



JANUARY 2021

Smart Switchgear - Let's go digital!

Pre-designed switchgear solution to save time and maximize reliability

Presenters



Raya Kostova

Global Training Support Specialist
ABB Electrification Business Area
Smart Power Division



Aleksandar Grbic

Global Application Specialist
ABB Electrification Business Area
Smart Power Division



Alberto Sannino

Market developer – ABB Ability™
ABB Electrification Business Area
Smart Power Division

Slido

Poll

Please check the box if you can see the Slido

Event code:

#D273

Event link:

<https://app.sli.do/event/jg7bp4m2>



Agenda

- Market trends
- New requirements in electric distribution
- Smart Switchgear
- Virtual demonstration
- Our value proposition
- Intelligent Switchgear for Large Building Example

Intelligent Distribution webinar series

Past events

Smart low voltage electrical distribution



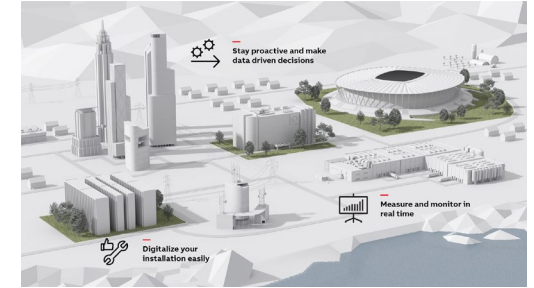
Recording: [LINK](#)

Smart Solutions to upgrade a LV electrical Installation



Recording: [LINK](#)

Switches and Fusegear have never been more connected



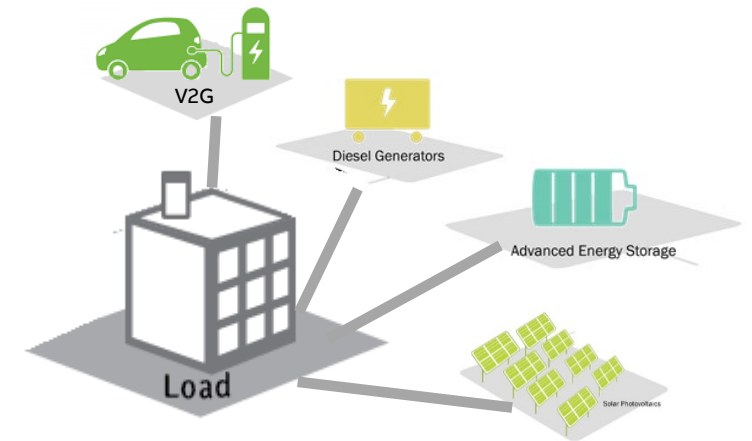
Recording: [LINK](#)

New Trends

Technologies which are changing the world we know



2019 This Is What Happens In An Internet Minute



Cloud computing, big data, internet of things (IoT), artificial intelligence (IA), industry 4.0 are phenomenon which are changing the approach to the electrical distribution as we know it today

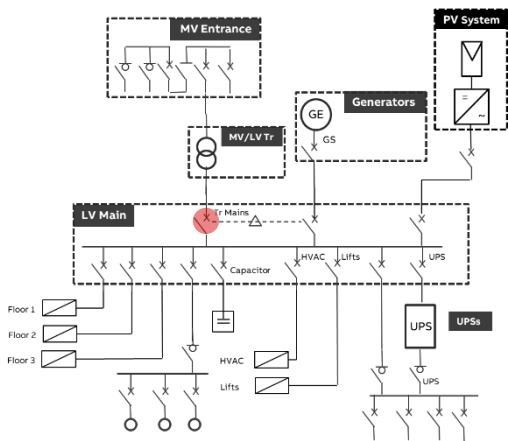
Electric distribution evolution

Key enabler of new technologies

In the past

1 external power meter for local monitoring of the electrical installation with high accuracy

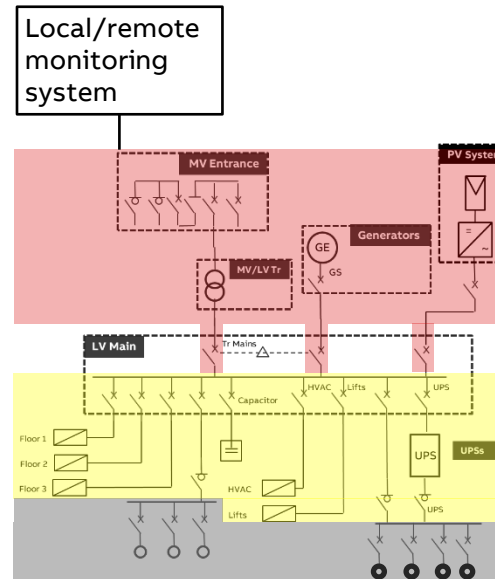
If necessary, additional meters with the local monitoring



● power meter for local monitoring

Today

Additional metering devices along the distribution with high and mid/high accuracy and local monitoring system



Advanced power monitoring and network performance:
P, Q, S, Ea, Er, Eap, f, I, IN, U and/or V, PF, THDU and/or THDV and/or THD-RU and/or THD-RV, THDI and/or THD-RI

Basic Power Monitoring:
P, Q, S, Ea, Er, Eap, f, I, IN, U and/or V, PF

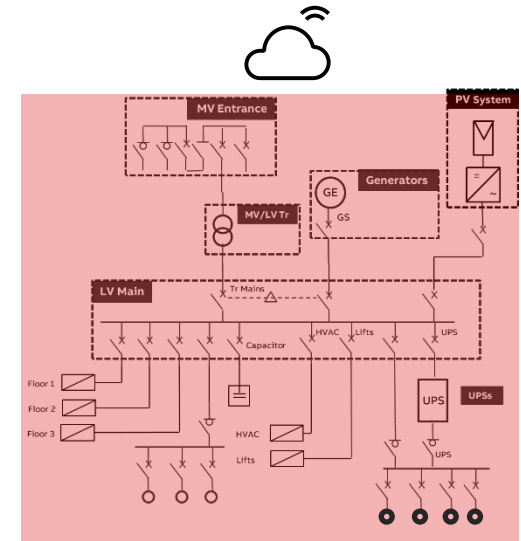
Energy monitoring:
Ea

In the near future

All the electrical parameters to be measured with high accuracy

Devices exchanging the information among them and with cloud

Advanced power monitoring and network performance



Smart Switchgear

Heart of Intelligent Distribution

Key requirements

The key aspect in realizing an intelligent distribution system is to have **smart switchgears** that can be easily monitored and managed from remote in order to answer market demand for reliability and efficiency.

Smart switchgear design package fits customer needs and helps designing, building, installing and operating the electrical installation

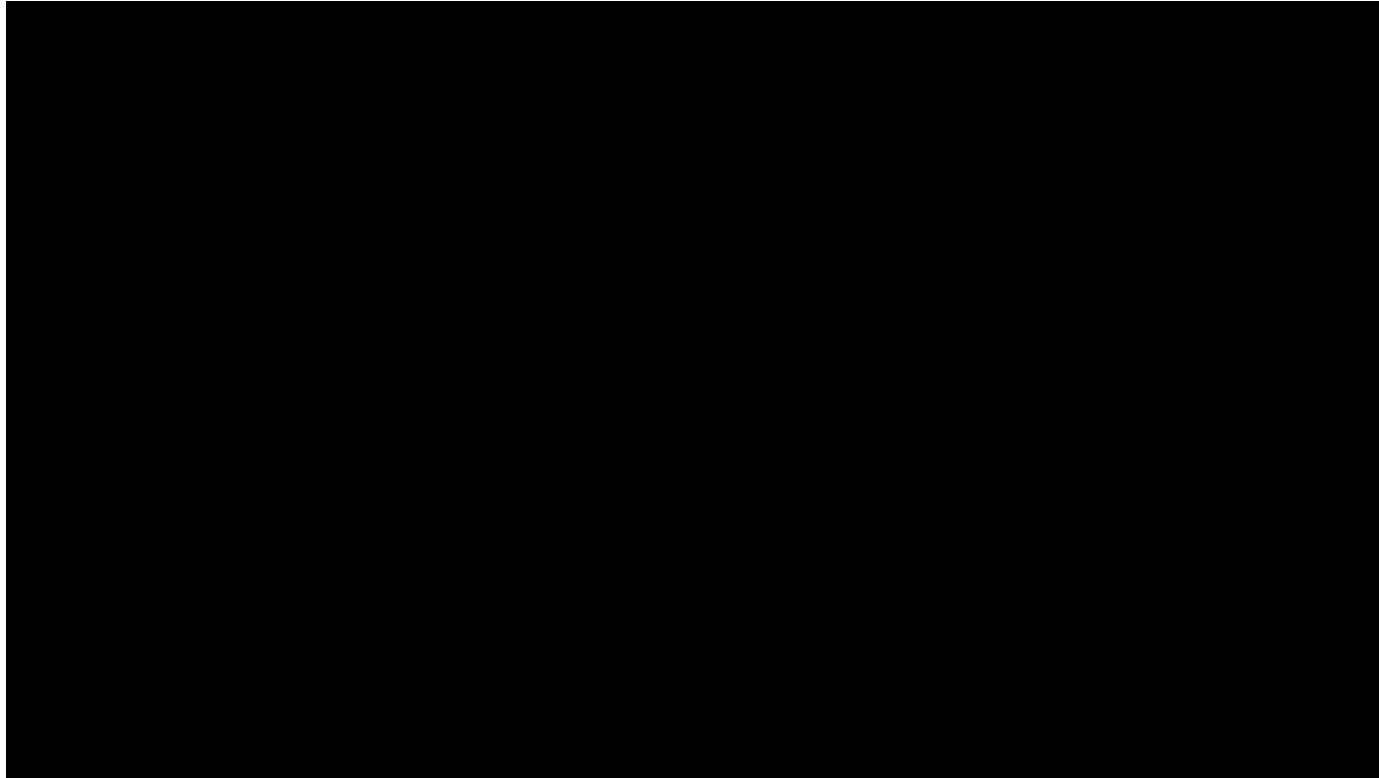
ABB intelligent distribution solutions are aimed to answer requirements from any segment and application.



Smart Switchgear

The Intelligent Distribution switchgear – ABB Experience Center in Bergamo (Italy)

Video



Smart Switchgear

Key values

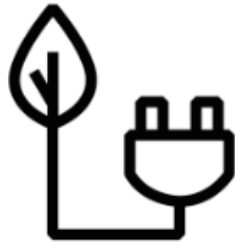
Flexibility

Simple to realize offering up to **66%** less cables and up to **10%** less connectivity components



Energy efficiency

Sustainable, offering from **7%** up to **20%** energy efficiency improvements



Service continuity

Reliable and simple to service, offering up to **36%** less maintenance cost



Cloud connection

Future proof, offering upgrade and update solutions with **0** downtime



Smart Switchgear

Maximize your bussines

Panel builders

- Easily integrated into traditional switchgears, with no additional time and effort needed.
- Detailed design of smart switchgear in to **minimize the time needed** for the realization and **maximize the reliability**.



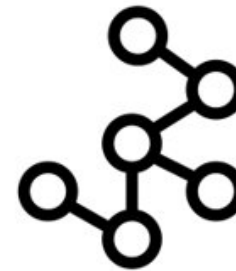
Consultants/EPCs

- Pre-designed, **flexible** and **Standard compliant** solutions **fitting any installation**.
- Answer the most demanding tasks of today and be ready for future improvements.



System integrators

- **Fully compatible** with all parts of the electrical and nonelectrical installation.
- **Seamless integration** to allow full visibility of the electrical part of the facility.



End users

- Cutting edge technology
- Easy to implement and use
- Immediate **investment and operational savings**
- Easy and simple **future improvements**.

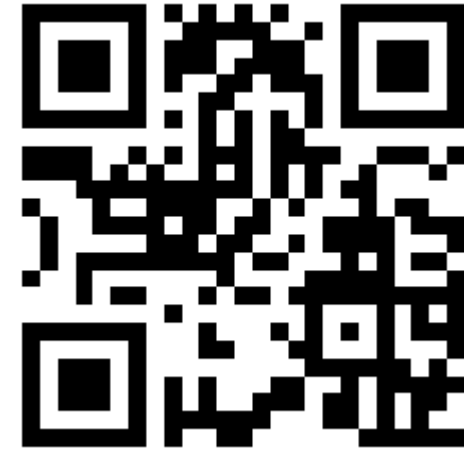


Slido

Poll

What kind of documentation are you usually using for realizing a connected and smart switchgear?

- 1) An example of complete switchgear design
- 2) Software tool for realizing a switchgear
- 3) Set of reference switchgear design by application/solution
- 4) Detailed product documentation
- 5) Other



Event code:

#D273

Event link:

<https://app.sli.do/event/jg7bp4m2>

Intelligent switchgear example

Case Study

Large Buildings

Today's buildings require:

- Continuous power supply
- Sustainability
- Energy Efficiency
- Monitoring
- Integration of renewables
- Zero emissions
- Flexibility
- Maintainability
- Future proof design
- Maximum comfort
- Automation
- ...

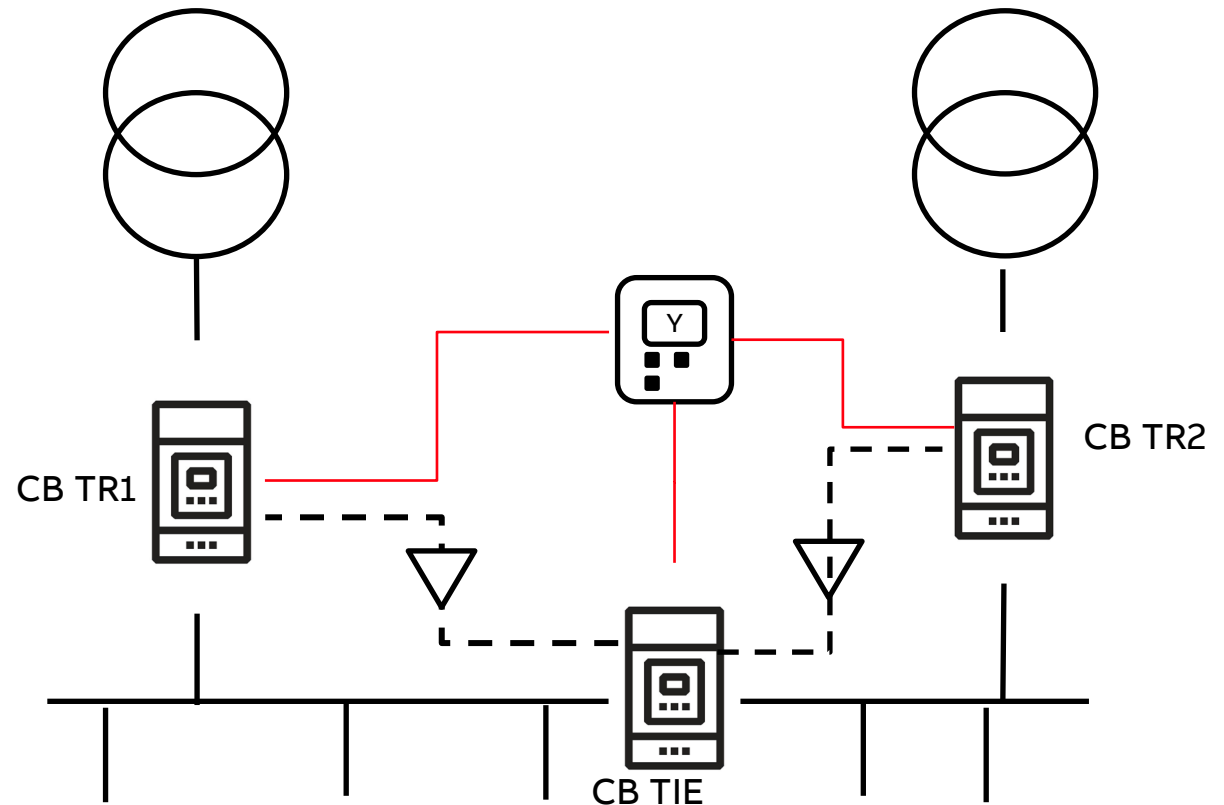


Intelligent switchgear example

Case Study

Main distribution board

- Most generic configuration with two incomers and a bus coupler: $I_n=1600A$; $I_{cw}=50kA$
- Main – Tie – Main open transition managed by ATS022
- Multiple outgoings for various loads
- Completely digitalized switchgear with full monitoring and predictive maintenance features
- Minimized complexity and maximum flexibility



Intelligent switchgear example

Application

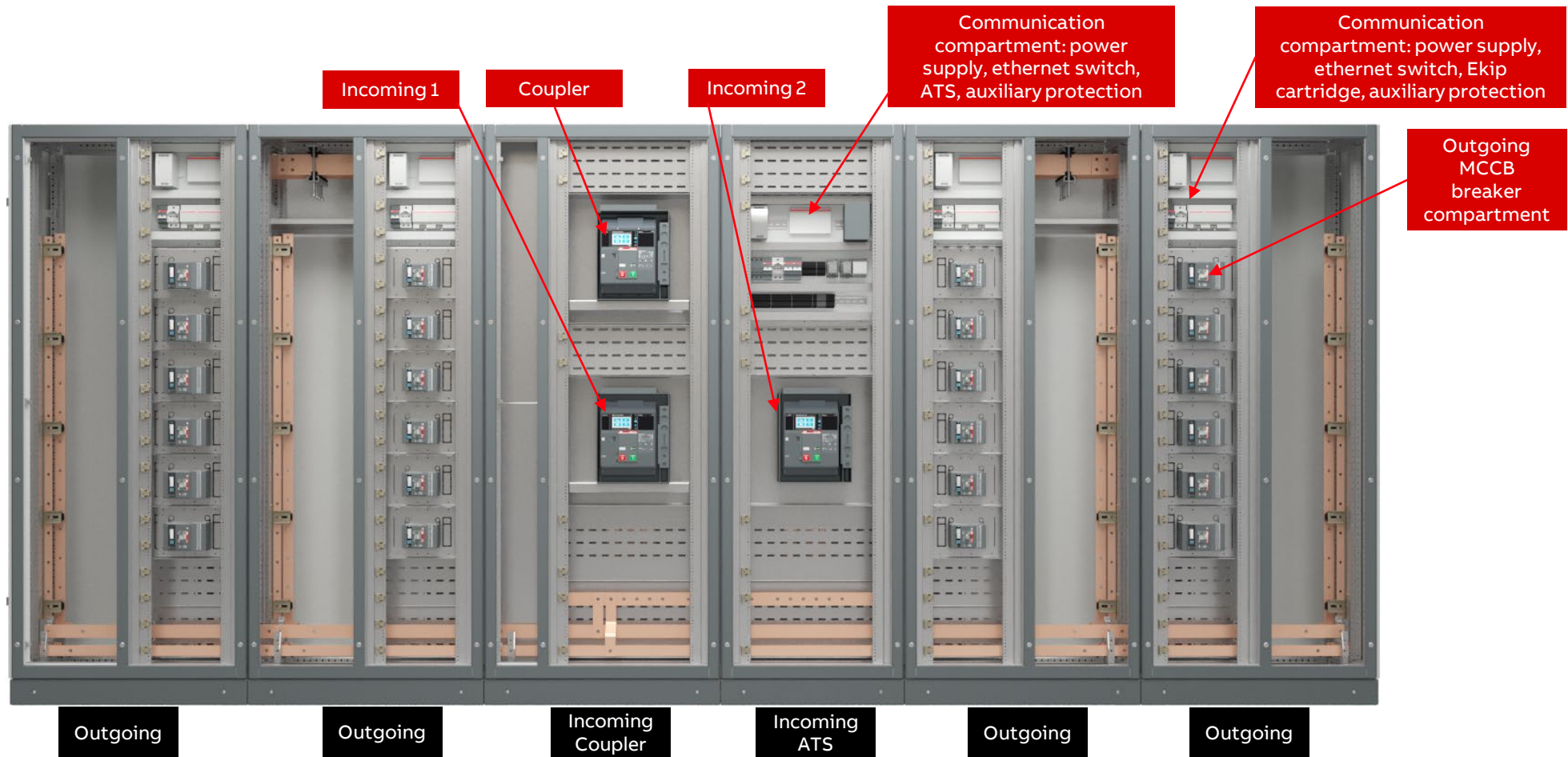
Switchgear Configuration – System Pro E Power

- Configuration with two incomers and a bus coupler ($I_n=1600A$; $I_{cw}=50kA$, IP30, Form 3b)
- ACBs 3p withdrawable with Ekip Hi-Touch LSI trip units
- Each wing has two outgoing columns
- MCCBs 3p fixed with Ekip Hi-Touch LSI trip units
- Automatic transfer switch ATS022 (incoming and coupling ACBs) is considered
- Each column is considered as an independent unit ready for the extension (all: mechanical/electrical and communication parts).
- Communication mounting plate has all auxiliary components sufficient for each independent unit: power supply, ethernet switch, protection devices, communication cartridge (if needed)
- Modbus TCP is considered



Intelligent switchgear example

Configuration



Intelligent switchgear example

Documents package

Available materials

Project documents:

- single line diagram
- functional scheme
- communication connections
- complete project specifications
- busbars layout

Complete 3D physical model: .step and .exe format

Complete 3D busbars layout

Detailed bill of materials

Web page: [LINK](#)

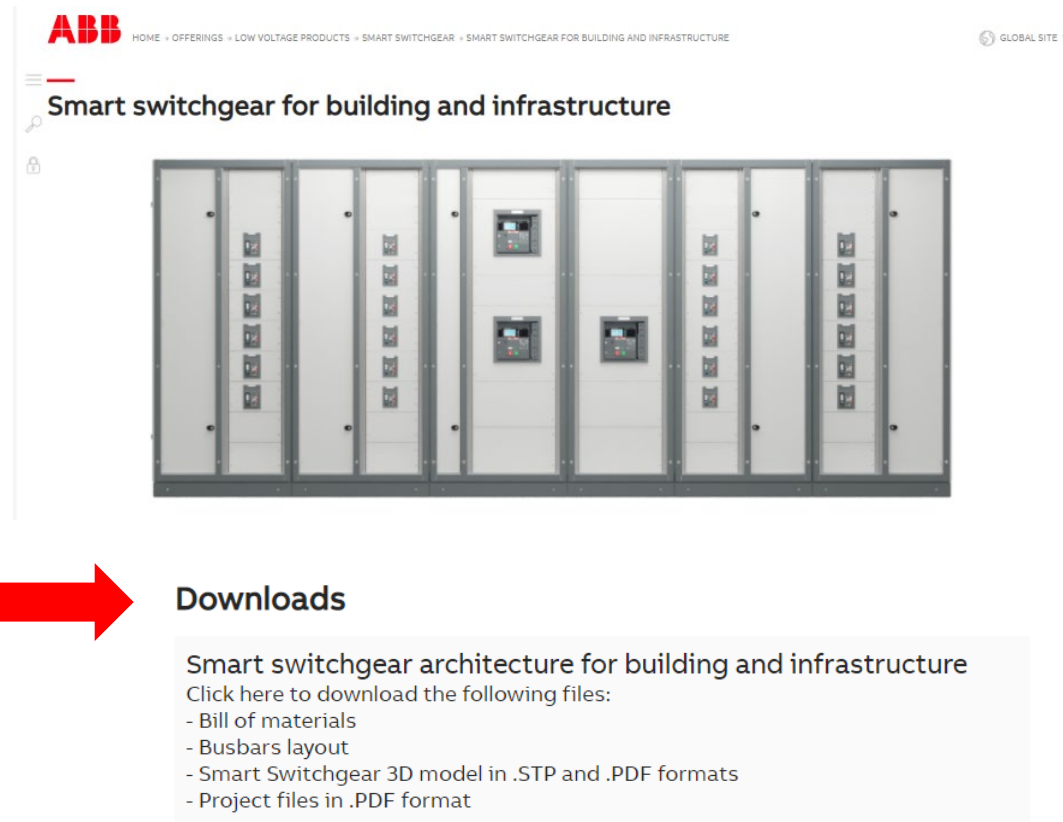



ABB HOME » OFFERINGS » LOW VOLTAGE PRODUCTS » SMART SWITCHGEAR » SMART SWITCHGEAR FOR BUILDING AND INFRASTRUCTURE GLOBAL SITE

Smart switchgear for building and infrastructure



Downloads

Smart switchgear architecture for building and infrastructure

Click here to download the following files:

- Bill of materials
- Busbars layout
- Smart Switchgear 3D model in .STP and .PDF formats
- Project files in .PDF format

Intelligent switchgear example

Documents package

Project documents

The image displays a technical drawing of an intelligent switchgear, specifically a communication arrangement. It includes a main view of the switchgear with a communication arrangement diagram overlaid, showing various components like power adapters, switches, and relays. A detailed wiring diagram shows the connection of these components, including a power adapter (23AC/230V-0.5A) and a switch (E1). The drawing is annotated with various labels and dimensions.

Parts list

DT	Quantity	Code	Type number	Article	Manufacturer
-A1	1	ABB.1SDA06552461	ATS022	ATS022 Automatic Load Transfer (ALT) controller	ABB
-E1	1	ABB.1SDA10520461	Ekip Cartridge 4 slots	Ekip Cartridge 4 slots XT2/XT4/XT5	ABB
-E1	1	ABB.1SDA07437361	Ekip SUPPLY 24-48VDC	Ekip SUPPLY 24-48VDC E1.2.E6.2	ABB
-E1	1	ABB.1SDA10556761	Ekip Com Modbus TCP Tmax XT	Ekip Com Modbus TCP XT2/XT4/XT5/XT7/XT7M	ABB
-E1	1	ABB.1SDA10556461	Ekip Com Hub Tmax XT	Ekip Com Hub Tmax XT XT2/XT4/XT5/XT7/XT7M	ABB
-E2	1	ABB.1SDA10520461	Ekip Cartridge 4 slots	Ekip Cartridge 4 slots XT2/XT4/XT5	ABB
-E2	1	ABB.1SDA07437361	Ekip SUPPLY 24-48VDC	Ekip SUPPLY 24-48VDC E1.2.E6.2	ABB
-E2	1	ABB.1SDA10556761	Ekip Com Modbus TCP Tmax XT	Ekip Com Modbus TCP XT2/XT4/XT5/XT7/XT7M	ABB
-E2	1	ABB.1SDA10556461	Ekip Com Hub Tmax XT	Ekip Com Hub Tmax XT XT2/XT4/XT5/XT7/XT7M	ABB
-E3	1	ABB.1SDA10520461	Ekip Cartridge 4 slots	Ekip Cartridge 4 slots XT2/XT4/XT5	ABB
-E3	1	ABB.1SDA07437361	Ekip SUPPLY 24-48VDC	Ekip SUPPLY 24-48VDC E1.2.E6.2	ABB
-E3	1	ABB.1SDA10556761	Ekip Com Modbus TCP Tmax XT	Ekip Com Modbus TCP XT2/XT4/XT5/XT7/XT7M	ABB
-E3	1	ABB.1SDA10556461	Ekip Com Hub Tmax XT	Ekip Com Hub Tmax XT XT2/XT4/XT5/XT7/XT7M	ABB
-E6	1	ABB.1SDA10520461	Ekip Cartridge 4 slots	Ekip Cartridge 4 slots XT2/XT4/XT5	ABB
-E6	1	ABB.1SDA07437361	Ekip SUPPLY 24-48VDC	Ekip SUPPLY 24-48VDC E1.2.E6.2	ABB
-E6	1	ABB.1SDA10556761	Ekip Com Modbus TCP Tmax XT	Ekip Com Modbus TCP XT2/XT4/XT5/XT7/XT7M	ABB
-E6	1	ABB.1SDA10556461	Ekip Com Hub Tmax XT	Ekip Com Hub Tmax XT XT2/XT4/XT5/XT7/XT7M	ABB
-F10	1	ABB.3C9402475381801	E93/32	E93/32 Fuse switch disconnector	ABB
-F20	1	ABB.3C9402475381801	E93/32	E93/32 Fuse switch disconnector	ABB
-IS1	1	TP.L1.TL-SG108E	TL-SG108E	8-Port Gigabit Unmanaged Pro Switch 8 10/100/1000Mbps RJ45 ports	TP-Link
-IS2	1	TP.L1.TL-SG108E	TL-SG108E	8-Port Gigabit Unmanaged Pro Switch 8 10/100/1000Mbps RJ45 ports	TP-Link
-IS4	1	TP.L1.TL-SG108E	TL-SG108E	8-Port Gigabit Unmanaged Pro Switch 8 10/100/1000Mbps RJ45 ports	TP-Link
-IS5	1	TP.L1.TL-SG108E	TL-SG108E	8-Port Gigabit Unmanaged Pro Switch 8 10/100/1000Mbps RJ45 ports	TP-Link
-IS6	1	TP.L1.TL-SG108E	TL-SG108E	8-Port Gigabit Unmanaged Pro Switch 8 10/100/1000Mbps RJ45 ports	TP-Link
-K13	1	ABB.15VA55002600000	CT-MFD.12	CT-MFD.12 1C/O 24-240VAC/24-48VDC 0.5s-100h Time relay	ABB
-K41	1	ABB.15BL14100180010	AB-30-10	Contactors AB-30-10 220-230VAC 4 / 25	ABB
-K41	1	ABB.15BN100100R1001	CAS-01	CAS-01 Aux-cont. 1NC AB...110, front (1-)	ABB
-K41	1	ABB.15BN30100R1000	IMS-1	Mechanical interlock	ABB

ABB
 Intelligent switchgear
 Parts list

Scale: 1:1
 Date: 06/12/2019
 Project number: 4149-01
 Page/Sheet: 1 / 9

Revision: A3
 Drawing number: 4149-01-CD2-1

Intelligent switchgear example

Busbars layout

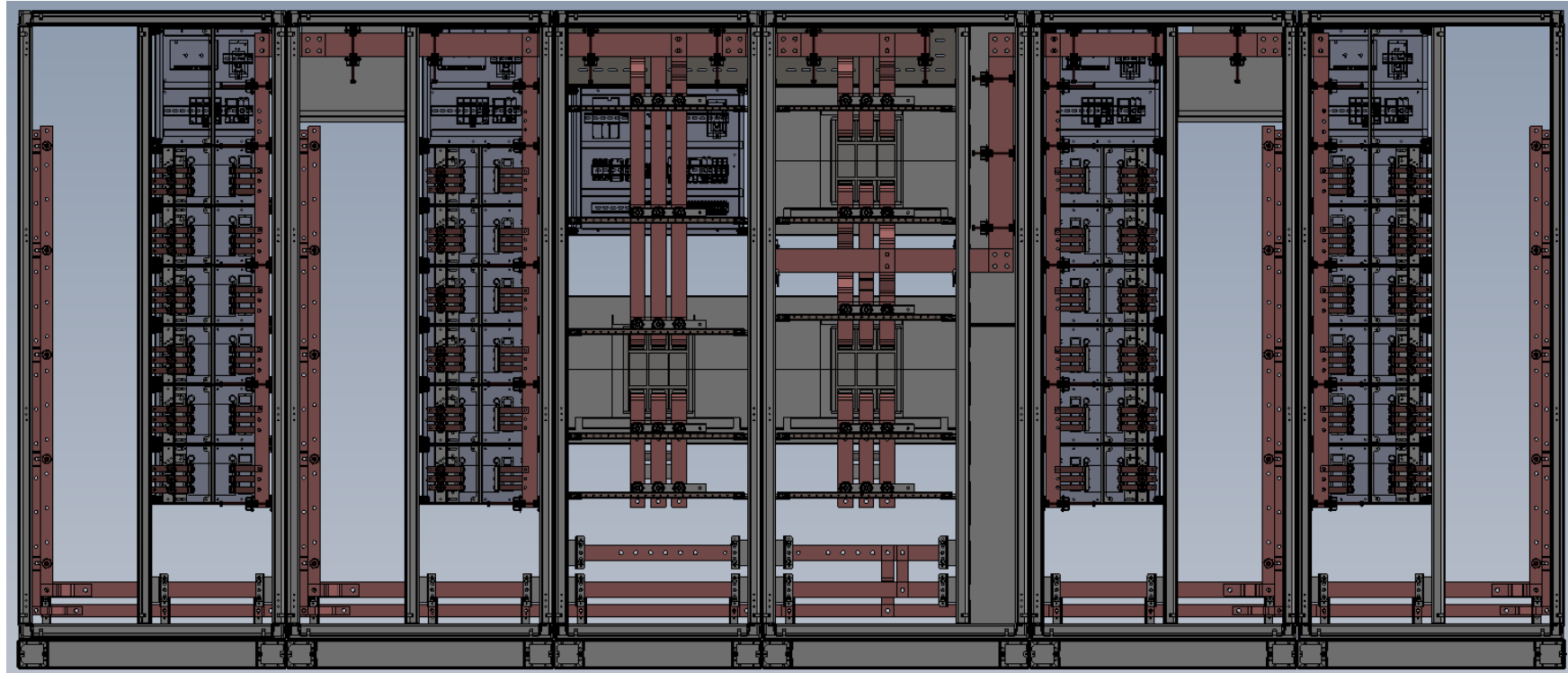
Copper bars

Busbars layout is included

All accompanying fixing components are listed (crosspieces, brackets, anchoring plates, isolators)

MBB – 1600A

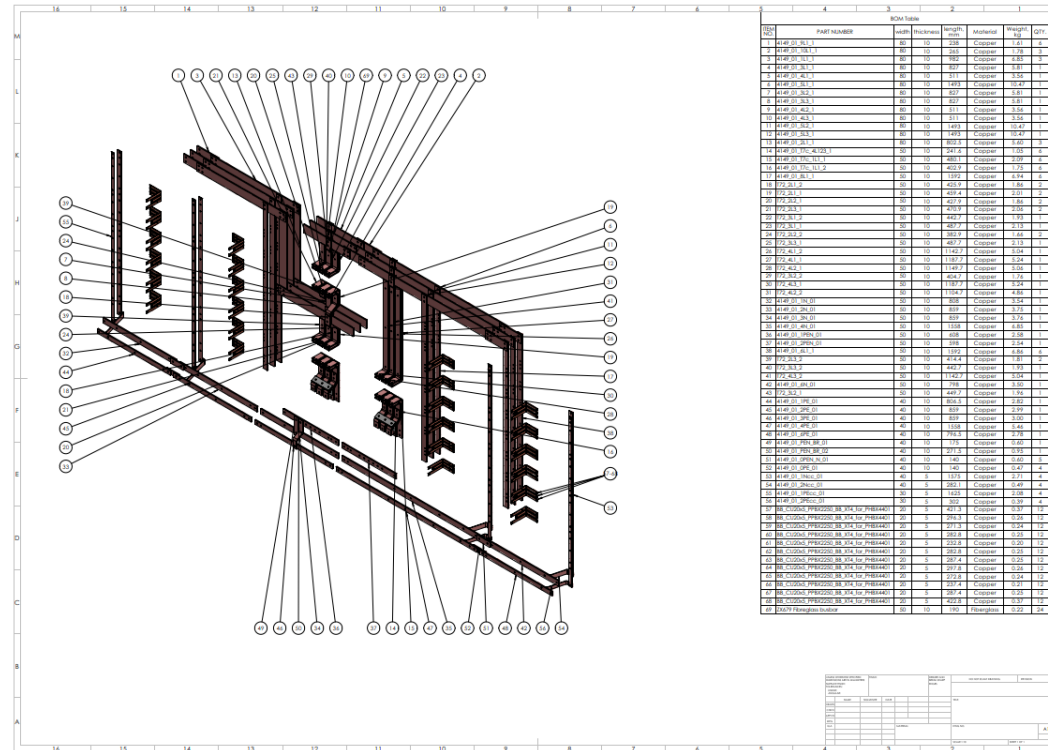
VBB – 1000A



Intelligent switchgear example

Documents package

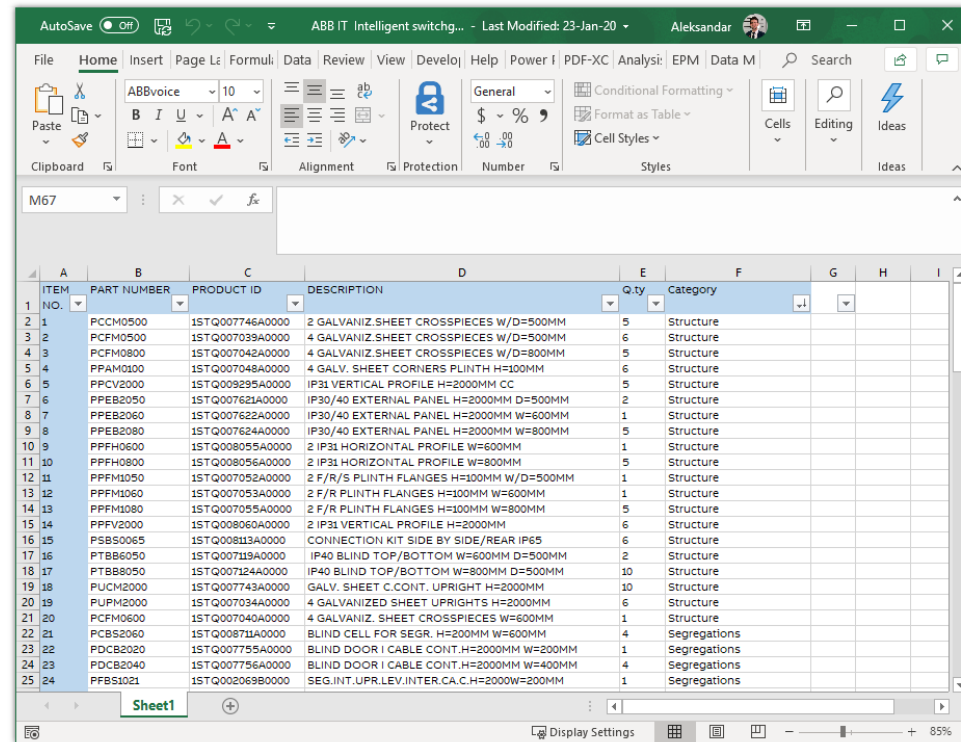
Complete 3D busbars layout



Intelligent switchgear example

Documents package

Detailed bill of materials

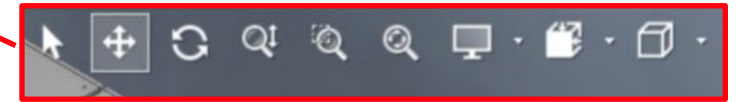


ITEM NO.	PART NUMBER	PRODUCT ID	DESCRIPTION	Qty	Category
1	PCCM0500	1STQ007746A0000	2 GALVANIZ. SHEET CROSSPIECES W/D=500MM	5	Structure
2	PCFM0500	1STQ007039A0000	4 GALVANIZ. SHEET CROSSPIECES W/D=500MM	6	Structure
3	PCFM0800	1STQ007042A0000	4 GALVANIZ. SHEET CROSSPIECES W/D=800MM	5	Structure
4	PFAM0100	1STQ007048A0000	4 GALV. SHEET CORNERS PLINTH H=100MM	6	Structure
5	PPCV2000	1STQ009295A0000	IP31 VERTICAL PROFILE H=2000MM CC	5	Structure
6	PPFB2050	1STQ007621A0000	IP30/40 EXTERNAL PANEL H=2000MM D=500MM	2	Structure
7	PPFB2060	1STQ007622A0000	IP30/40 EXTERNAL PANEL H=2000MM W=600MM	1	Structure
8	PPFB2080	1STQ007624A0000	IP30/40 EXTERNAL PANEL H=2000MM W=800MM	5	Structure
9	PPFH0600	1STQ008055A0000	2 IP31 HORIZONTAL PROFILE W=600MM	1	Structure
10	PPFH0800	1STQ008056A0000	2 IP31 HORIZONTAL PROFILE W=800MM	5	Structure
11	PPFM1050	1STQ007052A0000	2 F/R/S PLINTH FLANGES H=100MM W/D=500MM	1	Structure
12	PPFM1060	1STQ007053A0000	2 F/R PLINTH FLANGES H=100MM W=600MM	1	Structure
13	PPFM1080	1STQ007055A0000	2 F/R PLINTH FLANGES H=100MM W=800MM	5	Structure
14	PPFV2000	1STQ008060A0000	2 IP31 VERTICAL PROFILE H=2000MM	6	Structure
15	PSBS0065	1STQ008113A0000	CONNECTION KIT SIDE BY SIDE/REAR IP65	6	Structure
16	PTBB6050	1STQ007119A0000	IP40 BLIND TOP/BOTTOM W=600MM D=500MM	2	Structure
17	PTBB8050	1STQ007124A0000	IP40 BLIND TOP/BOTTOM W=800MM D=500MM	10	Structure
18	PUCM2000	1STQ007743A0000	GALV. SHEET C.CONT. UPRIGHT H=2000MM	10	Structure
19	PUPM2000	1STQ007034A0000	4 GALVANIZED SHEET UPRIGHTS H=2000MM	6	Structure
20	PCFM0600	1STQ007040A0000	4 GALVANIZ. SHEET CROSSPIECES W=600MM	1	Structure
21	PCBS2060	1STQ008711A0000	BLIND CELL FOR SEGR. H=200MM W=600MM	4	Segregations
22	PDCB2020	1STQ007759A0000	BLIND DOOR I CABLE CONT. H=2000MM W=200MM	1	Segregations
23	PDCB2040	1STQ007756A0000	BLIND DOOR I CABLE CONT. H=2000MM W=400MM	4	Segregations
24	PFBS1021	1STQ002069B0000	SEG.INT.UPR.LEV.INTER.CA.C.H=2000W=200MM	1	Segregations

Intelligent switchgear example

Documents package

Complete 3D physical model



Navigation toolbar



Tools toolbar

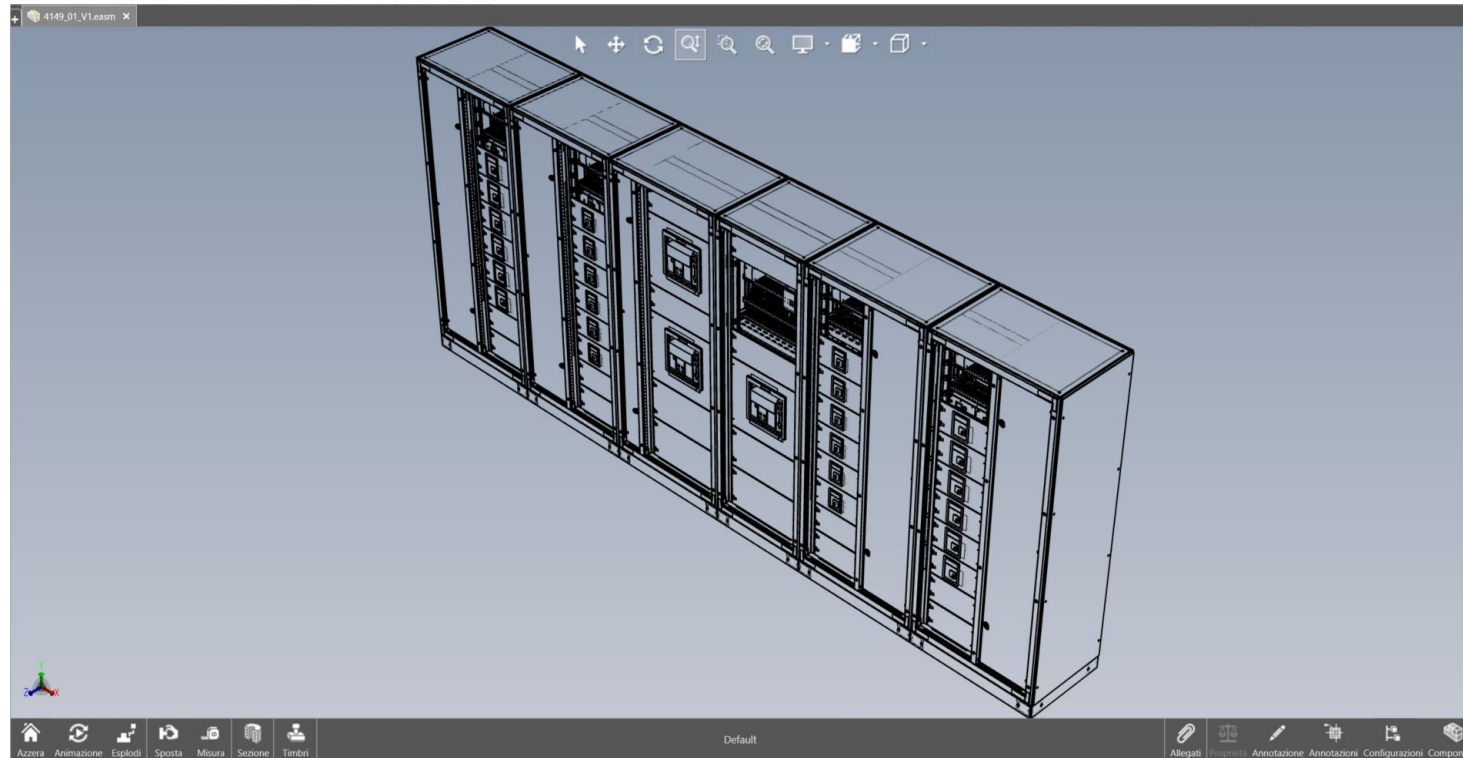


Options toolbar

Intelligent switchgear example

Documents package

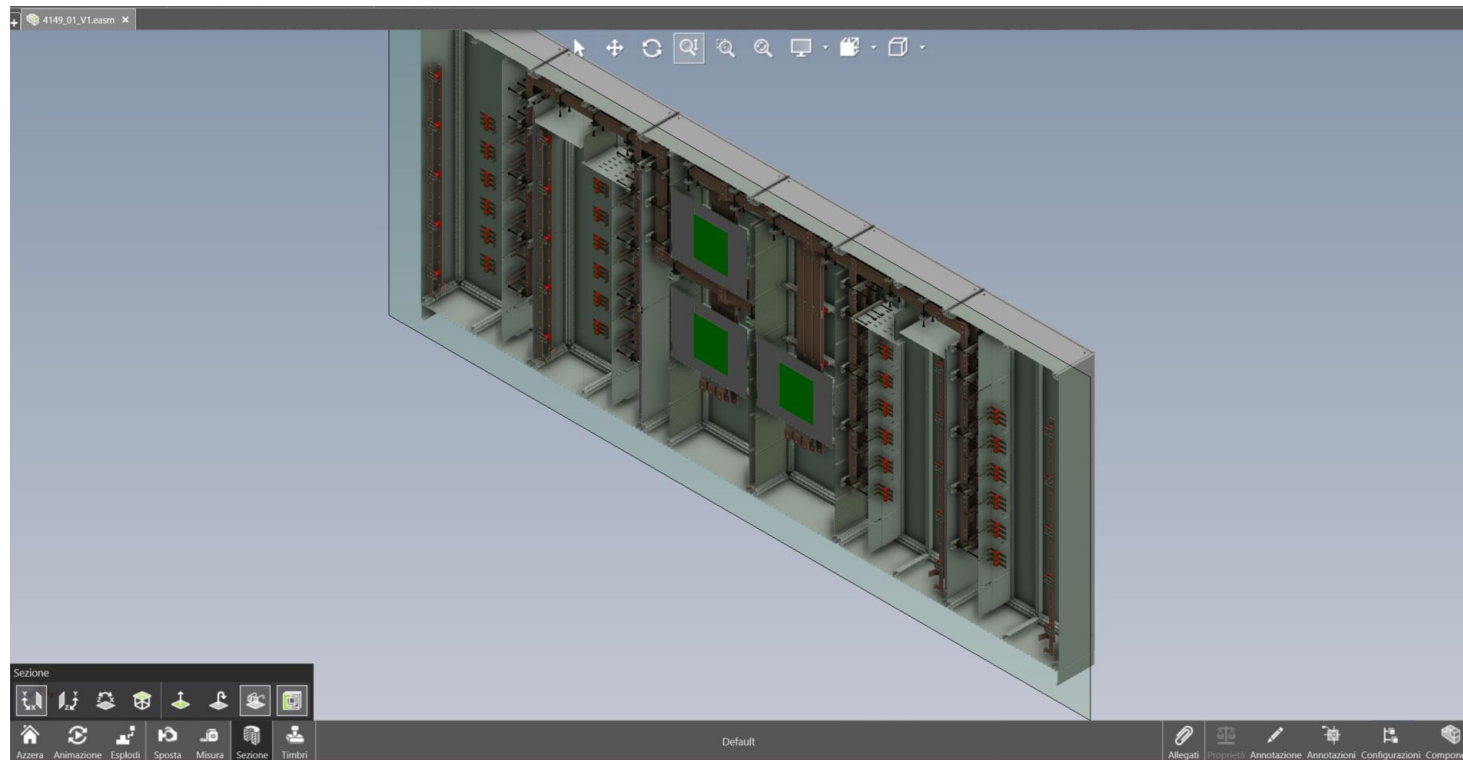
Complete 3D physical model



Intelligent switchgear example

Documents package

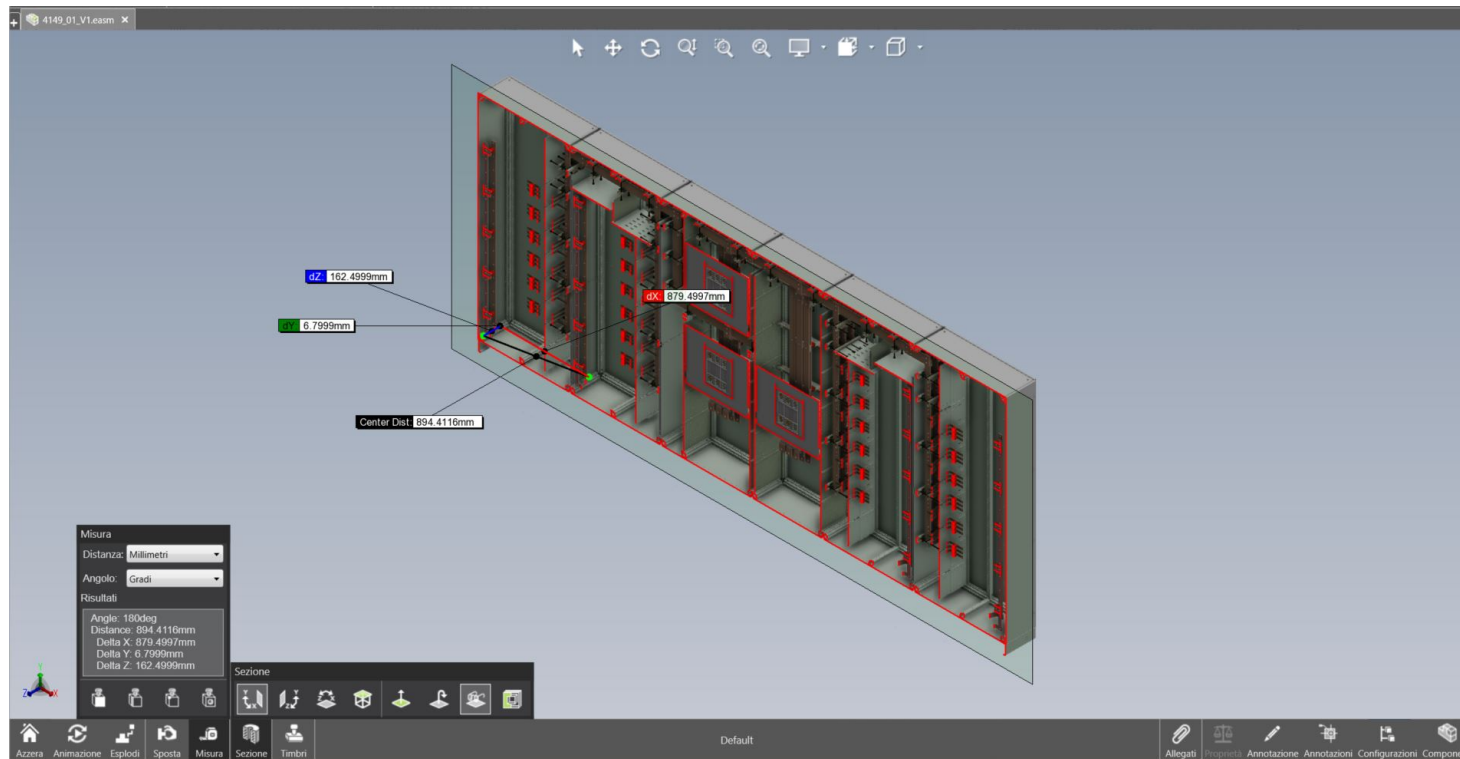
Complete 3D physical model



Intelligent switchgear example

Documents package

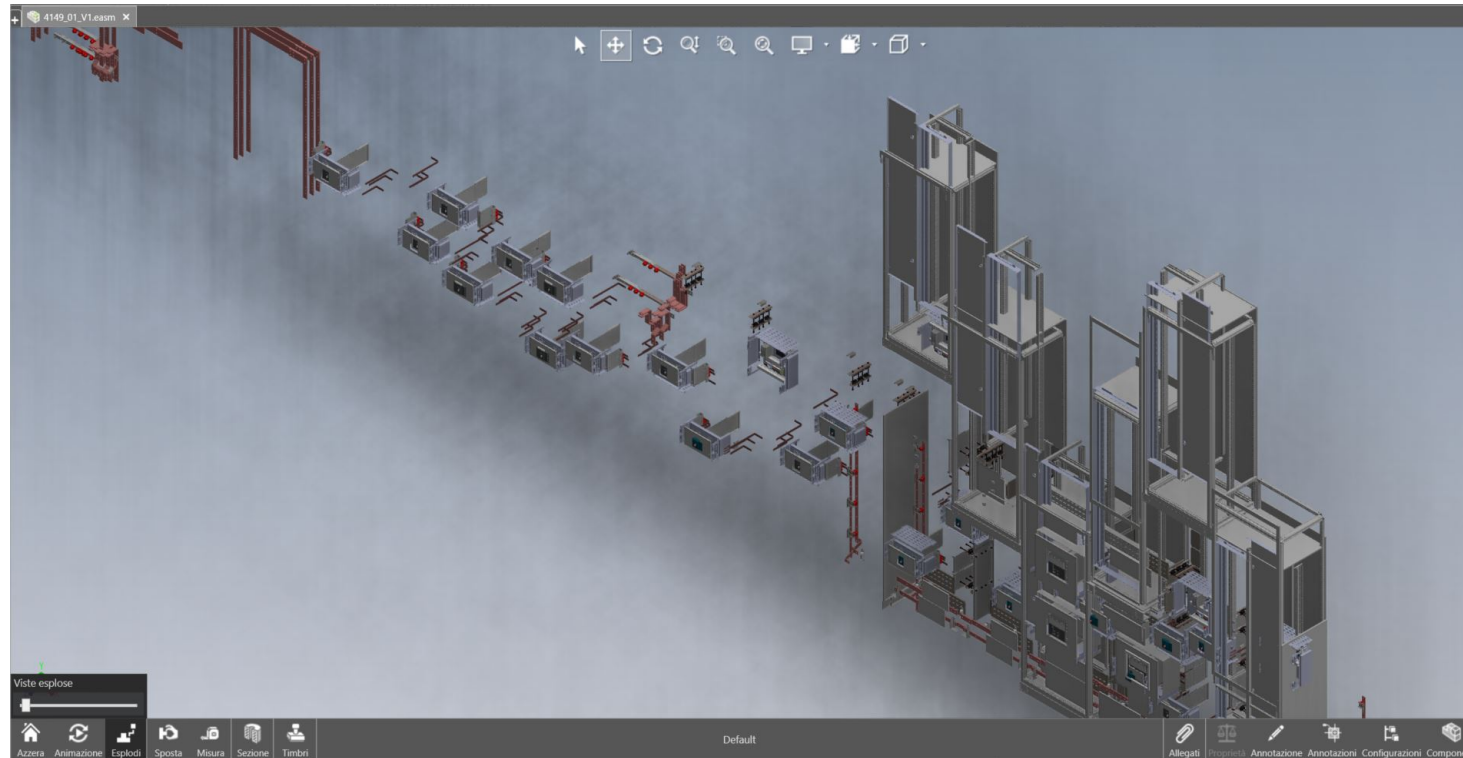
Complete 3D physical model



Intelligent switchgear example

Documents package

Complete 3D physical model



Slido

Poll

How would you describe material and concept shared today?

- 1) Very useful for my daily business
- 2) Useful, but I would appreciate to have this kind of material per application/segment (e.g. Data Center, Marine, Food and Beverage...)
- 3) Useful when integrated in the software tool I am using (e.g. EPLAN)
- 4) Not useful for my business
- 5) Not relevant for my business
- 6) Not applicable to the type of switchboard I am using
- 7) Other



Event code:

#D273

Event link:

<https://app.sli.do/event/jg7bp4m2>

Smart Switchgear

Useful Links

- Smart Switchgear Web Page: [link](#)
- Smart Switchgear for Building and Infrastructure Web Page: [link](#)
- Smart Switchgear for Building and Infrastructure package: [link](#)

- Smart Metering and Monitoring Web Page: [link](#)
- Smart Upgrades and Updates Web Page: [link](#)

- Efficiency of Electrical System. Introduction to IEC 60364-8-1: [link](#)
- Smart Upgrade & Update Article: [link](#)
- Smart upgrade for Emax 2: [link](#)
- Intelligent ITS2 monitoring unit for Switches and Fusegear: [link](#)

Next webinar

Stay tuned

Arc flash protection and mitigation solutions

How to protect people and assets from an arc flash?

Learn more about arc flash risks and discover ABB Medium and Low Voltage solutions for greater protection and productivity. Because safety is not a cost, it is an investment!



Thursday, March 11th



9:00 AM CET

4:00 PM CET

We will get in touch with you soon



Smarter safety

—

Q&A

ABB