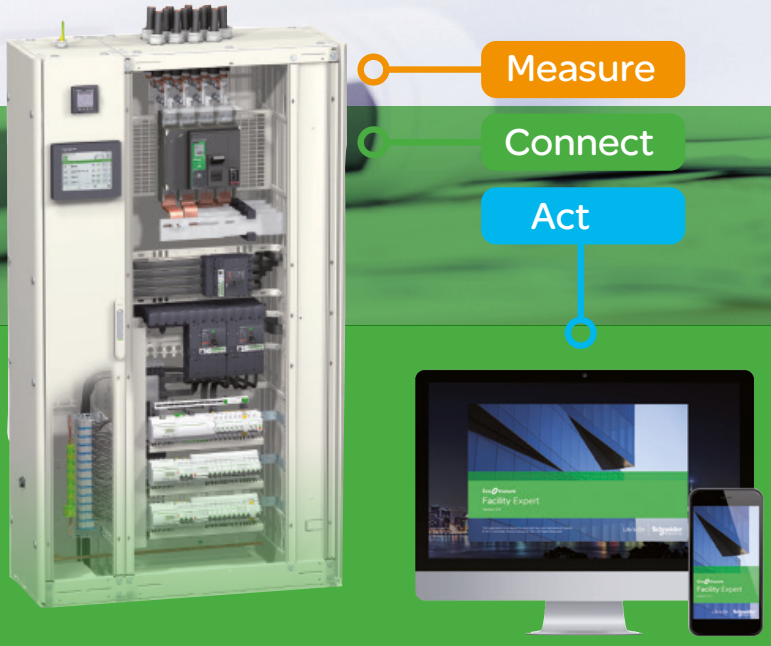
EcoStruxure™ Power

For commercial & Industrial Buildings

Design & Selection Guide for Energy & Operations Management Solutions



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Life Is On Schneider Electric

Safety information

Important instructions

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it.

The following special messages may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of either symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER
DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury. **Failure to follow these instructions will result in death, serious injury, equipment damage, or permanent loss of data.**

⚠ WARNING
WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury. **Failure to follow these instructions can result in death, serious injury, equipment damage, or permanent loss of data.**

⚠ CAUTION
CAUTION indicates a hazardous situation which, if not avoided, can result in minor or moderate injury. **Failure to follow these instructions can result in injury or equipment damage.**

NOTICE
NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this signal word.

Please note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, operation and installation of electrical equipment, and has received safety training to recognize and avoid the hazards involved.

Before you Begin

Electrical monitoring and control equipment and related software are used in a variety of the buildings. The type or model of electrical monitoring and control equipment suitable for each application will vary depending on factors such as the system dependability level, unusual conditions and government regulations etc.

Only the user can be aware of all the conditions and factors present during setup, operation and maintenance of the solution. Therefore, only the user can determine the electrical monitoring and control equipment and the related safeties and interlocks which can be properly used. When selecting electrical monitoring and control equipment and related software for a particular application, the user should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual also provides much useful information.

Ensure that appropriate safeties and mechanical/electrical interlocks protection have been installed and are operational before placing the equipment into service. All mechanical/electrical interlocks and safeties protection must be coordinated with the related equipment and software programming.

Start up and test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check be made and that enough time is allowed to perform complete and satisfactory testing.

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and grounds, except those grounds installed according to local regulations (according to the National Electrical Code in the U.S.A., for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Perform all start-up tests recommended by the manufacturer.

Operation and adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-195 (English version prevails):

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer's instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer's instructions and the machinery used with the electrical equipment.
- Only those operational adjustments actually required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

Safety pre-cautions

The following safety messages apply to installation, configuration and operation of SmartStruxure Building Operation, Power Monotoring Expert and Power Manager sofware connected to Smart Panels.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, BURN OR EXPLOSION

- Only qualified personnel familiar with low and medium voltage equipment are to perform work described in this set of instructions. Workers should understand the hazards involved in working with or near low and medium voltage circuits.
- Perform such work only after reading and understanding all of the instructions contained in this bulletin.
- Turn off all power before working on or inside equipment.
- Use a properly rated voltage sensing device to confirm that the power is off.
- Before performing visual inspections, tests, or maintenance on the equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, grounded, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of back feeding.
- Handle this equipment carefully and install, operate, and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury, as well as damage to electrical equipment or other property.
- Beware of potential hazards, wear personal protective equipment and take adequate safety precautions.
- Do not make any modifications to the equipment or operate the system with the interlocks removed. Contact your local field sales representative for additional instruction if the equipment does not function as described in this manual.
- Carefully inspect your work area and remove any tools and objects left inside the equipment.
- Replace all devices, doors and covers before turning on power to this equipment.
- All instructions in this manual are written with the assumption that the customer has taken these measures before performing maintenance or testing.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use the software to control time-critical functions because communication delays can occur between the time a control is initiated and when that action is applied.
- Do not use the software to control remote equipment without securing it with an authorized access level, and without including a status object to provide feedback about the status of the control operation.

Failure to follow these instructions can result in death or serious injury.

⚠ WARNING

INACCURATE DATA RESULTS

- Do not incorrectly configure the software, as this can lead to inaccurate reports and/or data results.
- Do not base your maintenance or service actions solely on messages and information displayed by the software.
- Do not rely solely on software messages and reports to determine if the system is functioning correctly or meeting all applicable standards and requirements.
- Consider the implications of unanticipated transmission delays or failures of communications links.

Failure to follow these instructions can result in death, serious injury, equipment damage, or permanent loss of data.

NOTICE

LOSS OF DATA

- Be sure to activate product and component licenses prior to the expiry of the trial license.
- Ensure that you activate sufficient licenses for the servers and devices in your system.
- Backup or archive any SQL Server database data before adjusting any database memory options.
- Only personnel with advanced knowledge of SQL Server databases should make database parameter changes.

Failure to follow these instructions can result in loss of data.

NOTICE

UNAUTHORIZED OR UNINTENDED ACCESS TO CUSTOMER DATA

- Personnel setting up third-party authentication of the software must be aware that links to data are not secure.
- Do not setup access links to sensitive or secure data.

Failure to follow these instructions can result in unauthorized or unintended access to sensitive or secure customer data.

NOTICE

NETWORK INOPERABILITY

Do not make unauthorized changes in the network configuration.

Failure to follow these instructions can result in an unstable or unusable network.

This document is intended to describe how to select and configure the Smart panels system.

Energy and maintenance management have never been simpler

Smart Panels connect you to energy savings and operational efficiency in four steps.

0 Digitize

> Easily collaborate and share switchboard documents

> Attach preventative maintenance plans

1 Measure

> Embedded and stand-alone metering

> Control capabilities

2 Connect

> Integrated communication interfaces

> Ready to connect to EcoStruxure™ Facility Expert

3 Act

> Data driven energy and operation actions

> Real time monitoring and control

> Access to energy and asset management through on-line services

Tested, Validated, Documented Smart Panels architecture

Smart Panels have been certified via Schneider Electric's "guide" quality process.

Tested in performance labs by experts, in the most common configuration
Validated full functional compatibility of devices
Documented, with user guide, predefined CAD panel designs & wiring diagrams

Smart Panels overview

Smart Panels are key components of energy management in buildings.

You can only manage what you measure and see. Schneider Electric Smart Panels form the basis of a simple solution for understanding how a building functions in terms of energy consumption and technical performance.

Smart Panels are the first step in creating an energy management strategy. Combined with Schneider Electric Energy Management Services, they form a complete solution for real energy savings.

Smart Panels are based on the Ethernet network. Ethernet is widely used in domestic and industrial applications, allowing easy, transparent access to electrical devices from any location.

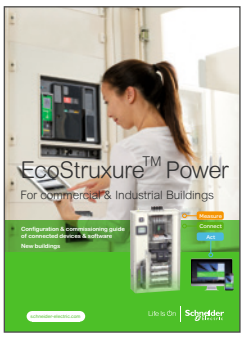
Purpose

This guide intends to help electrical consultants design a safe, reliable and efficient electrical distribution based on the EcoStruxure™ Power solution by:

- describing the key applications to run efficiently a building
- giving guidelines to select accordingly the right products and services
- showing 4 architectures examples for 4 different buildings (Bank branch, Office building, High School and Supermarket)
- and by giving rules to assess the overall system performances.

This guide supplements the other EcoStruxure Power documents supporting you to design, construct and operate Smart panels.

Smart Panels Assembly Guide



Configuration and commissioning guide

Prerequisites

Familiarity with LV electrical distribution components is required to understand and benefit from this guide.

Scope

This release of this guide deals with LV switchboards for commercial buildings:

- School
- Gymnasium
- Small Hotel
- Bank
- Office
- Hotel ***
- Supermarket
- Retail...

Only new buildings are covered by this document. For revamping projects, verify the compatibility of existing devices with the new EcoStruxure™ connected products system using the EcoStruxure Power Commision configuration tool, or with the help of your local Schneider Electric support.

EcoStruxure™ Power digitizes electrical distribution

0 Digitize

1 Measure

ComPact NSX

PowerTag Energy 250/630A

Compact NS

Sepam S20/40

MasterPact MTZ

Energy meter

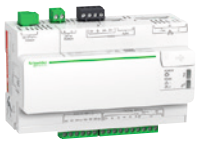
Reflex

PowerTag Energy 63A

IO module

Power meter

2 Connect


Com'X

Smartlink SI B

PowerTag Link

IFM

IFE / IFE Gateway

3 Act

> On local network

> On cloud 24/7

Gateway web pages

EcoStruxure™ Power Commision

EcoStruxure™ Facility Expert

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This guide contains clickable links for:

- page redirection towards table of contents or chapters,
- links to open web pages of the Schneider Electric site,
- links and QR codes to watch the videos on your mobile devices.

I propose

1

EcoStruxure™ delivers Innovation at Every Level:

From connected products to edge control, and apps, analytics and services on six domains of expertise – Power, IT, Building, Machine, Plant, and Grid – EcoStruxure™ delivers enhanced value around Connectivity, Safety, Availability, Efficiency and Cybersecurity to our customers.

EcoStruxure Facility Expert is a key contributor to the EcoStruxure Power platform. An edge control solution, Facility Expert is a cloud-based software that provides operation monitoring and information sharing, ensuring business continuity while reducing energy and maintenance costs.

Unleash the full potential of your electrical panels and energy management system by connecting cutting-edge hardware with innovative software and services – like Facility Expert – helping you to optimize operations, save energy, and improve efficiency where it counts.

SUMMARY

EcoStruxure™ Power empowers you for the future

EcoStruxure™ Power gives you a complete solution approach to:

- Deliver more reliable and efficient power
- Protect your assets, processes, and people
- Provide tailored, future-ready solutions for the new digital economy
- Enable new services in energy and operation management
- Create new business opportunities for your company

EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

As a partner of Schneider Electric, **grow your business** by adding valuable new services while increasing customer satisfaction and retention.

I propose

1

1.1. Benefits for investors

Building investors want to develop high quality buildings that comply with the latest standards to maximize the value of their investments. Sustainable and efficient buildings accrue higher market value as reduced energy costs, environmental sustainability, and better-quality workspaces are more attractive to tenants; investors will benefit from a more productive property and owners of such buildings are experiencing higher occupancy rates and faster lease-up periods.

Source: the impact of energy labels and accessibility on office rents | N. Kok, Mastricht University and M. Jennen, CBRE Global Investors | 2013.

For these customers, EcoStruxure™ Power solution is:

- **Compliant** to electrical installation standards and energy efficiency standard such as ISO50001, IEC 60364- 8–1 or labels for green buildings LEED EB O&M (USA), BREEAM- (UK) NF HQE Exploitation (France), DNGB for Existing Building (GERMANY).
- **Faster and simpler** to design and implement thanks to system tests ensuring easy integration, setup and interoperability of all components (hardware and software). This enable to shorten the building delivery time.
- **Future ready** with the use of the latest technologies. It enables to make the installation evolve along with the growing needs of the business hosted in the building.

1.2. Benefits for business owners and operations teams

Business owners want to reach their business objectives and ensure the safety of their employees with a healthy and productive environment. For businesses such as retail, the customer experience in the sales area is key and it requires a good level of comfort.

SUMMARY

Amid rising costs and increased regulation, digitization is transforming the way buildings operate today and that's presenting new challenges to **Facility managers** who are being challenged to reduce operating costs and meet environmental regulations while still maintaining high building performance with limited workforce.

EcoStruxure™ Power solution enables buildings to be:

Efficient by gaining control on building operating costs.
In commercial buildings, 75 % of building costs is spent during the operation phase but unlike very large facilities, most mid-sized facilities don't have the tools in place to act on these costs, to track energy consumptions and maintenance activities because the tools are too complex or too expensive.

With EcoStruxure™ Power, they are now accessible thanks to IoT technology. Taking this kind of solutions into account at the design stage is a real opportunity to reduce the operating costs:

- Energy costs by - 5 % *Navigant Research publication.
- Maintenance costs by - 8 % **The Service Council publication.

Reliable

EcoStruxure™ Power helps operations teams improve the business continuity by + 10 %, it allows them to:

- Reduce business interruption losses and time to repair.
- Avoid disruption of business by preventing electrical distribution problems of Electrical Distribution.
- Increase Electrical Asset & System Reliability and Lifetime.

How much will a downtime cost and what are the key applications (HVAC system, refrigeration, cash registers, …) to run the business? Answering these questions will help to select the appropriate solutions for each application and thus maximize the uptime.

Safe

EcoStruxure™ Power helps operations teams protect people and assets, it allows them to:

- Ensure electrical protection system is always ready to operate.
- Ensure regulatory maintenance is always done on time. The list of statutory maintenance requirements (required by law) is country dependent but it can be huge and needs to be documented.

SUMMARY

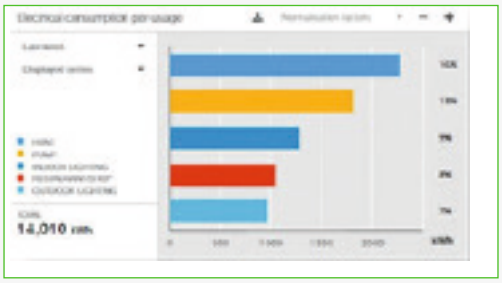
I select

2

This chapter lists the applications that help improve the energy and operations efficiency, the business continuity and safe operations of facilities. They can be selected according to the customer needs.

2.1. Energy monitoring and reporting

The Energy Management System collects the data from the meters (electric, water, gas) installed on the property and provides in dashboards to analyze the energy consumptions and the ability to set targets to reduce their cost.



- Submetering enables to understand how the energy is used in the building and it is recommended to monitor 80 % of the energy usage of a building.
- Monitor Power demand and Power Factor with alerts as they have an impact on the energy bill.
- Track the energy consumptions against a target.
- Monthly reports helps to show progress of energy actions for the business owner.

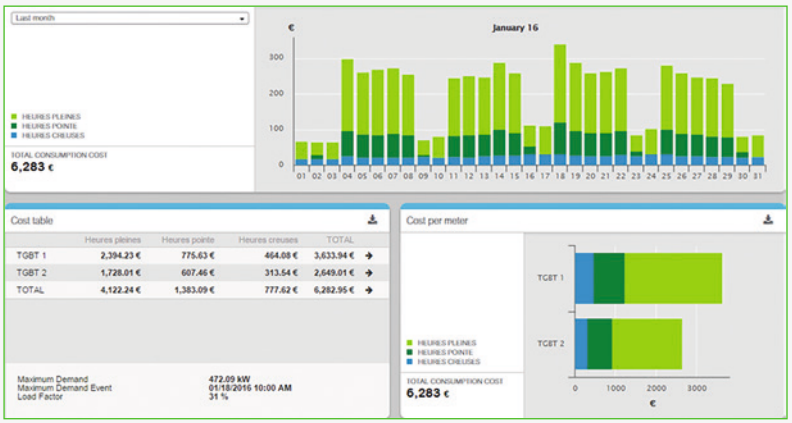
NOTICE
METERS VIEW The full-screen meter view displays a maximum of 20 meters' data. Export functionality is limited to visualized meters only.

2.2. Energy cost allocation

This application enable a building owner to allocate the energy cost:

- per tenant in building with several tenants
- per production line in an industrial building
- per cost center in general.

Usually active, reactive energy consumptions and power demand shall be collected at main meter level and at sub meter level for each tenant area or group.

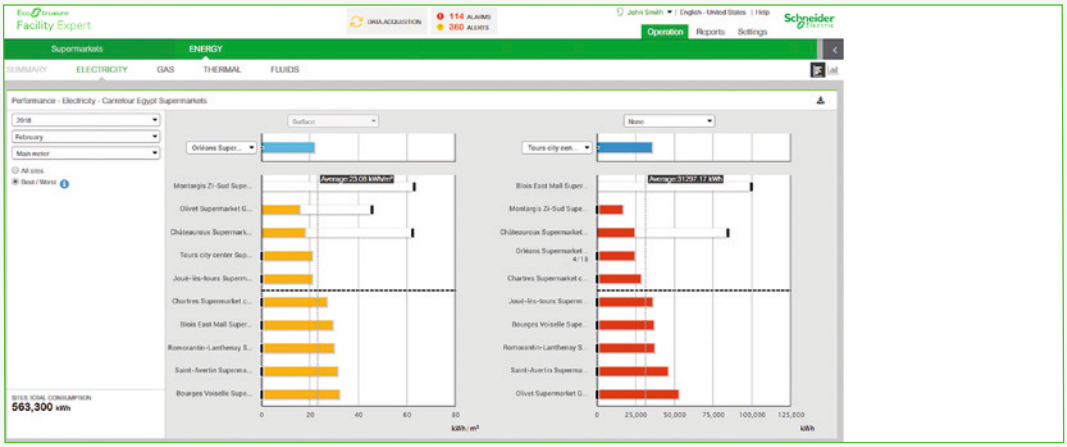


SUMMARY

2.3. Multi-sites energy consumptions comparison

When managing a sites portfolio, it is essential to track the aggregated consumption of the sites and to compare sites against each other to focus first on poor performers. Being able to compare also per energy use helps to determine which HVAC system or lighting system is the most energy efficient.

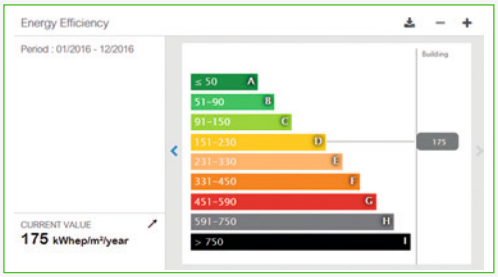
NOTICE
MULTI-SITE COMPARISON WIDGET The best way to use the benchmarking feature is to create groups of sites. There is no limitation on the number of sites associated with a customer, however the "All sites" comparison widget displays a maximum of 50 sites.



NOTICE
Even if the sites are on the same network, it is highly recommended to connect at least one Com'X per site to get a clear energy consumption view.

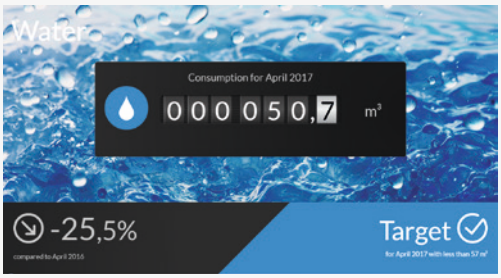
2.4. Sustainability Performance

Standard or labels have been defined to help building managers benchmark their sites according to local energy performance rating. In some countries, it is mandatory to display the rating at the building entrance.



EPBD Energy performance graph

To show green image to visitors and involve occupants of the building, a screen at building entrance can display information about the energy action results and transform kWh into meaningful CO^2 equivalents such as number of flights or saved trees.



SUMMARY

2.5. Asset Lifecycle Management

Cloud based document repository provides convenient reference material at all times, helping everyone to easily collaborate, share and find the information they need.

It enables technicians access relevant and up to date documents such as manuals, instruction sheet or diagrams from wherever they are and can speed up operations with a simple QR Code placed on equipment.

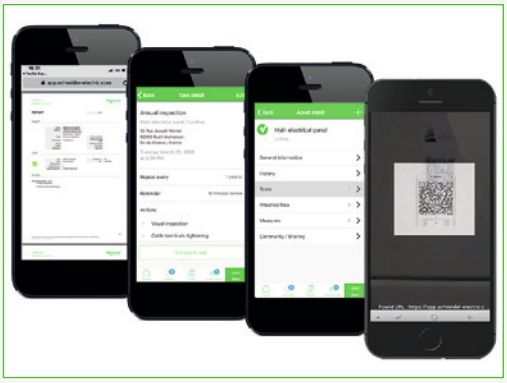
Video support

2.6. Maintenance intervention history and reporting

Logging of maintenance activities is important to ensure traceability in case of inspection or audit but it is usually long and painful as technicians have to write out information on all tasks performed or parts used at the end of the day. Cloud-based solution with new tools simplify the facility maintenance.

Once the maintenance job is done, technicians can now use their smartphone to enter maintenance logs with pictures, audio record and automatic generation of reports reducing thus the number of administrative tasks.

Video support

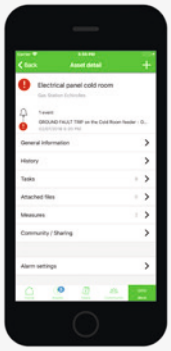


This traceability benefits also to any technician who has to deal with an issue as he can access interventions history and search for root causes and its resolution for similar equipment. Knowing that more than 50 % of breakdowns have already occured and the fix is known, it will reduce the analysis time and thus the time to repair.

2.7. Alerts on mobility

Connecting buildings and equipment to operations team via smartphone or tablet enable to manage facilities more effectively. They will get alerts from connected assets in case of issue, be notified in mobility, access to alarm detail to analyze it and decide whether to go on site or postpone intervention to next maintenance visit.

Video support



SUMMARY

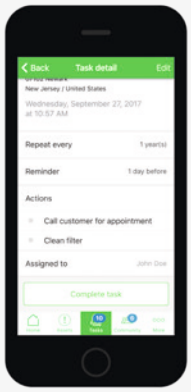
2.8. Maintenance tasks management

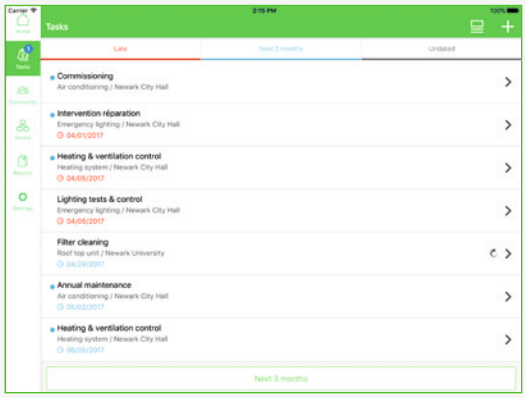
According to the Institute of Electrical and Electronics Engineers (IEEE), the failure rate of electrical components is three times higher for systems where preventive maintenance is not performed. This tells us that electrical problems, for the most part, can be avoided.

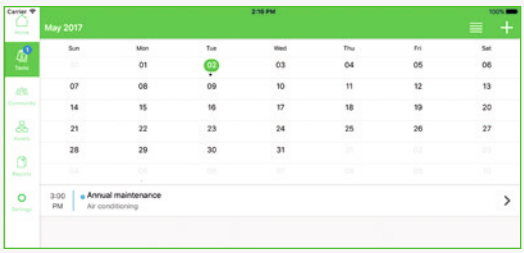
Cleaning dirt from inside electrical panels and tightening electrical connection on frequent basis can reduce the chances of fires, electric shock and arc flash incidents.

To be sure to not miss a maintenance on any sensitive equipment to run the business activity, maintenance management tool can help with maintenance planning, organizing work of the technicians, storing schedules for required maintenance and issuing reminders on upcoming maintenance. QR code placed on equipment makes loading the predefined maintenance plans a snap.

Video support







2.9. Power monitoring

Monitoring electrical distribution variables (voltages, currents, harmonics…) enables to detect issues such as voltages fluctuations that can disturb or damage sensitive loads or that can lead to nuisance tripping.

Alarms can be set and notifications sent out if the power systems functions outside of its normal parameters.

SUMMARY

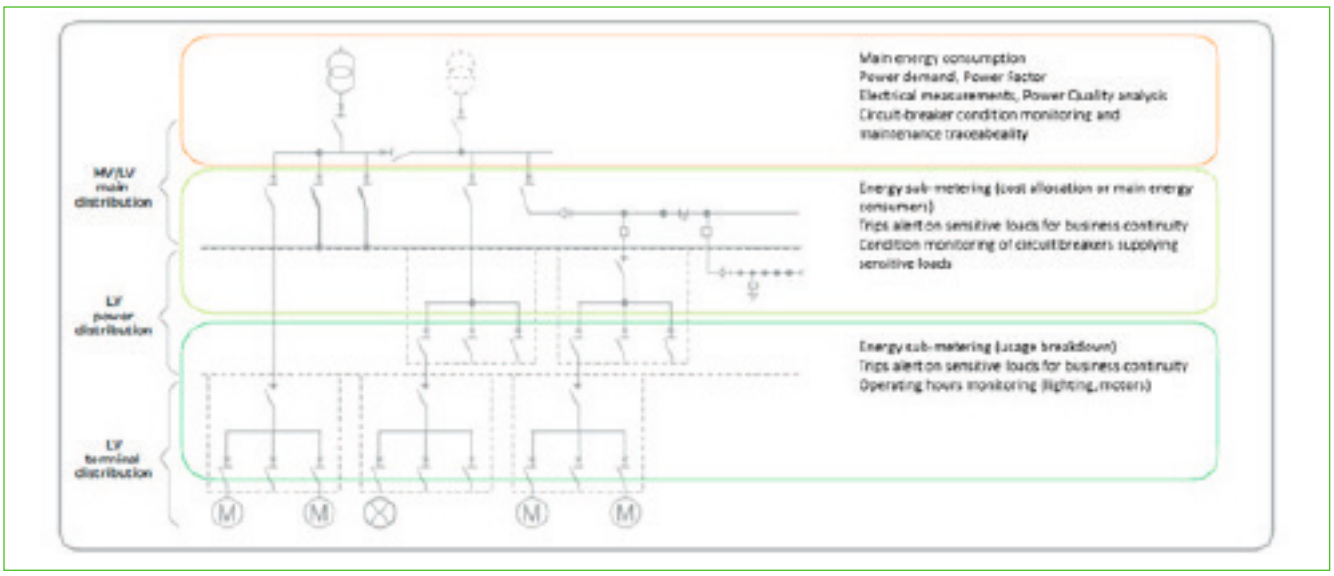
3.1. Energy consumptions to be monitored in a building

The most important consumptions and parameters are listed in the table here below according to the building activity.

Consumptions parameters	Meter	Building activity
Building total consumptions		
Electricity	1 electrical meter per main switchboard incomer(s)	All activities
Gas	1 gas main meter	All activities
Water	1 water main meter	All activities
HVAC consumptions		
Chiller / Rooftop / Heat pump	1 electrical meter per machine (including circulation pumps)	All activities
Ventilation (AHU > 5000 m³/h)	1 electrical meter per machine	All activities
Gas boiler	1 gas meter if there are other gas usages	All activities
Floor / Zone (> 500 m²) consumptions		
Sub-distribution swithchboard	1 electrical meter per sub-distribution switchboard	All activities
Comfort parameters		
Temperature	1 temperature probe per floor / zone > 500-1000 m²	All activities
Domestic hot water production		
Electric boiler	1 electrical meter	Hotel, restaurant, leisure and sport, retail, collective building
Gas boiler	1 gas meter	Hotel, restaurant, leisure and sport, retail, collective building
Food refrigeration consumptions		
Refrigeration machine	1 electrical meter per machine or group of machine	Hotel, restaurant, retail
Compressed air consumptions		
Compressor machine	1 electrical meter per group of compressors	Industriy, R&D centre

3.2. Type of instrumentation for Smart Panel

3.2.1. Guideline according to the electrical architecture level



SUMMARY

3.2.2. Positioning embedded metering and stand-alone metering

Positioning embedded metering and stand-alone metering

The following criteria are considered to determine when Smart Panel architecture shall include embedded metering (within circuit breakers) or stand-alone metering (Power Meter with associated sensors).

Embedded metering is relevant when the customer needs include the following:

- basic power quality monitoring (THD, Cos φ…)
- easy-to-install and compact meter
- basic state-of-the-art accuracy (Energy Class 1) with standards compliance
- circuit breaker asset monitoring.

Stand-alone metering is relevant when the customer needs include the following:

- advanced power quality monitoring, configurable metering data logging
- require revenue-accurate readings for billing, to meet local billing regulations and green standards
- meet international accuracy standards beyond class 1 (e.g. 0.2 at installation source for billing)
- operational constraints:
  - separation of protection & metering, installer habits, availability of some meters commercial references in some countries
  - dedicated meter display (for instance capability to display upstream voltage when CB is open).

3.2.3. Selection table

This table helps determine the right type of instrumentation for the incomer and feeders of the Smart Panel according to the applications that have been requested.

Main objectives	Trip alert	Energy monitoring and power loss alert	Energy monitoring, Trips alerts with diagnostics Up to 630 A	Energy monitoring, Trips alerts with diagnostics Above > 630 A	Energy and advanced power quality monitoring
Applications	**OF/SD**	**PowerTag Energy 63/250/630A**	**Micrologic 5 Compact NSX**	**MTZ**	**Power meter**
Wireless					
		■			
Energy monitoring					
Energy class		Class 1	Class 2	Class 1	Class 1 or less
Power Monitoring					
Electrical measurements		■	■	■	■
Power quality			basic	basic	advanced
Alerts					
Open/close and trip	■		■	■	
Voltage loss		■	■	■	
Pre-alarm overload			■	■	
Trips with causes (LLT, STP, Short circuit, Earth leakage), contextual data and diagnosis			■	■	
Circuit breaker condition monitoring					
Health status				■	
Maintenance information (contact wear, number of trips)			■	■	
Local visualization					
Local display					■

SUMMARY

3.3. Network architecture guideline

3.3.1. Data publication via the Ethernet

An Ethernet cable connects one of the Com'X Ethernet ports to a switch on the customer's LAN. The customer's Ethernet network and internet connection are then used to transfer data to the data analysis system's server.

This solution is the simplest to set up, the most secure and the cheapest to put in place.
In case of the customer refuses to provide internet access, 2 solutions can be envisioned:

- A dedicated internet access with an Internet box.
- Internet access through cellular network with a 3G or 4G router connected to the Com'X.

3.3.2. Data collection

Using an ethernet network to collect data

Setting up and using an ethernet network is technically more complicated. However, the advantage of this type of network is that it can be used by several applications simultaneously. This means that if the customer already has such a network in place, it can be used without having to install new communication cables. In this case, Modbus-TCP <-> Modbus serial (EGX100) gateways will need to be added.

This solution is ideal for collecting data from devices that are dispersed around the building.

A Com'X 200 can communicate via the IP network with a maximum of 20 Modbus-TCP <-> Modbus serial gateways.

One should not connect more than 100 Modbus slaves to the various serial ports (this includes slaves of the Com'X 200's serial port and slaves of the serial ports of the different Modbus-TCP <-> Modbus serial gateways).

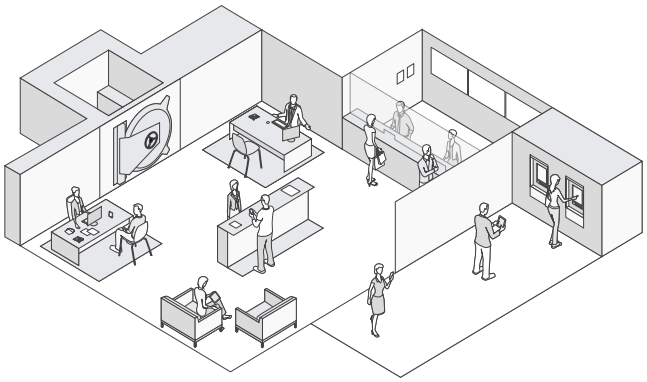
Nota: these two methods (Modbus serial and Modbus–TCP) can be used in parallel at a site.

Using a Modbus serial network to collect data

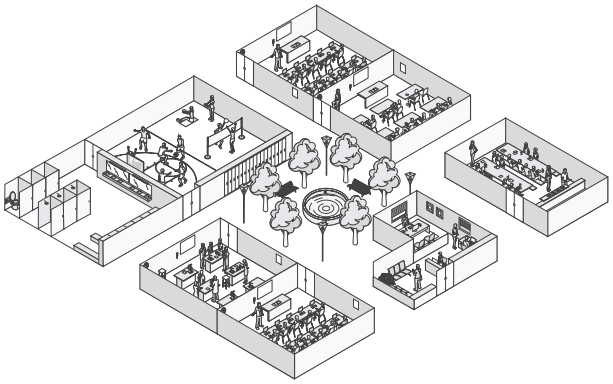
This solution is well suited to collecting data from devices grouped together in close proximity to the Com'X. One should not connect more than 20 Modbus slaves to a serial network (so as not to negatively impact the response times achieved via this network). Any additional meters should be connected to Ethernet/Modbus gateway, which in turn should be connected to one of the Com'X 200's Ethernet ports.

SUMMARY

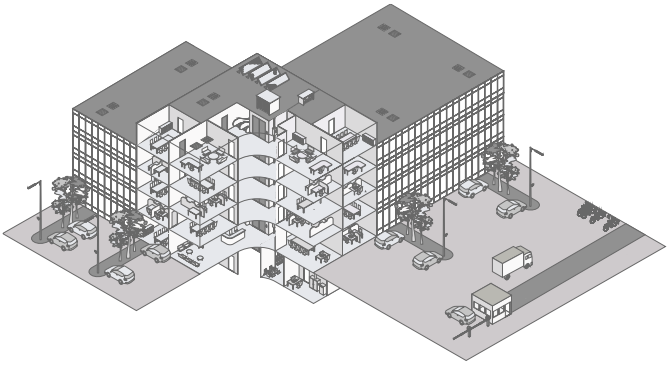
3.4. Solutions per building type



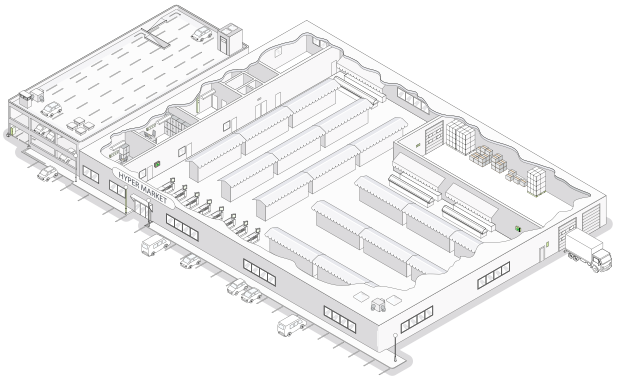
Bank branch



High school



Office



Supermarket

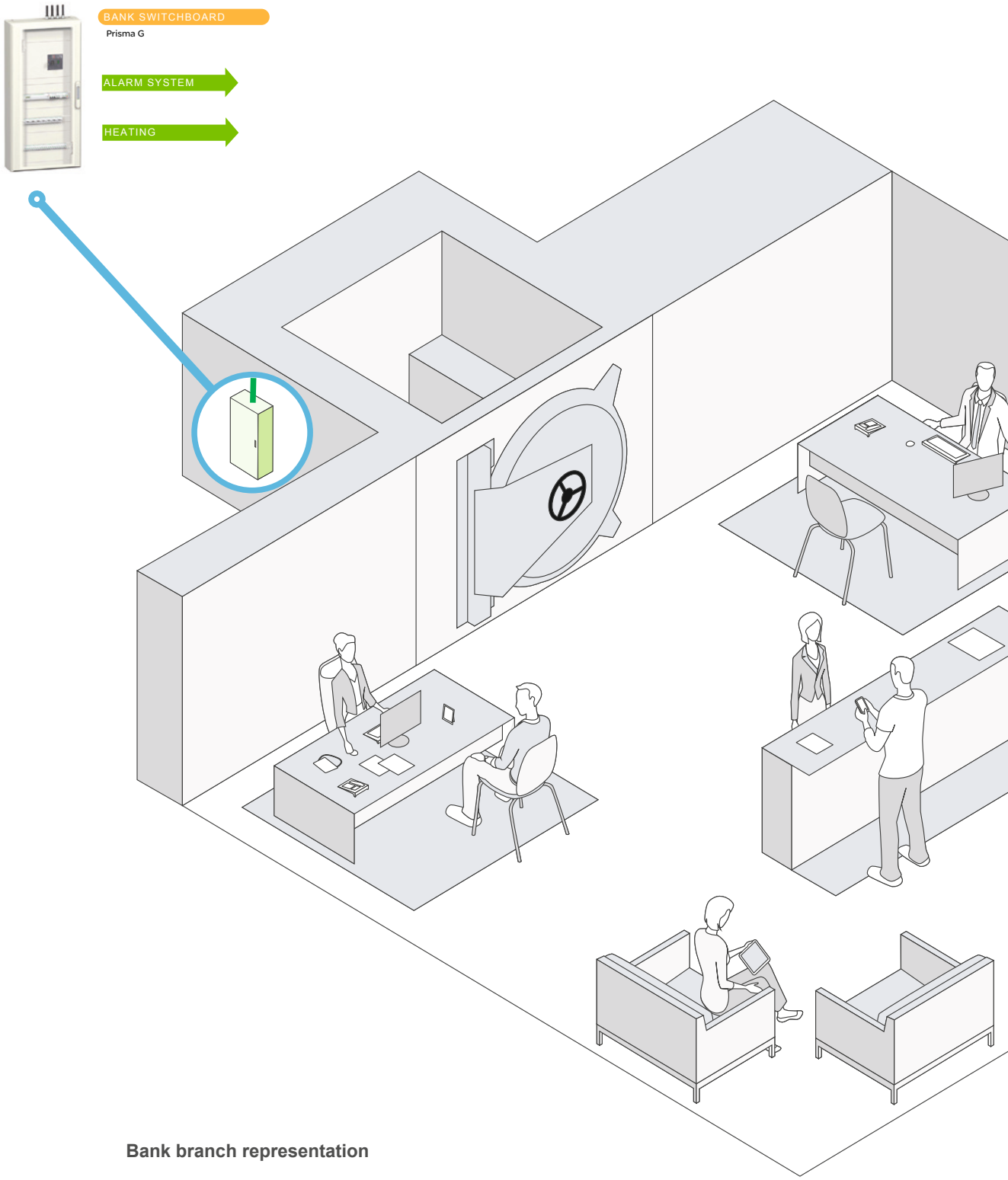
SUMMARY

3.4.1. Bank branch

Regardless of the size of the financial institution, branch energy consumption remains one of the largest operational expenses. To maximize profits, energy costs should be optimized at the branch level, and across the portfolio.

Customer needs

Ensure customer and staff safety and system availability.
Monitor multi-site energy consumptions and be able to benchmark energy usage.



Bank branch representation

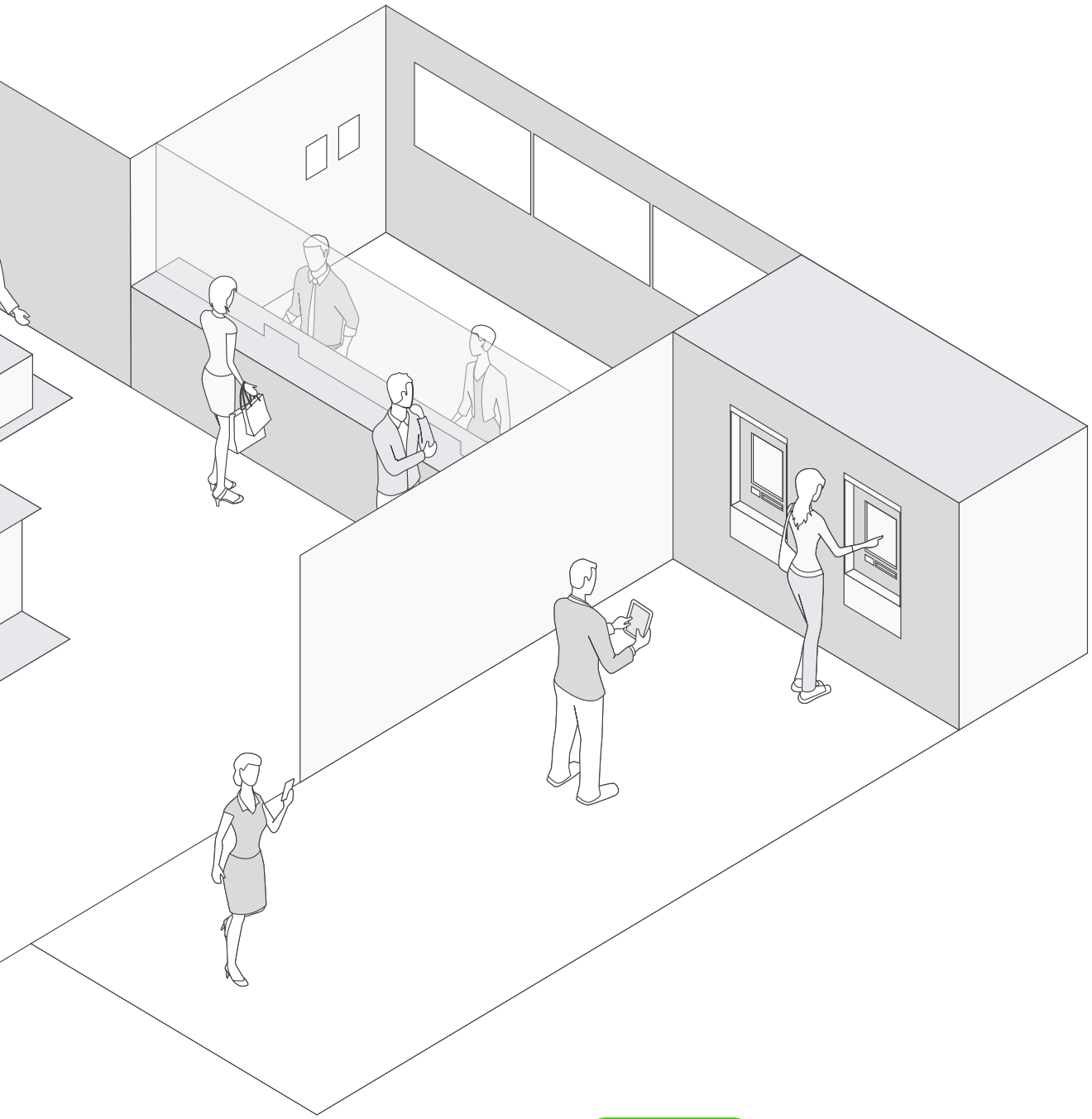
SUMMARY

Bank branch site description

- 150 m²

Space split in two main parts:

- counters for customer reception
- offices (4 offices + 1 office for the manager).



SUMMARY

Solution

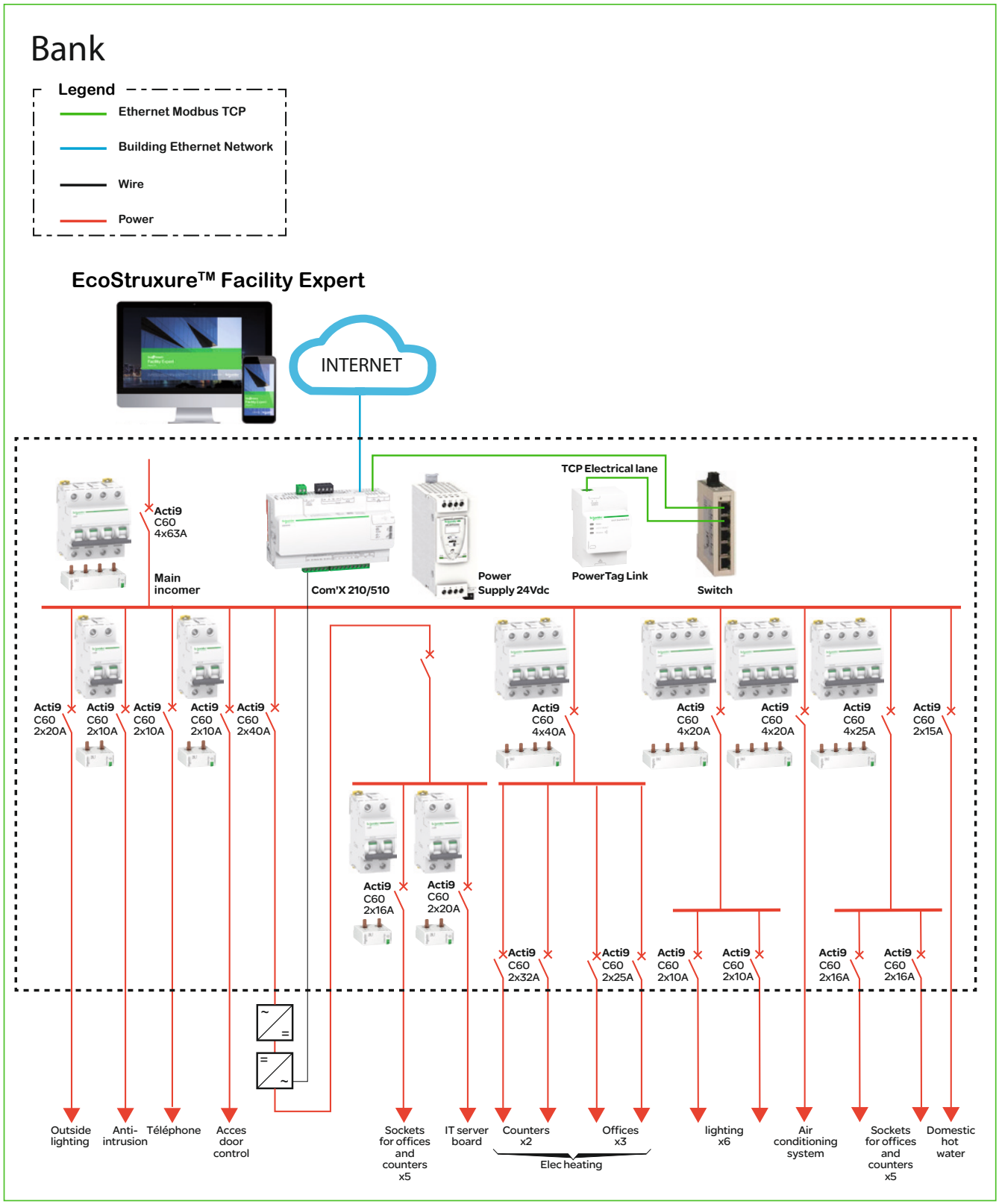
This solution enables to:

- be alerted 24/7 on mobile when the IT server room, anti-intrusion alarm system, heating and air conditioning are no more supplied
- aggregate energy consumptions of all bank branches and track them against targets
- compare energy consumptions of all bank branches (total and per energy use such as lighting, Heating and Air conditioning) or per regional areas and identify best and poor performers
- understand how, where and when energy is used in each bank branch to identify savings.

Bill Of Material

Product	Function	Part number / range	
EcoStruxure™ Facility Expert	Cloud-based software and app to optimize energy operations and maintenance management of your facilities	Depend on license	
Com'X 210/510	Data logger to collect data and publish them hourly to Facility Expert	EBX210/EBX510	
PowerTag Link	Wireless to Modbus TCP/IP Concentrator	A9XMWD20	
PowerTag Energy	Wireless sensor to measure energy and/or to detect voltage loss	2P	A9MEM1521
			A9MEM1522
		3P	A9MEM1540
		4P	A9MEM1541
			A9MEM1542

SUMMARY



Other types of PowerTags can be used.

SUMMARY

3.4.2. Office

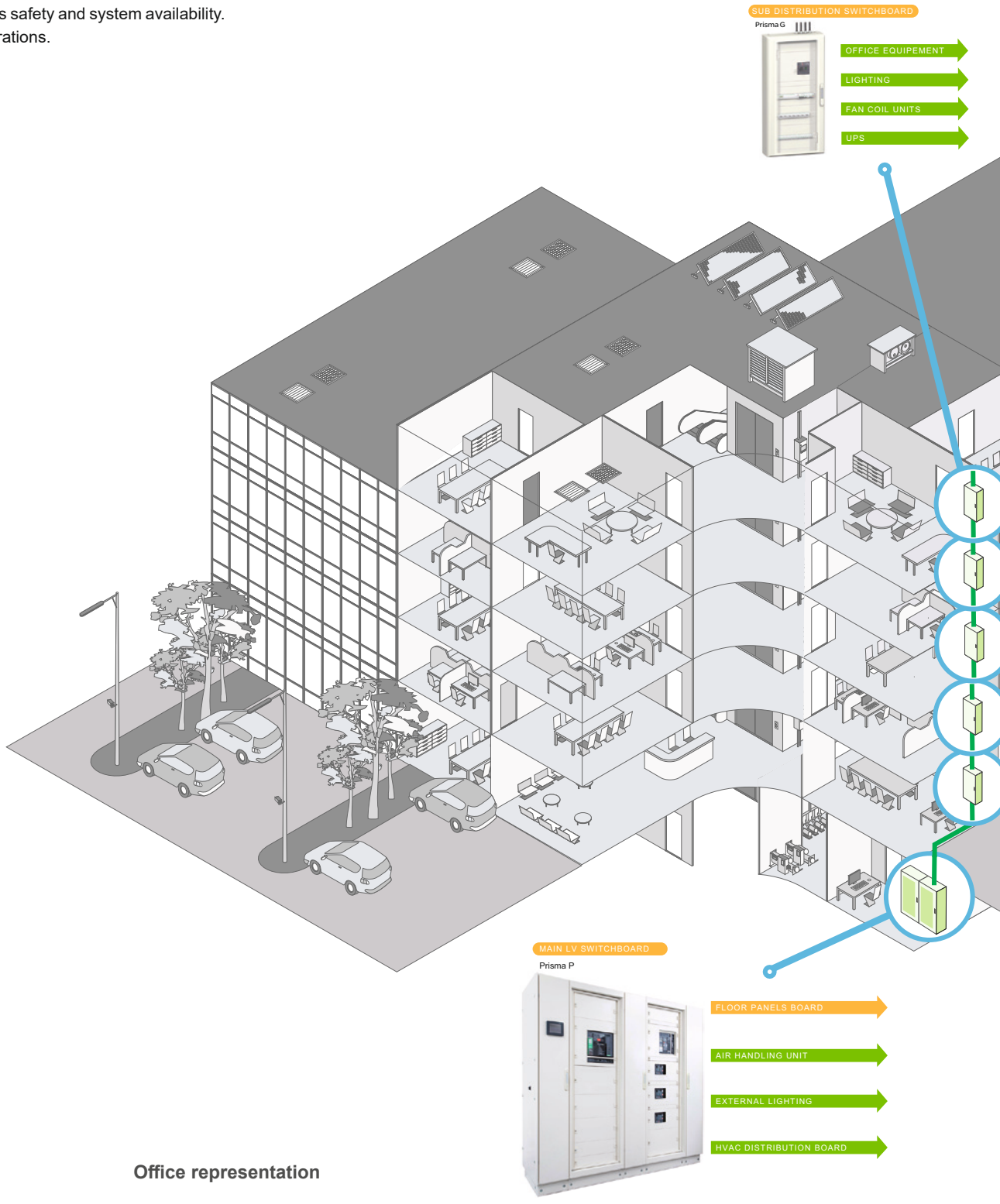
Customer needs

Building investor-owner:

- Attract tenants by promoting the building high efficiency (compliant to IEC60364-8-1).
- Rent the building to several tenants and reallocate energy costs to each of them.
- Maximize equipment lifetime to lower OPEX.

Facility Manager:

- Ensure occupants safety and system availability.
- Optimize his operations.



Office representation

SUMMARY

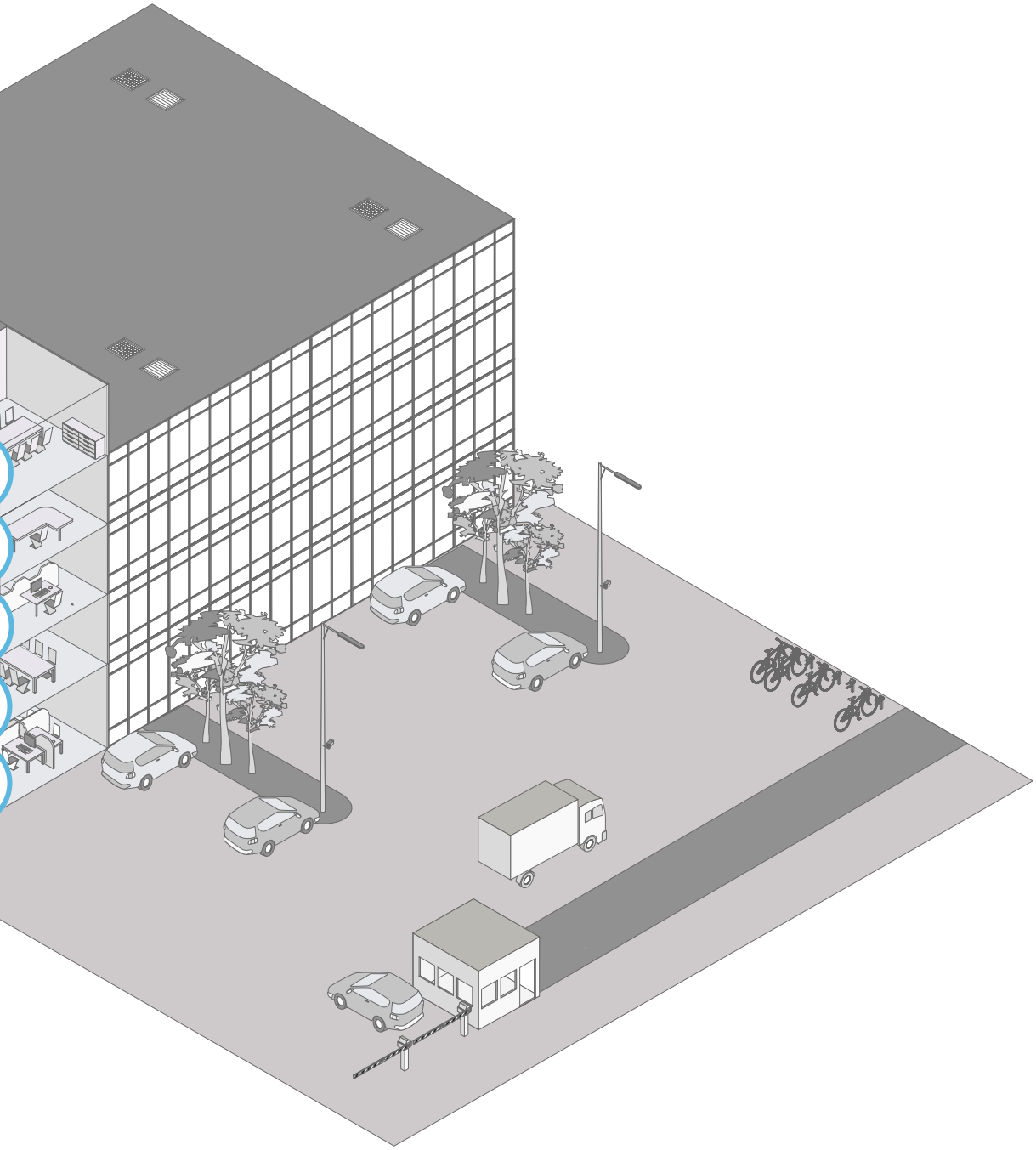
Site description

Site description:

- small office,
- multi tenants
- external parking.

5 floors 2 500 m²:

- 1st floor = 1 meeting room + 1 conference room + 19 offices
- other floors = 2 meeting rooms + 23 offices.



SUMMARY

Solution

This solution enables the Building Owner to:

- Allocate per floor the electrical and water energy costs.
- Ensure preventive maintenance is done for high invest equipment such as Air Handling Unit and Heat pumps.
- Monitor energy consumptions to detect energy waste during closed hours.
- Monitor Power demand and Power Factor to optimize the electricity tariff.

This solution enables the Facility Operations team to:

- Be alerted 24/7 on mobile when the IT server room, anti-intrusion alarm system, smoke extraction are no more supplied.
- Prove the job is done with immediate intervention reports.
- Access quickly on mobile to all information of an equipment (intervention history, user manual, single line diagram, …).
- Avoid wasting time doing manual meter readings.

Bill Of Material

Product	Function	Part number / range
EcoStruxure™ Facility Expert	Cloud-based software and app to optimize energy operations and maintenance management of your facilities	Depends on license
Com'X 210/510	Data logger to collect data and publish them hourly to Facility Expert	EBX210/EBX510
Smartlink SI B	Wireless to Modbus TCP/IP Concentrator I/O block for water	A9XMZA08
PowerTag Link	Wireless to Modbus TCP/IP Concentrator	A9XMWD20

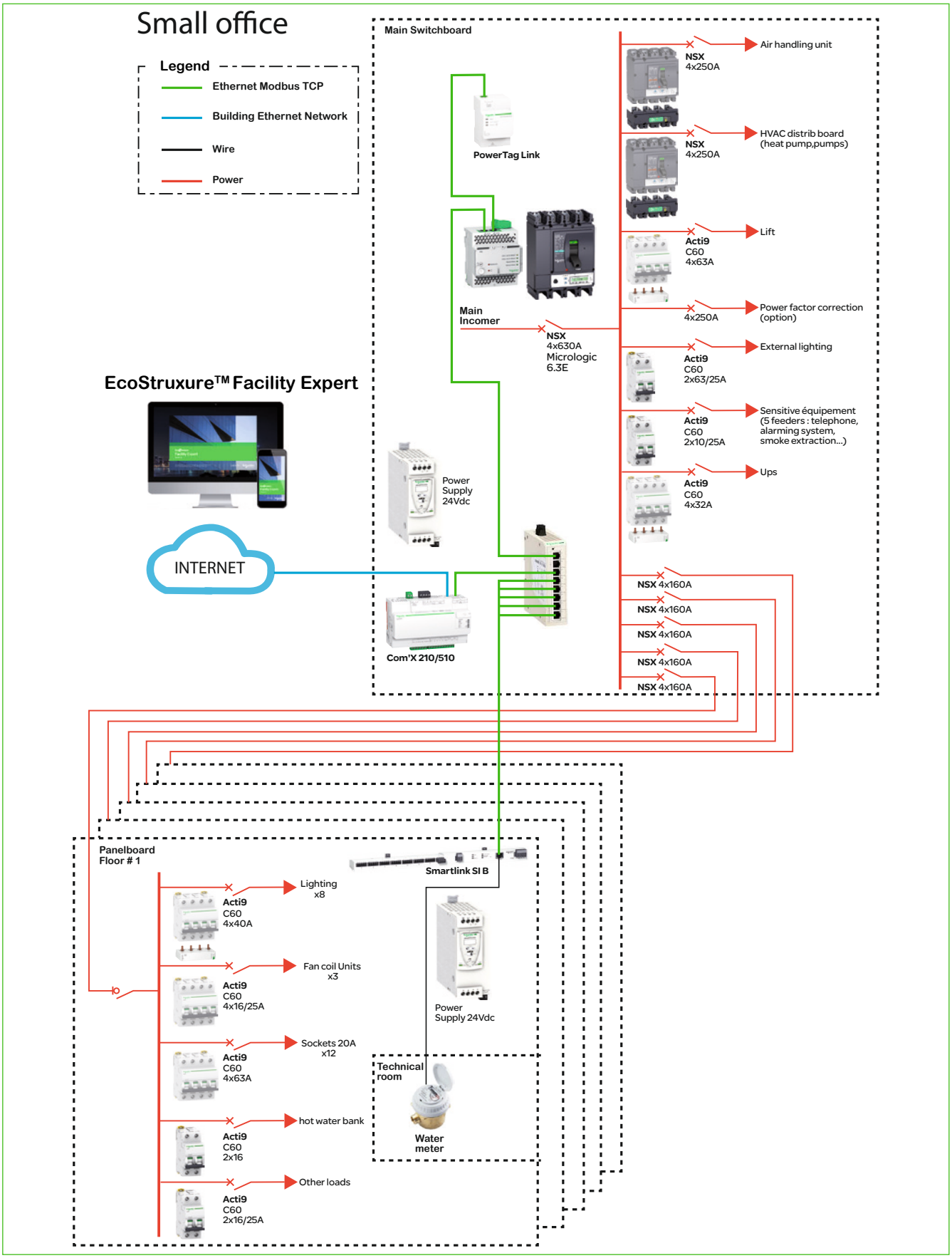
LV434021

Product	Type	Cat. no.
PowerTag Energy 250/630A Wireless sensor to measure energy and/or to detect voltage loss	M250 3P	LV434020
	M250 3P+N	LV434021
	M630 3P	LV434022
	M630 3P+N	LV434023

A9MEM1521

Product	Type	Mounting	Short description	Cat. no.
PowerTag Energy M63 Wireless sensor to measure energy and/or to detect voltage loss	1P + wire	Top or bottom	PowerTag Energy M63 1PW	A9MEM1520
	1P+N	Top	PowerTag Energy M63 1PN T	A9MEM1521
		Bottom	PowerTag Energy M63 1PN B	A9MEM1522
	3P	Top or bottom	PowerTag Energy M63 3P	A9MEM1540
			PowerTag Energy M63 3P 230V LL	A9MEM1543
	3P+N	Top	PowerTag Energy M63 3PN T	A9MEM1541
		Bottom	PowerTag Energy M63 3PN B	A9MEM1542

SUMMARY



Other types of PowerTags can be used.

SUMMARY

3.4.3. High school

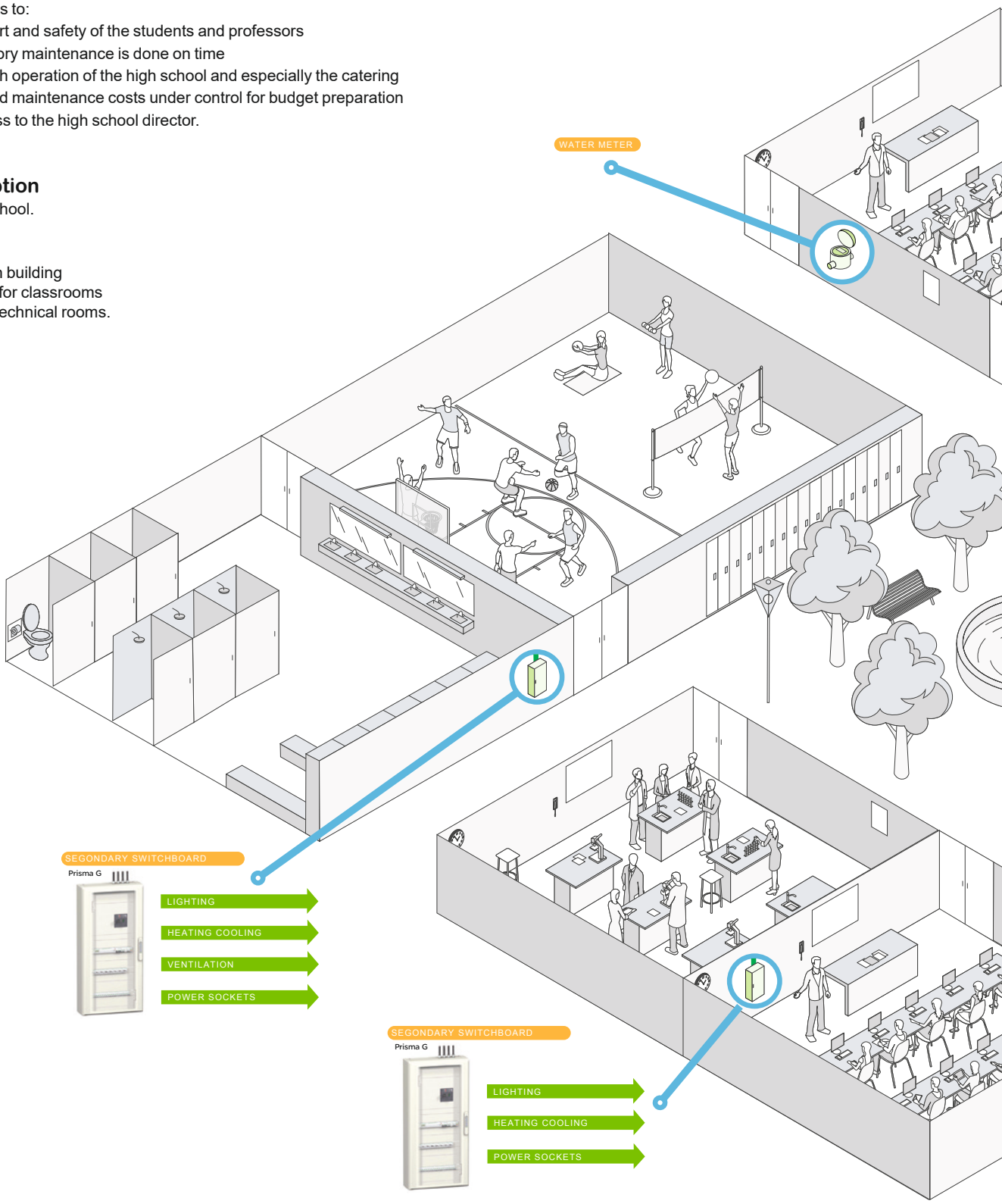
Customer needs

The bursar wants to:

- ensure comfort and safety of the students and professors
- prove regulatory maintenance is done on time
- ensure smooth operation of the high school and especially the catering
- put energy and maintenance costs under control for budget preparation
- report progress to the high school director.

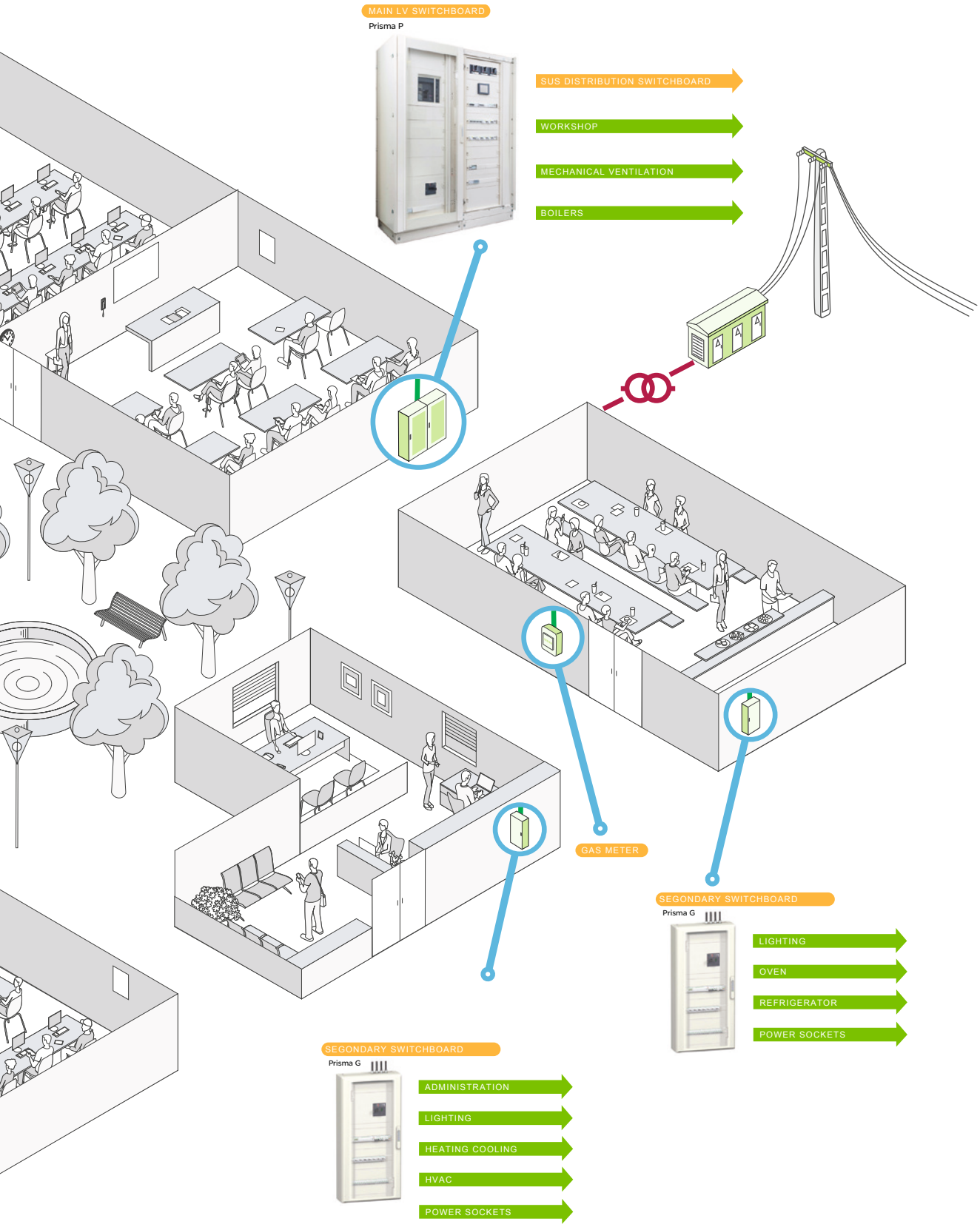
Site description

- Secondary school.
- 500 students.
- 4 main parts:
  - administration building
  - two buildings for classrooms
  - catering and technical rooms.



High school representation

SUMMARY


MAIN LV SWITCHBOARD
Prisma P
SUS DISTRIBUTION SWITCHBOARD
WORKSHOP
MECHANICAL VENTILATION
BOILERS
GAS METER
SEGONDARY SWITCHBOARD
Prisma G
LIGHTING
OVEN
REFRIGERATOR
POWER SOCKETS
SEGONDARY SWITCHBOARD
Prisma G
ADMINISTRATION
LIGHTING
HEATING COOLING
HVAC
POWER SOCKETS

SUMMARY

Solution

This solution enables to:

- Notify 24/7 the maintenance team when equipment (restaurant cold room, boilers, air handling Unit ...) are no more supplied.
- Record maintenance interventions with an associated report.
- Monitor when and where the energy is consumed in the facilities and detect abnormal consumptions during closed hours.
- Be alerted in case of peaks or low power factor to avoid penalties on the electricity bill.
- Detect water leaks.

Bill Of Material

Product	Function	Part number / range
EcoStruxure™ Facility Expert	Cloud-based software and app to optimize energy operations and maintenance management of your facilities	Depends on license
Com'X 210/510	Data logger to collect data and publish them hourly to Facility Expert	EBX210/EBX510
PowerTag Link	Wireless to Modbus TCP/IP Concentrator	A9XMWD20
Smartlink SI B	Wireless to Modbus TCP/IP Concentrator I/O block for water	A9XMZA08
IFE	Ethernet interface for LV breaker	LV434001

LV434021

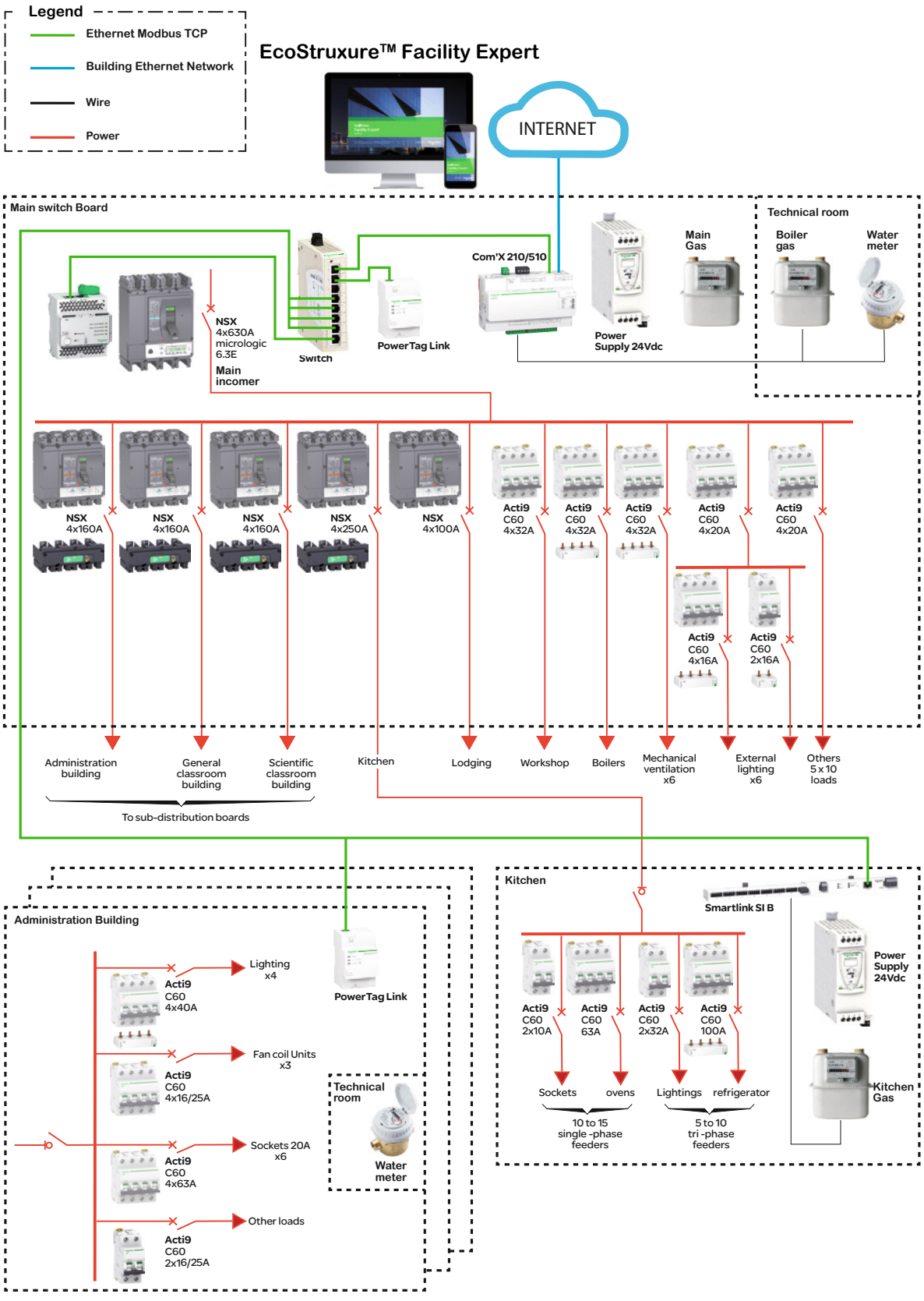
Product	Type	Cat. no.
PowerTag Energy 250/630A Wireless sensor to measure energy and/ or to detect voltage loss	M250 3P	LV434020
	M250 3P+N	LV434021
	M630 3P	LV434022
	M630 3P+N	LV434023

A9MEM1521

Product	Type	Mounting	Short description	Cat. no.
PowerTag Energy M63 Wireless sensor to measure energy and/ or to detect voltage loss	1P + wire	Top or bottom	PowerTag Energy M63 1PW	A9MEM1520
	1P+N	Top	PowerTag Energy M63 1PN T	A9MEM1521
		Bottom	PowerTag Energy M63 1PN B	A9MEM1522
	3P	Top or bottom	PowerTag Energy M63 3P	A9MEM1540
			PowerTag Energy M63 3P 230V LL	A9MEM1543
	3P+N	Top	PowerTag Energy M63 3PN T	A9MEM1541
		Bottom	PowerTag Energy M63 3PN B	A9MEM1542

SUMMARY

High School



Other types of PowerTags can be used.

SUMMARY

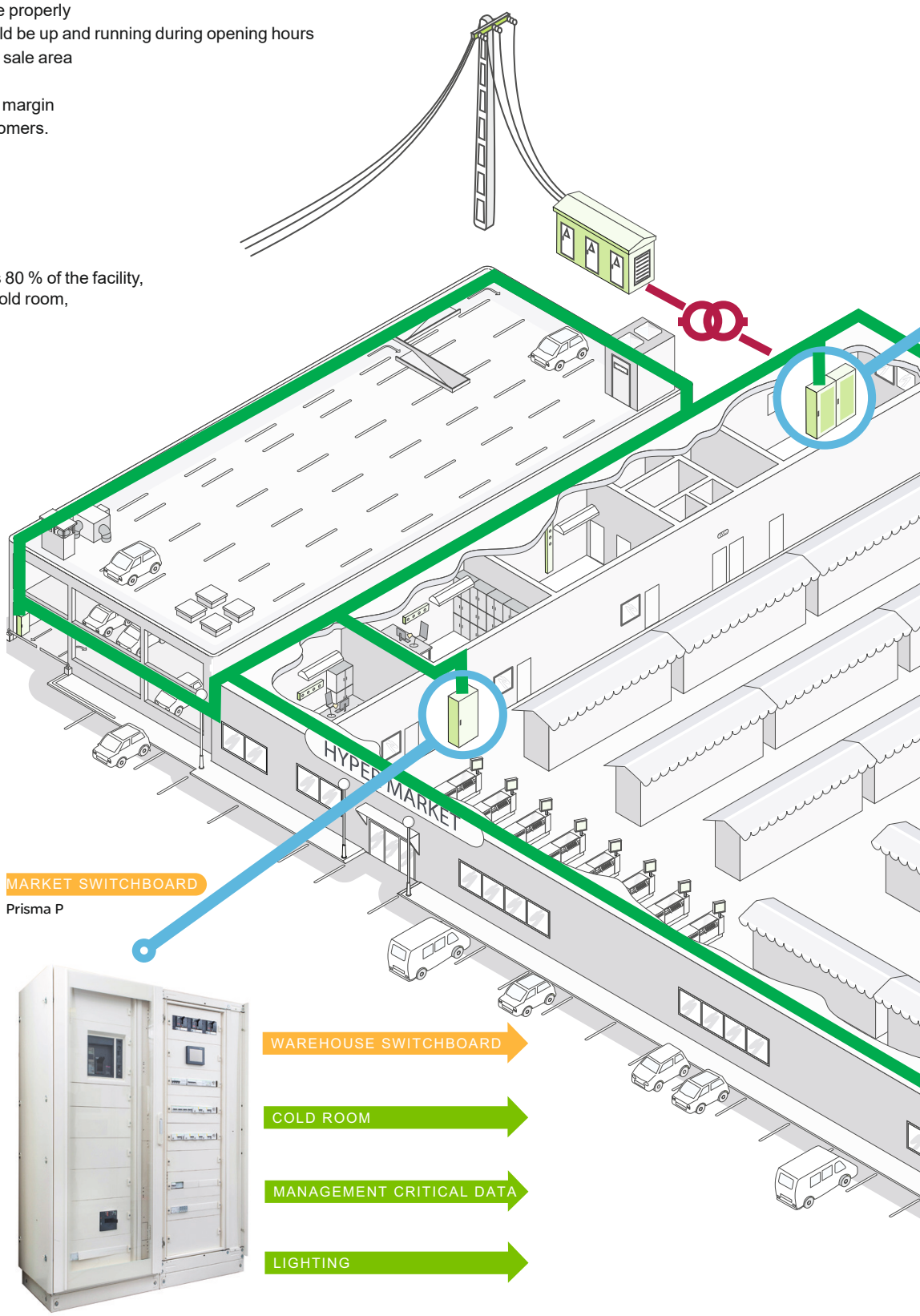
3.4.4. Supermarket

Customer needs

- Ensure food refrigeration operate properly
- Lighting and cash registers should be up and running during opening hours
- Ensure customers comfort in the sale area
- Prove regulatory compliance
- Reduce energy costs to improve margin
- Show green image towards customers.

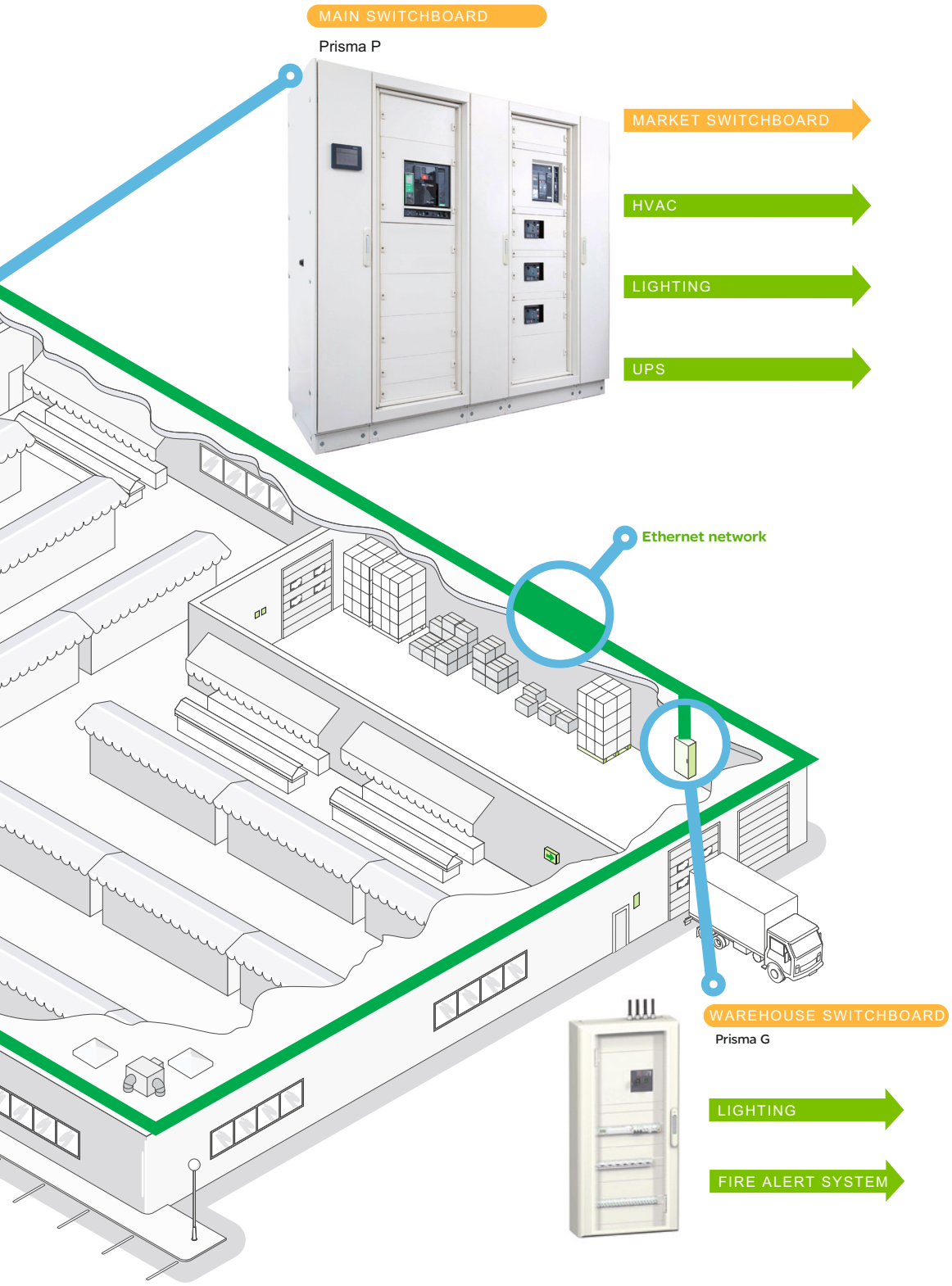
Site description

- 5 000 m²
- Installed Power 2000 kVA
- 1 floor, the sales area represents 80 % of the facility, external parking, warehouse with cold room, office and cloakrooms.



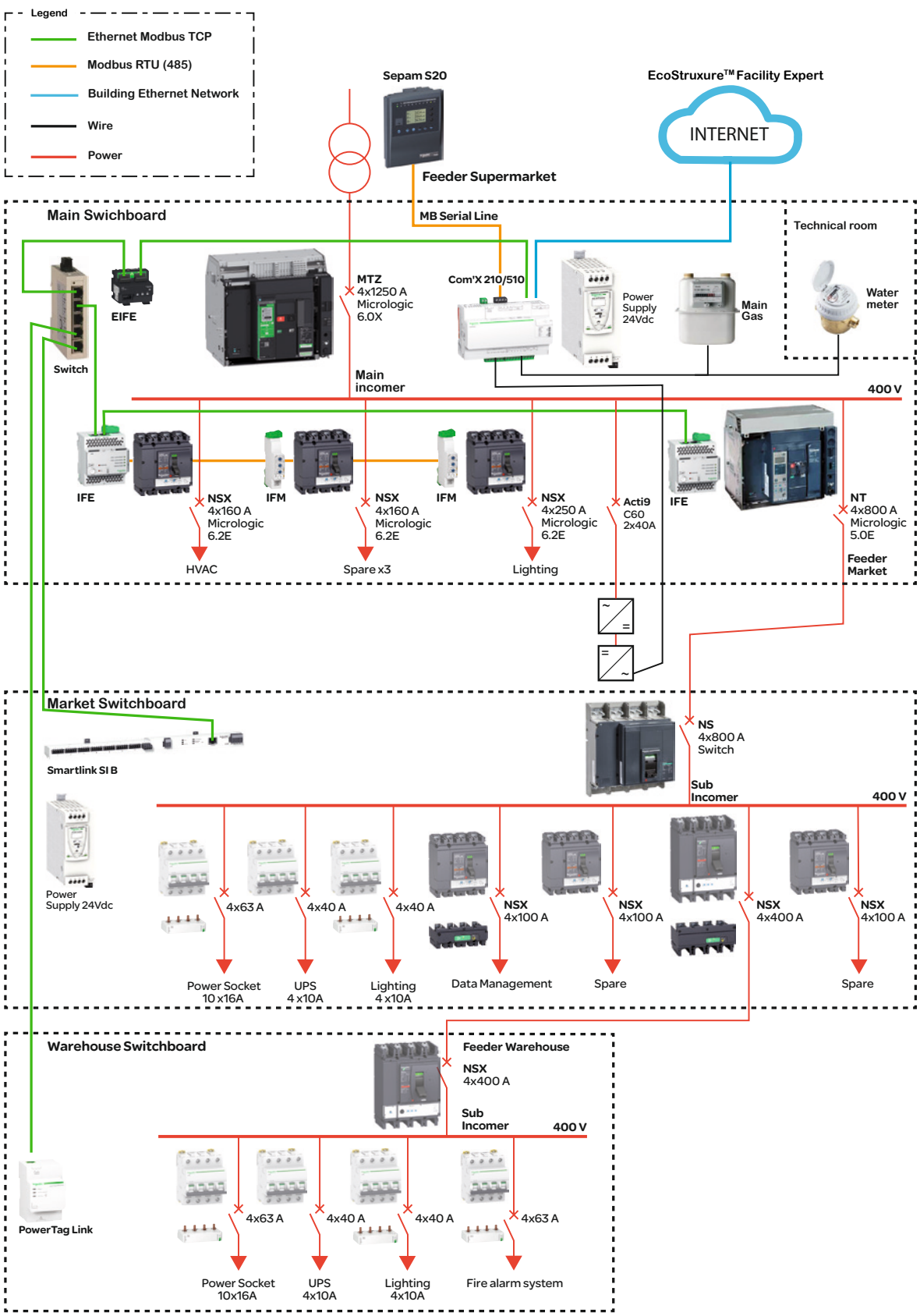
Hypermarket building representation

SUMMARY


MAIN SWITCHBOARD
Prisma P
MARKET SWITCHBOARD
HVAC
LIGHTING
UPS
Ethernet network
WAREHOUSE SWITCHBOARD
Prisma G
LIGHTING
FIRE ALERT SYSTEM

SUMMARY

Supermarket



Other types of PowerTags can be used.

SUMMARY

Solution

This solution enables to:

- Notify 24/7 the maintenance team when equipment (cold room, rooftop, bakery oven...) are no more supplied.
- Be alerted when cash registers UPS run on low battery or when the battery has to be changed.
- Record all regulatory maintenance interventions with an associated report.
- Monitor when and where the energy is consumed in the supermarket and detect abnormal consumptions during closed hours.
- Be alerted in case of peaks or low power factor to avoid penalties on the electricity bill.
- Be alerted in case of high harmonics on your electrical network and plan corrective actions to avoid lighting disturbances.
- Display energy savings on a screen at the supermarket entrance.

Bill Of Material

Product	Function	Part number / range
EcoStruxure™ Facility Expert	Cloud-based software and app to optimize energy operations and maintenance management of your facilities	Depends on license
EcoStruxure™ Energy Kiosk Option	Animated energy kiosk	SVSFEOPT007
Com'X 210/510	Data logger to collect data and publish them hourly to Facility Expert	EBX210/EBX510
PowerTag Link	Wireless to Modbus TCP/IP Concentrator	A9XMWD20
Smartlink SI B	Wireless to Modbus TCP/IP Concentrator I/O block for water	A9XMZA08
IFE	Ethernet interface for LV breaker	LV434001
eIFE	Embedded Ethernet interface fo Masterpact MTZ	LV851001

LV434021

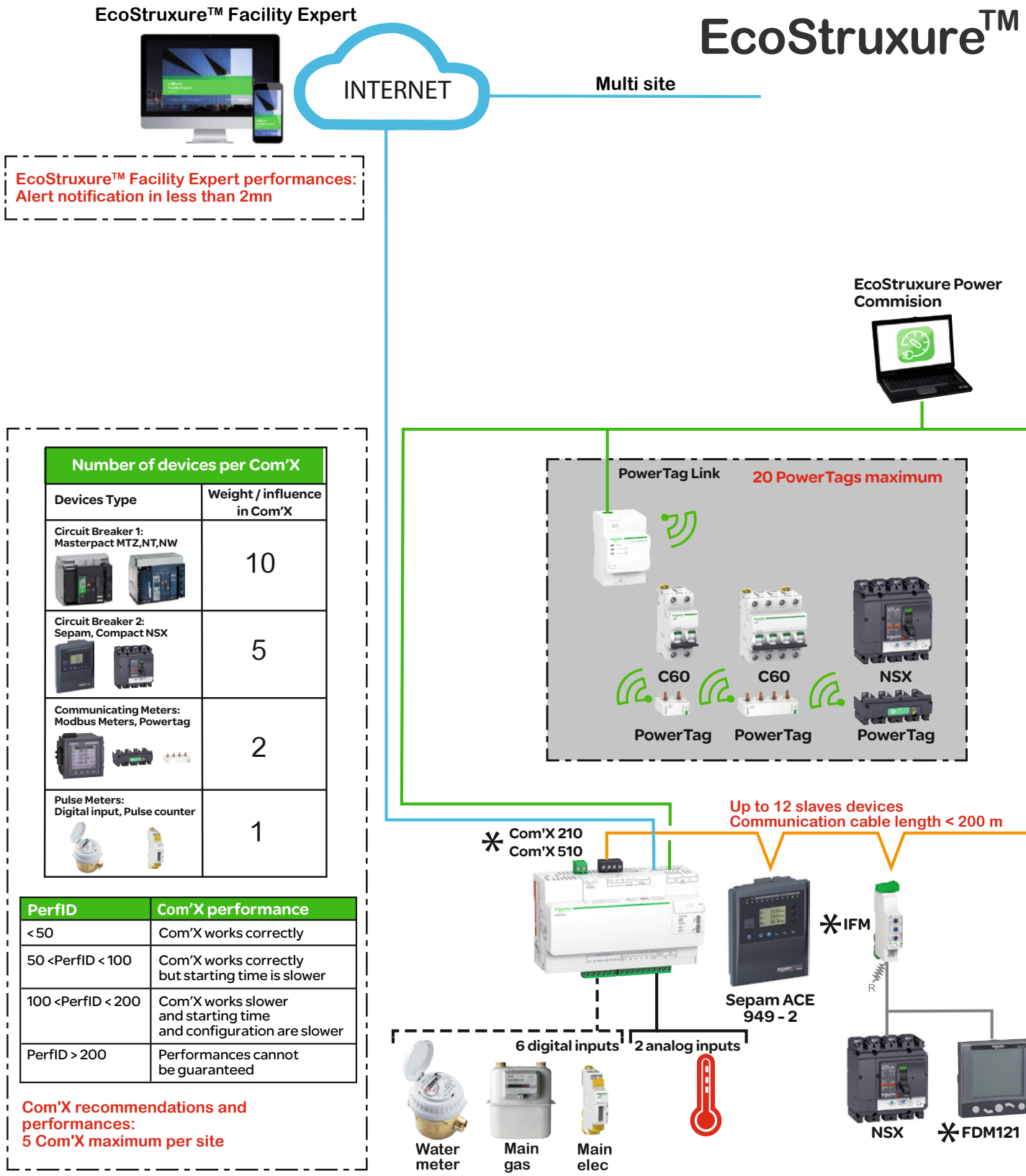
Product	Type	Cat. no.
PowerTag Energy 250/630A Wireless sensor to measure energy and/ or to detect voltage loss	M250 3P	LV434020
	M250 3P+N	LV434021
	M630 3P	LV434022
	M630 3P+N	LV434023

A9MEM1521

Product	Type	Mounting	Short description	Cat. no.
PowerTag Energy M63 Wireless sensor to measure energy and/ or to detect voltage loss	1P + wire	Top or bottom	PowerTag Energy M63 1PW	A9MEM1520
	1P+N	Top	PowerTag Energy M63 1PN T	A9MEM1521
		Bottom	PowerTag Energy M63 1PN B	A9MEM1522
	3P	Top or bottom	PowerTag Energy M63 3P	A9MEM1540
			PowerTag Energy M63 3P 230V LL	A9MEM1543
	3P+N	Top	PowerTag Energy M63 3PN T	A9MEM1541
		Bottom	PowerTag Energy M63 3PN B	A9MEM1542

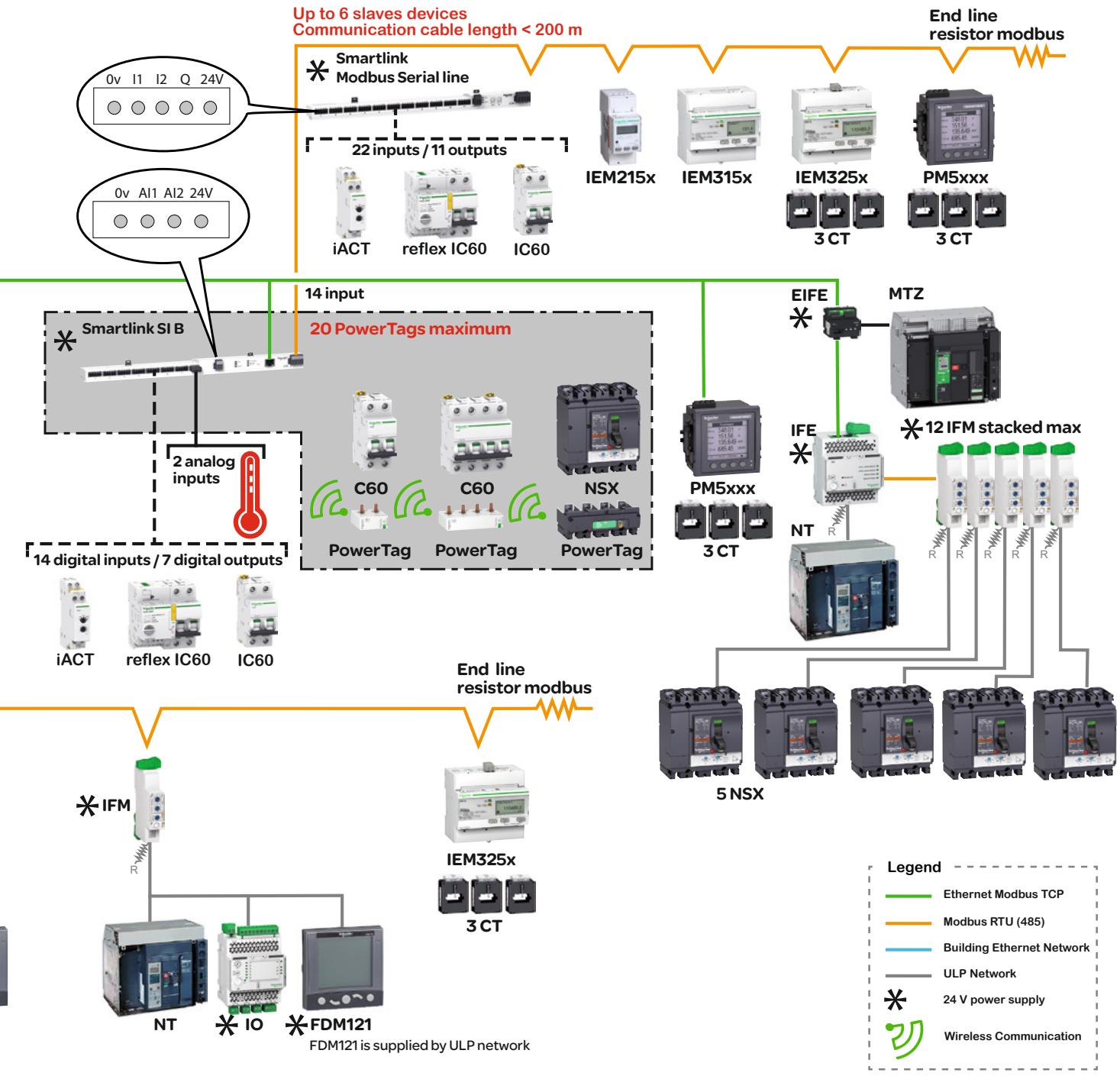
SUMMARY

4.1. Typical architecture



SUMMARY

Power



SUMMARY

4.2. EMC

The EMC levels of the Enerlin'X devices range are compliant with Building IT minimum levels, considered necessary for a good robustness on site, with level harmonization for products used in solutions. These levels do not supersede the applicable device standards; the higher level shall be applied.

- Immunity to Electrostatic discharges IEC61000-4-2.
- Immunity to Radiated electromagnetic field IEC61000-4-3.
- Immunity to Electric Fast transients IEC61000-4-4.
- Immunity to Lightning surge IEC61000-4-5.
- Immunity to conducted disturbances, induced by radio-frequency fields IEC61000-4-6.
- Immunity to Voltage dips & interruption IEC61000-4-11.
- Immunity to conducted, common mode disturbances in the frequency range 0 Hz to 150kHz IEC61000-4-16.
- Conducted and radiated emissions.

Each individual Enerlin'X devices are compliant or even above the international standard regarding immunity for residential, commercial and light industry environments (site directly connected to a low voltage public mains network or connected to a dedicated DC source).

The target is to reach the immunity level of severe industrial environments and the emission level of residential, commercial and light industry environments (Class B).

Therefore tests are carried out at Smart Panel level inside Prisma enclosure in real environment (Loaded cubicle).

Smart Panel offer in Prisma enclosure is fully compliant with international standard regarding emission levels for residential, commercial and light industry environments and immunity for severe industrial environments.

To reach the level corresponding to the most severe situation in industrial environments (Immunity) installation rules should be put in place. Schneider Electric recommendation (assembly and cabling) are given.

4.3. Cyber security

Device connectivity is becoming more prevalent in as buildings increasingly rely on off-site personnel to troubleshoot and fix detected problems. Connecting the Masterpact MTZ and Enerlin'X devices to an internet router gives the possibility to send notifications. However, connecting your devices to internet services will create threats for security. You are encouraged to read a complementary Schneider Electric System Technical Note, How can I Reduce Vulnerability to Cyber Attacks?
The document is available in the Schneider Electric global website from the download section.

For example, the Masterpact MTZ, IFE and IO Module come with a firmware signature to assure that the firmware is coming from Schneider Electric. In addition, the Masterpact MTZ system can be hardened for security with communication network separation, implementing a regular check of firmware for security updates and strong password management. These features provide a higher level of security for an electrical switchboard. For the Masterpact MTZ, you are encouraged to read a complementary guide, Masterpact MTZ - Cybersecurity Guide (DOCA0122EN).

Schneider Electric recommends a defense-in-depth approach to cyber security. No single approach is adequate. The defense-in-depth approach layers the network with security features, appliances, and processes. When connecting devices to networks, you should configure a network structure with one or more firewall devices (software firewalls are not recommended). The following architectures are presented to demonstrate how to increase the level of security.

Recommended communication Architecture with Com'X

Com'X allows separating the Ethernet communication network of the electrical assets from the Building's IT network. Network separation provides a secure way to connect Smart Panels to the Facility Manager office through the building's communication network infrastructure.

The Facility Manager can access an energy dashboard and electrical asset information on-site or remotely when connected to the Internet. Com'X provides a security barrier to manage the Smart Panels' remote connection and maintain the capability to send electrical alarms notifications to a Facility Manager or electrical maintenance team.

When the network is separated via Com'X, direct access to Enerlin'X device webpages is not permitted unless a direct physical connection is made with the electrical switchboards. Com'X adds a layer of cyber security hardening while securing access to your electrical data.

SUMMARY

Cloud-based software Cybersecurity details

Facility-Expert is a Mobile and Web based application. 100% of corresponding back-end services are hosted on Microsoft Azure Cloud.

SECURE DEVELOPMENT LIFECYCLE

Schneider Electric is continuously monitoring the changing security landscape of cryptography and cybersecurity to ensure that we offer the best available protections to our customers and their sensitive data.

Our development practices follow a Secure Development Lifecycle which insure a high level of code quality and usage of up-to-date libraries in order to insure an optimal level of Cybersecurity.

Facility-Expert application as well as all Schneider Electric cloud systems are regularly audited by an internal process which include Penetration Tests.

CERTIFIED DATA CENTERS

Our cloud services are physically deployed across multiple Microsoft Azure data centers. Microsoft data centers are world-class facilities with more certifications than any other cloud provider.

The data centers used by Facility-Expert are located in East US (Virginia), West Europe (Netherland) and North Europe (Irland).

Certifications and compliance achievements include ISO/IEC 22301, 27017, 27018 and ISO/IEC 27001 in addition to SOC 1, SOC 2 and SOC 3.

To learn more about Microsoft's Azure data centers, please visit: https://azure.microsoft.com/en-us/support/trust-center/

DATA SECURITY AT REST

Schneider Electric follow best practices to create highly secured solution and to limit the risk of data being compromised in any meaningful manner while protecting the privacy, control and autonomy of each customer's data independently from any other.

Our solution is including:

- Customer information (PIM: password, email, profile) is stored and encrypted in a corporate Identity Management System (IMS).
- System to system credentials and tokens are stored and encrypted in EcoStruxure™ Facility-Expert databases located in the Microsoft Cloud Azure.
- Customer functional data including time-series is segregated logically in the EcoStruxure™ Facility-Expert SQL database located in Microsoft Cloud Azure.
- Customer data is encrypted at rest in Facility Expert databases.

DATA SECURITY IN MOTION

Schneider Electric with EcoStruxure™ Facility Expert implement best practices as:

- All communications to and from EcoStruxure™ Facility-Expert with internal Schneider Electric systems or external third-party systems, are encrypted using HTTPS (minimum level required is TLS 1.2).
- Certificate involved in these encrypted sessions are leveraging SHA 256 secure hash algorithm.
- This also applies to communications between our on-premises data loggers (Com'X, SE8000, D-PAS, B-PAS) and Schneider Cloud platform.

Schneider Electric is continuously monitoring the changing security landscape of cryptography and cybersecurity to ensure that we offer the best available protections to our customers and their sensitive data.

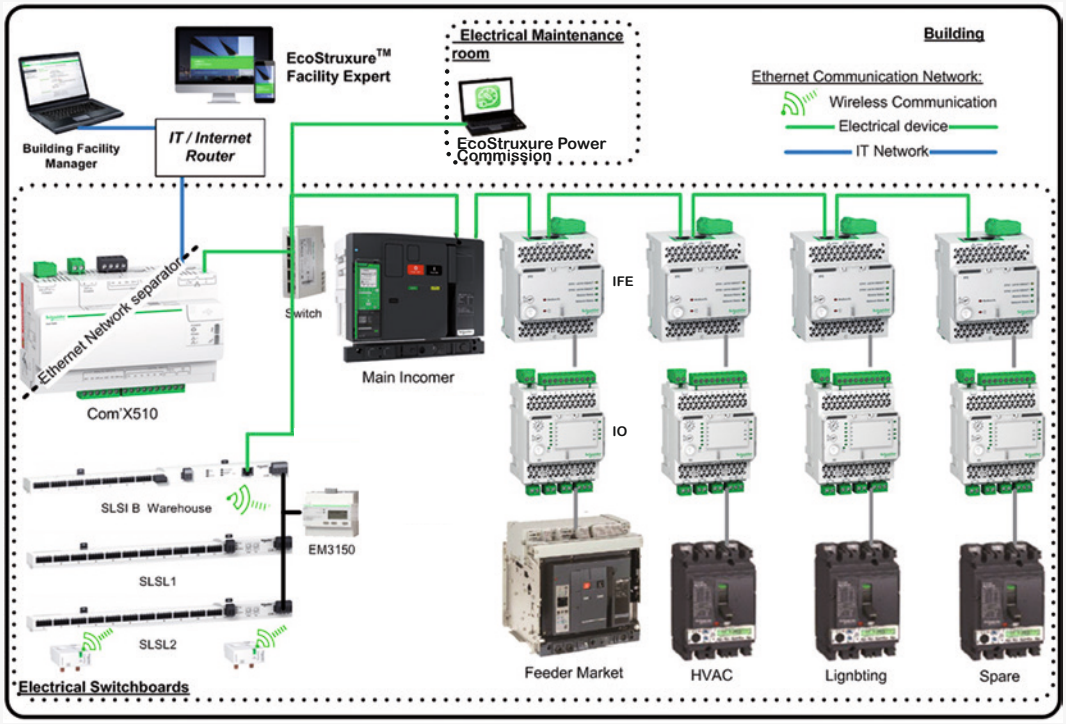
DATA PRIVACY

Schneider Electric focuses on securing data flows coming from connected products and solutions (whether they connect to non-Schneider hosts or platforms managed by Schneider Electric), and on aligning to the latest data integrity and privacy regulatory requirements such as the European General Data Protection Regulation (GDPR).

- Data policy is compliant to local regulation.
- Customer Data Use and Protection policy to be electronically signed by the Responsible of the site (Building owner, Tenant, …). No Data will be exported without this agreement.

Data remains customer ownership.

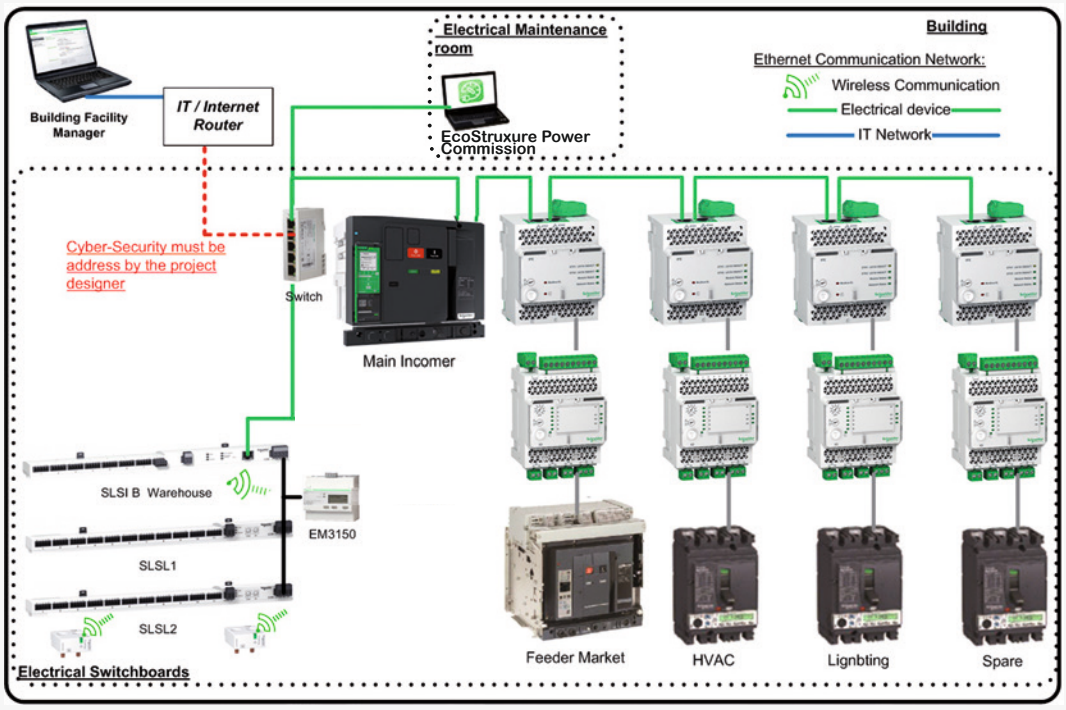
SUMMARY



Electrical network communication architecture separation, with Com'X

The above architecture is recommended by Schneider Electric. Please refer to Com'X cybersecurity guide (reference) for more information.

Alternate communication Architecture without Com'X



Alternate electrical network communication architecture without Com'X

In the event the customer wants to use an alternate communication architecture, the network should be adapted for the appropriate level of cybersecurity for the complete site. Please see the cybersecurity recommendations outlined previously outlined.

SUMMARY

Schneider Electric Cloud Platform

The use of security certificates on Schneider Electric servers ensures that any data communicated is kept confidential and secure (this information will be sent to the selected server).

Schneider Electric servers are located in a highly secure and failproof environment. Access to these servers is controlled via a security policy.

Data are transmitted over Hypertext Transfer Protocol Secure (HTTPS) which encrypts data during transmission to improve the security of exchanges.

Rules and recommendations

Communication

The RJ45 ULP termination is mandatory on each empty ULP RJ45.
The end of line Modbus termination is mandatory.

SFTP Cat6 or Cat5 Ethernet RJ45 cables are mandatory for communication signals.

No Modbus devices, such as a Smartlink Serial Line with Common 0V potential, should be connected to IFM.

It's recommended not to exceed 8 Modbus slaves for one Modbus master. This will ensure a better response time (Enerlin'X IFE+ or Smartlink Ethernet).
To optimize the communication system, stack IFMs on IFE (better performance and behavior with EMC aspect).

SUMMARY

Appendix

Auxiliary power supplies

The voltage range on the Enerlin'X device should be 24Vdc +/-10%

The OverVoltage Category (OVC) of the mains input on the 24V supply should be compatible with the location at which it is connected on the mains installation network.

ULP modules have current integrated protection equal to 3A with Icc = 20A. The 24Vdc external power supply should be able to protect the ULP module with Icc limitation equal to 20A maximum.

It is recommended to use Star topology to limit EMC disturbances.
The connection between the power supply and terminal block (+/-) should be as short as possible. In case of daisy chaining, connect the last apparatus to the power supply with an additional cable.

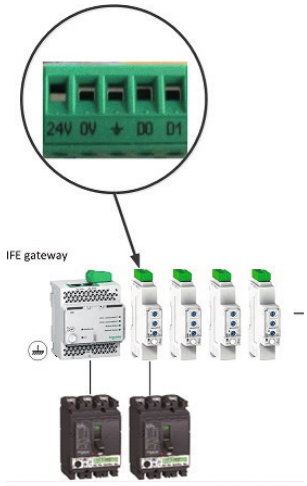
All IFE & IO modules should have a direct connection with the power supply and cannot be supplied through ULP.

If several stacked IFMs are not stacked with an IFE, only one of the IFMs should have a direct connection with the power supply.

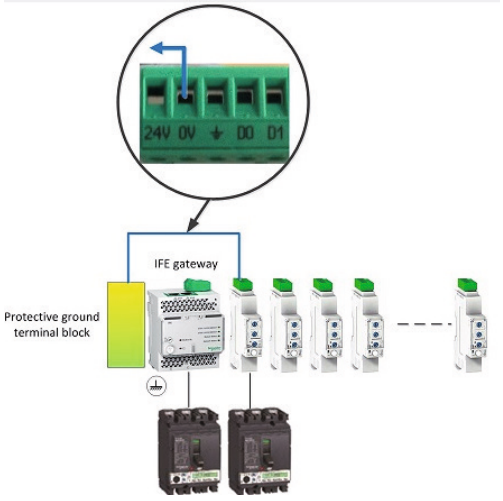
BSCM + µlogic NSX or BCM Masterpact are directly supplied through one of the two RJ45 ULP ports of IFE/IFM or IO modules.

No more than 2 x IO modules can be used on an ULP bus.

Masterpact Micrologic should be supplied by a dedicated AD power supply (see the bill of materials for more details).



If no IFMs are used, 0V should be connected to a protective ground terminal block at power supply level. No other devices should have 0V connected to ground.



The 0V on IFMs is only connected to a protective ground terminal block at one point (first stacked IFM) on the Modbus line. No other devices should have 0V connected to ground.

SUMMARY

The number of power supply segments is limited to 3 with a maximum rating of 5A. 0V, D0 and D1 are distributed along the Modbus lines. For further information please refer to the ULP guide.

In case of a floating power supply and without IFM installed, the number of NSX Micrologics is limited by earth leakage currents as follows:

Example: if Compact NSX Micrologics are used on 690VAC, then the maximum number allowed on the complete system will be: 500 µA/54 = 9 (500 µA is the normative rate given by electrical authorities for this application field).

Ue - VLN/ULL	Breaker ratio (Compact NSX)
66/115	9
127/220	17
230/400	31
347/600	47
400/690	54
/ 1000	
Vac	µA rms

Products nominal consumption

Devices 24 V DC	W	mA
IFE, EIFE	2.88	120
IFM	0.72	30
FDM121	0.72	30
IO module	3.96	165
Masterpact BCM ULP	1.56	65
Micrologic 5, 6 NSX	1.32	55
NSX BSCM ULP	0.36	15
Micrologic E, P, H, Masterpact	2.4	100
Micrologic E, P, H, Masterpact MC2 or MC6	4.8	200
1 Input of IO module	0.12	5
1 Output of IO module	2.4	100
Smartlink Modbus	0.84	35
Smartlink Ethernet	2.64	110
Smartlink SI B	2.64	110
OF/SD24, iOF/SD24	0.24	10
iACT24, iATL24	0.36	15
Reflex iC60, RCA iC60	0.36	15
1 pulse meter iEM2010	0.12	5
2 pulse meters iEM2010	0.12	5
FDM128	6.84	285
COM'X 24 V DC	5.2	

Devices 220 V	W	mA
PowerTag Link	5	45

Reference	W	A
ABL8MEM24003	7.20	0.3
ABL8MEM24006	14.4	0.6
ABL8MEM24012	28.8	1.2
ABL8MEM24030	72	3
ABL8MEM24050	120	5
ABL8MEM24100	240	10

Reference	W	A
ABL8MEM24003	7.20	0.3
ABL8MEM24006	14.4	0.6
ABL8MEM24012	28.8	1.2
ABL8RPS24030	72	3
ABL8RPS24050	120	5
ABL8RPS24100	240	10

SUMMARY

Appendix

Ethernet communication architectures

Star topology

Star topology is a communication architecture in which each device is connected individually to a central node, generally a switch.

Advantages

Star topology is more robust:

- It helps reduce damage caused by the malfunction of a device (if one device is defective, communication is still possible with the other devices).
- It is possible to add or remove as many devices as desired without disrupting the network.

Disadvantages

- This topology requires a large amount of wiring and is therefore less economical.
- The central node is the single point of failure of the entire network.

Series topology

Series topology is a communication architecture in which all the devices are connected to each other successively. Each node is connected to the preceding and subsequent nodes, except the first and last nodes.

Advantages

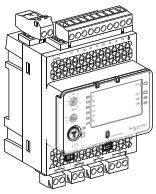
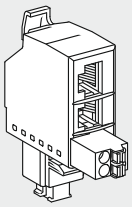
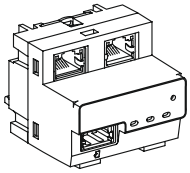
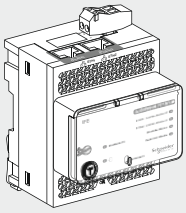
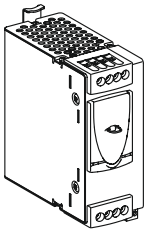
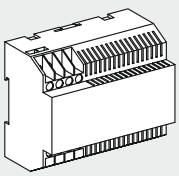
- This topology is more economical: the amount of wiring required for this installation is optimized.
- It is easy to add devices to this topology.

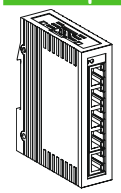
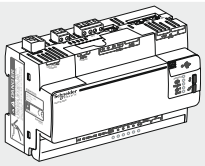
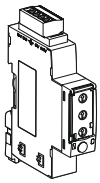
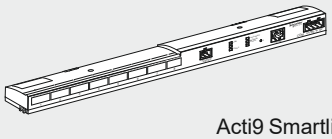
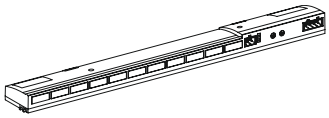
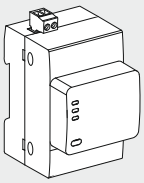
Disadvantages

- All the nodes in the network are points of failure of the entire network.
- It is complicated to remove devices from the chain.
- All the devices in the chain should be equipped with two RJ45 ports for connection purposes. A device with only one such port can only be placed at the beginning or end of the chain. Only 2 such devices can therefore be used.

SUMMARY

Bill of materials

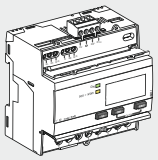
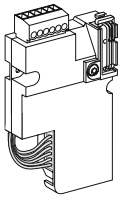
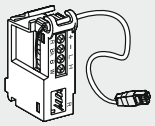
Description		Reference
	I/O application module	**LV434063**
	ULP port	**LV850061SP**
		LV850062SP
	EIFE	**LV851001**
	IFE, EIFE Ethernet interface for LV breaker	**LV434001**
	Ethernet interface for LV breakers and gateway	**LV434002**
	Power supply	**ABL8MEM24003**
		ABL8MEM24006
		ABL8MEM24012
		ABL8MEM24030
		ABL8MEM24050
		ABL8RPS24100
		ABL8RPS24200
	Power micrologic	**AD54440**
		AD54441
		AD54442
		AD54443
		AD54444
		AD54445

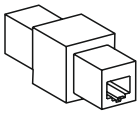
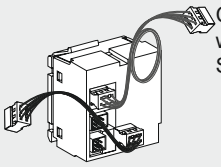
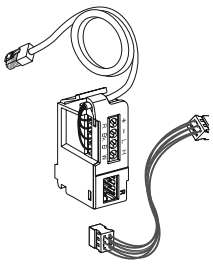
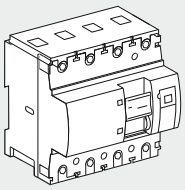
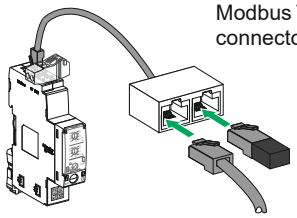
Description		Reference
	Ethernet Switch	**TCSESU053FN0**
		TCSESU083FN0
	Com'X 210 Com'X 510 Energy server	**EBX210** **EBX510**
	IFM V2	**LV434000**
	IS	**NVE85393-04**
	Stacker (set of 10)	**TRV00217**
	Acti9 Smartlink SI B	**A9XMZA08**
	Smartlink Modbus	**A9XMSB11**
	PowerTag Link	**A9XMWD20**

SUMMARY

Appendix

Bill of materials

Description			Reference
	IEM3150		**A9MEM3150**
	Communicating device with BCM (Breaker Control Module)		**33106**
	Internal terminal block		**33119**
	ULP cord, shielded cable	L = 0.35 m	**LV434195**
		L = 1.3 m	**LV434196**
		L = 3 m	**LV434197**
	Ethernet cable RJ45: ■ 10-100 mb ■ Length 100 m max ■ RJ45 cable, Category 6 SFTP, recommended	L = 1 m	**VDIP184546010**
		L = 0.5 m	**VDIP184546005**
	Modbus cable: ■ shielded twisted pair ■ RS485 standard + Power Supply ■ a roll of RS485 cable, 4 wires (2 x RS485 + 2 power supply) with a length of 60 m		**50965**
	10 ULP line terminators		**TRV00880**
	ULP cable, shielded cable	L = 0.3 m	**TRV00803**
		L = 0.6 m	**TRV00806**
		L = 1 m	**TRV00810**
		L = 2 m	**TRV00820**
		L = 3 m	**TRV00830**
		L = 5 m	**TRV00850**

Description			Reference
	5 RJ45 connectors female/female		**TRV00870**
	Communicating device with BSCM (Breaker Status & Control Module)		**LV434205**
	NSX cord shielded cable	L = 0.35 m	**LV434200**
		L = 1.3 m	**LV434201**
		L = 3 m	**LV434202**
	NG125	10 A	**18649**
	Modbus T connector	L = 0.3 m	**VW3A8306TF03**
		L = 1 m	**VW3A8306TF10**

SUMMARY

Bill of materials

LV434021

Product	Type	Cat. no.
PowerTag Energy 250/630A Wireless sensor to measure energy and/ or to detect voltage loss	M250 3P	LV434020
	M250 3P+N	LV434021
	M630 3P	LV434022
	M630 3P+N	LV434023

A9MEM1521

Product	Type	Mounting	Short description	Cat. no.
Power Tag Energy 63A Wireless sensor to measure energy and/ or to detect voltage loss	1P + wire	Top or bottom	PowerTag Energy M63 1PW	A9MEM1520
	1P+N	Top	PowerTag Energy M63 1PN T	A9MEM1521
		Bottom	PowerTag Energy M63 1PN B	A9MEM1522
	3P	Top or bottom	PowerTag Energy M63 3P	A9MEM1540
			PowerTag Energy M63 3P 230V LL	A9MEM1543
	3P+N	Top	PowerTag Energy M63 3PN T	A9MEM1541
		Bottom	PowerTag Energy M63 3PN B	A9MEM1542
PowerTag Energy P63 Wireless sensor to measure energy and/ or to detect voltage loss	1P +N	Top	PowerTag Energy P63 1PN T	A9MEM1561
		Bottom	PowerTag Energy P63 1PN B	A9MEM1562
	1P +N RCBO	Bottom	PowerTag Energy P63 1PN B for RCBO	A9MEM1563
	3P +N	Top	PowerTag Energy P63 3PN T	A9MEM1571
		Bottom	PowerTag Energy P63 3PN B	A9MEM1572
PowerTag Energy P63 Wireless sensor to measure energy and/ or to detect voltage loss	1P+N	Top or bottom	PowerTag Energy F63 1PN	A9MEM1560
	1P+N	Top or bottom	PowerTag Energy F63 1PN 110V	A9MEM1564
	3P	Top or bottom	PowerTag Energy F63 3P	A9MEM1573
	3P+N	Top or bottom	PowerTag Energy F63 3PN	A9MEM1570
	3P+N	Top or bottom	PowerTag Energy F63 3PN 127/220V	A9MEM1574

A9MEM1561

A9MEM1560

SUMMARY

Appendix

EcoStruxure™ Facility Expert

Subscription Name	Description	Main features	Reference*
EcoStruxure™ Facility Expert - Energy	Web portal access to view your energy consumption and costs Mobile App for manual meters reading Monthly score cards showing key energy metrics Includes 5 energy meter	• Energy consumption and costs monitoring (main, usage, zone, meter) • Consumption levels tracked during both business open and closed periods • Alerts on main energy demand if consumption exceeds set targets • Multi-site comparison capability • Energy site performance vs standard • Power demand and power factor monitoring and alerts • Monthly score card	SVSFE0002
EcoStruxure™ Facility Expert - Operations	"Web portal access to view asset status and condition Mobile app to access to asset information Includes 5 connected assets Unlimited users"	• Maintenance planning tool, asset log history and asset document library • Alarms on assets on threshold and status change • Monitor assets key variables (temperature, running hours, pressure...) • Preconfigured alarms for Schneider Electric assets (Masterpact, NSX, Sepam, PowerTag) • Maintenance report • Task manager tool with task reminders • Sharing of asset information and tasks across team • QR code to access and store asset information (Digital log book)	SVSFE0003

** Trial licenses available for 6 months.*

EcoStruxure™ Facility Expert

Learn more about EcoStruxure™ Facility Expert.
Contact us for more information.

Glossary

This section explains certain words or acronyms which might be unclear to a reader who does not know the system or the environment.

Term	Description
ACB	Air Circuit Breaker - Masterpact
Smartlink	Modular communication system for final distribution
BMS	Building Management System
DHCP	Dynamic Host Configuration Protocol
DPWS	Devices Profile for Web Services
DSP	Digital Service Platform
EcoStruxure Power Commission	Configuration software for LV circuit breaker (Masterpact - Compact NS - Compact NSX) and for Acti9 system
EMC	Electromagnetic Compatibility
EMS	Energy Management System
Enerlin'X	Name of the range of digital product in Schneider Electric
IT service	Information Technology service, manage the computers and network
LV	Low Voltage
MCB	Miniature Circuit Breaker - Acti9
MCCB	Molded Case Circuit Breaker - Compact NSX - Compact NS
Modbus	Serial line protocol, also known as Modbus RTU
SMTP	Simple Mail Transfer Protocol
TCP/IP	Ethernet protocol
Ti24 connector	Prefabricated connector in the Acti9 system
WAGES	Water Air Gas Electricity Steam
Ecostruxure™ Facility Expert	Cloud based software and app for energy and asset management

SUMMARY

Life Is On | Schneider Electric

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