



18 NOVEMBER

Switches & Fusegear have never been more connected
ABB Electrification

Presenters



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Digital Solutions



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Fusegear



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Transfer Switches



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Global Training Support
Specialist



Agenda

01. Introduction

02. ITS2 monitoring unit

03. Compact Secondary
Substations (CSS)

04. Electrical distribution for
building and infrastructure

05. Critical power

06. Q&A

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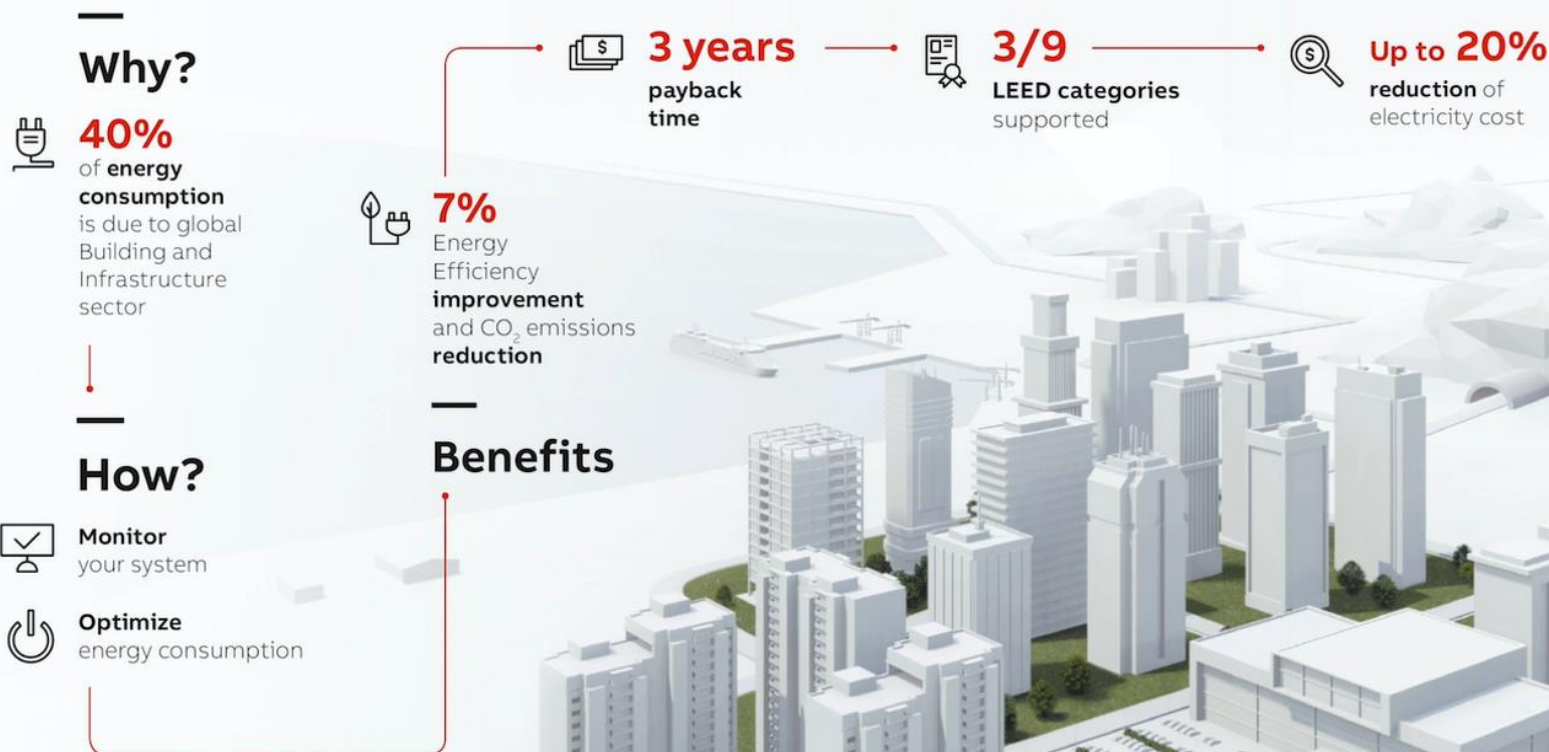
Introduction

Smart Metering and Monitoring

The winning choices to make your distribution system more efficient

ABB smart solutions for metering and monitoring are flexible and grant a 7% improvement in energy efficiency, ensuring access to LEED Certifications and allowing a payback time of less than 3 years.

Furthermore, you can connect your facility to the cloud in 10 minutes, start monitoring the entire electrical system and satisfy demanding new international standards and regulations.



Energy Efficiency in Electrical System

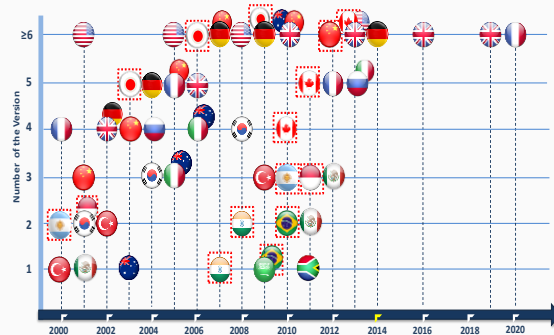
Certification & Standard

International Standard

- **ISO 50001 Energy management systems – Requirements with guidance for use (ISO 50001:2018)**
- **IEC 60364-8-3 ed. 1 Low-voltage electrical installations**
- **ANSI/ASHRAE/IES/USGBC Standard 189.1-2014, Standard for the Design of High-Performance Green Buildings**
- **UNI EN 15232 Energy performance of buildings – Impact of Building Automation, Controls and Building Management**

National Regulation

- Many Countries developed local regulation for measuring new constructions and renovations



European Directive

- The Energy performance of buildings directive requires that all new buildings must be nearly zero-energy buildings (NZEB) as of 31 December 2020
- Energy that NZEB require should come mostly from renewable energy sources

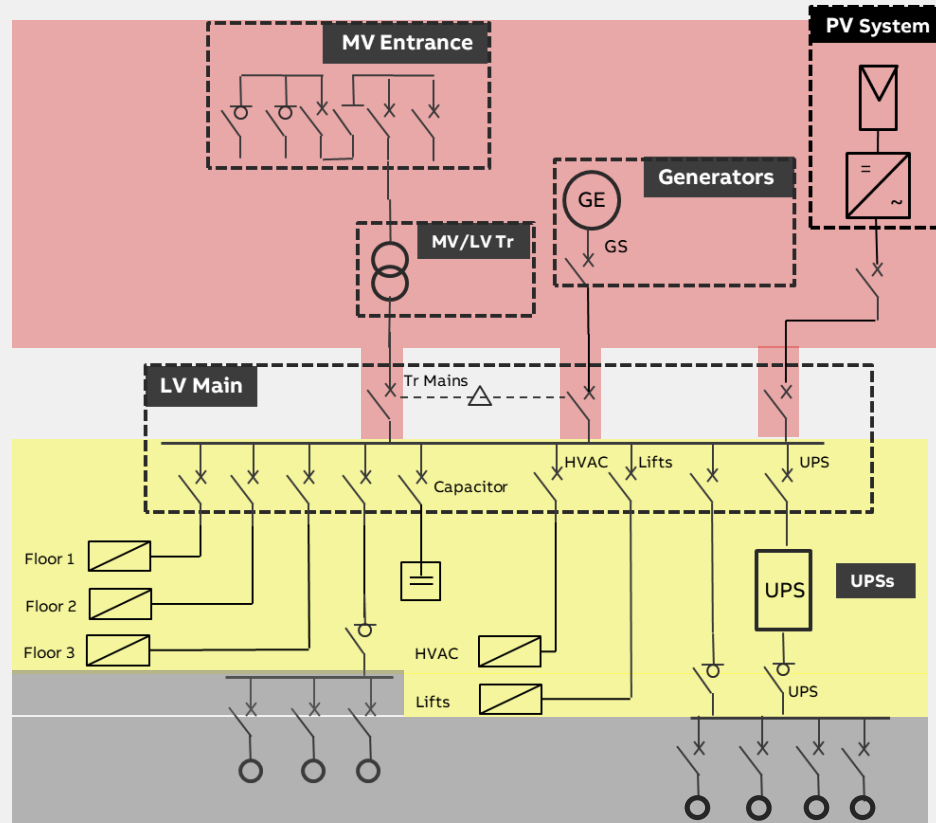
Certification System



Metering and monitoring is a key requirement for the energy efficiency improvements

Smart metering devices

ABB solutions for metering requirements



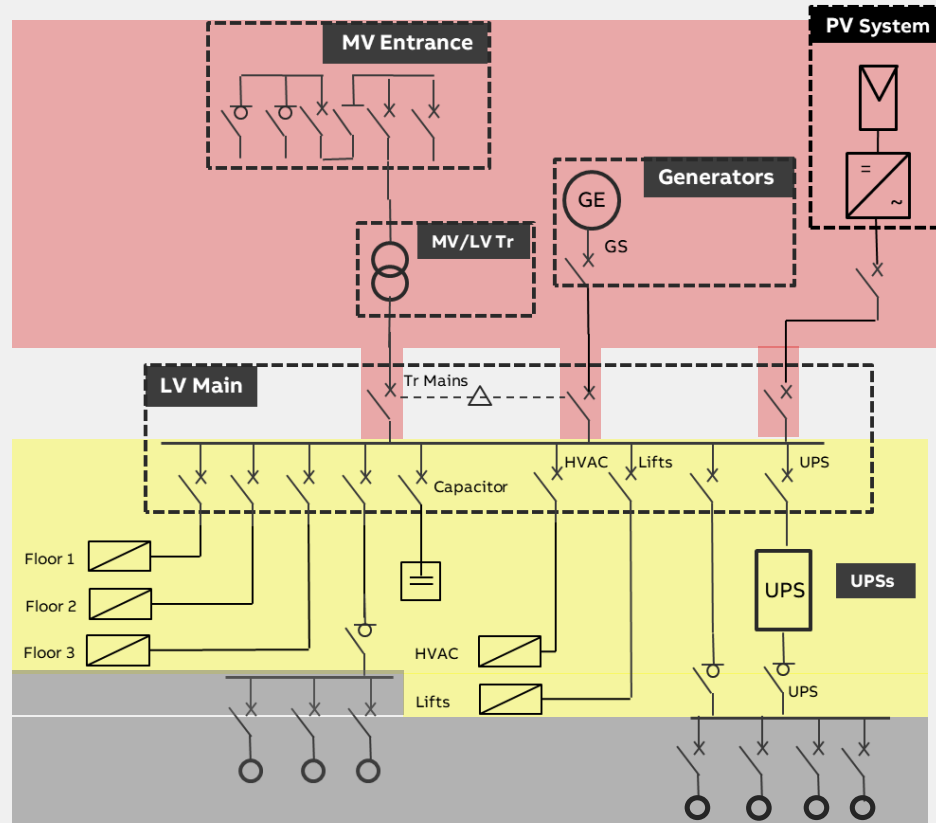
Metering devices

- Circuit breakers: Emax 2 and Tmax XT
 - Digital Relay: Ekip UP
 - ATS: TruONE
 - Fusegear: InLineII ITS2
-
- Circuit breakers: Emax 2 and Tmax XT
 - ATS: TruONE
 - Fusegear: SlimLine XRG and InLineII ITS2
 - ITS2 with OS and OT switches
 - UPS
 - Network Analyzers: M4M 20 and M4M 30
-
- Circuit Monitoring System: CMS-700
 - Network Analyzer: M4M 20
 - EQ meters



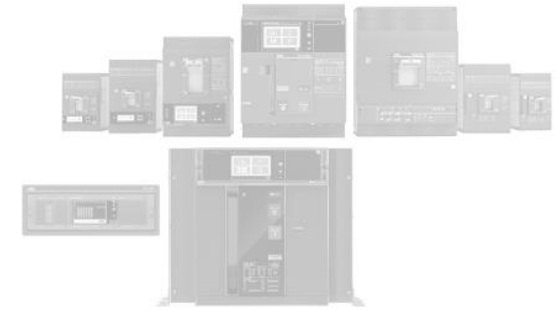
Smart metering devices

ABB solutions for metering requirements



Metering devices

- Circuit breakers: Emax 2 and Tmax XT
 - Digital Relay: Ekip UP
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- Circuit breakers: Emax 2 and Tmax XT
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 - ITS2 with OS and OT switches
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 - Network Analyzers: M4M 20 and M4M 30
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- Circuit Monitoring System: CMS-700
 - Network Analyzer: M4M 20
 - EQ meters



Overview of the applications



**Buildings and
infrastructure**

**Compact
secondary
substation**

**Critical
power**

2

ITS2 monitoring unit

ITS2 monitoring unit

ITS = Intelligent Tier Switch

- Monitoring and measuring unit
 - More information: switch position, temperature and fuse status
- Advanced protection features
- Remote control of motorized switches
- Enables communication
 - Modbus RTU & TCP
 - Cloud connection with ABB Ability™ EDCS



SlimLine XRG + ITS2

Future-proof your installation

Integrated and future ready switches and fusegear



InLinell + ITS2 - **New**



Stand alone ITS2 - **New**



The installation will be **80% faster** with the factory mounted ITS2 compared if you would use a traditional energy meter together with InLinell.



Ekip Connect Configure ITS2 monitoring **in just 1 min**

ITS2 is not only a measuring device

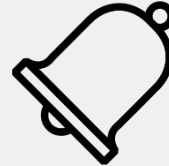
Extra protection for your applications



FUSE MONITORING



**PREVENTIVE OVERLOAD
PROTECTION**



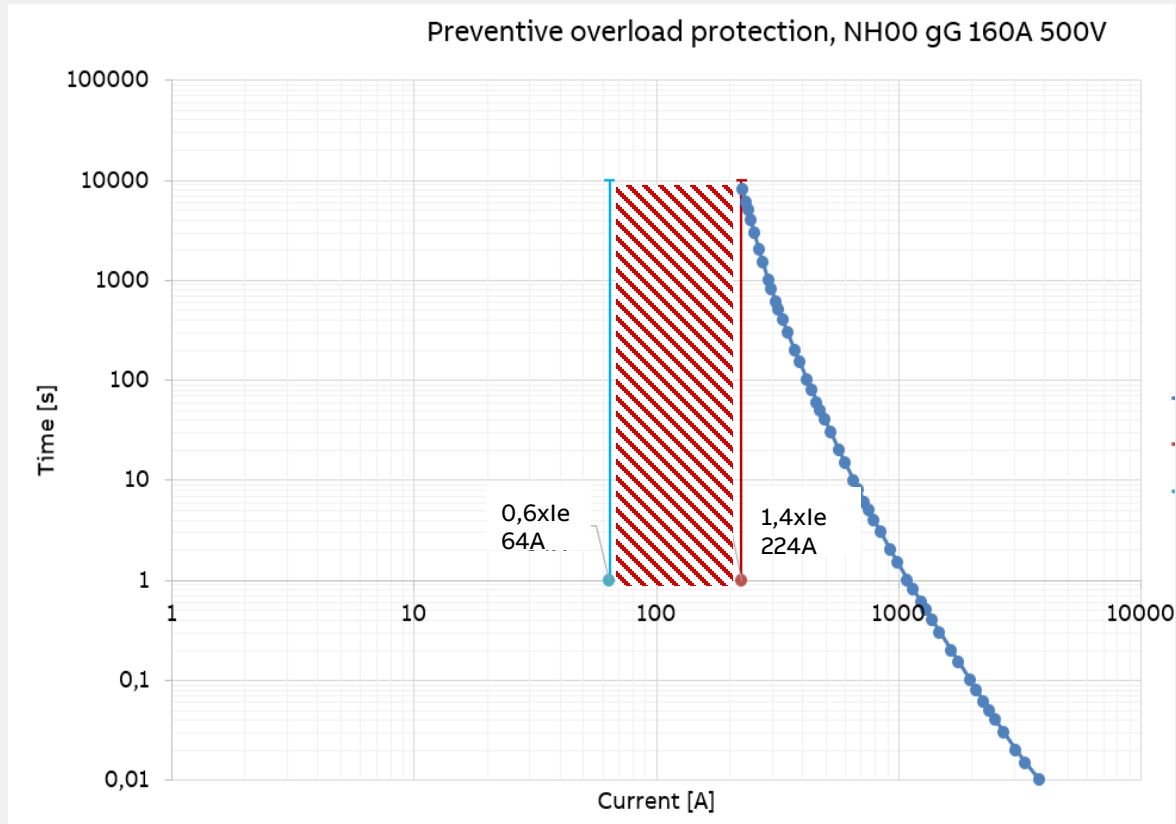
ALARM SETTING



**MOTOR OPERATION
SETTINGS**

Not only a measuring device

Preventive overload protection



Why?

- Operating times of fuses are rather long in overcurrent's
- During overload, the system can overheat and eventually being damaged
- Preventive overload protection is covering the gap to fuse protection of the system

What can you set?

- $\pm 40\%$ of the rated current
- 0-180 min
- If the current limit is exceeded timer will start
- When time limit is exceeded the ITS will signal the motorized switch to switch off or send an alarm
- If current goes back to the allowed limits time will stop

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Compact secondary substations (css)

Digitalize your installation

Compact Secondary Substation - CSS

Main applications

- **Supplying low voltage energy from MV-systems**
 - For residential areas
 - Further distribution
 - Industrial buildings
- **Stepping up voltage**
 - E.g. from 0,6kV-0,8kV to 12kV for applications like solar- or windfarms
 - Stepping energy from secondary distribution Network down to low voltage grid



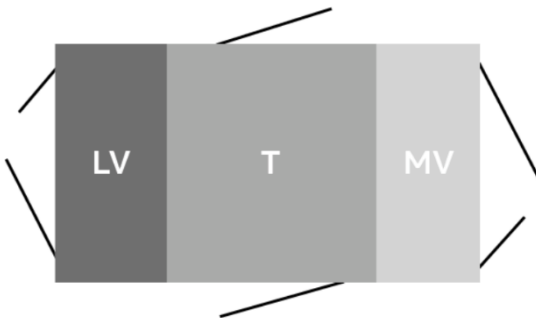
Compact Secondary Substation - CSS

Main applications

Example for a CSS



Example for a common layout of a CSS

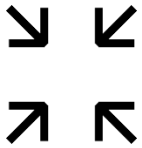


Typical power ratings are from 250kW to 1600kW
Typical voltage levels are 12kV, 24kV and 36kV



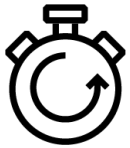
Electrical distribution for building and infrastructure

Measuring and monitoring with InLine II and integrated ITS2



Space saving

Stackable onto InLine II – increasing slightly the height but not the width



Faster installation time

80% faster - No need to wire separate components



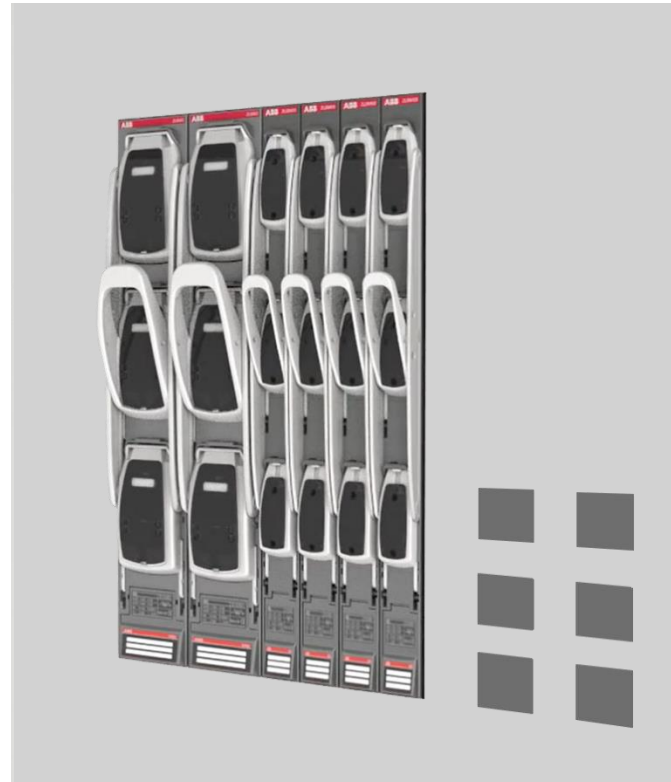
More measurements

Measure energy consumption, temperature and indicate blown fuses amongst others



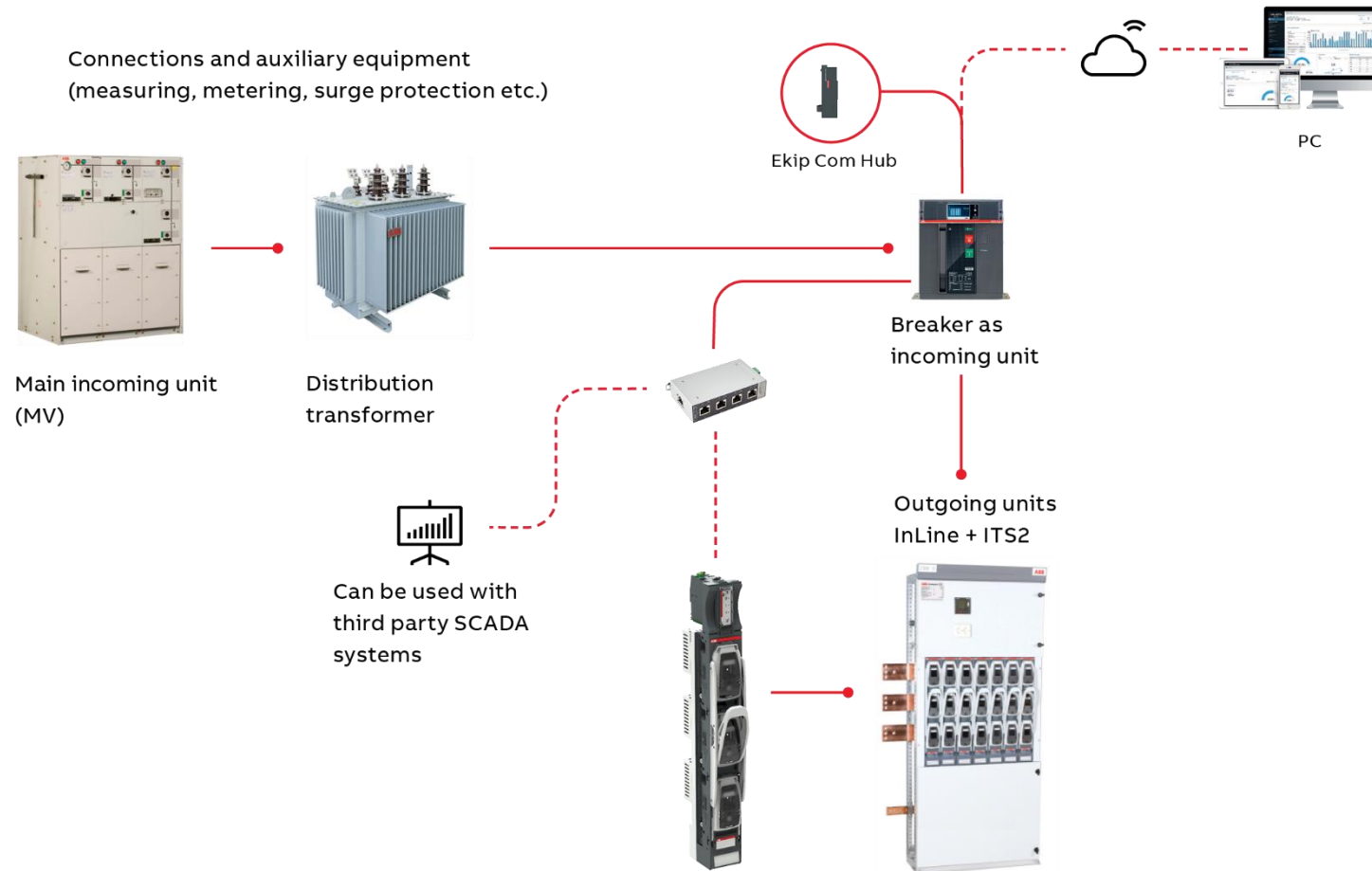
Higher level of protection

IP30 protection from front in closed position and IP20 in open position



Connection to ABB Ability EDCS in a Compact secondary Substation (CSS)

InLine II and integrated ITS2



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Electrical distribution for
buildings and infrastructure
Digitalize your installation

Electrical distribution for building and infrastructure

- Reliable, interruption free power supply
- Maintenance
- Protection from overloads



Electrical distribution for building and infrastructure

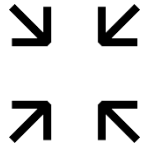
Traditional way of measuring and monitoring

- Metering with separate energy meters
- Requires extra space
- Mounting of sensors and cables is time consuming
- Limited measurements
- More electrical components and connection points



Electrical distribution for building and infrastructure

Measuring and monitoring with SlimLine XRG and integrated ITS2



Space saving

Integrated into SlimLine XRG –
does not increase product
footprint



Faster installation time

80% faster - No need to wire
separate components



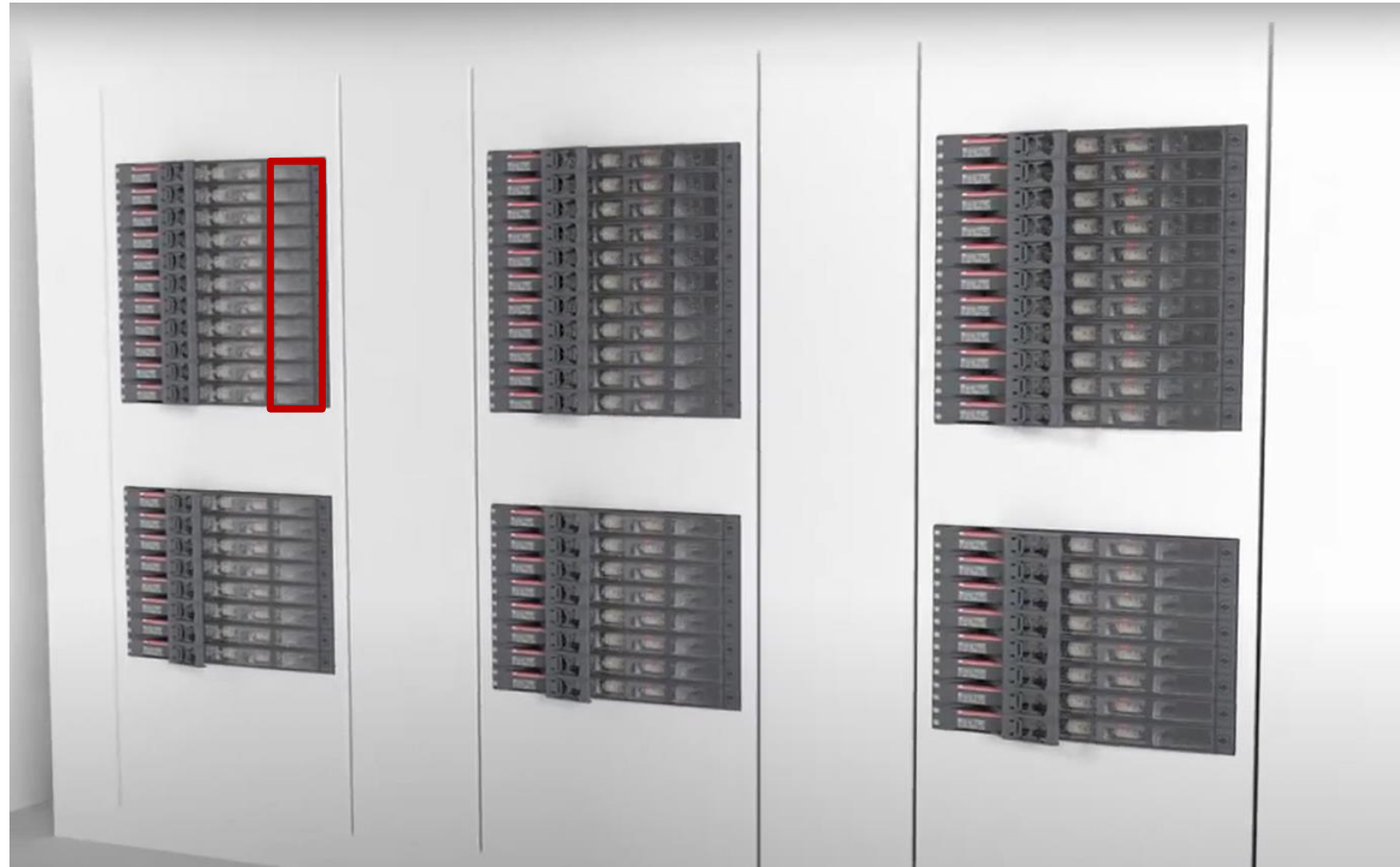
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Measure energy consumption,
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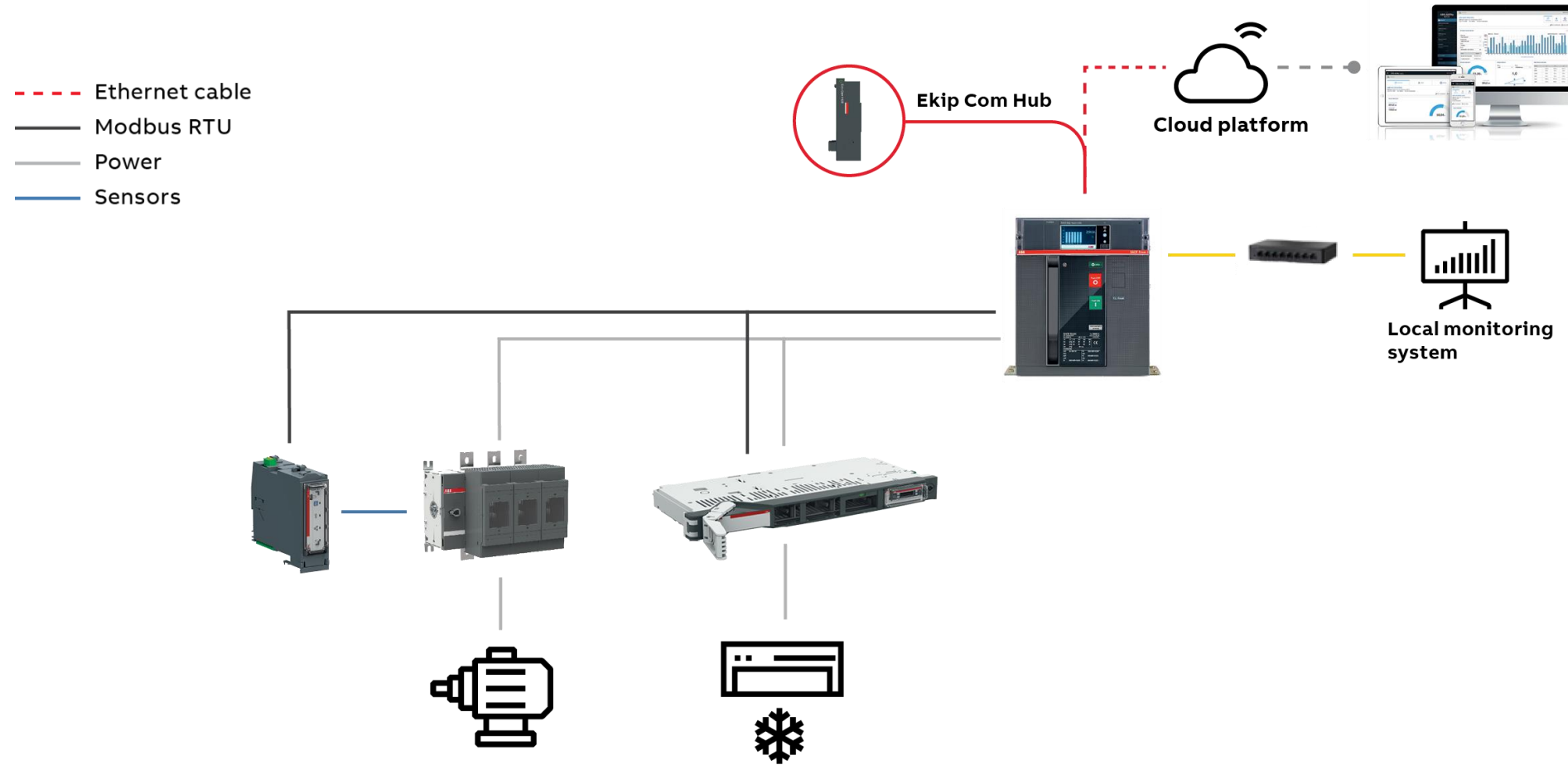


Higher level of protection

IP30 protection from front in closed
position and IP20 in open position



Connection to energy management systems



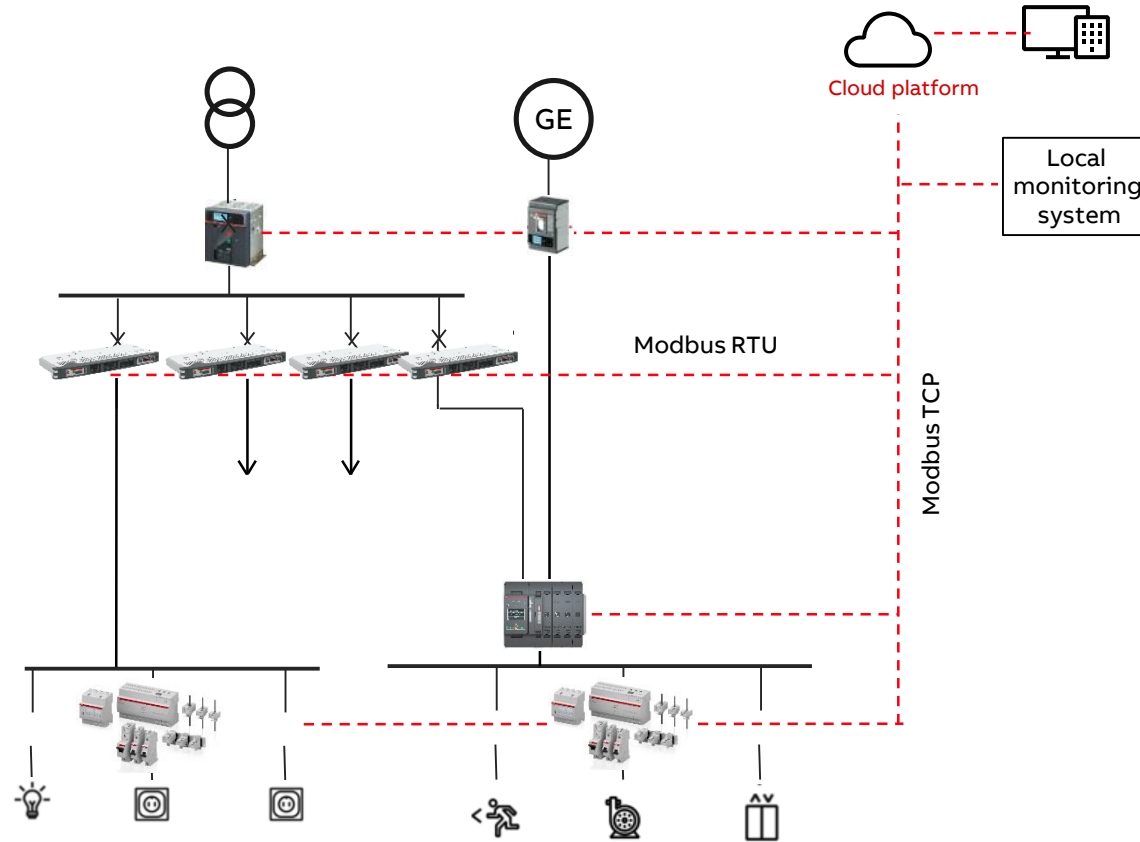
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Critical power

Digitalize your installation

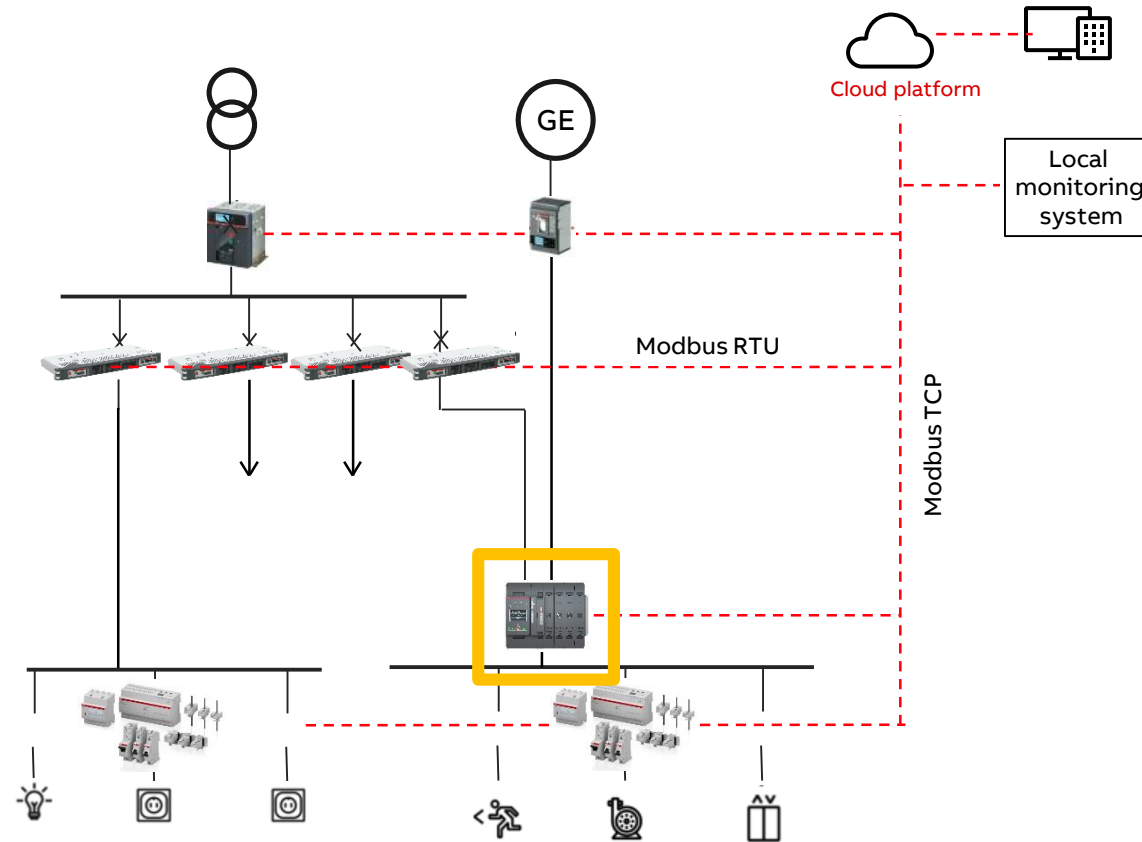
Application

Critical power



Application

Critical power

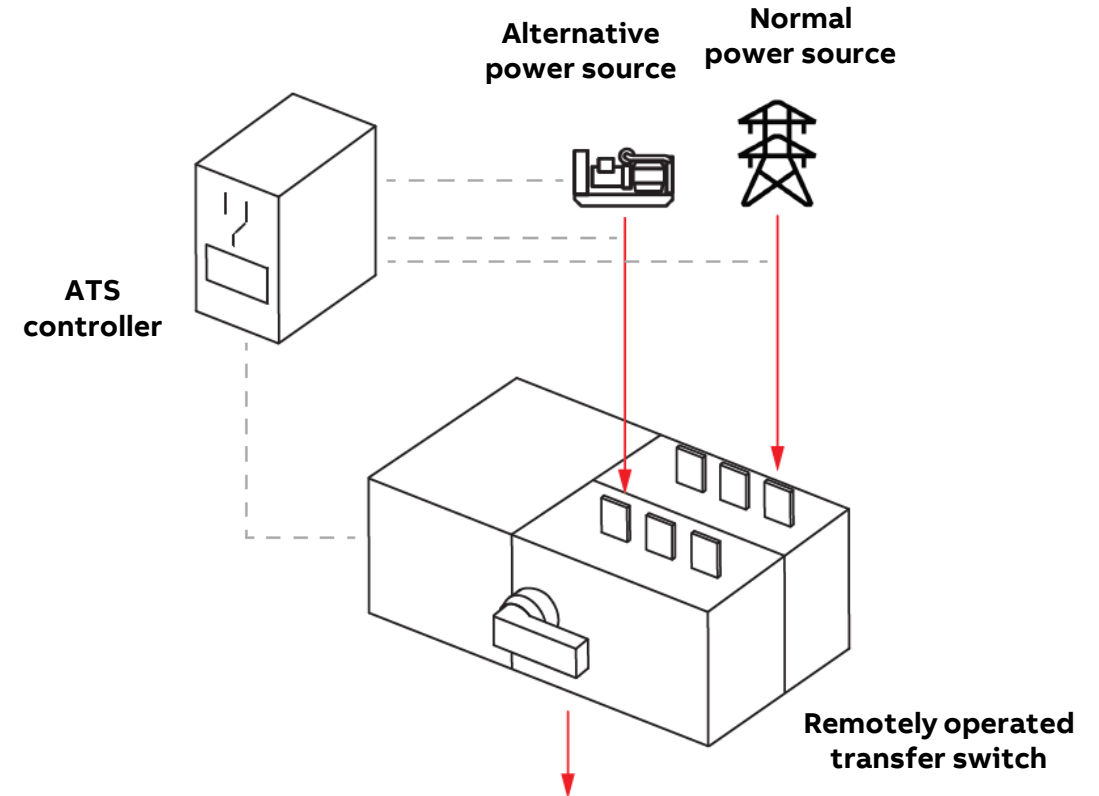


Critical power

Measuring and monitoring capabilities in ATS

ATS solutions in the market today:

- External wiring harnesses
- External controller with basic functionality
- Limited measuring capabilities
- Limited diagnostics data
- Limited communication capabilities



Critical power

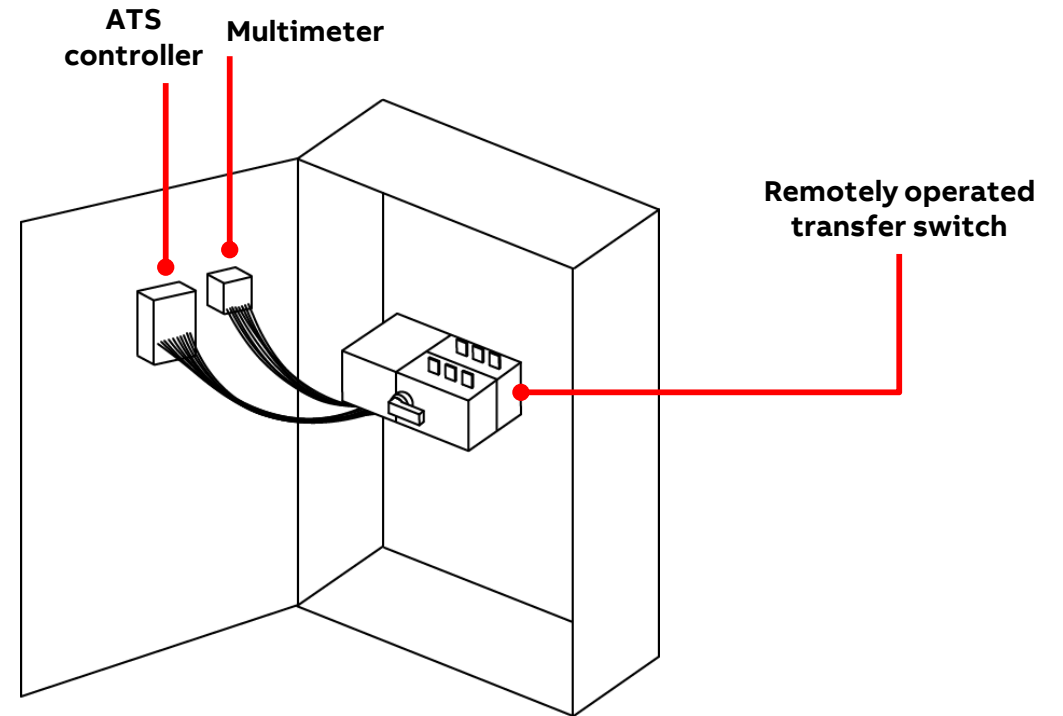
Measuring and monitoring capabilities in ATS

ATS solutions in the market today:

- Bringing dangerous line voltages and current to the door

Conclusion

- Conventional solutions can be complex
- Increased probability of fault due to possible mistakes during the installation and assembly
- Overall safety and reliability of the installation may be compromised



Critical power

Measuring and monitoring capabilities with TruONE™ ATS

World's first true ATS



TruONE® ATS

World's first true ATS

One unit, One wire – just like an ATS should be

- Saves up to 60 meters of wire
- Embedded controller with detachable HMI



TruONE® ATS

World's first true ATS

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TruONE® ATS

Real time measuring

World's first true ATS

One unit, One wire – just like an ATS should be

- Saves up to 60 meters of wire
- Embedded controller with detachable HMI

Enhanced measuring capabilities

- Embedded Rogowski coils
- Current, power, energy, THD



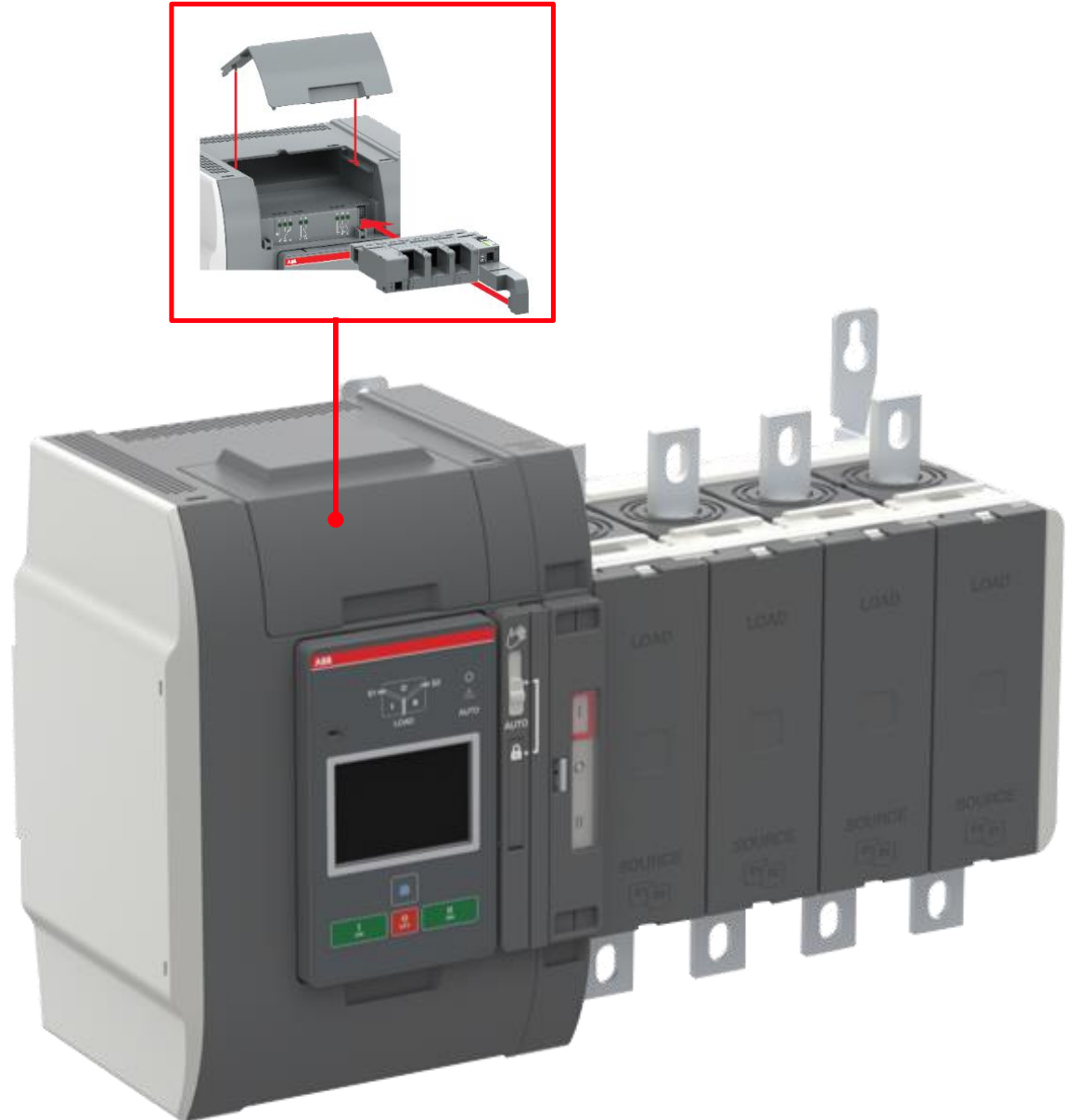
TruONE® ATS

Real time measuring

World's first true ATS

Market leading communication capabilities

- Modbus RTU
 - Modbus TCP
 - Ethernet IP
 - ProfiNet
 - Profibus DP
 - DeviceNet
-
- All modules mounted inside the switch body
 - Same modules as with ABB Emax 2



TruONE® ATS

Real time monitoring

World's first true ATS

Improved diagnostics

- Generator start time/date, start-up time



TruONE® ATS

Real time monitoring

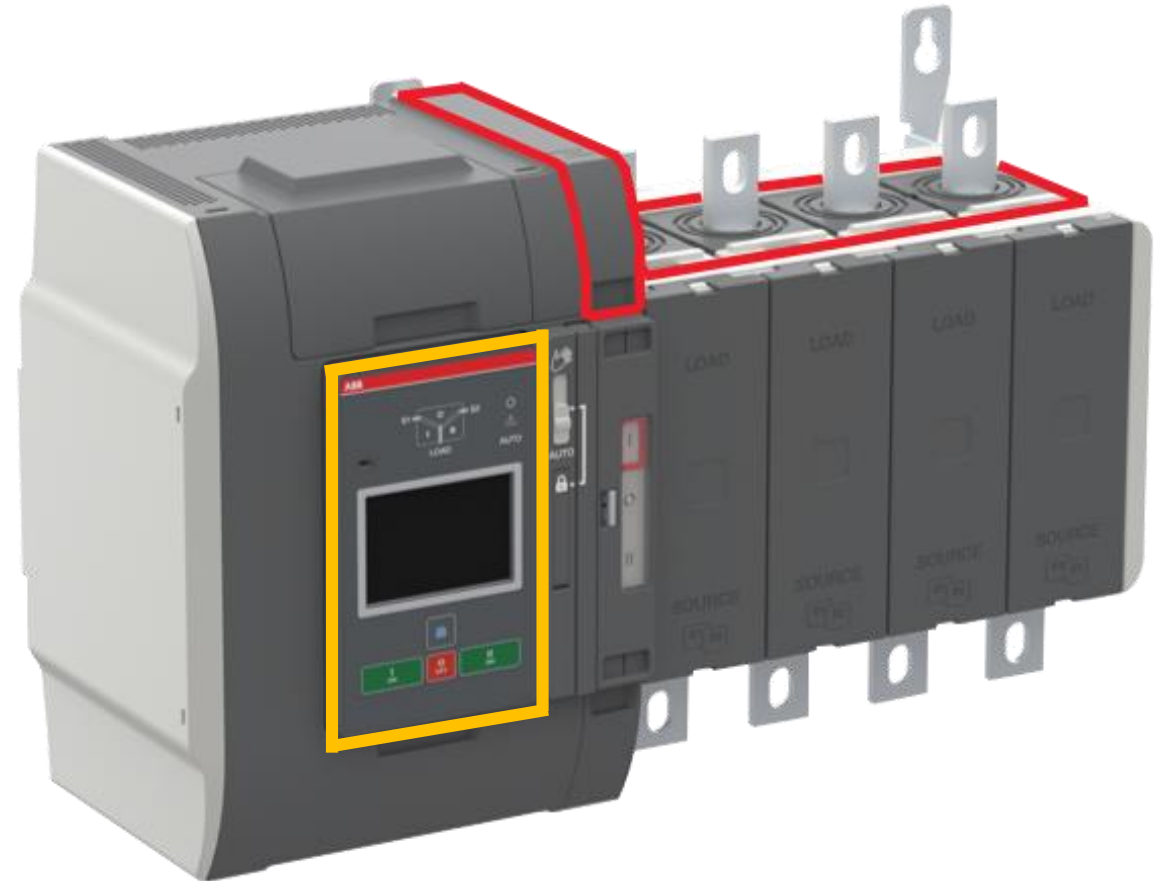
World's first true ATS

Improved diagnostics

- Generator start time/date, start-up time

Predictive maintenance

- Temperature, contact wear



TruONE® ATS

Real time monitoring

World's first true ATS

Improved diagnostics

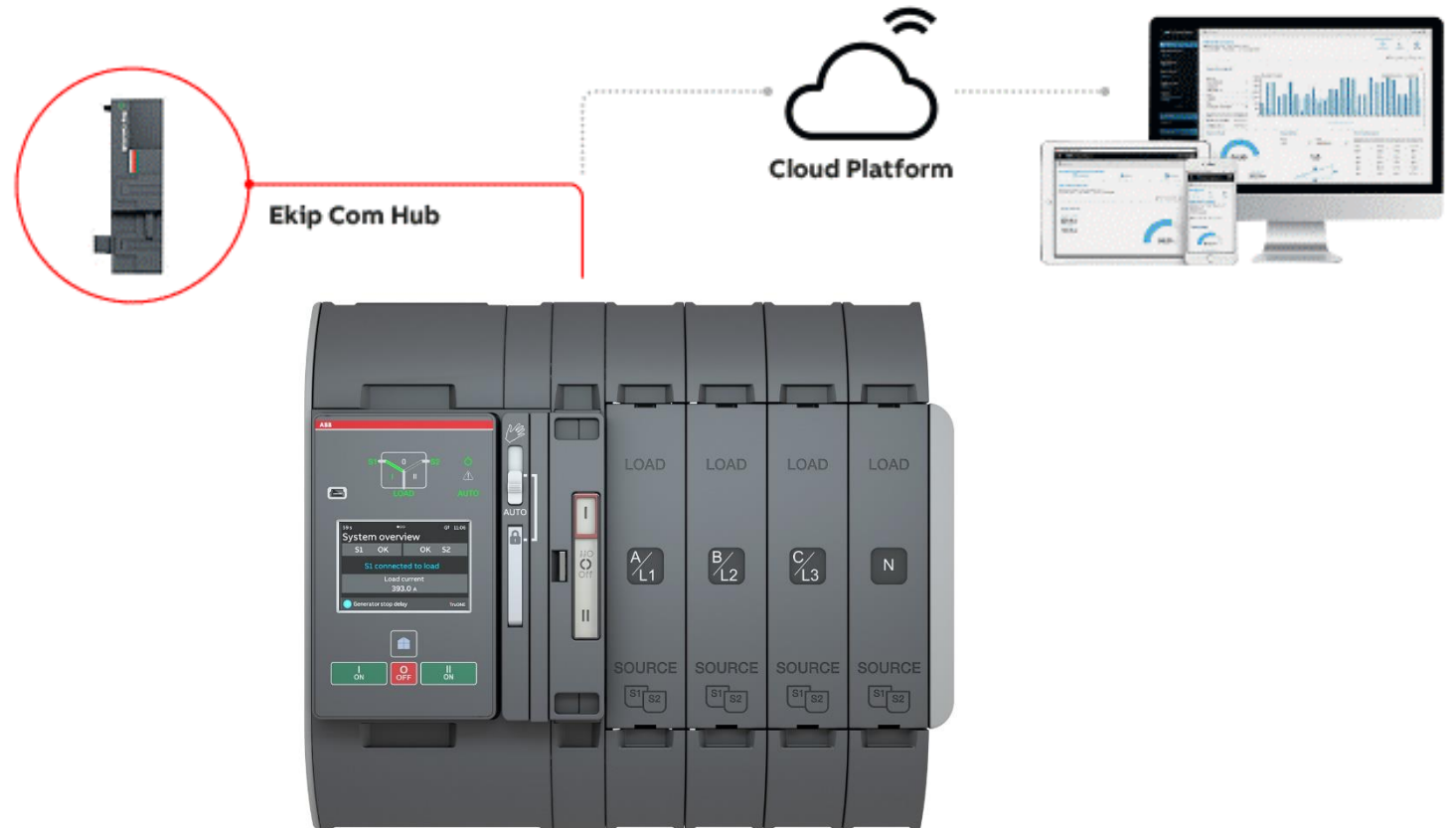
- Generator start time/date, start-up time

Predictive maintenance

- Temperature, contact wear

Cloud connectivity with ABB Ability™: EDCS

- Make data driven decisions



TruONE® ATS

Real time monitoring



Frost & Sullivan commends ABB for developing the industry's first all-in-one ATS solution with predictive maintenance capabilities and unique functionalities that set it apart from its top competitors' products

Critical power

Measuring and monitoring capabilities with TruONE™ ATS

World's first true ATS



Summary

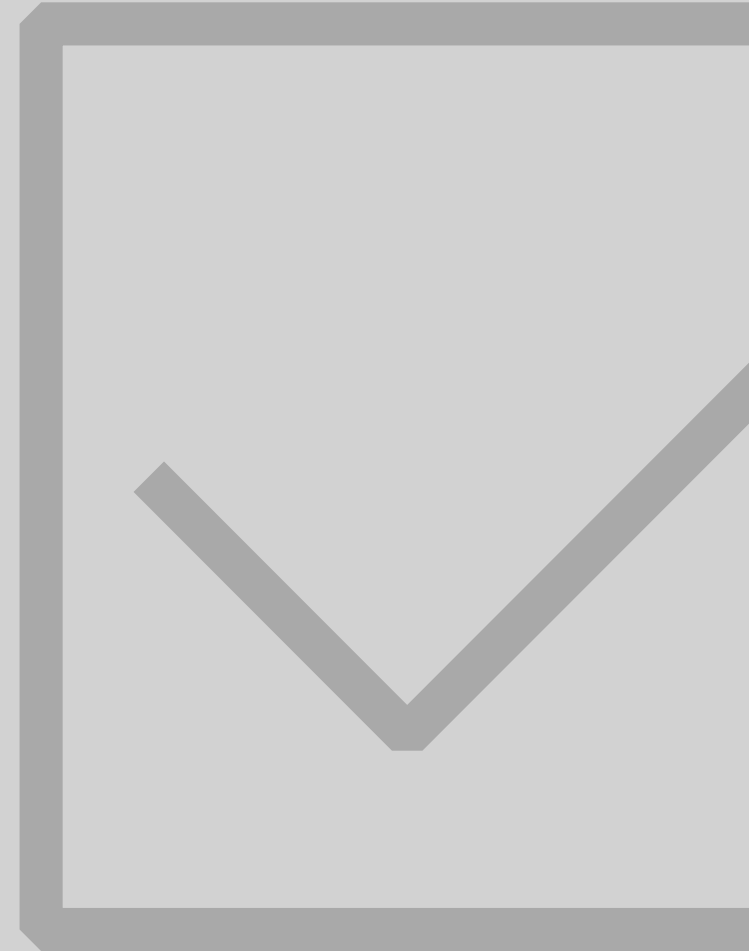


Summary

Convenience and ease

Implement measuring and monitoring capabilities without increasing complexity

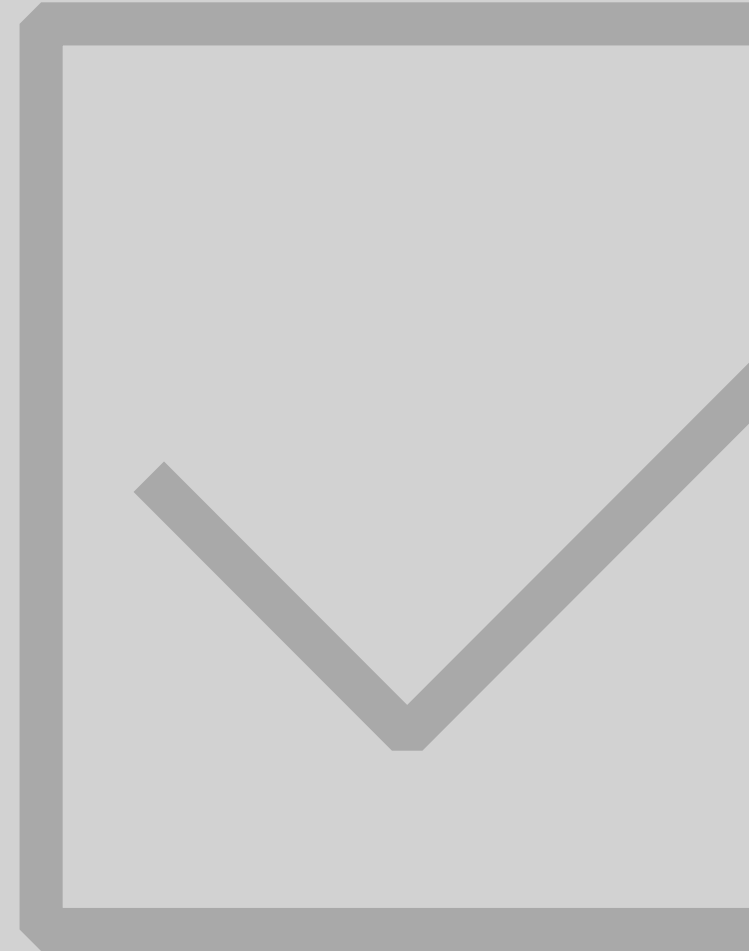
- Integrated design – up to 80% faster installation
 - TruONE ATS – One unit, one wire
 - InLineII and SlimLine – factory mounted ITS2
- ITS2 - One unit to digitalize your installation
 - Compatible with OT switch-disconnectors and OS Switch fuses



Summary

Smarter, data-driven decisions made in real time.

- Monitor energy consumption and costs at a glance, via building management systems or ABB Ability Electrical Distribution Control System (EDCS)
- Easier and faster implementation of energy management strategies
- Improve the energy efficiency, increase the value of your facility – complying with the latest standards and certifications.



Intelligent Distribution webinar series

Stay tuned

Smart switchgear

Join us to discover how to design and build a smart low voltage switchgear with ABB components, to maximize the energy efficiency and continuity of service of your assets.



Wednesday January 27th, 2021



**9:00 AM CET
4:00 PM CET**

We will get in touch with you soon



**Smart low voltage
electrical distribution**

Recording: [LINK](#)



**Smart Solutions to upgrade
a LV electrical installation**

Recording: [LINK](#)

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Q&A

For more information visit:

- Smart Metering and Monitoring Web Page: [link](#)
- Smart Switchgear Web Page: [link](#)
- Efficiency of Electrical System. Introduction to IEC 60364-8-1: [link](#)
- Smart Switchgear for Building and Infrastructure package: [link](#)
- ITS2: [link](#)



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