

NET POSITIVE

PIX Easy Middle Rolling

Offer overview - Air insulated switchgear up to 17,5 kV - High level of safety, simplicity to use & strong reliability

Hainam - June 2019

Life Is On

Schneider
Electric

Review program

- 1 The 1 – 2 – 3 slide ! & license principle
- 2 Applications
- 3 Catalogue
- 4 Architecture & technical characteristics
- 5 Key benefits
- 6 EcoStruxure ready



1 The 1 - 2 - 3 slide !

1 Dedicated offer to Licensees



2 New integrations

EasyPact
EXE



Thermal
monitoring

3 Figures

Up to
17,5 kV

31,5 kA

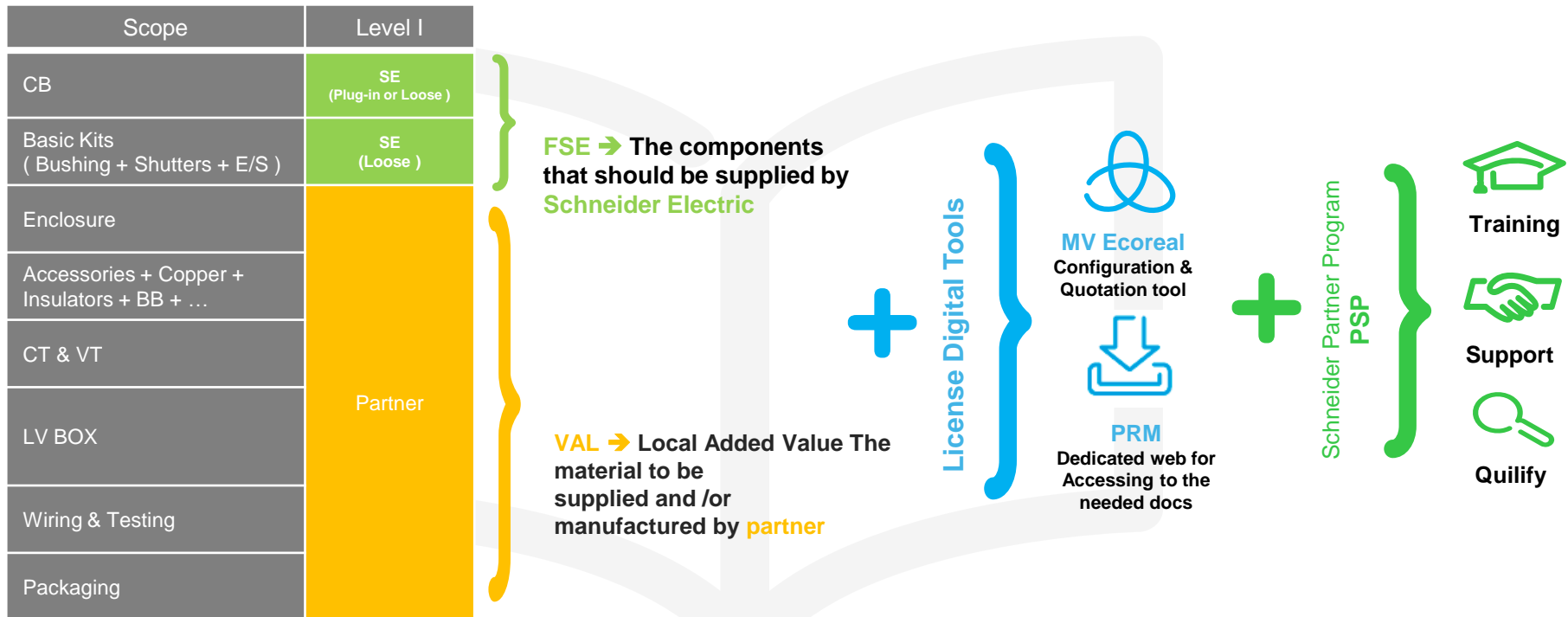
2 500 A

Medium voltage air insulated switchgear with the brand new EasyPact EXE vacuum circuit breaker

Highest level of operator safety :
LSC-2B
31.5kA 1s A-FLR Internal Arc
Classification

Fully type tested versus IEC

1 PIX Easy Level I as Partner Offer



PIX Easy Level I - Level I Scope

PIX EASY Level I → FSE vs. VAL Scope

FSE

❑ Mobile parts

- Easy Pact EXE CB
- Metering devices

❑ BASIC KIT

- Bushing
- Earthing Switch
- Shutter Mechanism and Accessories
- Internal Arc Doors

❑ Additional Optional Component

- LV plug, female contacts
- Switching operation lever
- CB extraction trolley
- SE protection relay unit
- Racking in-out position contact
- LV box door handle & Heating resistor
- Interlocking by keys CB and ES
- Signalisation ES - VPIS

VAL

MEDIUM VOLTAGE

❑ Manufacture (Or direct purchasing)

- Panel structure
- Current transformer
- Voltage transformer
- All Copper connections
- Phase barriers

❑ Assembling and cabling

- CB Customization
- FSE and VAL parts assembly
- Cubicle integration with LV box and final wiring (CT / VT connections)

❑ Quality Control

- Switch board conformity
- Dielectric test
- Checking of winding direction on CT's
- Product quality plan
- Part check VT compartment cabling manufacturing quality plan
- Routine tests
- FAT

LOW VOLTAGE

❑ Engineering drawings

❑ Relay (cabling + programming)

❑ Manufacture

(Or direct purchasing)

- LV Compartment box including the door

❑ Assembly

- LV compartment with structure

❑ LV quality control

- Dielectric testing 2kV 50 Hz / 1mn on LV
- Checking relay functioning sequences
- Routine tests as per wiring diagram

❑ Cubicle packaging

❑ Service

- Installation, commissioning and testing
- After sales / trouble shooting
- Spare parts management

Type wise

Applications

Buildings

- Healthcare
- Hotels
- Airports
- Banking & finance

Energy & Infrastructure

- Electrical utilities
- Smart cities

Industry

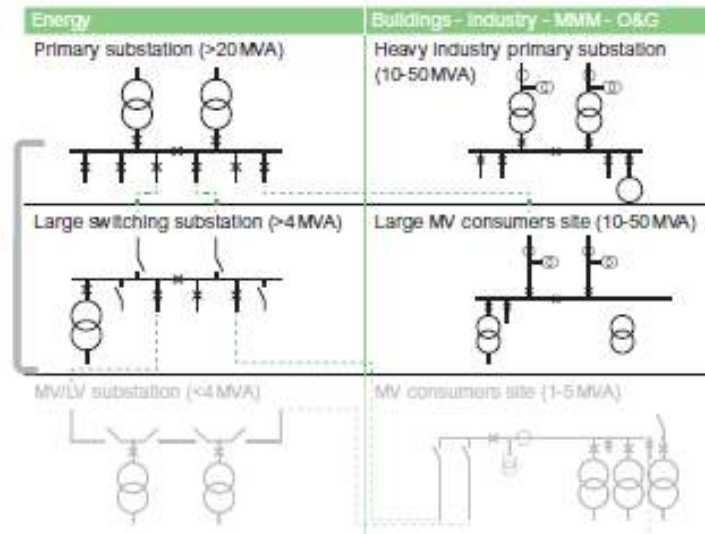
- Food & Beverage
- Automotive
- Water and wastewater
- Small industries
- Life sciences



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Power ratings wise



3 Catalogue



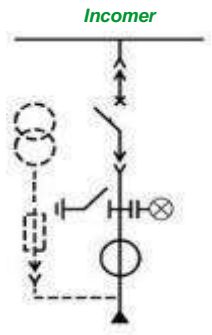
Circuit breaker



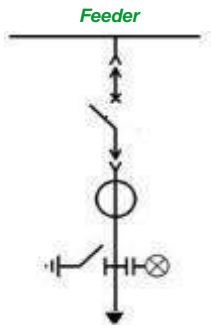
Metering device

3 Catalogue

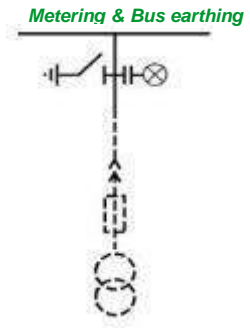
5 functional unit cubicles -



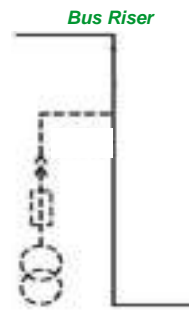
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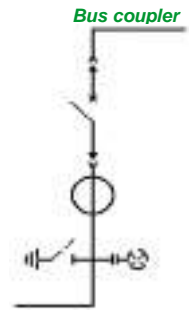
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3



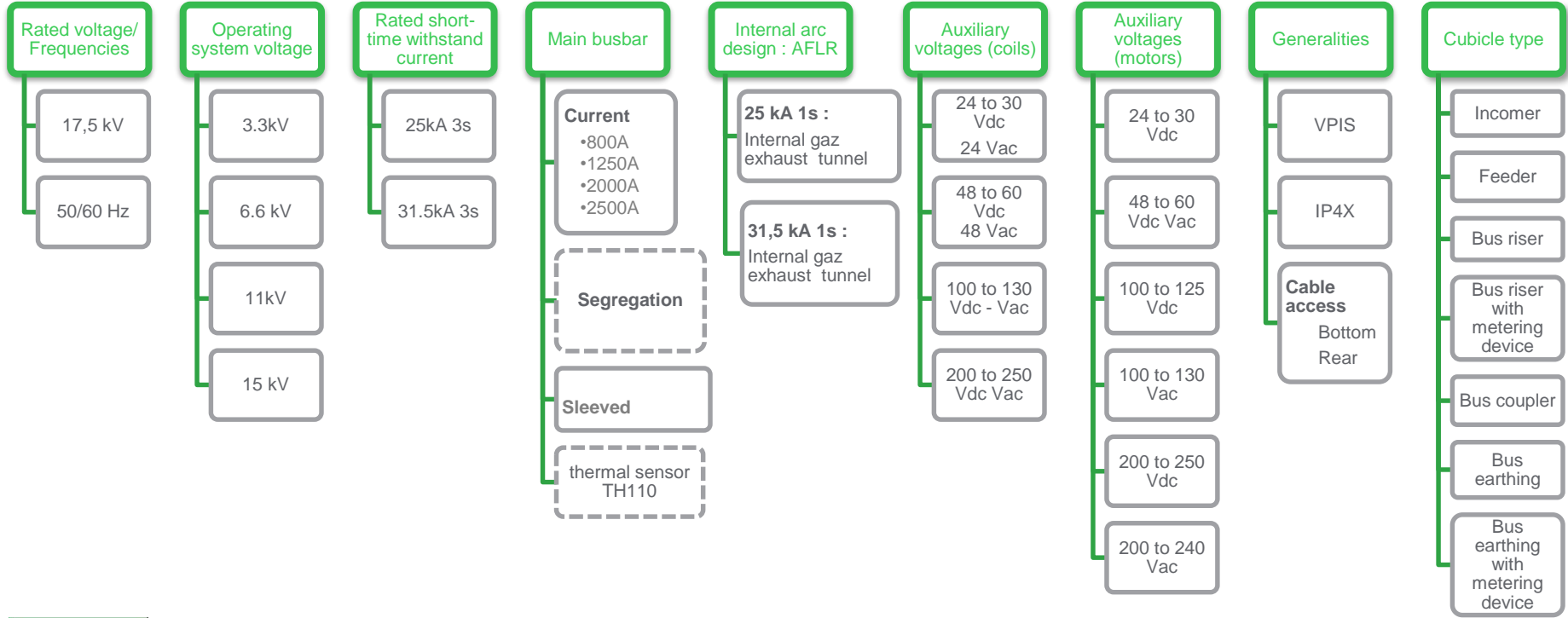
4



5

3 Catalogue details

Switchboard configurations



3 Catalogue details

Incomer

Rated current

800A

1250A

2000A

2500A

Cable compartment

Type of cables:
Single core
Three core

Number of cables / phase:
1 to 4

Surge arrester

Space heater

thermal sensor TH110

environmental sensor CL110

Instrument transformers

Current transformers
1 or 2 sets
DIN type (800 to 2500A)

Voltage transformer

Earthing switch

With

Key lock

Electro-magnetic lock

Key + Electro-Magnetic lock

Withdrawable device : Circuit breaker

Auxiliary contacts
: 4NO+4NC
Optional :
8NO+8NC
12NO+12NC

1 trip coil

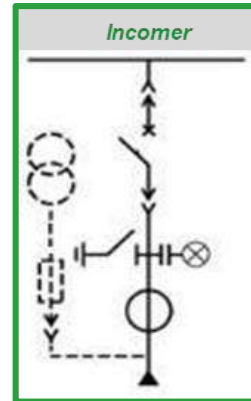
1 closing coil

2nd trip coil (MX or MN)

flat key & lock

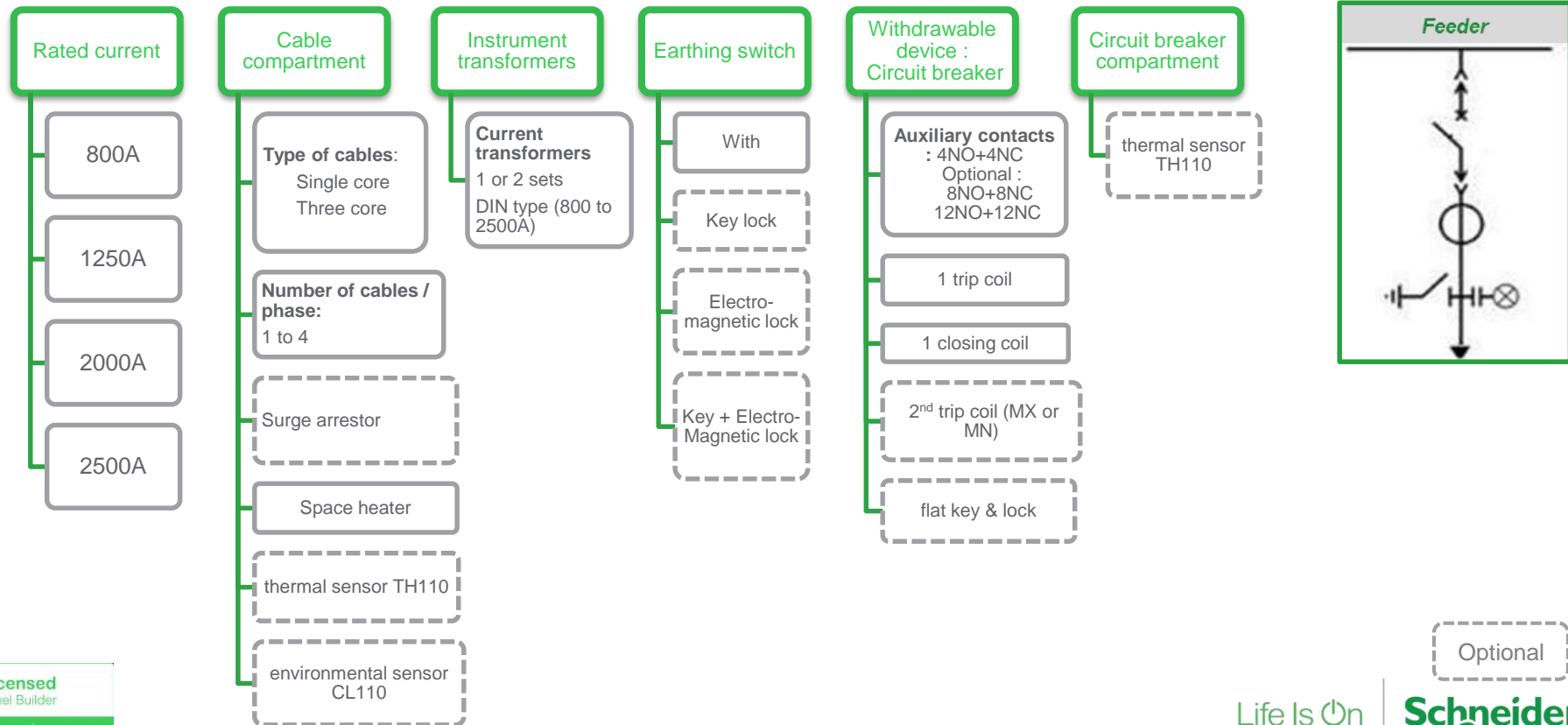
Circuit breaker compartment

thermal sensor TH110



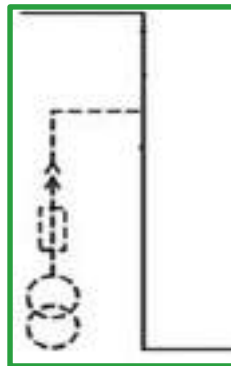
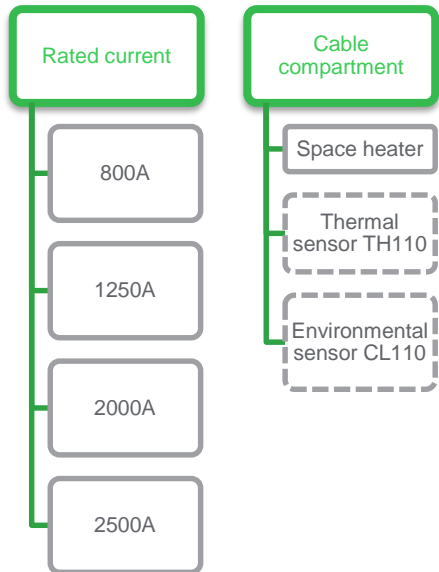
3 Catalogue details

Feeder

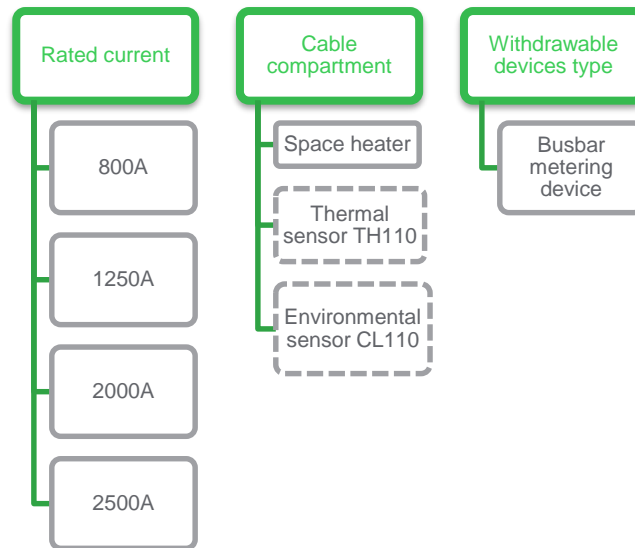


3 Catalogue

Bus riser



Bus riser with metering device



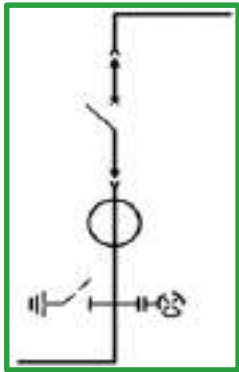
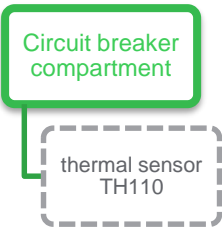
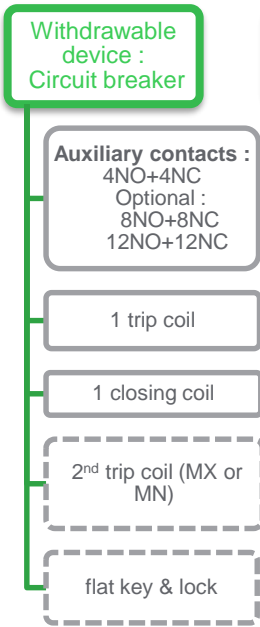
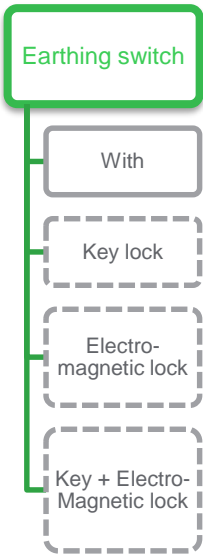
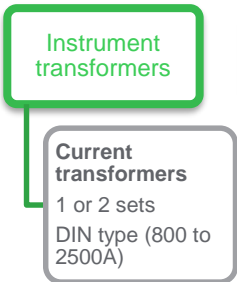
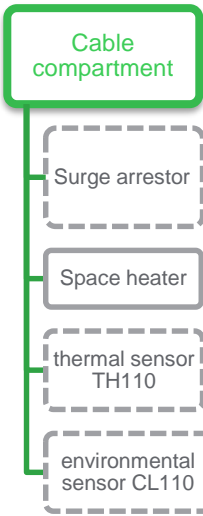
Optional

3 Catalogue details

Bus coupler

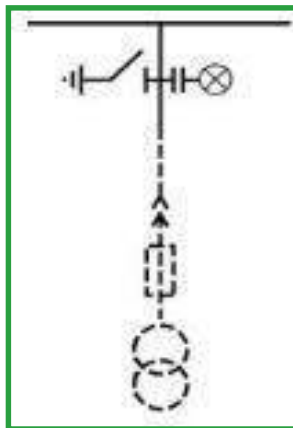
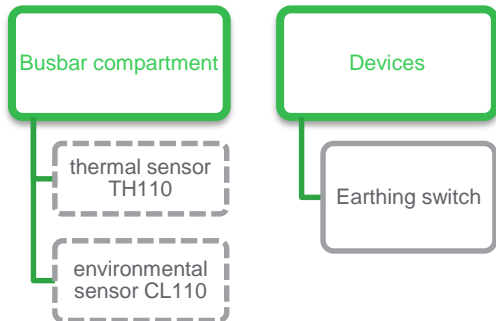
Optional

Updates all SLDs with Ecoreal's ones

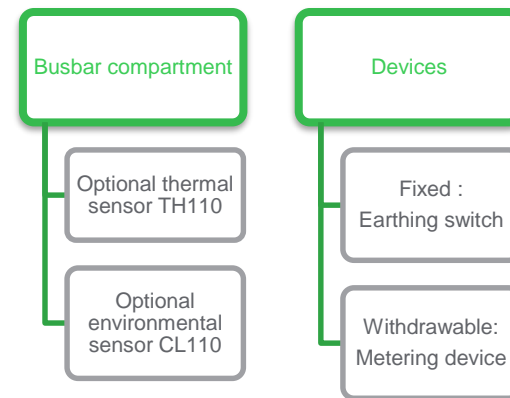


3 Catalogue

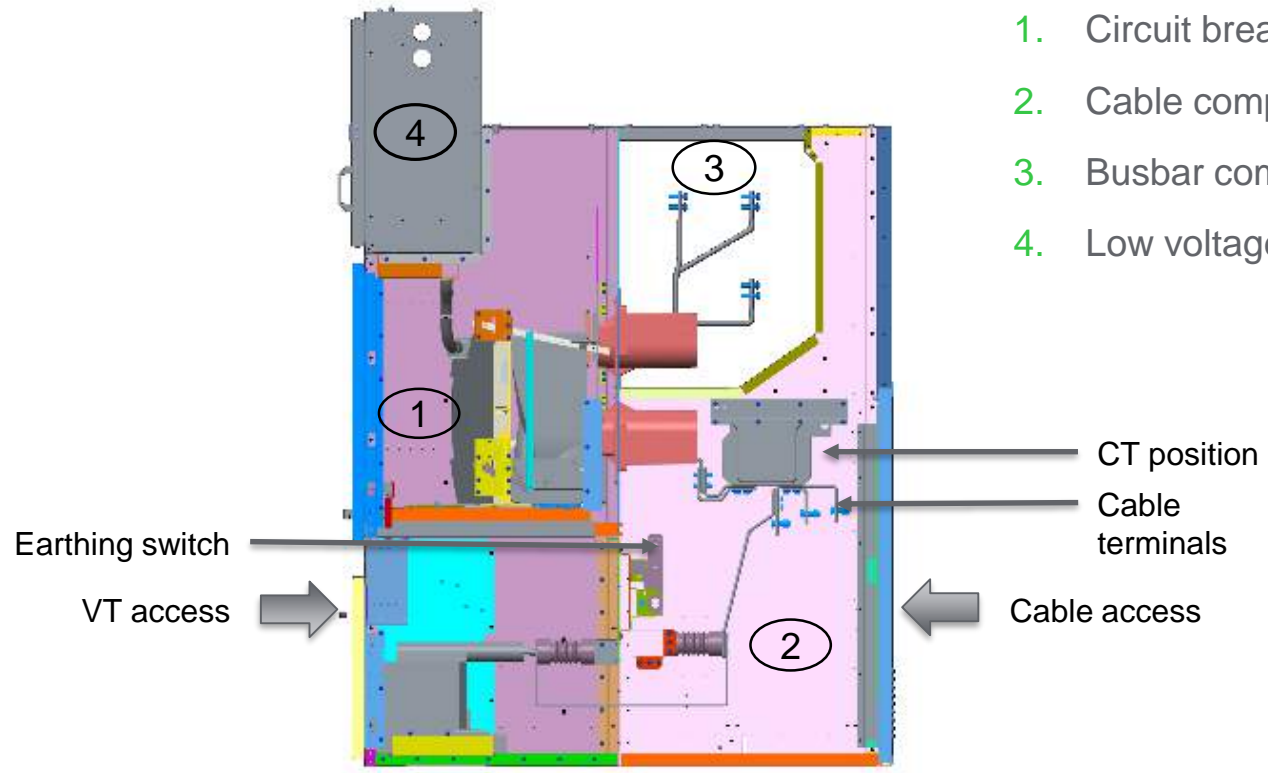
Bus earthing cubicle



Bus earthing & metering cubicle



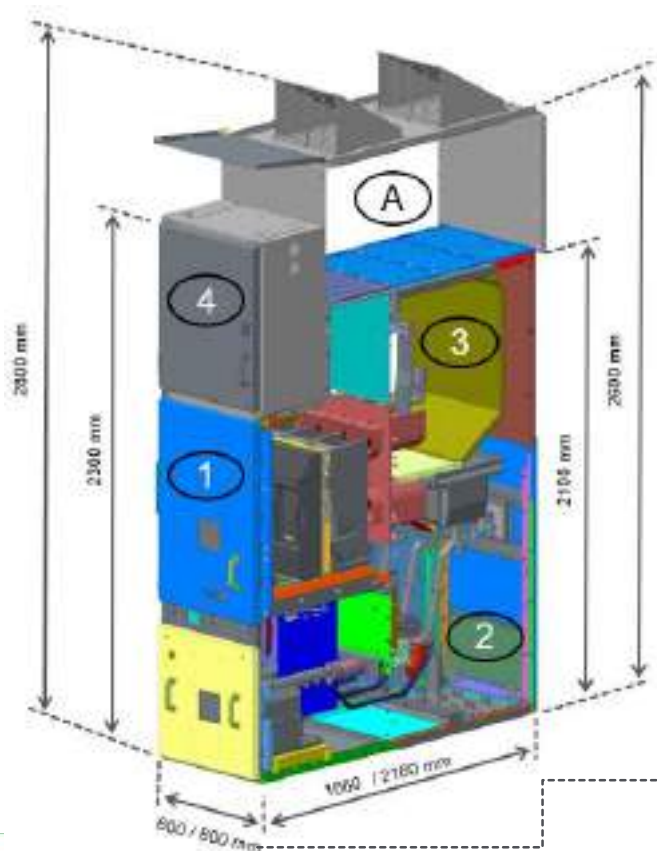
4 Architecture & Technical characteristics



- 1. Circuit breaker compartment
- 2. Cable compartment
- 3. Busbar compartment
- 4. Low voltage compartment

4 Architecture and technical characteristics

Dimensions & materials

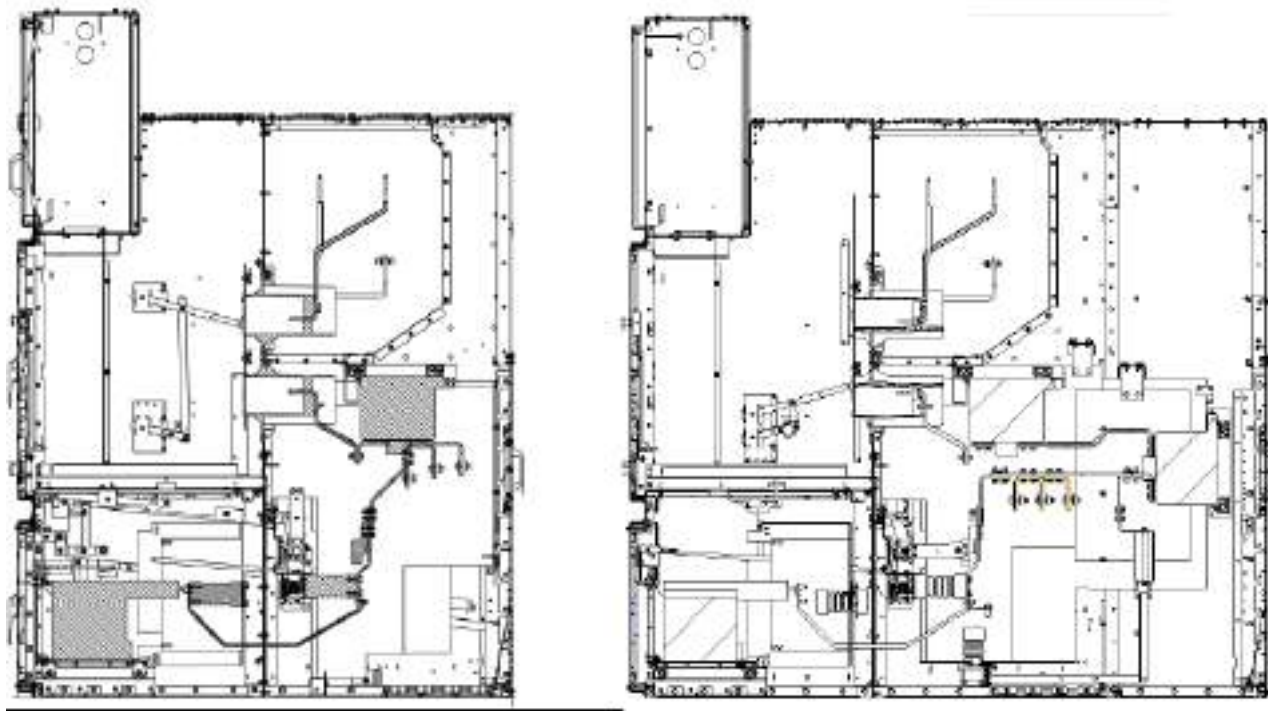


Devices	Material	Thickness
Busbars, risers, connections	Copper	
Enclosures	Aluminium Zinc coated steel	From 1 to 2 mm
Front doors	CRCA/GI sheets RAL 9001 painted	
Rear covers	Aluminium Zinc	

Ir (A)	Width (mm)	CB Phase distance
800	600	150mm
1250		
2000	800	210mm
2500		

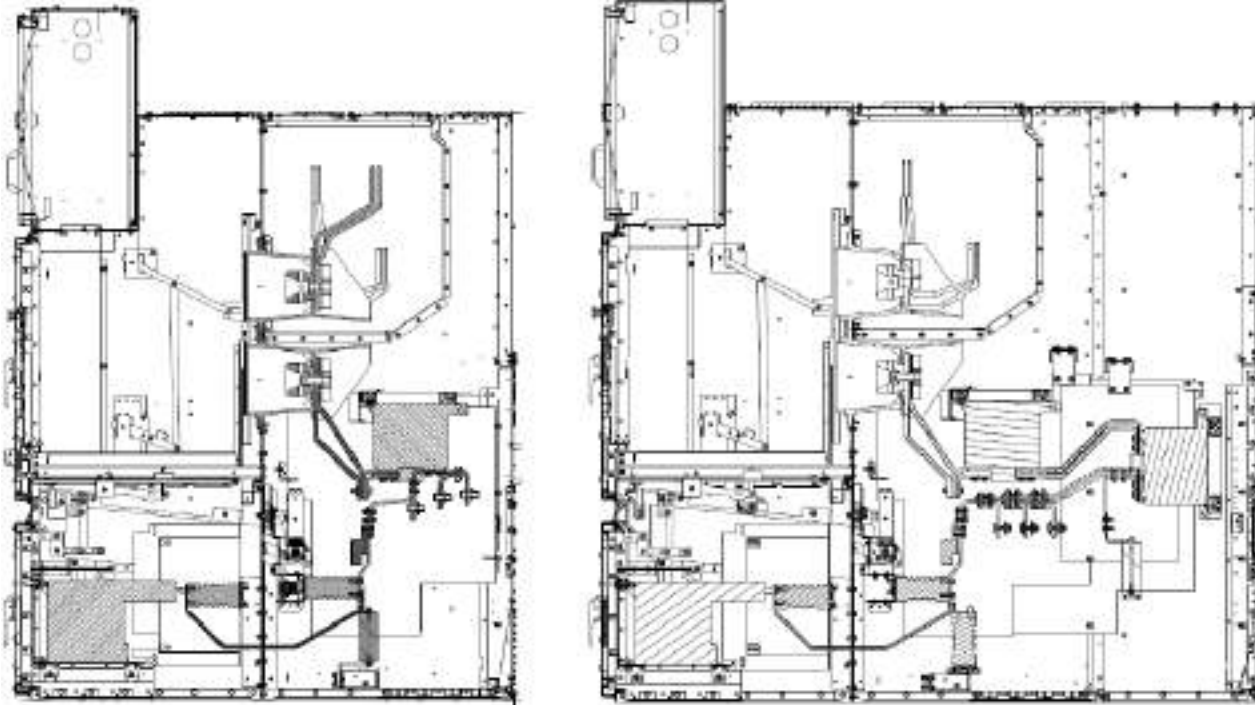
4 Architecture & Technical characteristics

Detailed sectional view with 1 or 2 CTs 800A and 1250A



4 Architecture & Technical characteristics

Detailed sectional view with 1 or 2 CTs 2000A and 2500A



4 Architecture and technical characteristics

Cables connections



No of CT / Ph		Rear Cable Access			
		800 A	1250 A	2000 A	2500 A
1CT / ph	1 core	> 650	> 650	> 650	> 650
	3 core	> 650	> 650	> 650	> 650
2CT / ph	1 core	> 650	> 650	> 550	> 550
	3 core	> 650	> 650	> 550	> 550

Cable type and run per phase	Current rating			
	800 A	1250 A	2000 A	2500 A
1 run single core per phase				
2 run single core per phase	X	X		
3 run single core per phase	X	X		
4 run single core per phase (Back to back)	X	X	X	X
1 run three core per phase				
2 run three core per phase	X			
3 run three core per phase	X	X		
4 run three core per phase (Back to back)				

Cable runs per phase	Current Rating			
	800 A	1250 A	2000 A	2500 A
1 No. of Cables / phase	X			
2 No. of Cables / phase	X	X		
3 No. of Cables / phase	X	X	X	X
4 No. of Cables / phase (Back to back)	X	X	X	X

4 Architecture and technical characteristics

Cubicle

Characteristics		Values
Rated voltage	kV	17.5
Lightening impulse voltage	kVp	95
Rated current	A	Up to 2500A
Rated peak current	kAp	65 or 81.9
Rated short time current	kA rms	25 or 31.5 (3s)
Internal arc Fault, AFLR	KA	25 or 31.5 (1s)
Degree of protection	IP	4X 2X between compartments
Loss of service continuity		LSC2B
Partition class		PM
Mechanical endurance ES and Rack-in/out	maneuvers	1 000
Ambient temperature	° C	-5° to + 40° / 35°c average over 24h
Altitude	m	Up to 1000 (without derating)

Designed & tested according to IEC 62271-200

4 Architecture & Technical characteristics

EasyPact EXE

Characteristics		Rating
Rated frequency	Hz	50/60
Rated current	A	Up to 2500A
Rated short time current (3s)	kA rms	25 / 31.5
Making current	kAp	65 / 81.9
Breaking current	Isc	25 / 31.5
Mechanical endurance		10 000
Classification		E2 , M2
Operating sequence		O – 0.3s – CO - 3min - CO
Capacitive switching class	kA	C2 for 25 C1 for 31.5

Designed & tested according to IEC 62271-100



Circuit breaker

4 Architecture & Technical characteristics

Accessories



Extraction trolley



Ramp for line voltage transformer

4 Architecture and technical characteristics

Type tests overview

Major type tests conducted in International labs such as KEMA, PEHLA, CESI, VOLTA, ASEFA & ASTA

- Internal Arc
- Making and breaking tests
- Short-time withstand current tests
- Dielectric tests
- Temperature rise tests
- IP tests



4 Architecture and technical characteristics

Standards

- ❑ IEC 62271-1 High-voltage switchgear and controlgear: common specifications
- ❑ IEC 62271-200 High-voltage switchgear and controlgear – part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1kV and up to and including 52kV.
- ❑ IEC 62271-100 High-voltage alternating-current circuit breakers.
- ❑ IEC 62271-102 High-voltage switchgear and controlgear – part 102: Alternating current disconnectors and earthing switches.
- ❑ IEC 60529 Degree of protection provided by enclosures
- ❑ IEC 61869-2 Current transformers
- ❑ IEC 61869-3 Voltage transformer.
- ❑ IEC 61243-5 Live Working-Voltage Detection Systems
- ❑ IEC 60720 Partial discharge measurements

5 Key benefits

For the end user



Safety tested for highest levels of operator safety with an Internal Arc Classification of 31.5kA 1s A-FLR



Simple: Qr codes for tailored information. Easy interface



Efficient: compact design and optimized architecture



Reliability designed for maximum service continuity with the LSC-2B PM classification



5 Key benefits for end users



Safety

Highest level of operator safety during arc faults

- Internal arc classification up to 31.5kA 1s
- A-FLR → Protection on all sides of the switchgear
 - tunnel solutions
- Type tested as per IEC in International labs
- Arc extinguishing solution with VAMP relay

Safe operation with built in interlocks and metal partitions

- Incorporates all the basic interlocks and more for error free operation
- Bus bar metallic segregation option

Hassle free safety during intervention

- Metallic shutters and partitions keep the accessible compartments
- Integrated earth switch



5 Key benefits for end users



Simplicity

Maximizing cable termination height for easy installation

- Easy connection / up to 4 cables per phase



Intuitive single line diagrams and drawings on the front door, VPIS on each cubicle for easy operations



Easy access to all compartments



5 Key benefits for end users



Simplicity

Access to safe repository through QR codes for customized data related to cubicle

- Manuals
- Brochures
- Maintenance reports



5 Key benefits for end users



Efficient

Compact design = Space savings

Only 800mm width for 2500A cubicles

Bus metering and bus earthing functions coupled in a single cubicle

All cubicles are naturally cooled (no electrical consumption for temperature management)



5 Key benefits for end users



Reliability

Fully type tested as per IEC standards

- All major tests are done in International labs

Maximizing service continuity to minimize down time

- LSC-2B service continuity as per IEC
- Busbar compartments segregation between cubicles (option)

Designed for a wide range of ambient temperatures

- No de-rating and natural cooling up to 40 °C ambient temperatures



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5 Key benefits



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For the partners



Easy to manage thanks to
Ecoreal MV tool



Short lead time : 2 weeks



Increased added value :
more localized parts, higher
modularity for breaker.

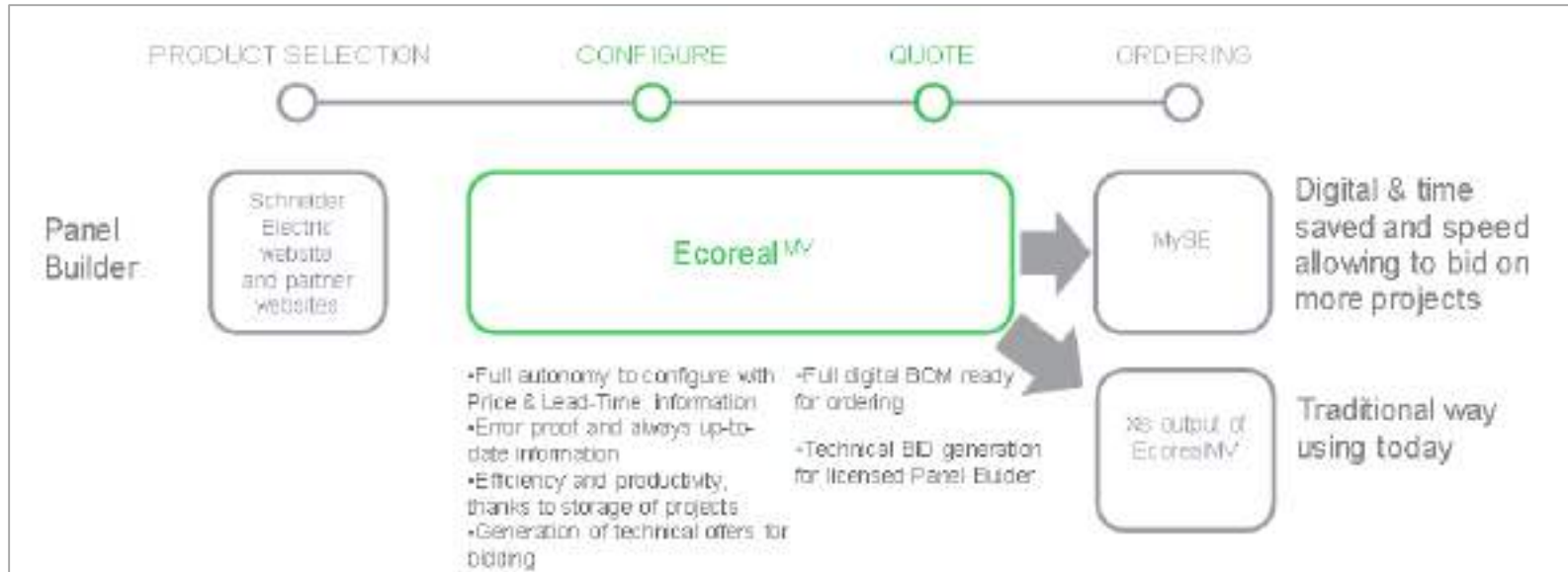


Schneider Electric & PIX
brand names association

5 Key benefits (for partners)



Easy to manage - Ecoreal MV

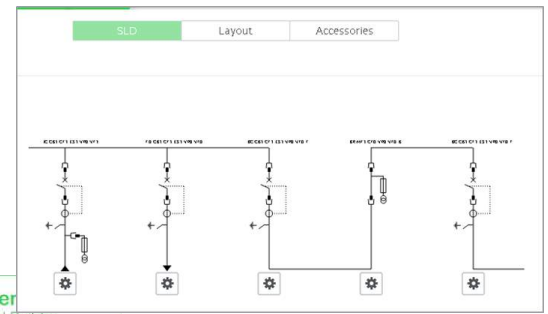


5 Key benefits (for partners)



Easy to manage

1 Configure



2 Quote

Technical Part

0.1 Switchboard (breakers) - IWB 1

Electrical data	
Rated voltage	24 kV
Insulation voltage (U _i)	36 kV
U ₁ (ULTRASHIELD) peak	75 kV
Operating voltage	11 kV
Frequency	50 Hz
Rated current (I _n)	25 kA
Short circuit current (I _{sc})	7.7
Mechanical general characteristics	
UIC standard compliance	24 001 0
Internal air circulation	3P1K4 with rear access
Width	350 mm
UIC standard type	high T3000
UIC exhaust type	deflector
Technical features & configuration	
ring assembly	standard
switchgear type	

0.2 Switchboard Summary

Order	Qty	Item	Technical description
0.1		IWB 1	
0.1.1	1	1C CB1 CT1 801 IWB V01	
0.1.2	2	2C CB1 CT1 801 IWB V02	
0.1.3	3	3C CB1 CT1 801 IWB V03	
0.1.4	4	4C CB1 CT1 801 IWB V04	
0.1.5	5	5C CB1 CT1 801 IWB V05	

3 Order

Public price (EUR) 7

Forecast only quantity

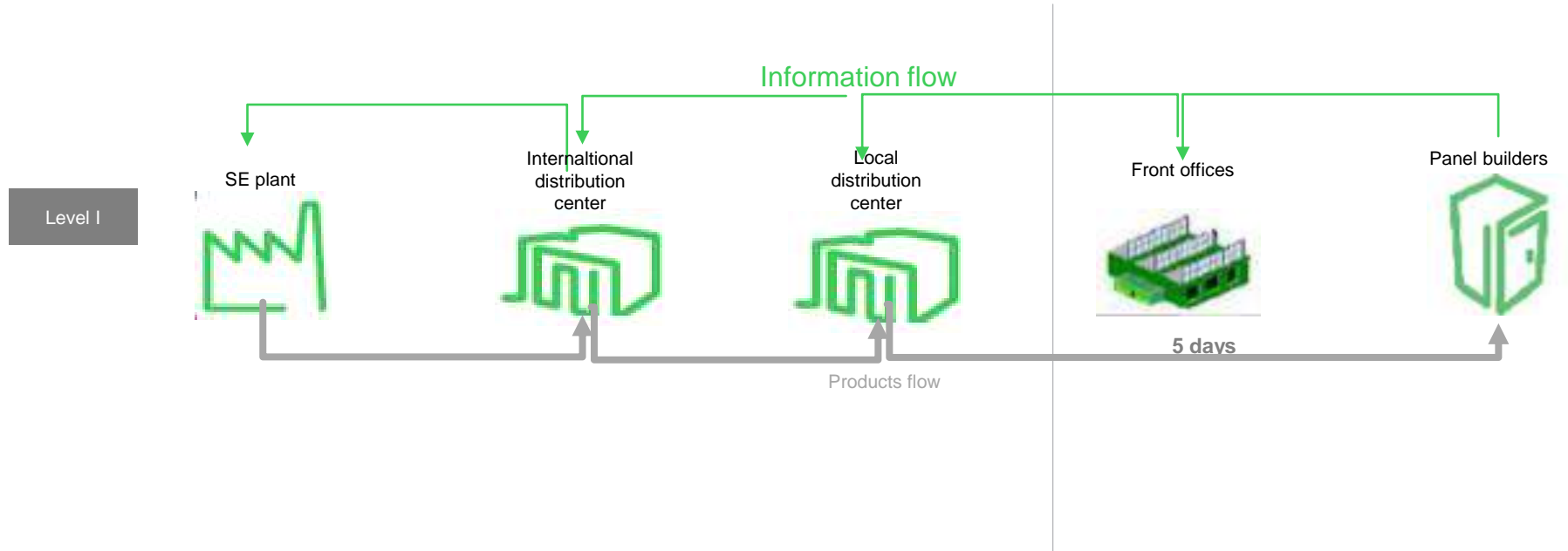
Order	Public price (EUR)	Net price (EUR)	Lead Time (working days)
1 - 1C CB1 CT...	2,047.00	2,037.00	20
2 - 2C CB1 CT...	3,908.00	2,539.00	3
3 - 3C CB1 CT...	3,036.00	2,696.00	3
4 - 4C CB1 CT...	1,144.00	1,564.00	40



5 Key benefits (for partners)



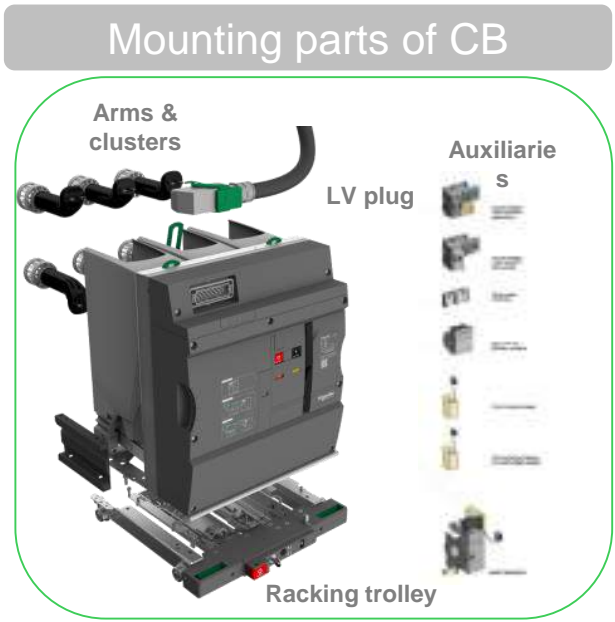
Short lead time : 2 to 8 weeks



5 Key benefits (for partners)

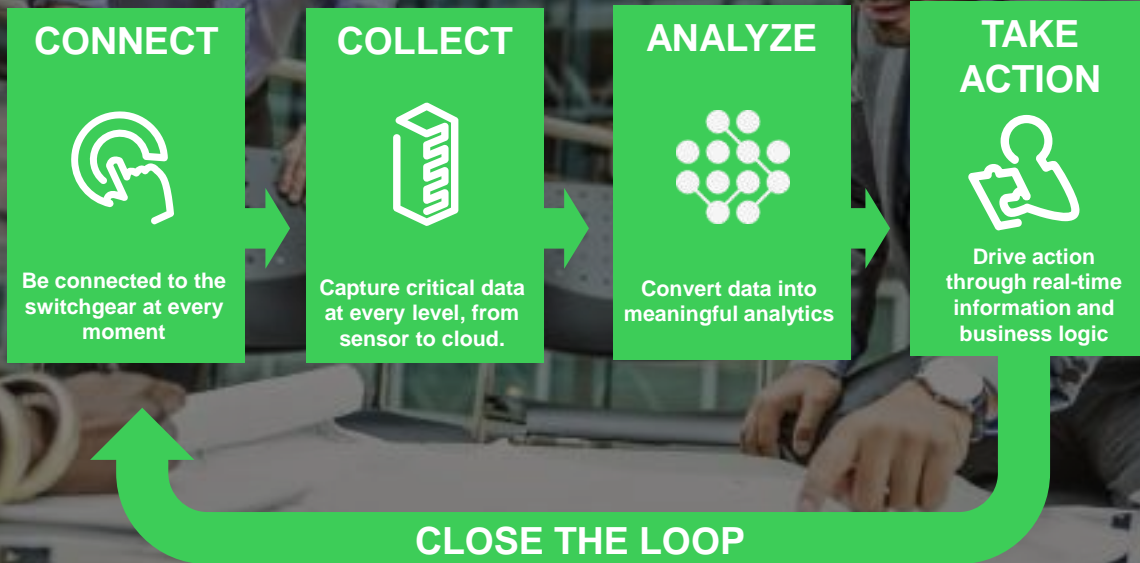


More added value



PIX Easy is EcoStruxure ready answering new demands... Why?

Assets management to extend the Switchgear lifetime



EcoStruxure ready



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6 EcoStruxure ready

Augmented with sensors, digital tools and analytics throughout lifecycles



- More precise conditioning monitoring & asset diagnostics
- Extending network observability & controllability
- Safer & more flexible field operations



Connected
Products



RM6



Easergy TH110



Easergy MICOM

Primary Equipment



PIX Easy....



Easergy T300 Remote Terminal Unit

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Thermal monitoring

What

- Critical connections (*bolted*) monitoring thru Wireless temperature sensors (*TH110*)

How

- Sensors paired to Substation Monitoring Device (SMD) with algorithm embedded to delivering status ●●●
- Any alarm will reach immediately (24/7) the facility manager by local alarm, remote HMI / Scada / sms / e-mail, ...

Why

- Reduced failure probabilities & maintenance times
- Reducing OPEX increasing Reliability

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TH110 (*Temperature sensor*) Wireless & Battery-less fixed on Cable connection of PIXEasy

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Environment monitoring*

What

- Wireless humidity sensor (*CL110*) inside compartment monitors Ambient T°, humidity & Cold point T° (for condensation)

How

- SMD with embedded Algorithm receives input 4 Degrees of severity of environment based on **IEC 62271-304**
- SMD provides alarms for excessive high t°, low t°, humidity
- Settings and position of sensors depends on application:
 - Example 1: monitor cable box environment in a wet country where cable trench could fill with water
 - Example 2: monitor LV compartment t° in very hot country

Why

- Avoiding fast aging
- Adapt maintenance period to real condition avoiding incidents



CL110
Wireless
Relative
humidity
Sensor

