Switches & Fusegear have never been more connected
ABB Electrification
Presenters

Camilla Jakobsson
Global Product Manager, Digital Solutions

Benjamin Lehmann
Global Product Manager, Fusegear

Antti Kullas
Global Product Manager, Transfer Switches

Raya Kostova
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
Introduction
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.

**Why?**
- **40%** of energy consumption is due to global Building and Infrastructure sector

**How?**
- Monitor your system
- Optimize energy consumption

**Benefits**
- Up to 20% reduction of electricity cost
- 3 years payback time
- 3/9 LEED categories supported
- 7% Energy Efficiency improvement and CO₂ emissions reduction
## Energy Efficiency in Electrical System 
Certification & Standard

<table>
<thead>
<tr>
<th>International Standard</th>
<th>National Regulation</th>
<th>European Directive</th>
<th>Certification System</th>
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<tbody>
<tr>
<td>ISO 50001 Energy management systems – Requirements with guidance for use (ISO 50001:2018)</td>
<td>Many Countries developed local regulation for measuring new constructions and renovations</td>
<td>The Energy performance of buildings directive requires that all new buildings must be nearly zero-energy buildings (NZEB) as of 31 December 2020</td>
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<tr>
<td>IEC 60364-8-3 ed. 1 Low-voltage electrical installations</td>
<td></td>
<td>Energy that NZEB require should comes mostly from renewable energy sources</td>
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<tr>
<td>UNI EN 15232 Energy performance of buildings – Impact of Building Automation, Controls and Building Management</td>
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Metering and monitoring is a key requirement for the energy efficiency improvements
Smart metering devices
ABB solutions for metering requirements

- Circuit breakers: Emax 2 and Tmax XT
- Digital Relay: Ekip UP
- ATS: TruONE
- Fusegear: InLine II ITS2
- Circuit breakers: Emax 2 and Tmax XT
- ATS: TruONE
- Fusegear: SlimLine XRG and InLine II 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
- ATS: TruONE
- Fusegear: InLine II ITS2
- UPS
- Network Analyzers: M4M 20 and M4M 30
- 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?
- ±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
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

- 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
4 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

- **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 energy management systems

- Ethernet cable
- Modbus RTU
- Power
- Sensors

Cloud platform

Local monitoring system

Ekip Com Hub
Critical power
Digitalize your installation
Application

Critical power
Application

Critical power

Cloud platform

Local monitoring system

Modbus RTU

Modbus TCP
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

One unit, One wire – just like an ATS should be
• Saves up to 60 meters of wire
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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
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](#)
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](#)