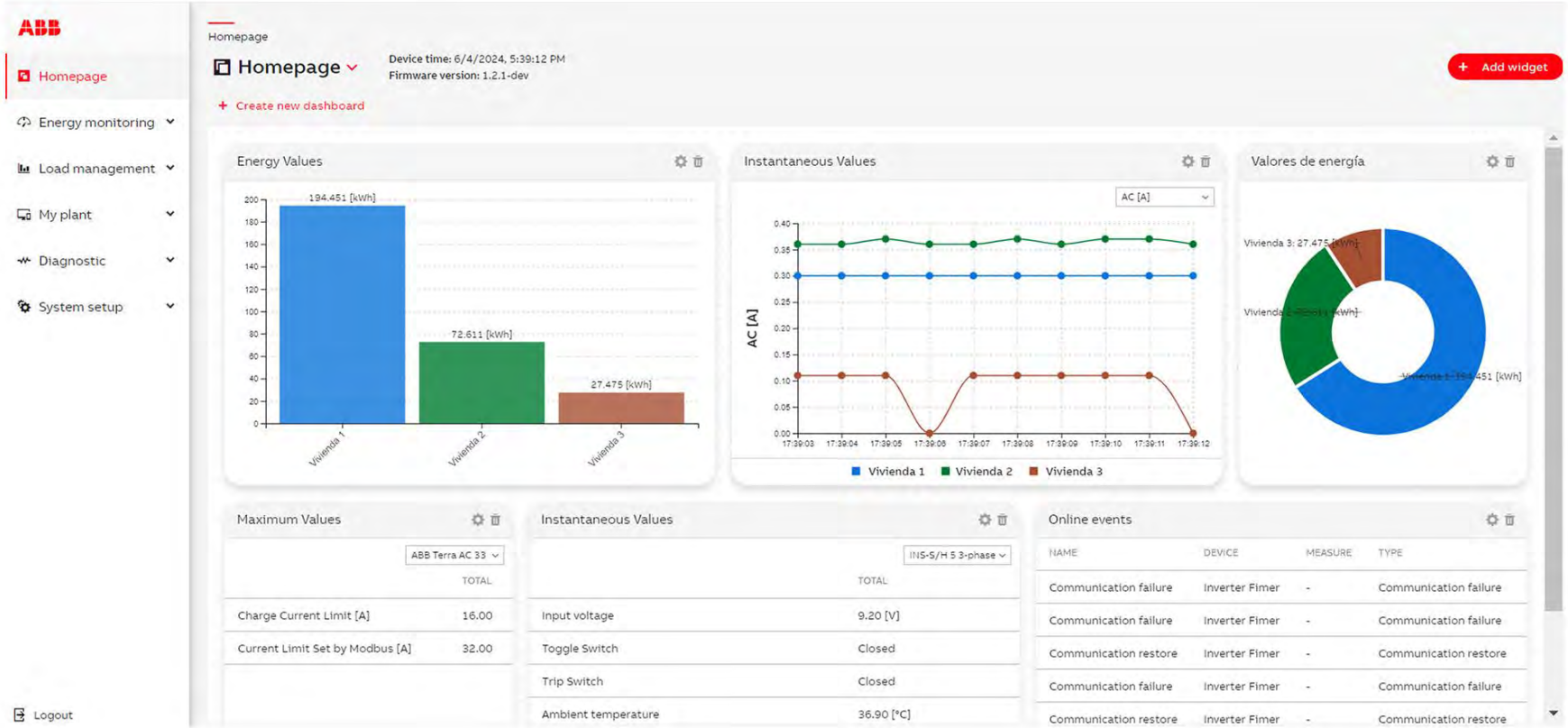


ABB InSite - Circuit Monitoring System - CMS

Real time data

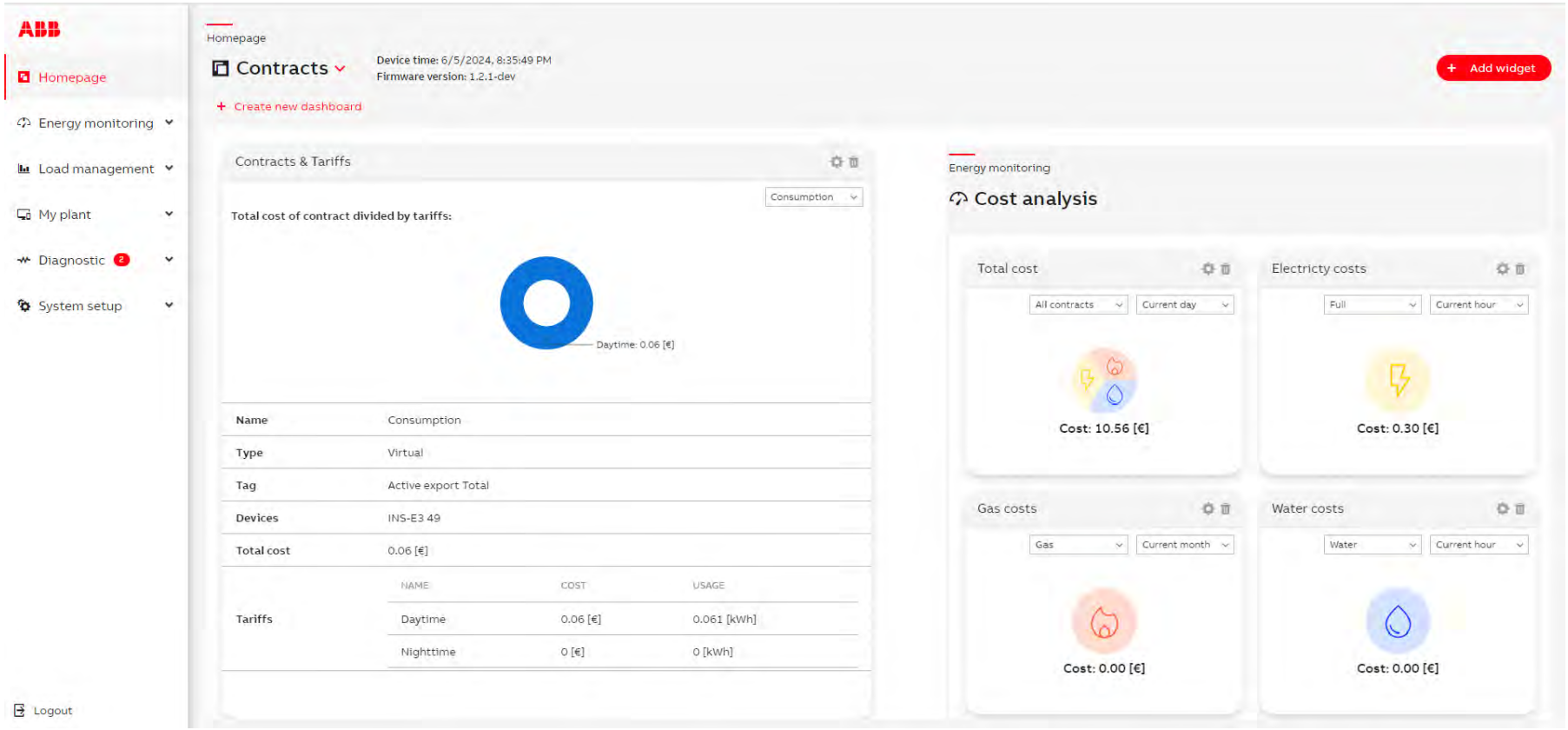


Scalability

- Sub and final distribution
- New builds or retrofits
- From large buildings to residences with advanced load management capabilities

ABB InSite - Circuit Monitoring System - CMS

Cost management



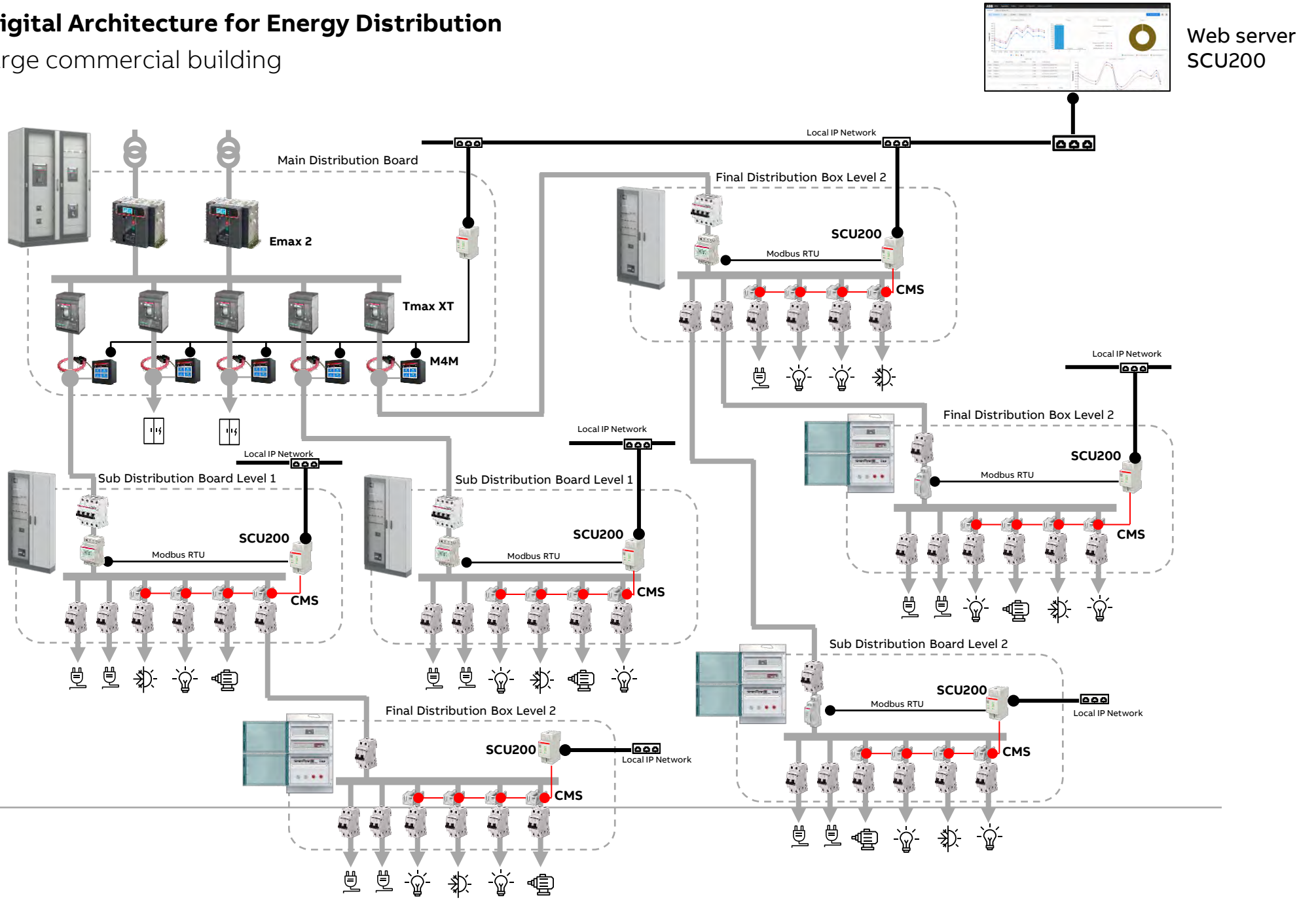
- Easy integration of 3rd party software systems
- Increased possibilities in terms of field device connectivity
- Access real-time data through the integrated InSite web server

06

SCU-200 Scalability-Expansion Modules

Digital Architecture for Energy Distribution

large commercial building

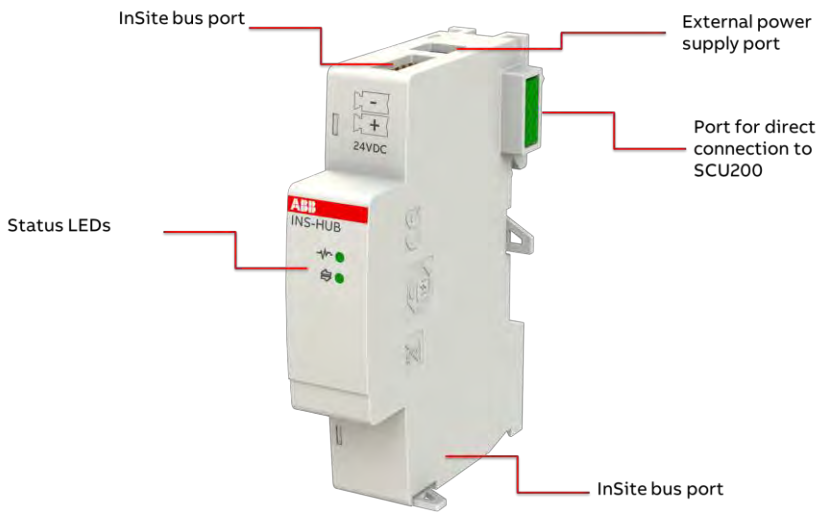


INS-HUB

Product details

LATE Q3-2025

Collector HUB module: INS-HUB



Elevate your control capabilities with the Collector HUB (INS-HUB) – a new powerful **expansion module designed for SCU200**. Seamlessly scale your infrastructure by extending support from 32 to an impressive **160 CMS sensors, INS-S/H devices or 40 DM modules** – all managed through a single SCU200 control unit.

Extends the number of sensors connected to SCU200 up to 64 per INS-HUB. Each SCU200 can support up to 2 INS-HUB module allowing a total of 128 additional sensors .

The INS-HUB is supporting both **external power supply** configurations and hybrid setups using both the SCU200's internal power supply (INS-PS-1 or INS-PS-2) and an external one.

Metering Module : INS-E3-5

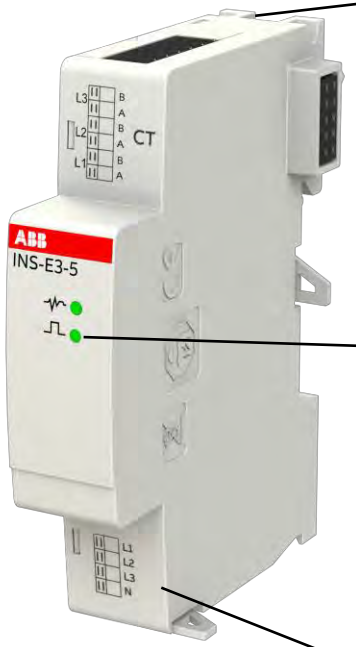
EXP: Q4 2024

Module Specifications:

- InSite expansion module for metering requirements beyond 80A.
- Smallest footprint (1DIN Module).
- Measurement of single phase channels or 3 phase incoming supply, expandable to 5 modules per SCU200.
- Data can be exported by Modbus TCP via SCU 200.
- Active energy accuracy 1% (excluding CTS)

Supported CTS:

- Any 3rd party / ABB CT's with 5A secondary rating.
  - Strip Length should be 8mm minimum
  - Conductor cross section 1.5mm2 max.



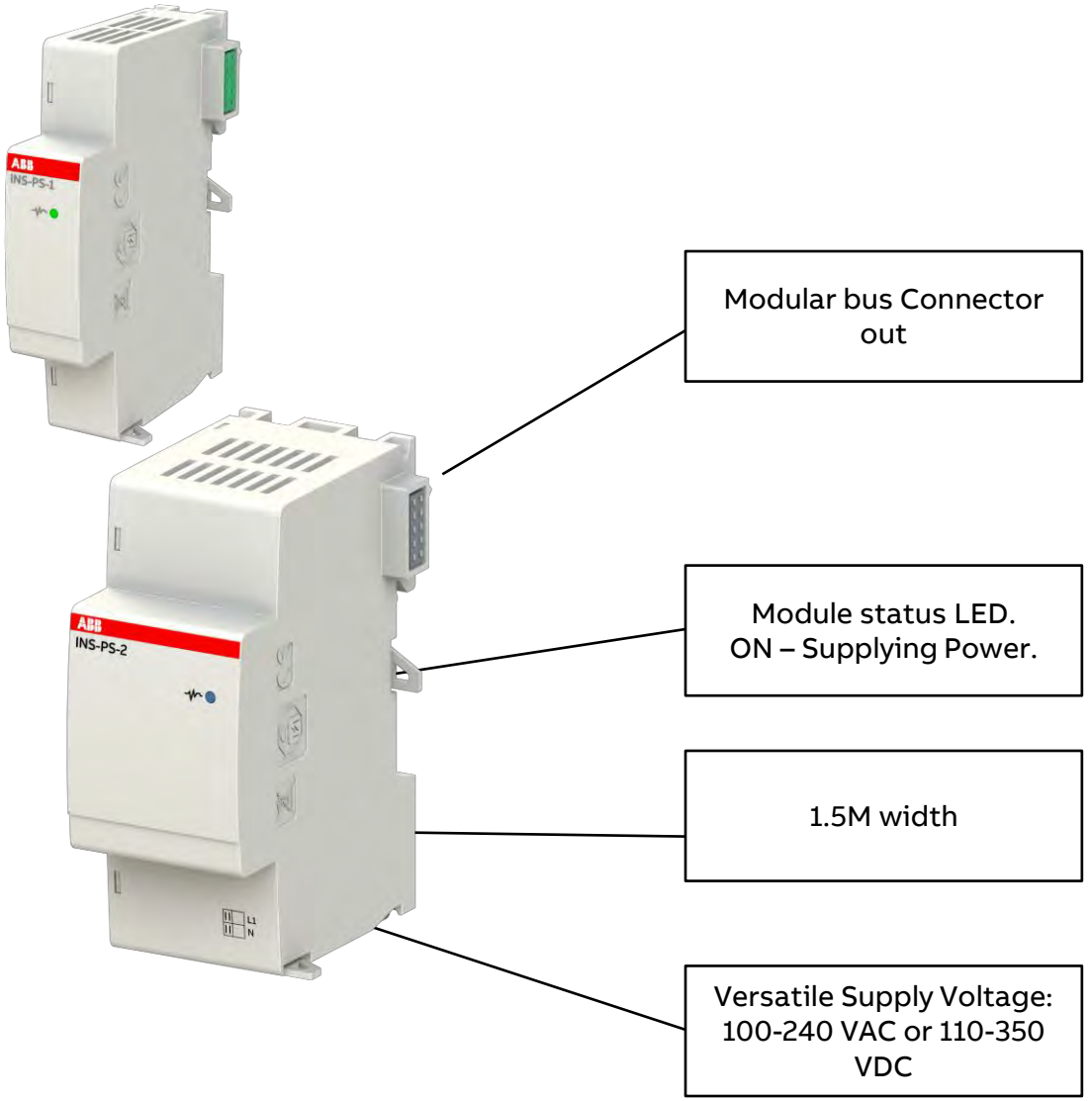
Max . 3 CTs

Instant visual feedback
1. Status LED
2. Data traffic with SCU 200

Voltage reference
Both 3W /4W systems

Power Supply Module : INS - PS2

InSite's enhanced power capabilities with the introduction of PS2, complementing the trusted PS1 for expanded energy management options.



Applications :

- Upgraded Power supply capability up to 30 watts, with a maximum capacity of 45 watts.
- To support fully loaded systems and large configurations with a single Power supply.
- Possibility to expand the InSite system with new expansion modules with out any extra supply module.
- A simple tool available online to assist you in choosing the correct power supply for a given configuration.
  InSte Power Supply Definer

07

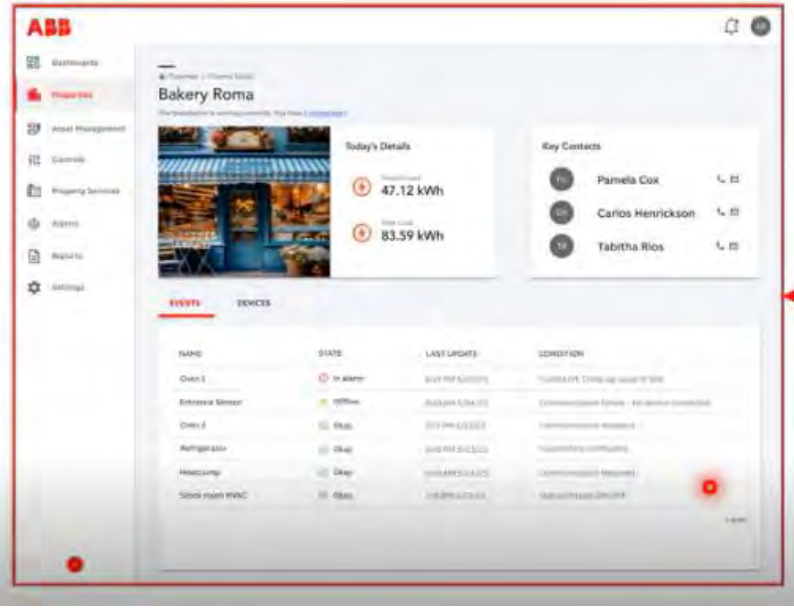
Cloud Connectivity through SCU200

InSite Energy Pro

1 Monitoring - Multi Tenant View

Visualization of different properties or groups at a glance in a single dedicated view

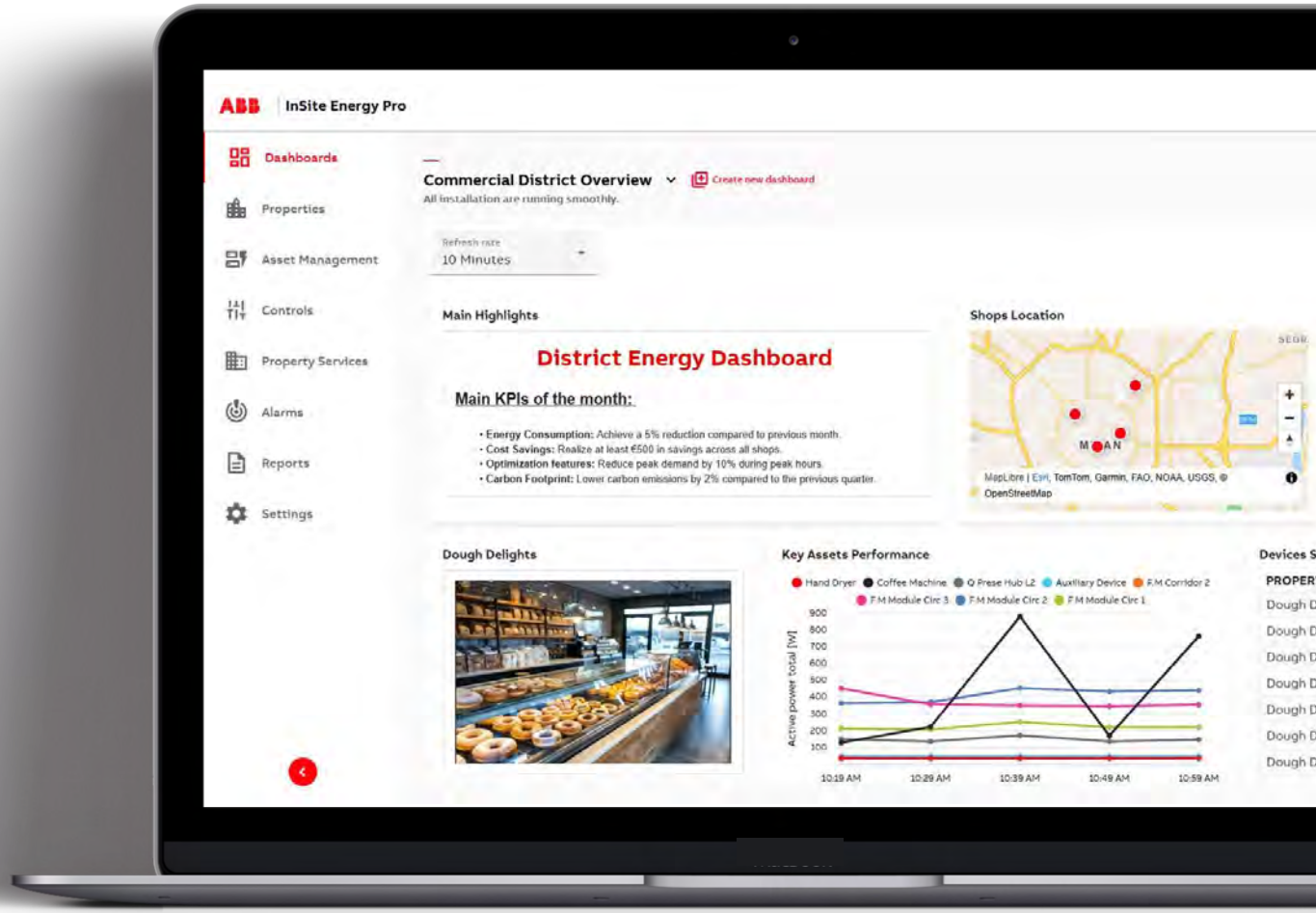
- Visualization at a glance of all the properties and groups managed in a multi-tenant scenario
- Visual indicators for quick identification of properties status (e.g., alarms, connectivity issues, etc.)
- Possibility of summary view of the main assets summary for each tenant
- Access to specific properties details is possible for quick reference and identification of key information.



Property status indicator

InSite Energy Pro
Functionalities & Structure

- Customize your Energy **Dashboards**
- Oversee and manage your **Properties**
- **Asset Management** – keep track of all connected devices
- Manual **Control*** of selected loads
- Benchmark analysis in **Property Services** section
- Configure **Alarms** to be notified of critical situations
- Export and share **Reports** with different stakeholders



*Manual control for MOD & ABB AC Terra EV charger included in the 1st Release. Pre-defined automations after the MVP

Summary

InSite CMS – Key Features

Meters	→	Comprehensive range of meters with embedded communication protocols – all compatible with InSite
System	→	Simple to specify – only 5 parts needed to create a complete system
Retrofit	→	Third-party & retrofit solution, ideal for existing properties with unidentified high consumers
Cost	→	One-time cost, no recurring fees
Integration	→	Integrates with all major BMS via Modbus TCP/IP
Cloud	→	InSite Energy Pro Cloud for multi-site and multi-tenant portfolios

THANK YOU