

INTERNAL

2019

ABB Ability™ Electrical Distribution Control System

Optimized energy distribution in a digital world



Energy and Fourth Industrial Revolutions

The Energy Revolution: 3D



Utilities

The Fourth Industrial Revolution: 1D

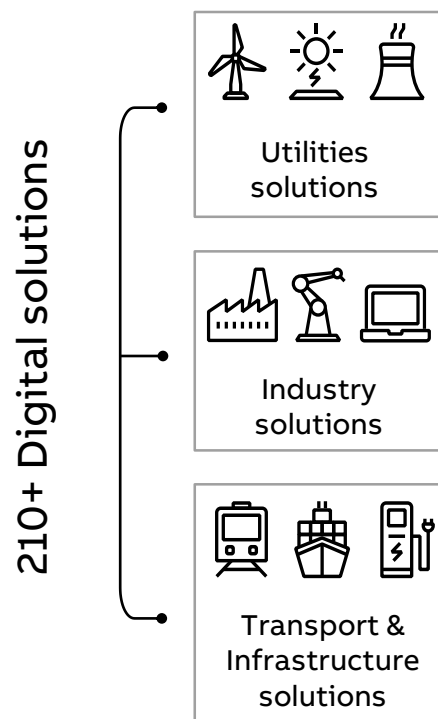


Industry

Transport & Infrastructure

Helping customer challenges with right...

Holistic digital portfolio



Structure to target pain-points



Value-based approach

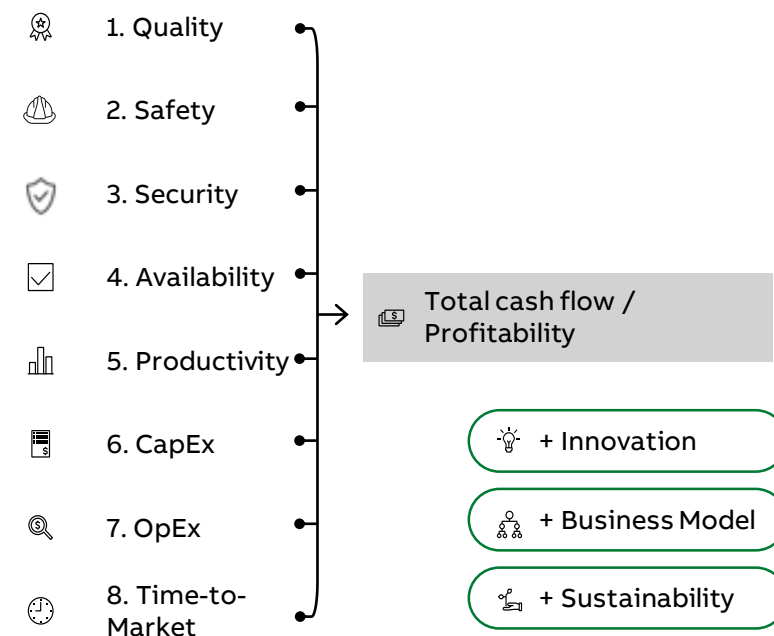
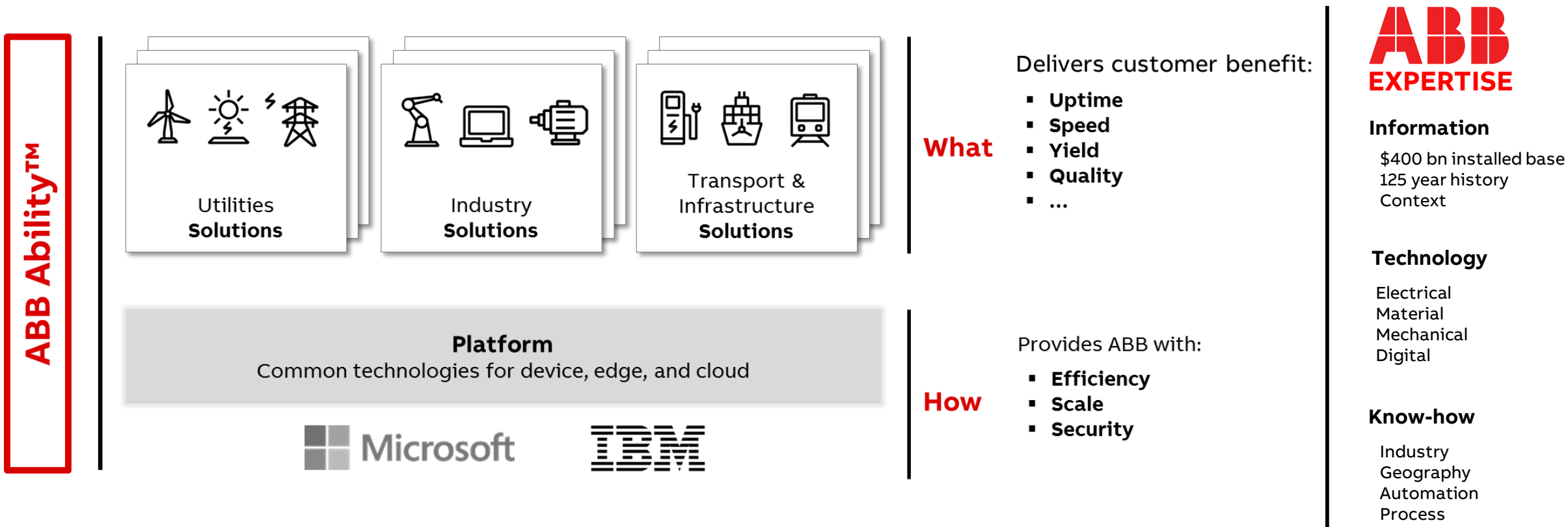


ABB Ability™

Industry-leading digital solutions built on a common set of standard technologies



Digitalization is building a bridge to the future

ABB - expertise in technology, information, and domain know-how



1

Digital opportunity is here transforming every aspect of industry

2

Crisp structured portfolio to support digital transformation

3

Value proposition for customers, not for own engineers

4

Speak one language in your company and with your customers

5

ABB Ability™ - Industry-leading digital solutions

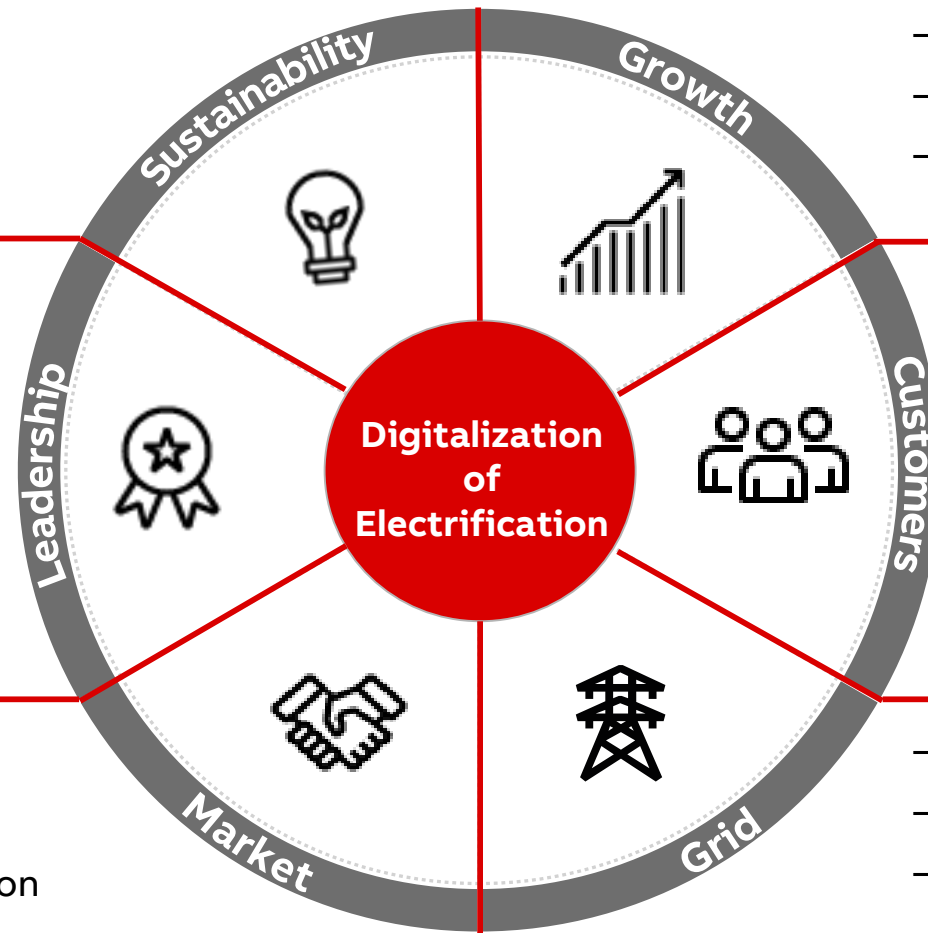
Why should we digitalise the energy sector?

Digitalization supports our ambitions in terms of sustainability, quality of supply and cost of energy

- Green energy by integrating renewables
- Reduce pollution with infrastructure for e-mobility
- Meet corporate sustainability targets

- Enables players to be part of the game
- Innovation, partnerships, collaboration
- Drive and influence

- New market products and services
- Minimise costs of energy
- Optimise customers energy consumption



- Support growth in the energy sector
- Enable interaction among all players
- Reduce complexity and accelerates market evolution

- Whole new customer experience
- New services for consumers
- E-commerce

- Reliability of infrastructure
- Maximise efficiency and quality of supply
- Leading edge operations and maintenance

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Architecture

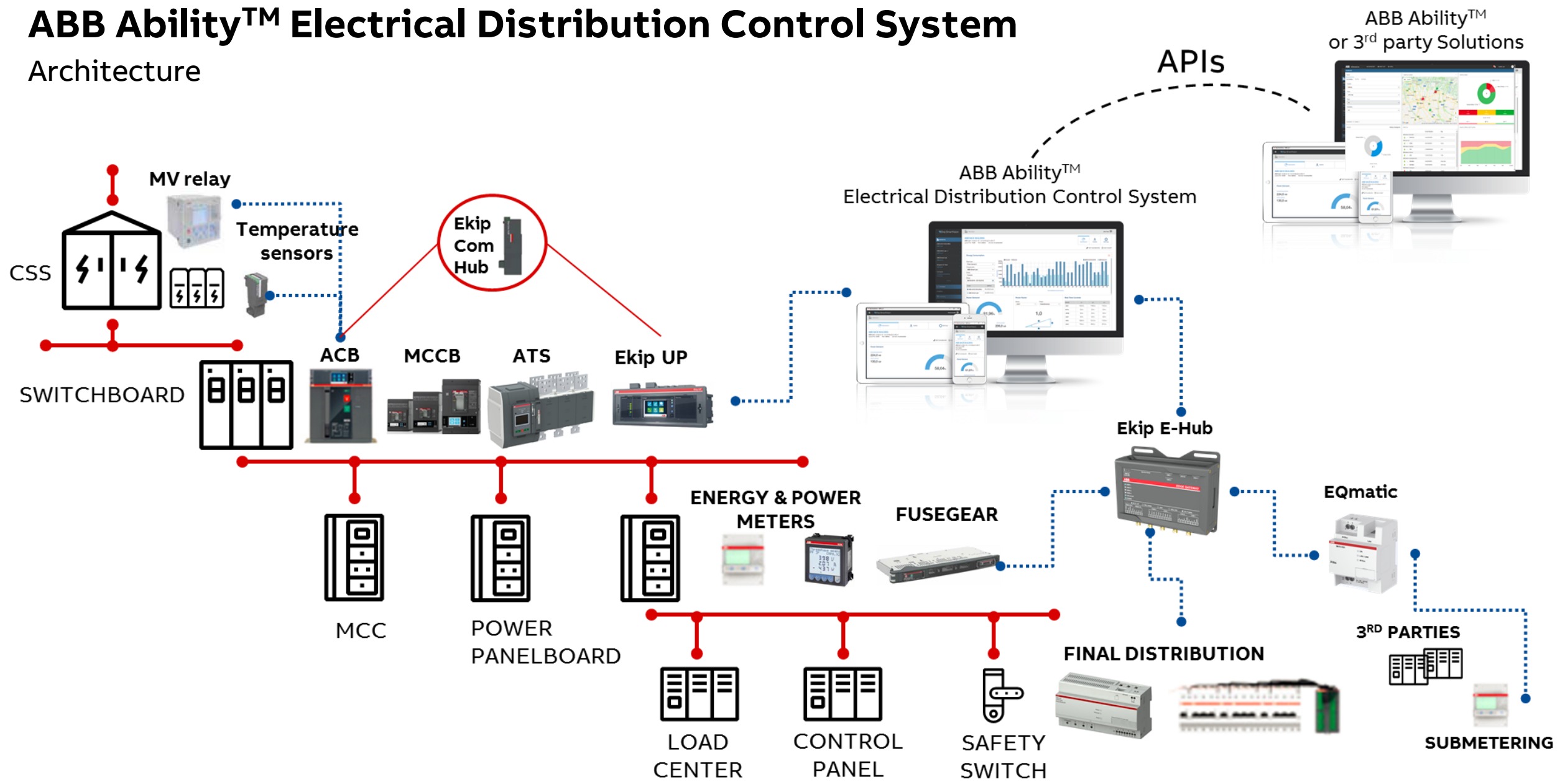


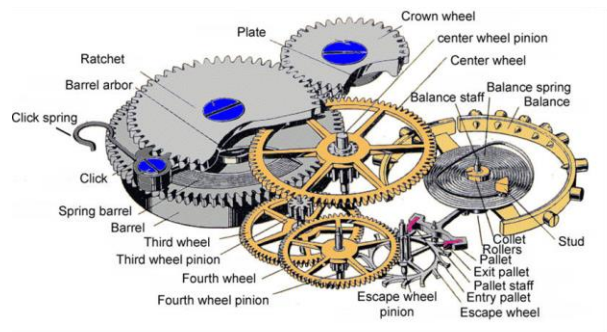
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Cloud-computing platform - SaaS

ENERGY
MANAGEMENT

ASSET
MONITORING

PREDICTIVE
MAINTENANCE

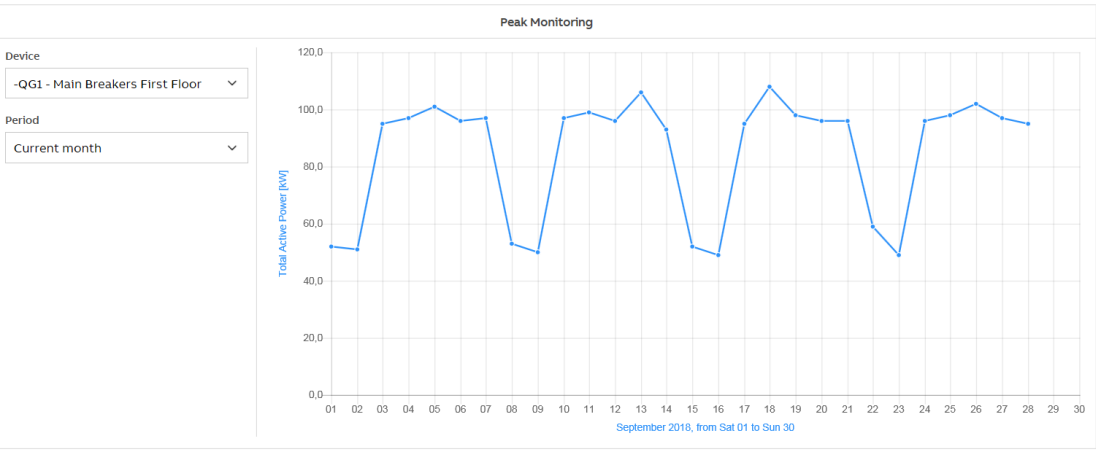
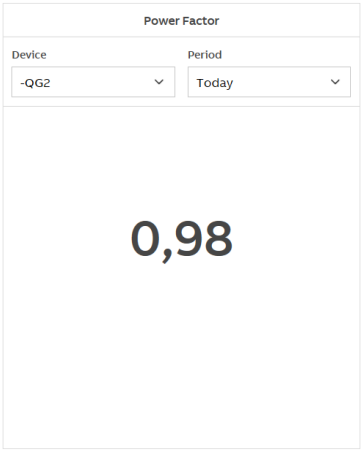
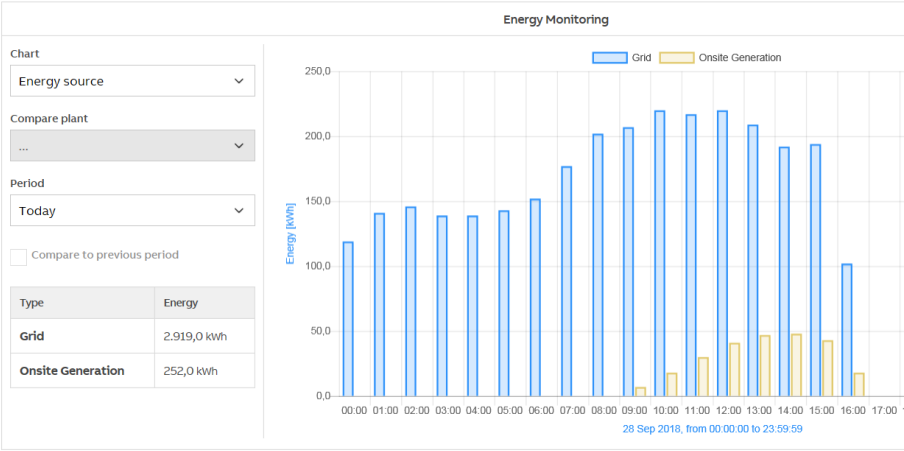
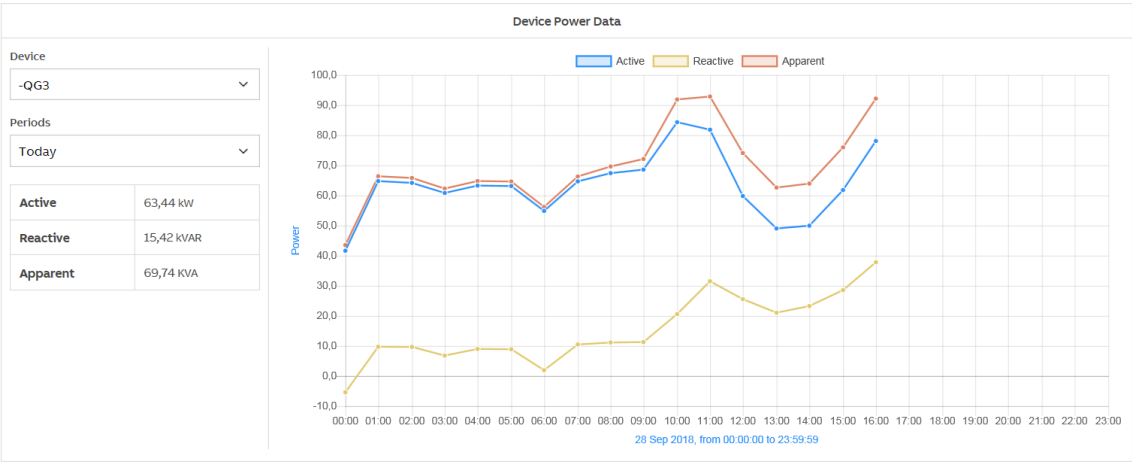
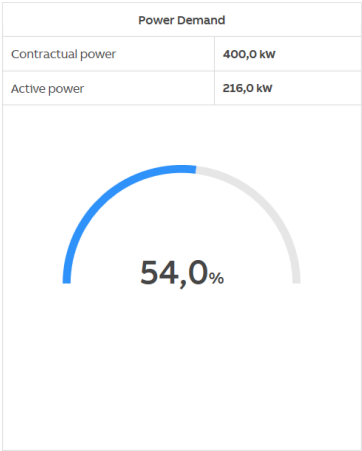


Simplify complexity



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Energy Management



Power Quality			
Device		Parameter	
Solar Roof Top		THD	
THD	L1	L2	L3
Voltage	1,0 %	1,0 %	1,0 %
Current	0,0 %	0,0 %	0,0 %



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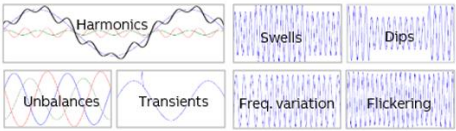
Asset Monitoring and Predictive Maintenance

ABB Ability™ EDCS – Asset Management

- Remote supervision of the facility (multi-site): owner or service provider can take action everywhere, anytime



- Ease of use: interactive images through tags & markers
- Alerts management: reduce downtime
- Scheduled reports
- Power quality (THD)
- Data storage



STATE	
Status	Closed
Position	Isolated
Operative Mode	Local
Any Alarm	Alarm
Any Trip Alarm	No Trip

MAINTENANCE	
Contact Wear	0,14%
Number of trips	0
Number of trips	0
Total Operations	25
Manual Operations	25

Alerts			
Alert	Measure	Mode	
-QG1 numero di operazioni	Number of operations	More than 1.000,0	▼
PROFILES			🕒 Related events
ABB Danilo Ravasio	🔊 Sales Engineer		



ABB Ability™ Electrical Distribution Control System

Asset Monitoring and Predictive Maintenance

ABB Ability™ EDCS – Predictive Maintenance

- Overall plant health conditions
- Smart visualization (traffic light) to monitor the system at a glance
- Operation and Maintenance cost saving thanks to optimized maintenance schedule
- Spare parts management: you know exactly what you need, no waste of time
- Reduced downtime
- Based on an algorithm that considers:
 - Environmental conditions
 - Utilization conditions
 - Circuit breaker Ageing
 - Measures (humidity/vibration/Temperatures) – 18Q4

PLANT HEALTH CONDITIONS



All devices

Product name	Serial Number	Health conditions	Next maintenance	Last maintenance	Aging life
EKIP TOUCH -QG1	3D1025017440X010	Good	Next on 23/01/2019	Last on 23/01/2018	92,5 %
EKIP TOUCH -QG2	3D125017442X010	Moderate	Next on 23/01/2019	Last on 23/01/2018	34,2 %

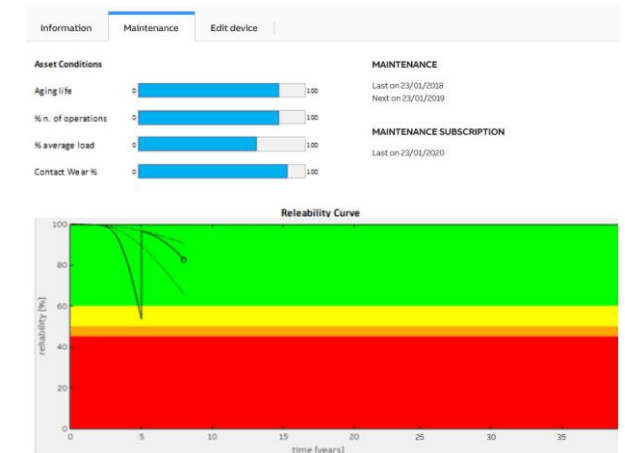


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Asset Management and Predictive Maintenance

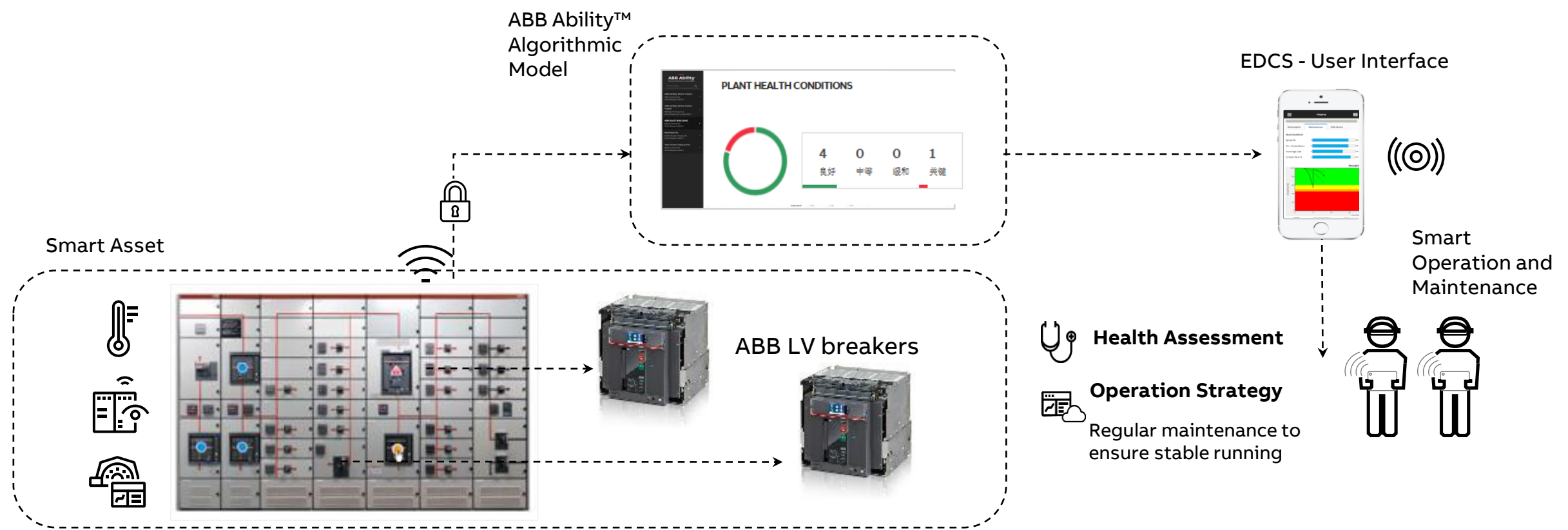
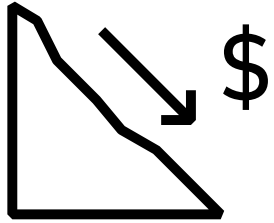
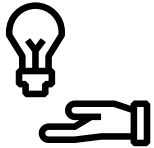


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Value proposition



Reduce operational cost



Increase Awareness

- Power quality
- Actionable insights
- Avoid energy waste



Optimize Consumption

- Usage optimization
- Peak shaving/remove penalties
- Cost allocation



Smarter Asset Management

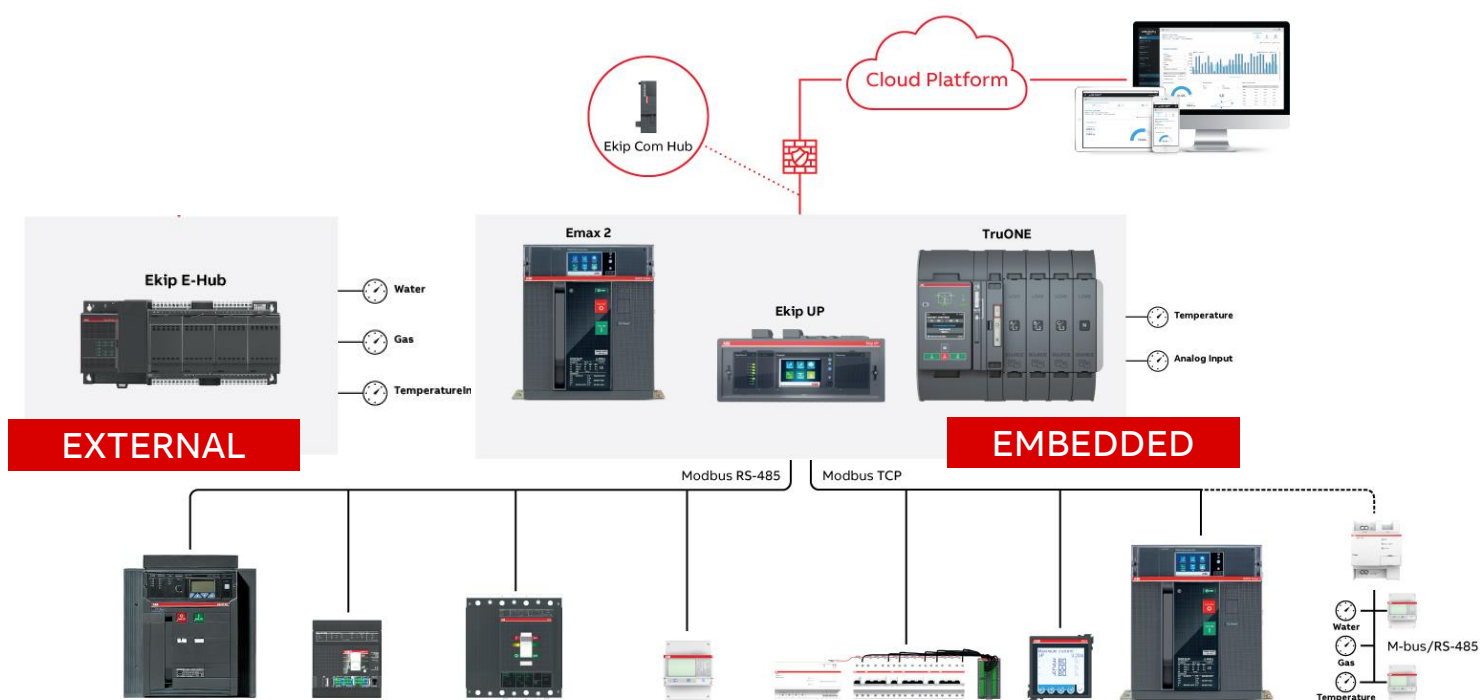
- Seamless supervision
- Proactive Alerts
- Predictive Maintenance

Scalable architecture

Connectivity schemes and data logging performance

ABB Ability™ Electrical Distribution Control System

Architecture and applications



Scalable architecture, with both embedded and external plug & play connectivity, targeting:

- Small-mid size industrial plant
- Small-mid commercial buildings
- Public buildings
- New installations
- Upgrade/retrofit of existing installation
- Single site application
- Multi-site application

Architectures

Solution with Ekip UP (upgrade the installed base)

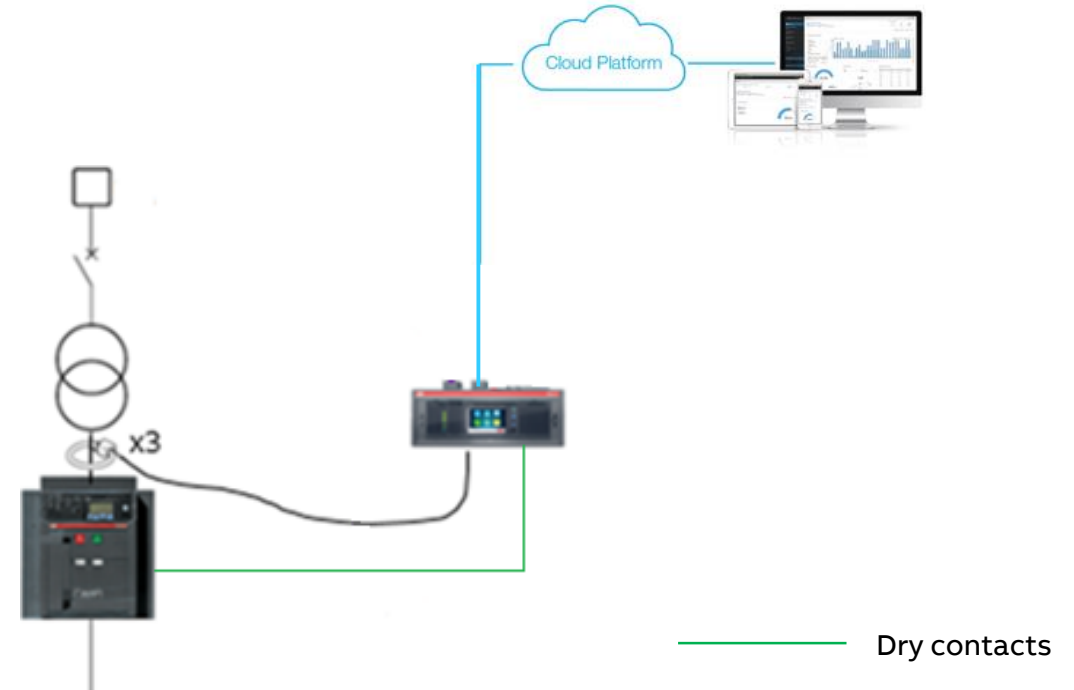
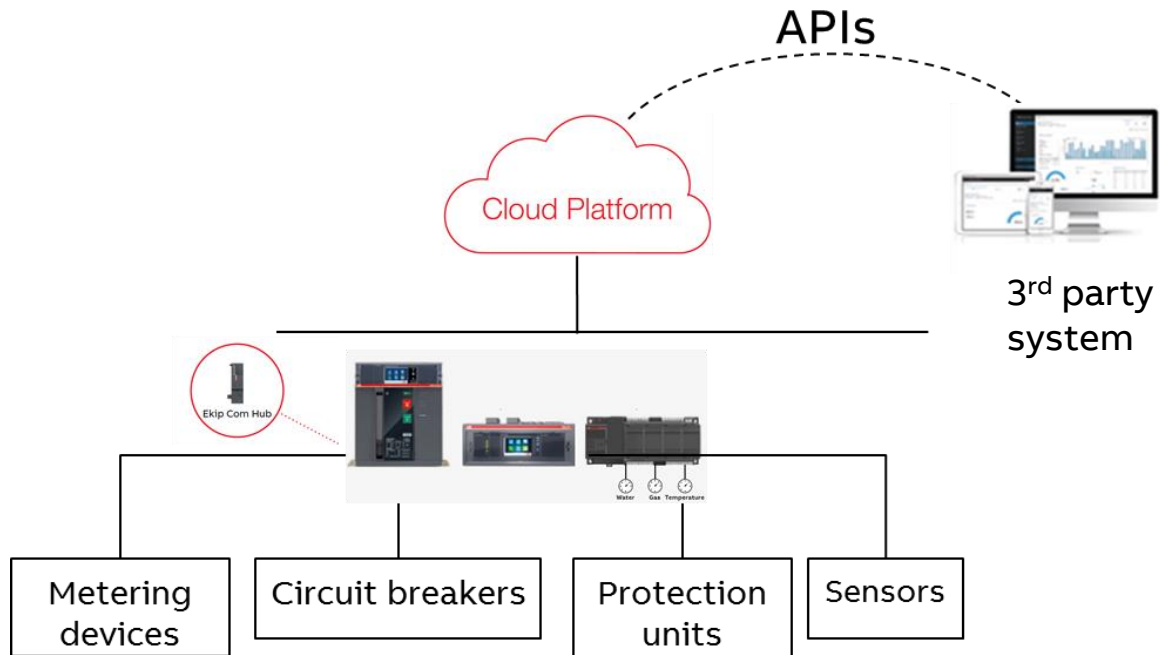


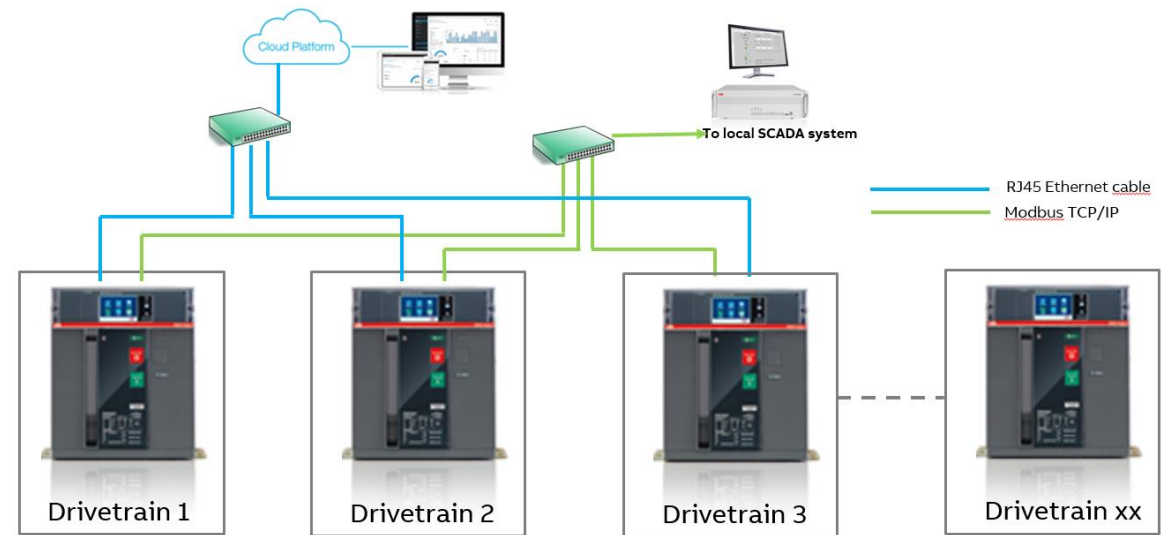
ABB Ability™ Electrical Distribution Control System

Interoperability with existing SCADA – Open to co-design

Solution with API



Solution with fieldbus/parallel connection



Note: in case of Modbus RTU slaves, the external gateway is needed

- APIs to onboard external services/solutions developed by other ABB BUs or 3rd party partners.
- APIs to un-tap data from the power systems into overarching solutions (ABB or 3rd party)

Use cases

Application in commercial and industrial buildings

Sub metering

Multi-site supervision for chain of stores



Stakeholders

Owner/End user
Design consultant
Panel builder
Maintenance provider
Energy manager

Market Segment

Commercial buildings

Description

Stores can be situated as single and multi-site or located in shopping malls.

For the aggregation and comparison on data from multiple locations, a cloud-based solution is beneficial and recommended. Cloud solutions gather data from all the different stores in one-single interface in order to monitor energy consumption, set benchmarks, identify room for improvements hence improve efficiency.

Customer needs

Owner/End user

- Increase the selling and renting value of the facility, save costs of energy consumptions and compare performances across different stores

Design consultant

- Implement a supervision system with low initial costs, which enables energy savings and offers these advantages with a fast payback

Panel builder/Installer

- Limited number of “plug and play” devices, easy to install and connect to cloud

Maintenance provider

- Proactive notifications and clear identification of performances, unwanted conditions or components which are faulty or have to be replaced. Maintenance operations should be quick and easy to carry out

Energy manager

- Monitor and control of the installation performances in order to reduce energy costs, identify inefficiencies and abnormal situations, ensure service continuity and avoid unexpected downtimes

Sub metering

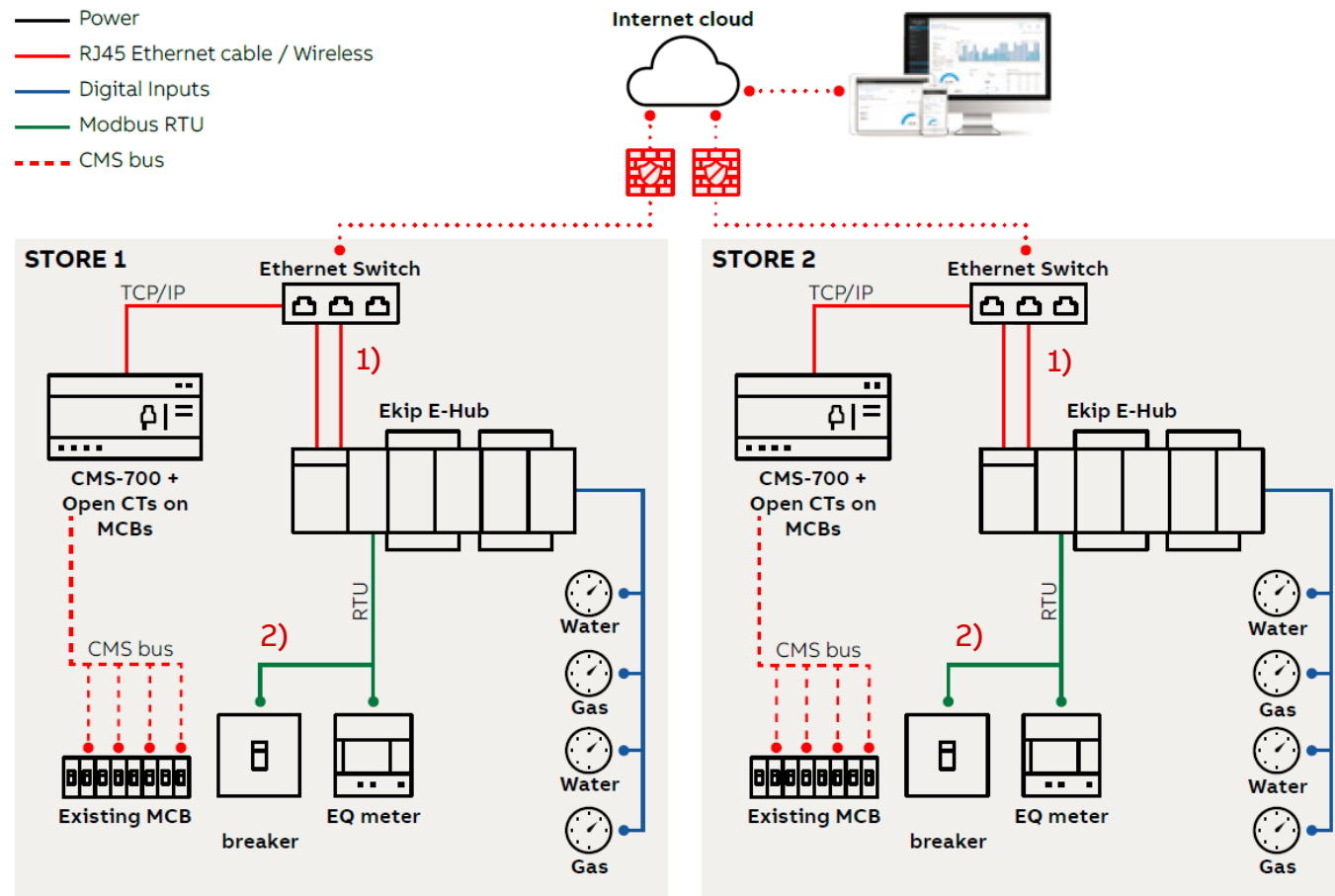
Multi-site supervision for chain of stores

System overview

Monitoring any branch or store requires a very simple installation. Electrical data and measurements are collected from energy meters, circuit breakers and CMS-700 units and transmitted to the E-Hub via Modbus RTU or Modbus TCP (preferred). The Ekip E-Hub is mounted on the DIN rail and gathers all the data from the system.

Water and gas consumption data are gathered from dedicated pulse meters and sent provided to the Ekip E-Hub.

Data from all the stores are then automatically published securely and safely to EDCS cloud platform via LAN or dedicated router with cellular connection.



- 1) **CONNECTION SCHEME FOR EXPLANATION PURPOSE ONLY:** CYBERSECURITY REQUIRES TO SEGREGATE THE INTERNET CONNECTION (ROUTER) FROM THE LOCAL TCP NETWORK (DEDICATED ETHERNET SWITCH WITH NO INTERNET ACCESS)
- 2) **BROWN FIELDS:** EXISTING BREAKER OR EQ METER MUST BE **COMPATIBLE AND WITH LATEST FIRMWARE.**
GREEN FIELDS: EQ METER CAN BE ADDED TO THE INSTALLATION FOR ELECTRICITY METERING

Sub metering

Multi-site supervision for chain of stores

Design and Specification



While guaranteeing fast payback, this solution can ensure compliance or higher class on efficiency standards.

1. Achieve compliance or higher class for energy efficiency standards (IEC 60364-8-1)
2. Ensure fast payback and increase sale or rental value of your facilities
3. Leverage data to benchmark, speed up and optimize design and specification

Installation



Deploying a multi-site monitoring solution, I can reduce installation time and components.

1. Connect your electrical panel to the cloud in only 10 minutes
2. Reduce cabling and installation needs by 60%
3. Reduce connectivity hardware by 25%






Operations



Introducing a single intuitive digital solution, I can guarantee continuous operation and allocate effectively energy consumptions.

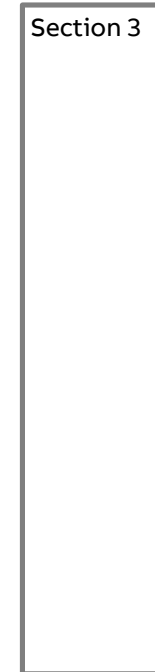
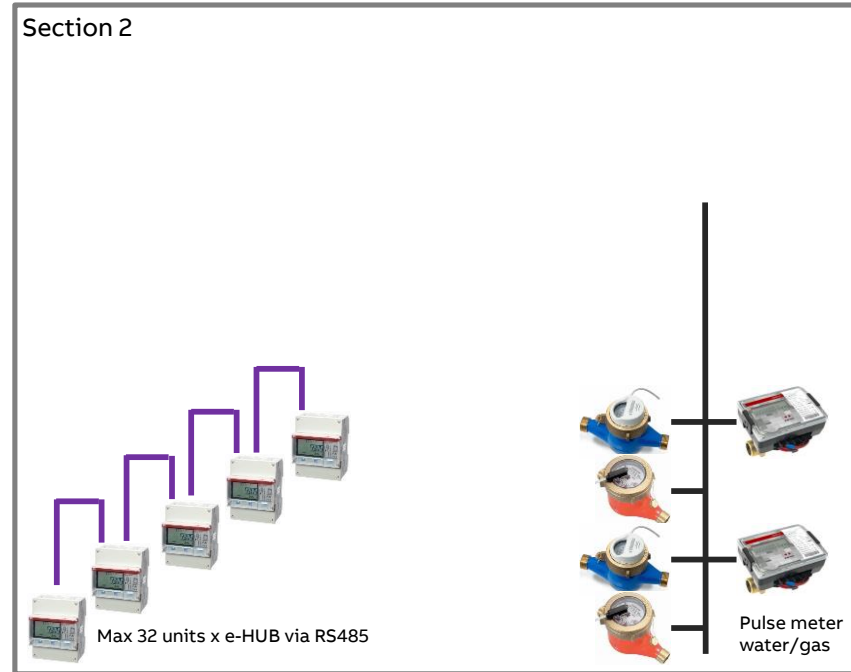
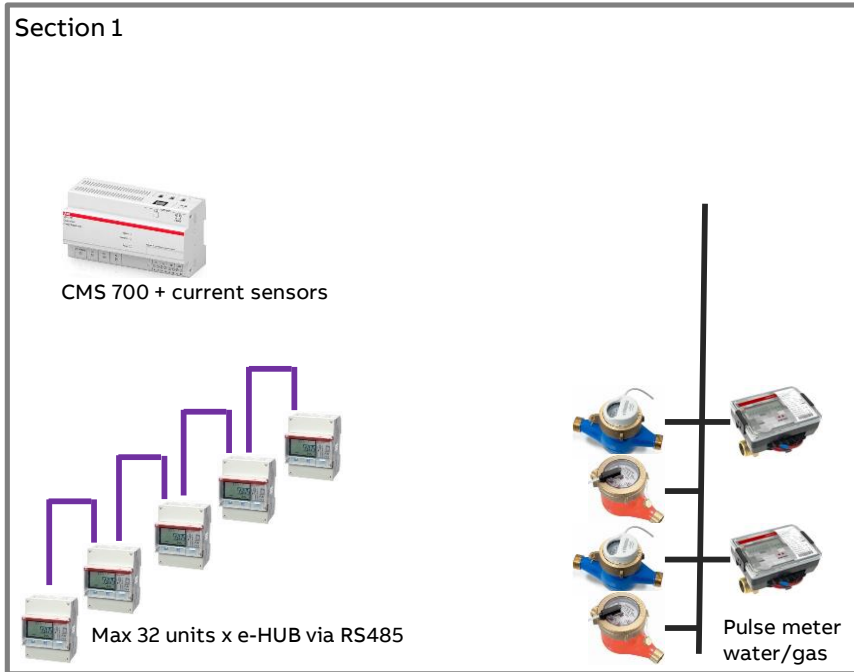
1. Save up to 20% on maintenance costs
2. Save up to 20% on energy bill
3. Simplify facility management: access the needed information from everywhere, at any time in 1 minute

Sub-metering

-  RJ45 Ethernet cable
-  Modbus TCP/IP
-  Modbus RS485
-  Digital input
-  Digital signal (impulse)

Devices

EQ Meters
CMS700
Pulse Meters
Ekip E-Hub



- DI



EQ Meters
CMS700
Pulse Meters
Ekip E-Hub

Upgrade

Retrofitting and upgrading public buildings



Stakeholders

Owner/End user
Design consultant
Installer
Facility manager

Market Segment

All buildings

Description

For public buildings such as schools, a retrofit solution can bring rapid benefits, in particular if carried out without replacing existing components.

With accurate performance monitoring of the installation, the facility can be managed more efficiently, delivering savings in maintenance and energy costs.

Customer needs

Owner/End user

- Increase the selling and renting value of the facility, save costs of energy consumptions with no replacements of existing components and quick implementation of retrofit/upgrade

Design consultant

- Cost-effectively upgrade the current system, with no replacement of existing components and short downtimes during installation, in order to eventually save costs and achieve compliance with standards and regulations

Panel builder/Installer

- “Plug and play” devices easy to install and to integrate in existing solutions, without replacement of components already in place

Facility manager

- Reduce downtimes due to unexpected failures. It should be possible to identify rooms for improvement pointing out inefficiencies. Smooth implementation of the retrofit/upgrade is required

Upgrade

Retrofitting and upgrading public buildings

System overview

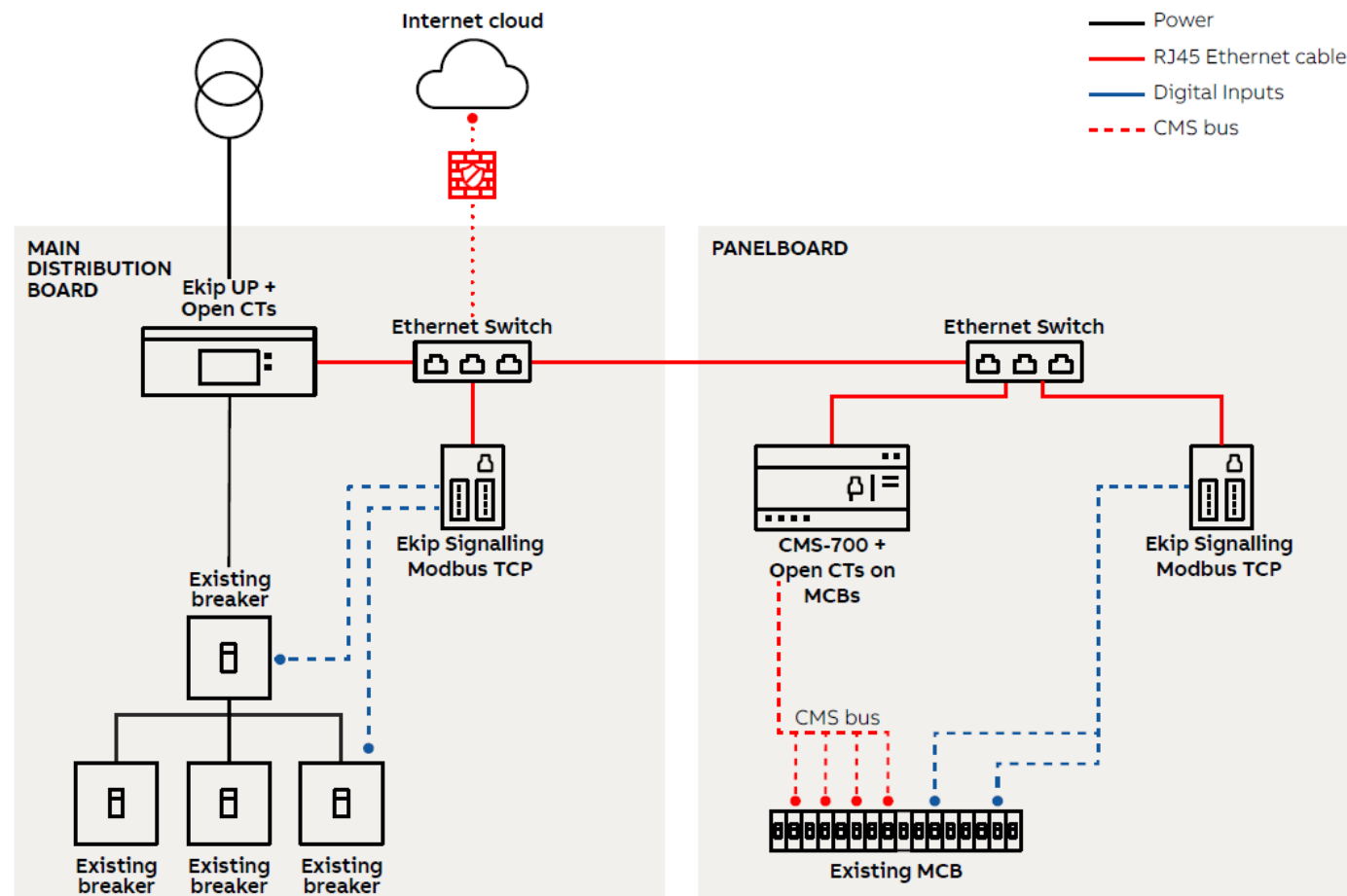
In this scenario, the Ekip UP or the Ekip E-Hub collect data from field devices.

The Ekip UP as digital unit with open current sensors can measure at specific points/loads in the system and act as the cloud gateway via Ekip Com Hub module. It can gather data from the Modbus TCP/IP and RS485 network.

Ekip Signalling Modbus TCP can collect data from aux contacts on the existing components (status, alarms number of operations..).

CMS-700 is responsible for branch monitoring and is connected to the Ekip UP via Modbus TCP/IP.

In order to monitor gas and water consumptions (via pulse meters) the Ekip E-Hub can be provided.



Upgrade

Retrofitting and upgrading public buildings

Design and Specification



I will easily upgrade the existing facilities, ensuring a very fast payback.

1. Achieve compliance or higher class for energy efficiency standards (IEC 60364-8-1)
2. Upgrade cost effectively your existing installation

Installation



Through plug&play components and commissioning, I can upgrade the existing distribution and panel boards. I don't have to replace anything.

1. Upgrade with 0 component replacement your existing installation
2. Upgrade in 1 day your existing installation

Operations

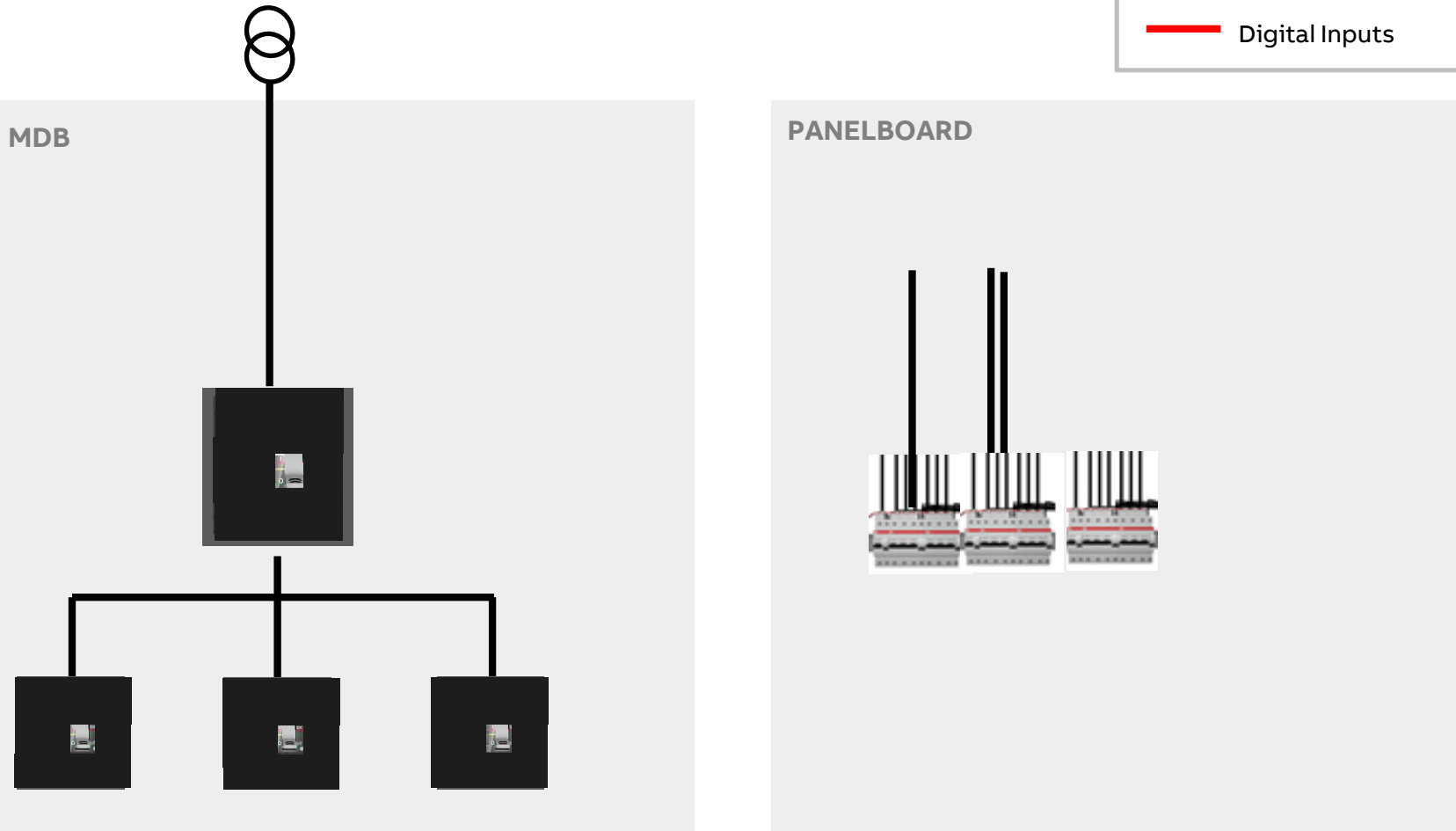


With this solution I can start saving on operating costs, also on multi-site, through an intuitive and simple solution while catching up with efficiency standards and regulations.

1. Start saving up to 20% on maintenance costs
2. Remove energy inefficiency by up to 10%

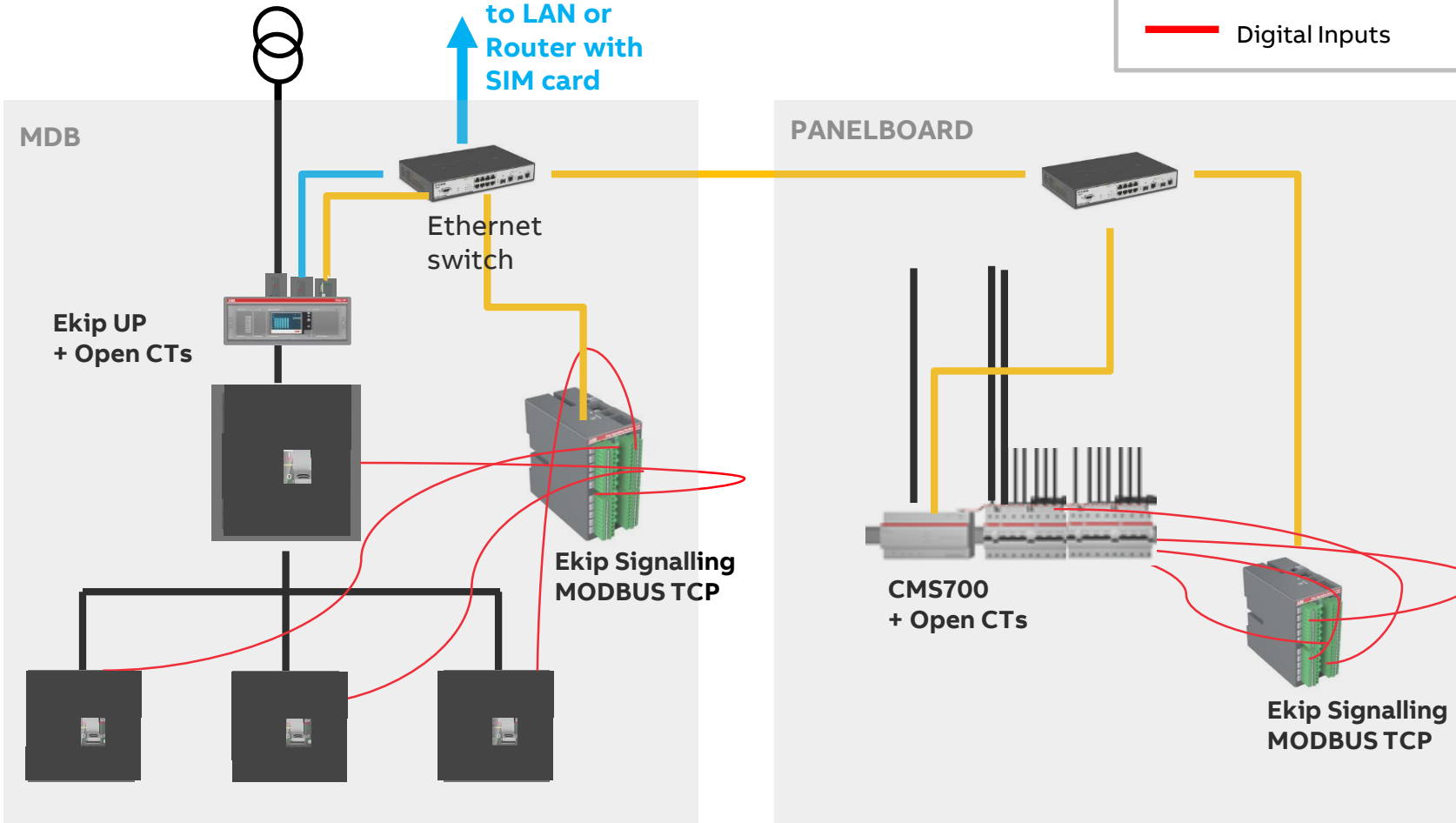
Upgrade

From grid connection to load centers



Upgrade

From grid connection to load centers



Components to be added

1. Ekip UP Monitor

- Energy and power quality measurements on main feeding line
- Data Hub to EDCS collecting via TCP from other boards

2. Ekip Signalling MODBUS TCP

- State and alarms
- Number of operations

Available if aux contacts are present

3. M2M or Ekip UP Monitor

- further energy/power metering points

4. CMS 700

- Overall panelboard energy
- Branch monitoring

Applications

Supporting the digital transformation of industrial site



Stakeholders	Engineering company
	Panel builder
	System integrator
	Maintenance provider
	Facility manager
Market Segment	Energy manager
	industrial

Description

The overall site has to be monitored, both the production plant and the offices. Data are collected from each section of the installation and sent both to the cloud and to the local supervision system. Energy and asset management analysis are carried out in order to save on maintenance costs and proactively intervene following alerts.

Customer needs

Engineering company

- Implement a single cost-effective supervision system for the entire industrial site which enables clear savings in the overall costs and has a short payback time

Panel builder

- System implementation in short time and with few components to be added

System integrator

- In case of retrofit solution, easy and quick integration of the new system into the existing installation with few-to-no components to be replaced; in case of new installation, limited number of devices to be connected in a short time

Maintenance provider

- Notification and clear identification of components which are faulty or need replacement. Maintenance operations should be quick and easy to complete for all section of the industrial site

Facility manager

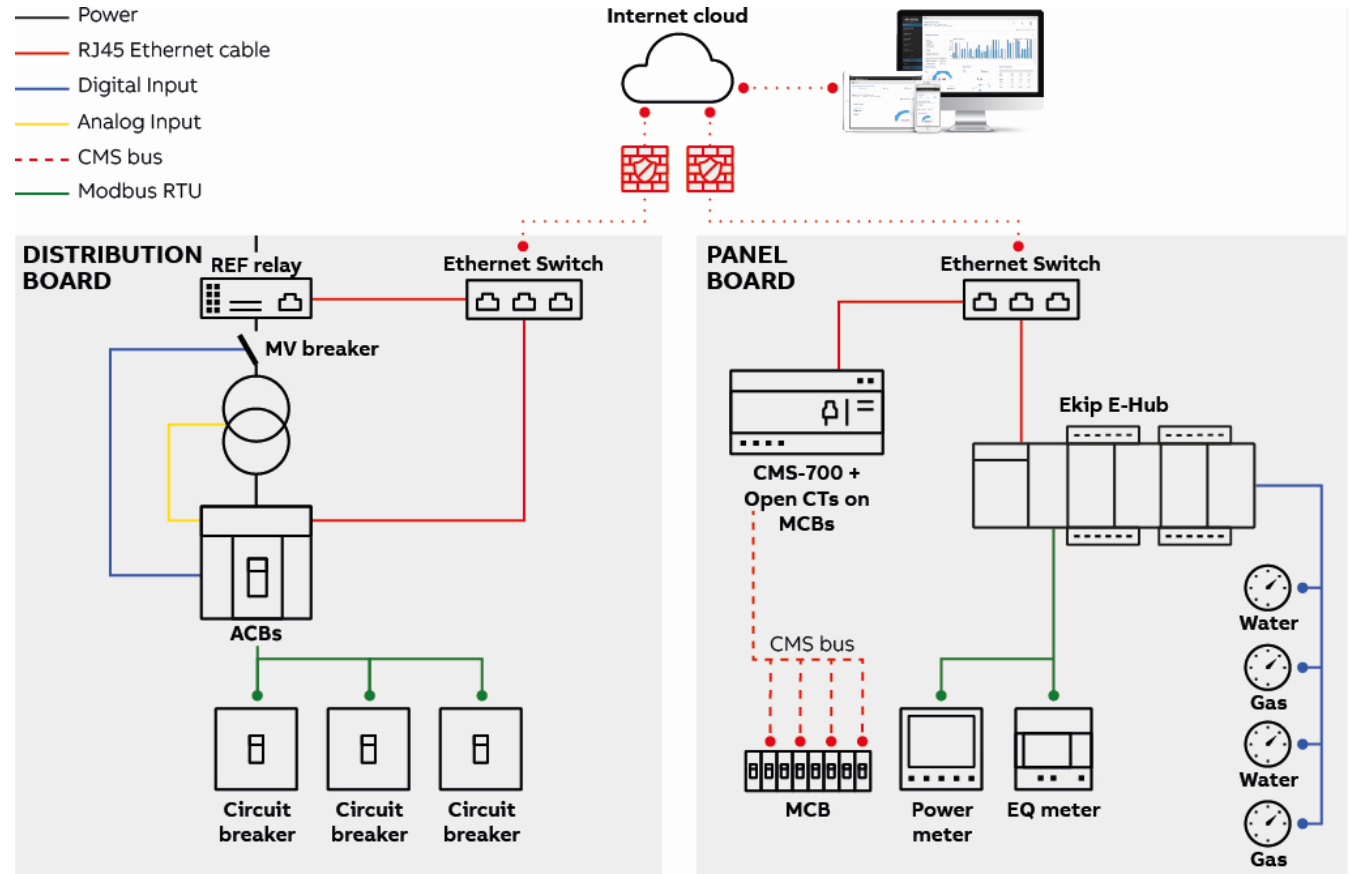
- Reduce downtimes due to unexpected failures, cut inefficiencies in sectors which are not performing as expected and access performances data easily

Applications

Supporting the digital transformation of industrial site

System overview

Each section of the industrial site is provided with one Ekip e-Hub which gathers data from the field devices: energy consumption is collected from the energy meters via Modbus RTU, water and gas consumptions from the dedicated meters as digital signals. Data from all the Ekip e-Hub installed are sent either to the cloud ABB Ability EDCS via Ethernet or to the local BMS system via Modbus TCP/IP. Where branch monitoring is needed, the CMS700 is installed and communicates with the local BMS system via Modbus TCP/IP.



Applications

Supporting the digital transformation of industrial site

Design and Specification



Design and Specification

While guaranteeing fast payback, this solution can ensure compliance or higher class on efficiency standards.

1. Save up to 15% on initial cost of a legacy control system
2. Ensure fast payback while preparing for industry 4.0
3. Upgrade your plant with innovative and scalable solution for energy and electrical asset management

Installation



Installation

Deploying a multi-site monitoring solution, I can reduce installation time and components.

1. Upgrade with 0 component replacement your installation
2. Reduce cabling and installation needs by 60%
3. Reduce connectivity hardware by 25%

Operations



Operation

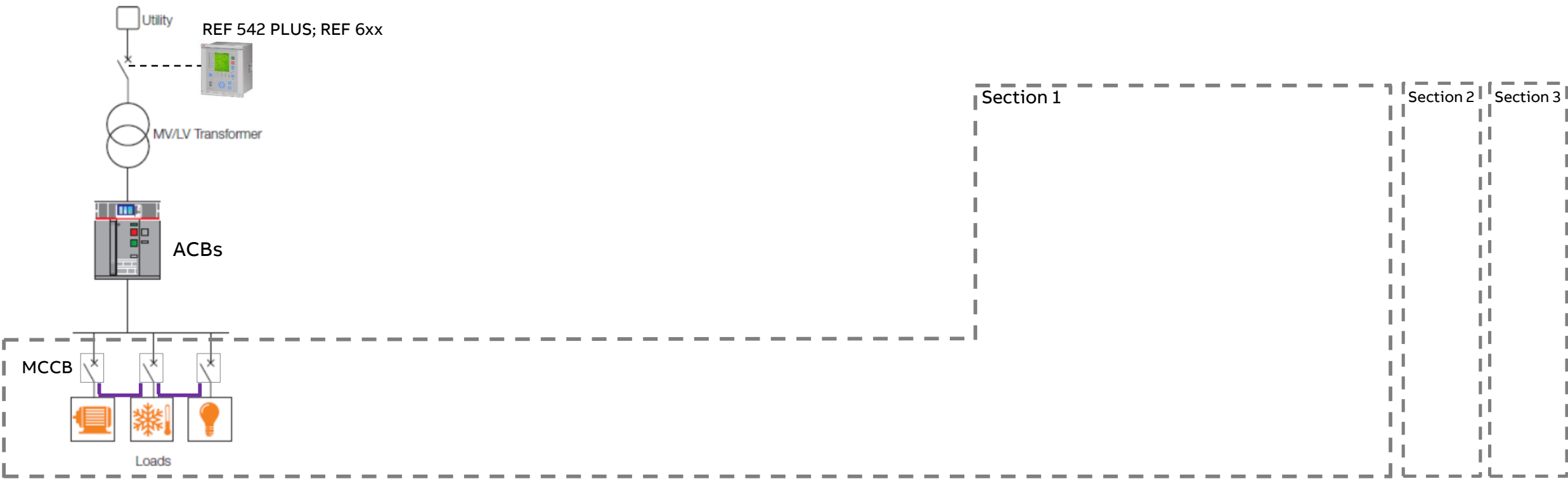
Introducing a single intuitive digital solution, I can guarantee continuous operation and allocate effectively energy consumptions.

1. Save up to 20% on maintenance costs
2. Remove energy inefficiency by up to 10%
3. Simplify facility management - Intervene in 1 min thanks to proactive alerts and notifications

MV + TRAFO integration

- RJ45 Ethernet cable
- IEC 61850
- Modbus TCP/IP
- Modbus RS485
- Analog/Digital signal (impulse)

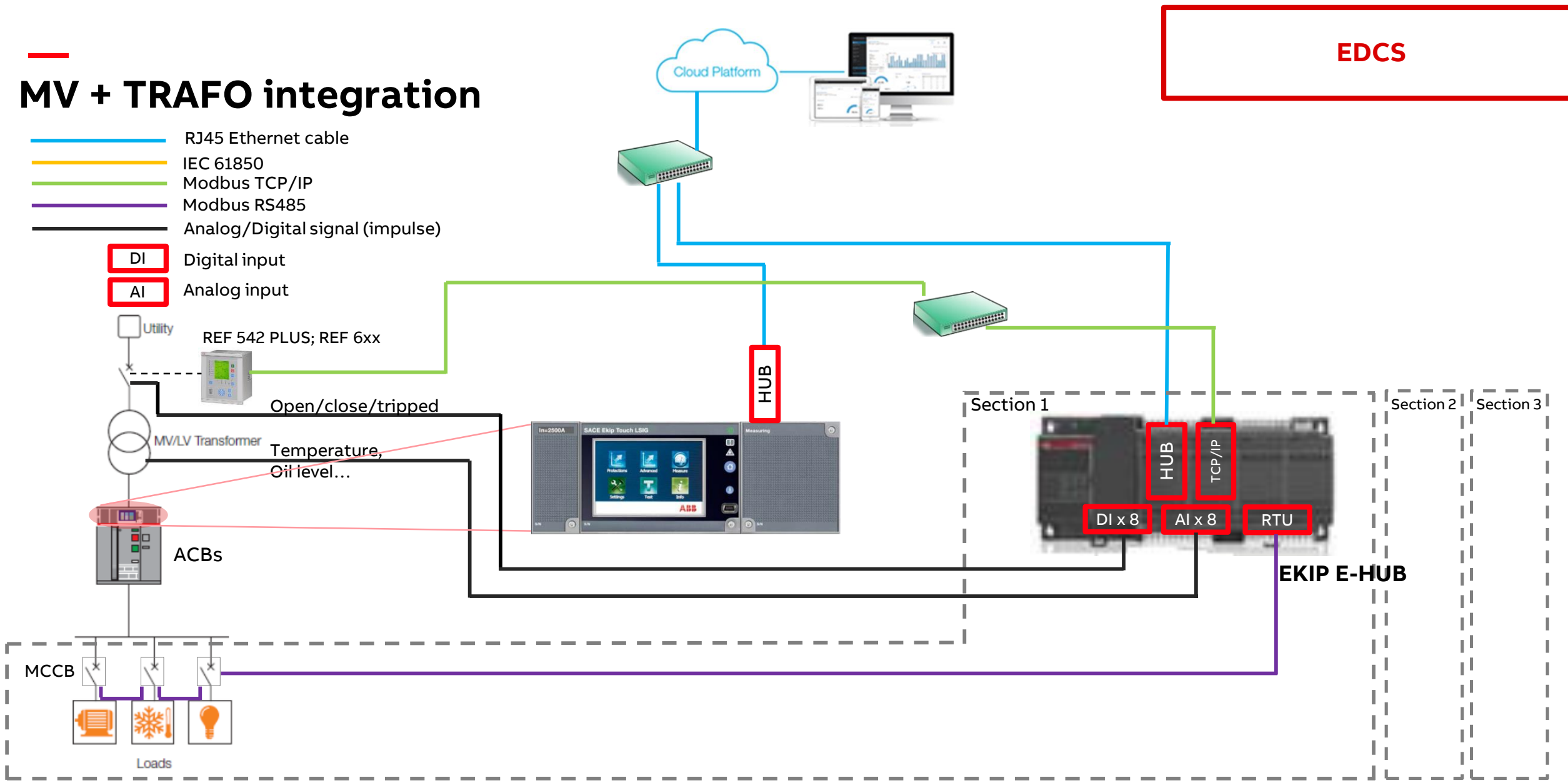
- DI Digital input
- AI Analog input



MV + TRAFO integration

- RJ45 Ethernet cable
- IEC 61850
- Modbus TCP/IP
- Modbus RS485
- Analog/Digital signal (impulse)

- DI Digital input
- AI Analog input

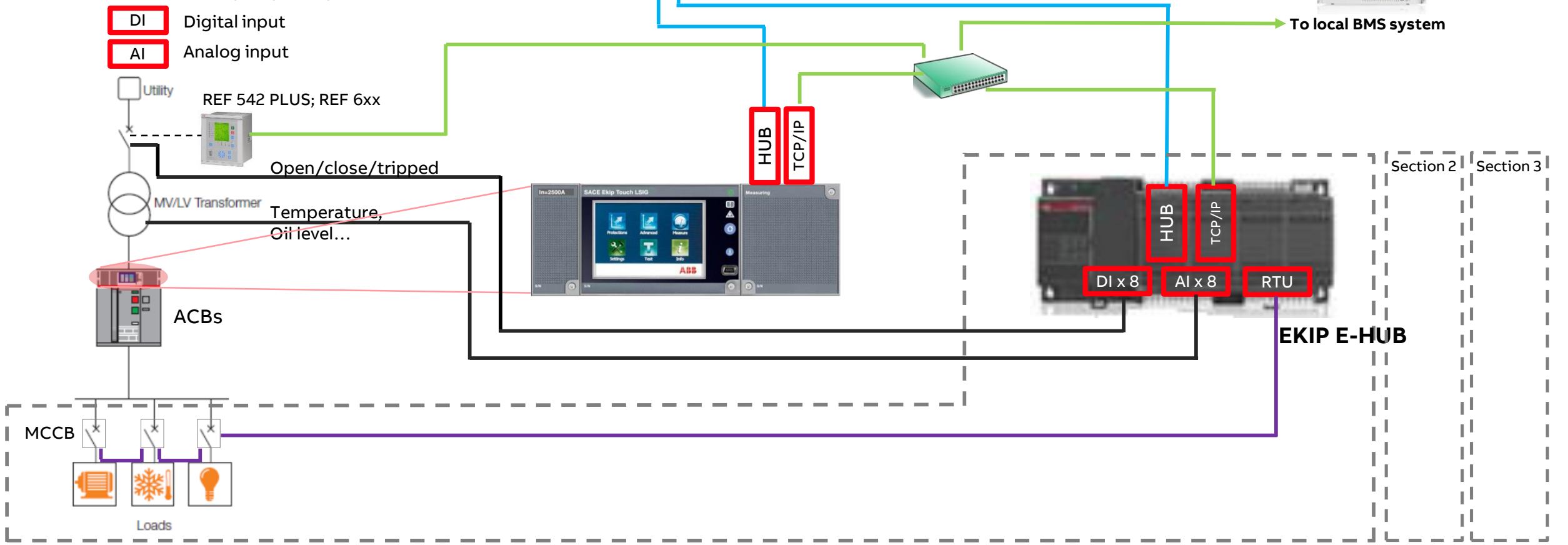


EDCS

MV + TRAFO integration

- RJ45 Ethernet cable
- IEC 61850
- Modbus TCP/IP
- Modbus RS485
- Analog/Digital signal (impulse)

EDCS + Local Control system

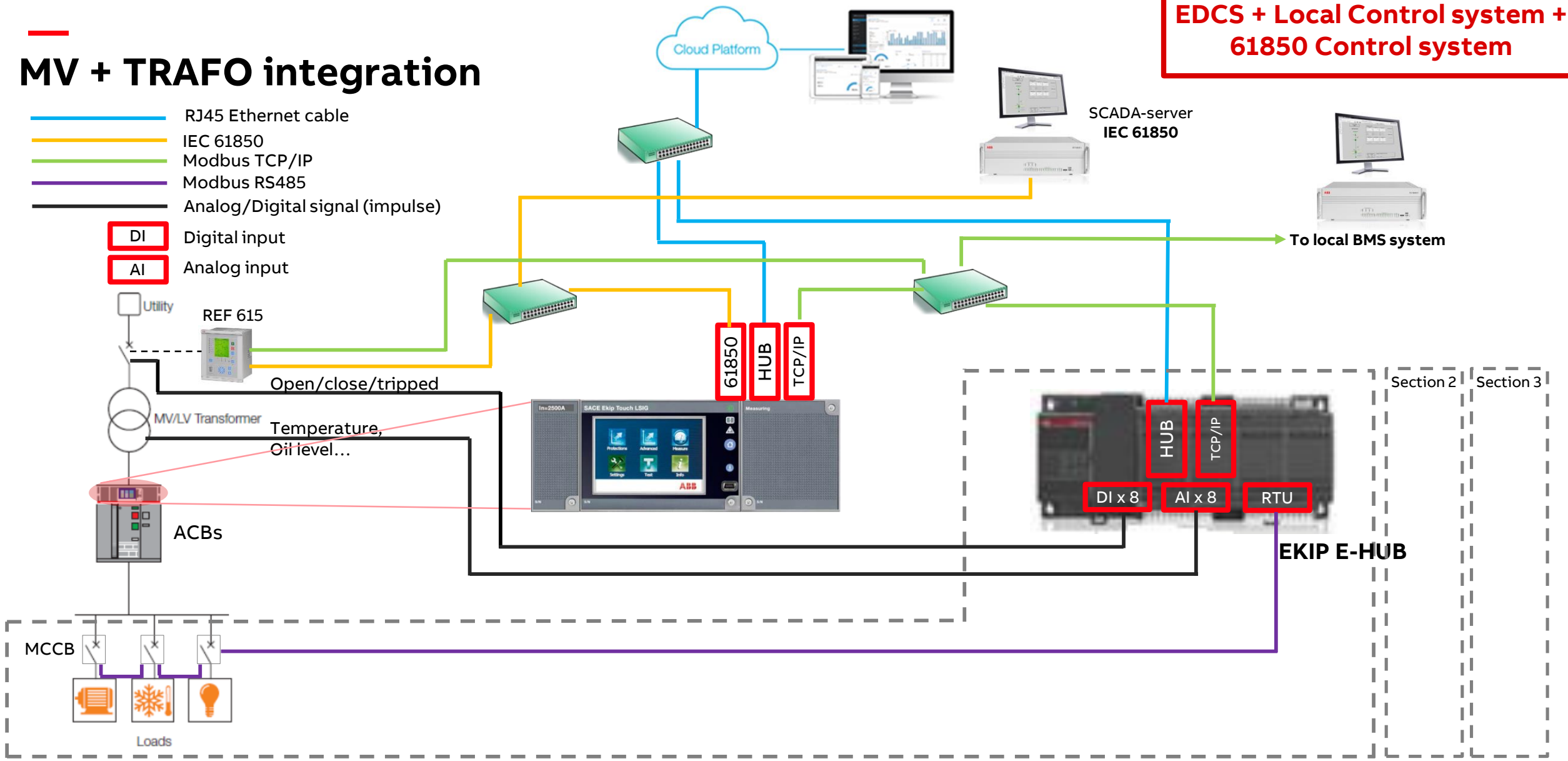


MV + TRAF0 integration

- RJ45 Ethernet cable
- IEC 61850
- Modbus TCP/IP
- Modbus RS485
- Analog/Digital signal (impulse)

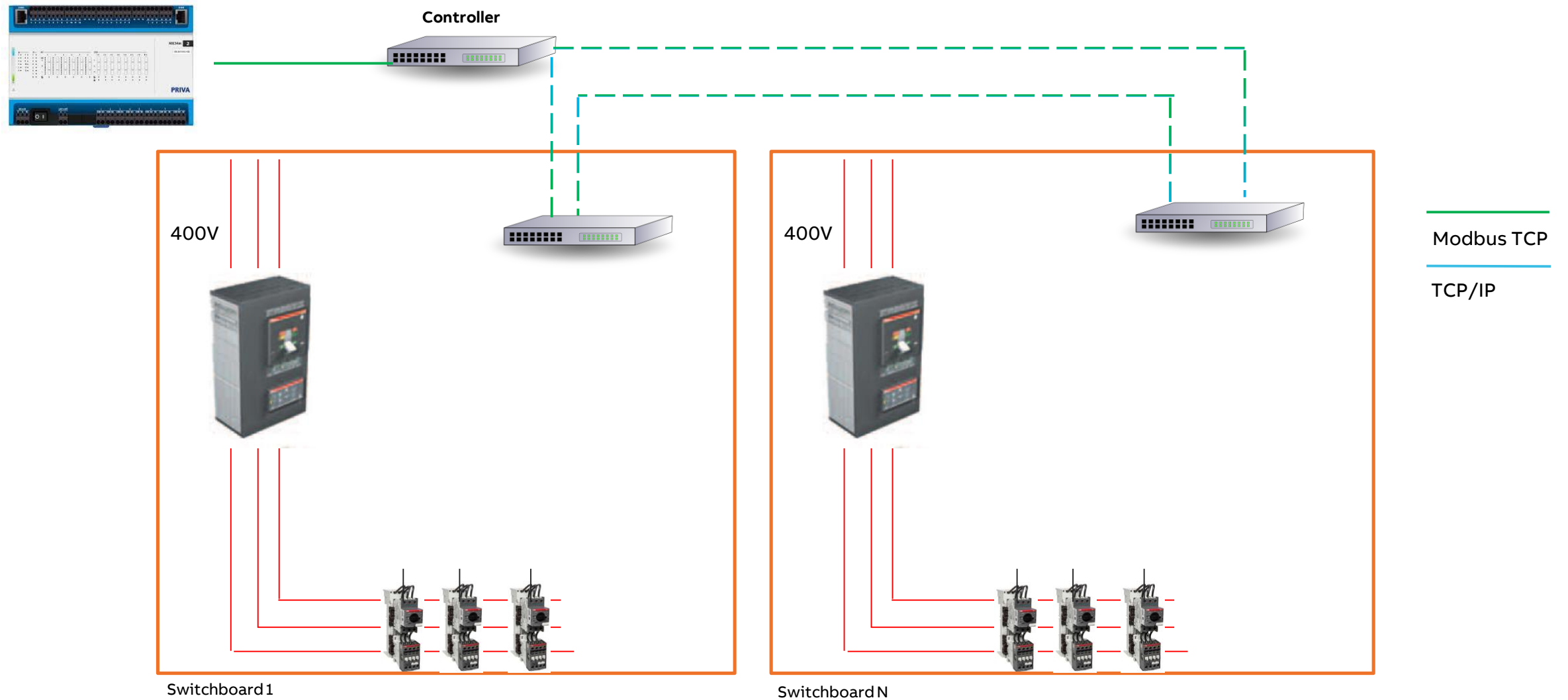
EDCS + Local Control system +
61850 Control system

- DI Digital input
- AI Analog input

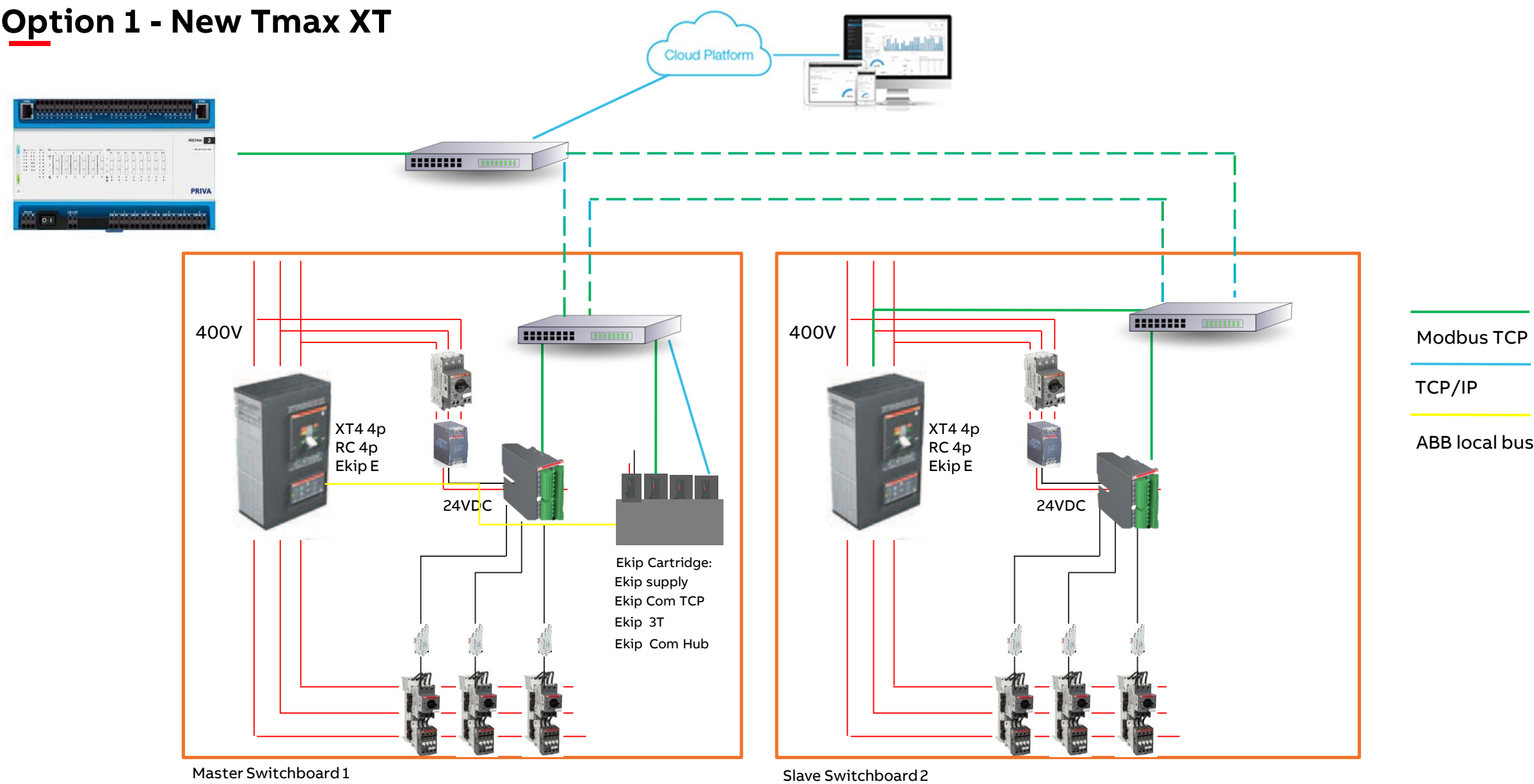


Use case - Greenhouse

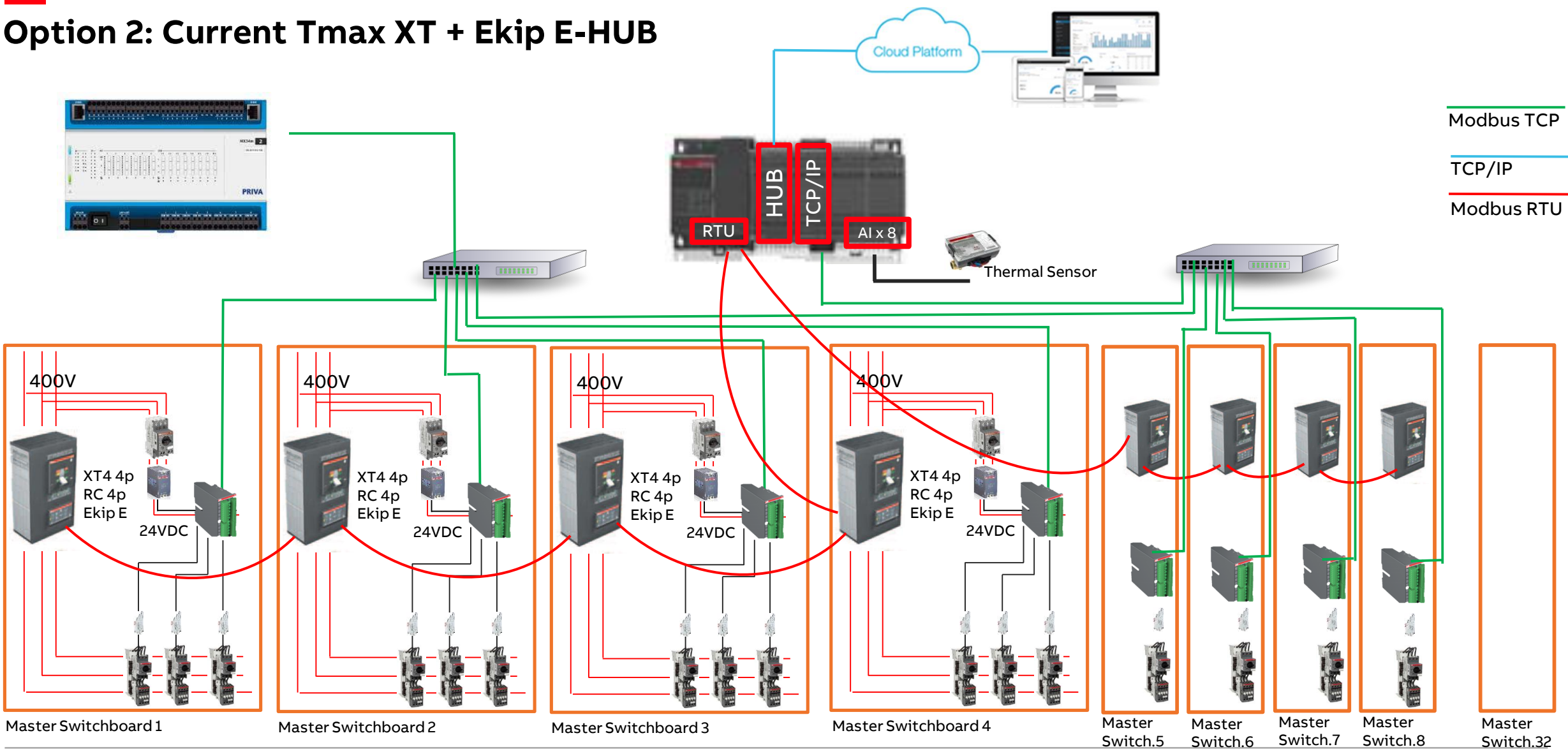
- Architecture: 40 distribution boards; 1x MCCB + 8x actuators each; 1x Local Controller for site via TCP
- Need: Control of loads and energy monitoring / cost allocation; optional temperature measurements



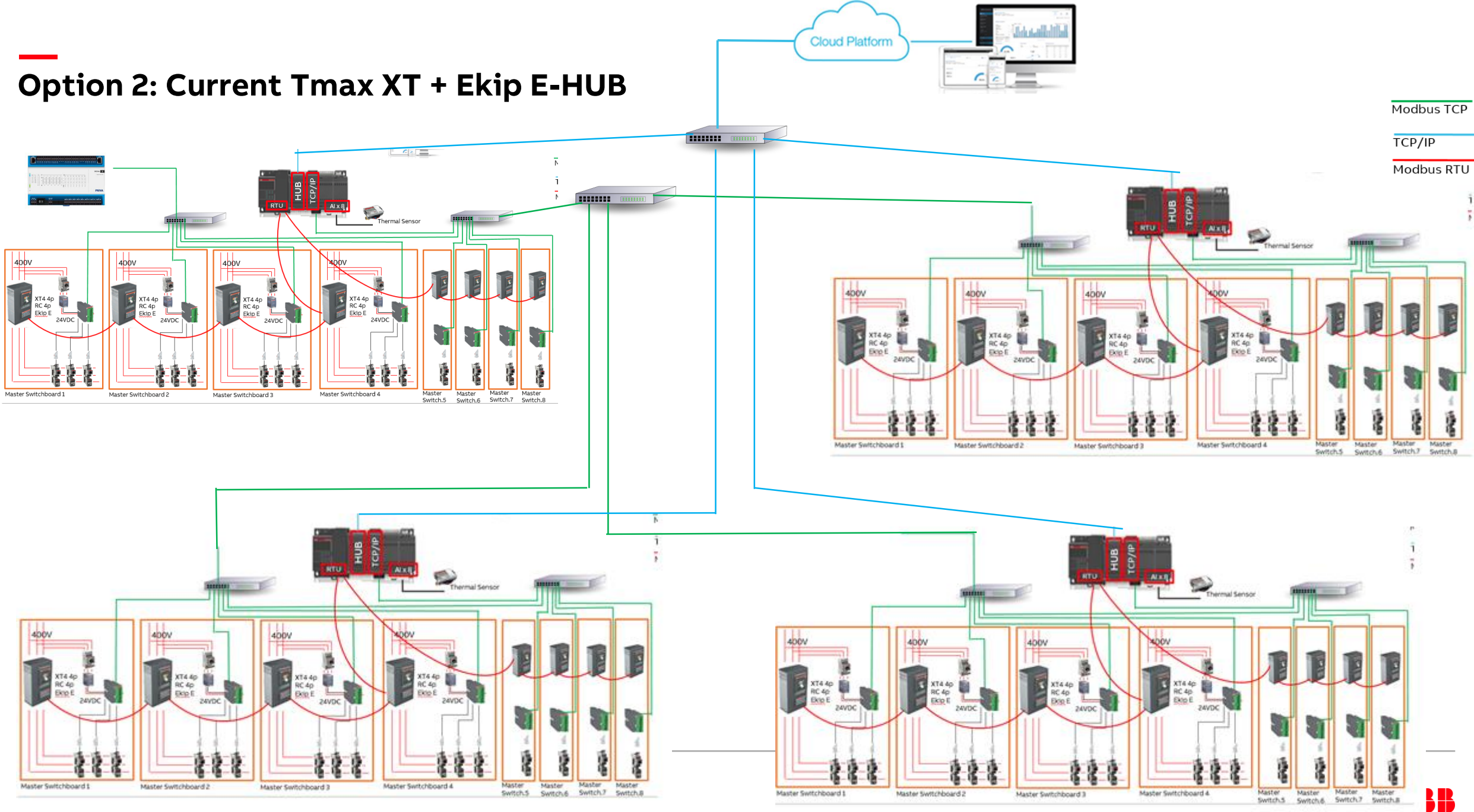
Option 1 - New Tmax XT



Option 2: Current Tmax XT + Ekip E-HUB



Option 2: Current Tmax XT + Ekip E-HUB





ABB



Customer success

ABB Ability™ Electrical Distribution Control System for Solar Rooftop management and optimization

Challenge

- Monitoring solution for solar rooftop while limiting CAPEX
- Better ROI estimation on roof-projects using data analytics

Solution

- **ABB Ability™ Electrical Distribution Control System** connects the ABB Dubai **315 kilowatt (kW) solar rooftop** part of the Shams Dubai initiative from **DEWA** Dubai Energy and Water Authority.

Benefits

- 4% savings on project's CAPEX
- Data analysis to calculate "customers' solar potential" and promote through app



ABB Ability™ Electrical Distribution Control System helps the Consorzio di Bonifica Veronese to reduce operational costs

Challenge

- Remote supervision of water pumping stations
- Optimization of personnel's tasks and costs
- Downtime prevention
- Removal of power quality penalties

Solution

ABB Ability™ Electrical Distribution Control System along with Emax 2 help optimize the operations of

- 2 water pumping station
- hydroelectric turbine

By reducing energy consumption and make better maintenance

Benefits

- **24 k€ grants** (Energy Efficiency Certificates) without any need of external expensive audits (ab. 8 k€)
- **30% savings** on annual operating costs
 - Remote proactive alerts to **prevent downtimes** and **quickly restore normal operations** after faults
 - Optimized **maintenance schedule**
 - **Personnel cost reduction** (less commuting, better decision making and data driven actions)
 - Decrease of **power quality penalties** due to utility
- **Payback in less than 3 months**

South American Bank keep branches energy usage under control with ABB Ability EDCS and Ekip UP

Challenge

Supervise the energy consumption in all the bank branches spread around the province of Buenos Aires (200+ branches)

- Get insights on power quality, power supply, energy cost
- Collect data from the branches, for analyses and reports

Solution

- ABB Ability™ Electrical Distribution Control System monitors and provides insights from the bank branches for their energy management.
- **Ekip UP** guarantees easy retrofit and comprehensive data-sets for upgrading the installed base

Benefits

- Control and optimize energy consumption for Branch offices to reduce operational costs
- Allocate energy costs throughout the branch network to identify efficiency patterns

«ABB Ability Electrical Distribution Control System and Ekip UP digitally upgrade existing facilities, enabling operational cost reduction »



An institutional facility in China ensures reliable power distribution with ABB Ability™

Challenge

- Replace protection components with negligible impact on the installation
- Upgrade the system with a monitoring solution to achieve proactive warning functions
- Monitor the big power demand

Solution

- The customer chooses **ABB Ability™ Electrical Distribution Control System** (connecting 14 low-voltage breakers) to reduce the system complexity with an embedded solution and to ensure continuous and efficient operation

Benefits

- Proactive action thanks to intuitive supervision of the electrical asset
- Automatic alerts on abnormal operating conditions

«**ABB Ability™ Electrical Distribution Control System** supports pre-warning functionalities to keep an eye on every condition and intervene proactively»



F&B improves profitability lowering maintenance and energy consumption costs

Challenge

- Supervise the whole electrical system, from MV down to the LV loads
- Retrofit - revamping with as low as possible impact
- Apply for Italian industry 4.0 super-depreciation grants

Solution

ABB Ability™ EDCS provides actionable insights on the plant areas for their energy management. Customer can visualize plant's energy demand and maintain its system healthy. A wide range of LV and MV devices could be connected (EPMV Relion relays, Emax 2, New Emax, Tmax, Ekip UP, M2M).

Benefits

- **Reduce energy consumption**, increasing efficiency and sustainability
- **Optimize routine maintenance** of the power distribution apparatus
- Predictive algorithms and proactive alerts to **prevent outages and unplanned activities** on critical systems
- Increase visibility on the **energy cost impact on the final product** and eventually increase profitability
- **Reduce** negative impact on processes due to **bad power quality**
- Potential payback < **12 months**

«ABB Ability™ Electrical Distribution Control System help maintaining cost lower and reducing the effort of maintenance cost.»



Italian pulp & paper supervises its plant microgrid with ABB Ability™ Electrical Distribution Control System

Challenge

- Connect and monitor a plant expansion featuring a turbine for on-site generation
- Analyse ROI of the new system into existing SCADA
- Ensure high power quality for process operations

Solution

The customer chooses ABB Ability™ Electrical Distribution Control System to connect cost-effectively the microgrid and analyse the impact of the on-site generation system

Benefits

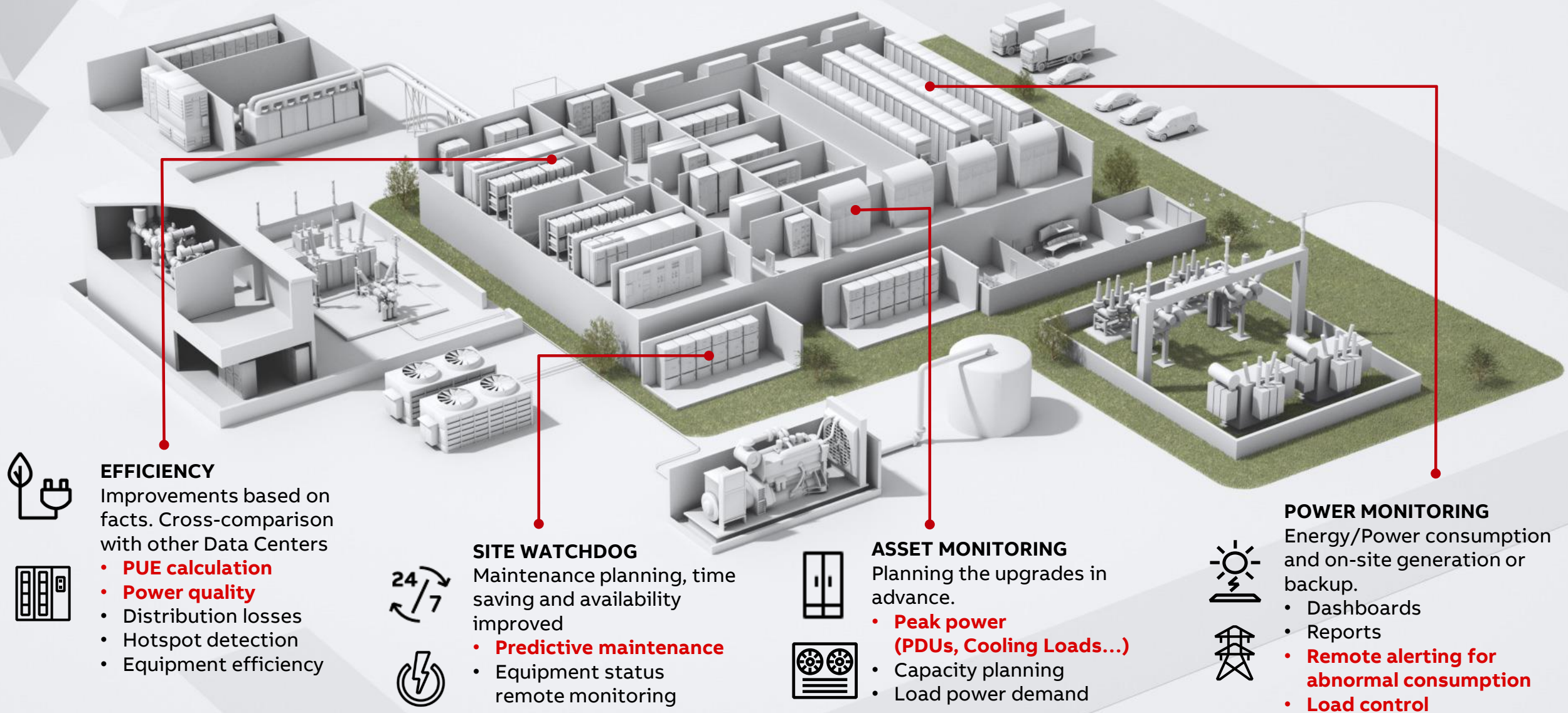
- **Complete supervision of the microgrid:** connection to the grid and local generation
- Turbine's actual usage pattern for **better ROI estimation**
- **Act on** potential issues due to **bad power quality**, affected by on-site generation
- **80% faster payback** with regards to a legacy supervision system option

«ABB Ability™ Electrical Distribution Control System monitors the energy demand from the grid as well as the energy generated on-site to ensure best operating conditions»



— EDCS Segment specific offer – Data Center

EDCS Segment specific offer – Data Center



EDCS Segment specific offer - Buildings

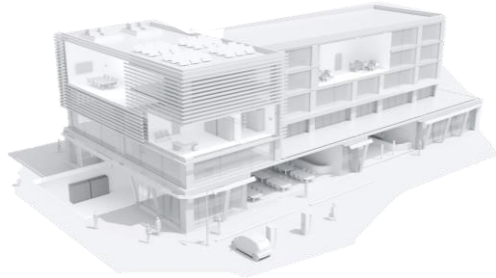
EDCS Segment specific offer - Buildings

Solutions for specific needs

Branch



Commercial



Compound



Hospitality



Give your buildings a new dimension

Value proposition – Design and Specification

Speed up your project

«Give your buildings a new dimension» enables customers to benefit from added values to facilities starting already from the Design and Specification stage

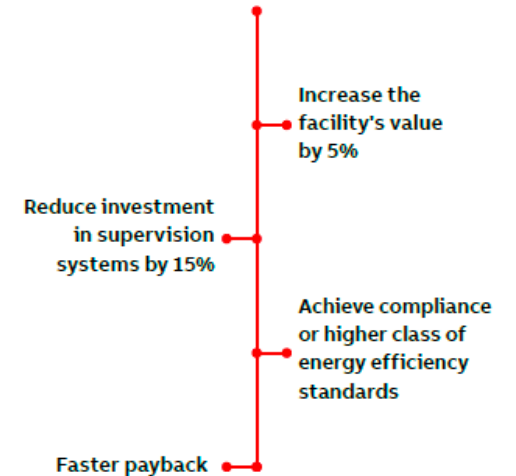
Values

Effective monitor and control of facility performances makes possible to easily obtain certifications of compliance to the highest energy efficiency standards. Moreover, thanks to certifications, the owner can increase the facility's value by 5% on the selling market.

With respect to other legacy control systems, the installation of ABB supervision system enables savings of investment costs up to 15%. Faster payback time represents another advantage of the solution.

Stakeholders

- Owner
- Design consultant
- Engineering company



Give your buildings a new dimension

Value proposition – Installation

Easy to install

«Give your buildings a new dimension» solutions are designed to be easy to install, bringing effective benefits to installers, panel builders and system integrators.

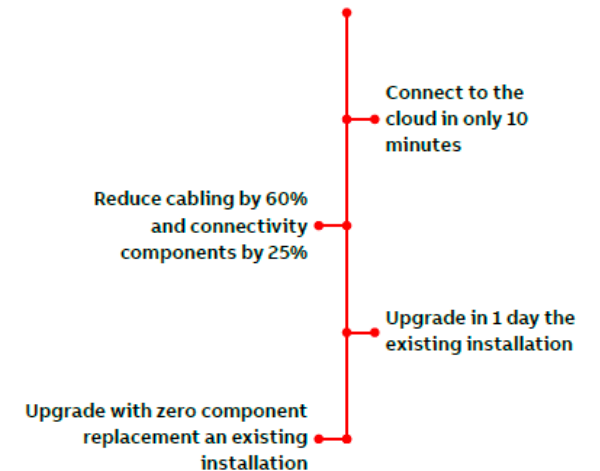
Values

The implemented solution is connected to the cloud and effectively collecting data in only 10 minutes with a small installation/integration effort.

Compared to analogous solutions, cabling required for the installation is reduced by 60% and hardware components strictly related to connectivity by 25%. The plug&play design of components and commissioning enables to quickly upgrade existing distribution and panel boards with no replacements of components already in place.

Stakeholders

- Installer
- Panel builder
- System integrator



Give your buildings a new dimension

Value proposition – Operations

Energy efficiency

At operations stage, «Give your buildings a new dimension» solutions focus on energy efficiency and maintenance optimization

High energy efficiency is achieved through monitoring and control of energy flows and consumption. Owner and energy manager can save up to 20% on energy bills taking advantage of the smart energy management solution.

Values

A precise analysis of consumptions enables to cut wastes and highlight inefficiencies which can be removed by up to 10%.

Stakeholders can benefit from savings on maintenance costs and from proactive alerts which allow ready interventions and reduce unplanned downtimes. Operations are guaranteed in 1 minute.

Stakeholders

- Owner
- Energy manager
- Maintenance provider
- Facility manager

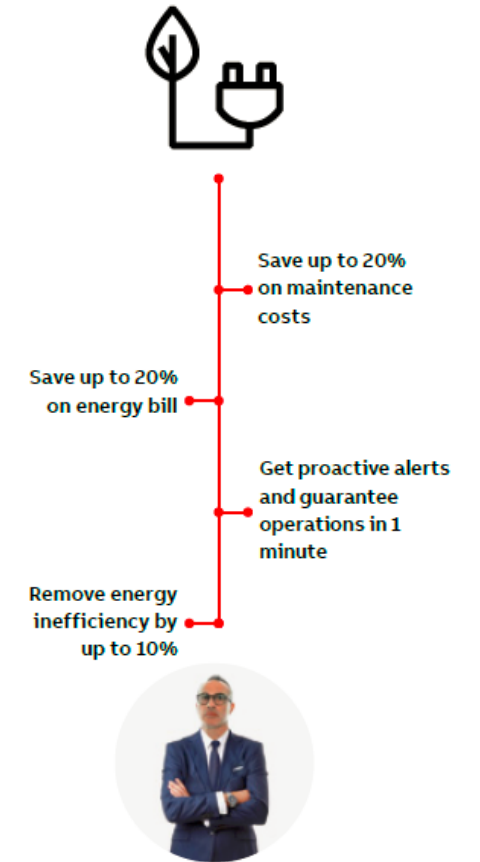
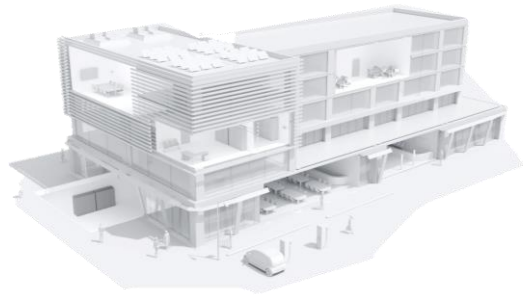


ABB Energy Management Solution for Branch



Workspaces



Comfort automation. Set predefined scenarios for heating and cooling depending on specific needs/occupation (sensor) and schedule information coming from reservation system.



Grant uninterrupted energy to critical Equipment and prevent data lost and ensure communication system availability.



Intelligent lighting system turn off or reduce lighting depending on the real need.



Emergency Light indication will highlight the route for the exit and concentration point.

Facility Manager / Owner



Centralized Cloud-based **Energy monitor and control** system, energy demand forecasting and **optimization** by applying load shifting, according to



Receive **alert** based on monitoring thresholds when an unexpected energy, water usage is reached.



Reduce Downtime and maintenance based on Predictive/Artificial Intelligence algorithms to lower the probability of fault and optimize maintenance activities.



Enforce Policies and Compliance, ensure energy regulatory compliance, by enforcing constraint, monitoring and reporting.

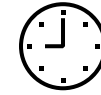
ABB Energy Management Solution for Hospitality



Guest Service



Set room temperature, air conditioning, lighting, curtains using a simple **guest interface** or **guest app**



Schedule **predefined scenarios**, like set temperature and lower curtains, lower the light while guest is arriving to the room.



Monitor car charging in the parking lot and be notified when the battery energy is at the requested level.

Site Energy Management



Centralized **Energy monitor and control** system, energy demand forecasting and **optimization** by applying load shifting, regulation on pumping system.



Receive **alert** based on monitoring thresholds when an unexpected energy, water, gas usage is reached. Protect critical power load with load shading capability on outage (air conditioning, concierge)



Gain **high level of independence** from utilities by leveraging renewable energy in-place generation. Store energy in the battery for better usage.

Multi-site Energy Administration



Cloud base solution enable the centralized control of all the hotel in the world within a single dashboard, **compare consumption** and have a clear show-back and report of all energy costs.



Centralized operation and maintenance based on Predictive Artificial Intelligence algorithms to lower the probability of fault and reduce energy consumption.



Enforce Policies and Compliance, ensure energy regulatory compliance, by enforcing and monitoring all hotels in the chain.