

TE ENERGY

SF6-free GIS COMPACT SWITCHGEAR UP TO 24 kV
FOR RMU APPLICATIONS AND PRIMARY DISTRIBUTION

SCELL_MONO | 24 kV, 630 A, 20 kA
24 kV, 1250 A, 25 kA



**ON TIME WITH
CONFIDENCE**



Co-funded by
the European Union



Investing
in your future

ISO 9001:2015

ISO 14001:2015

ISO 45001:2018

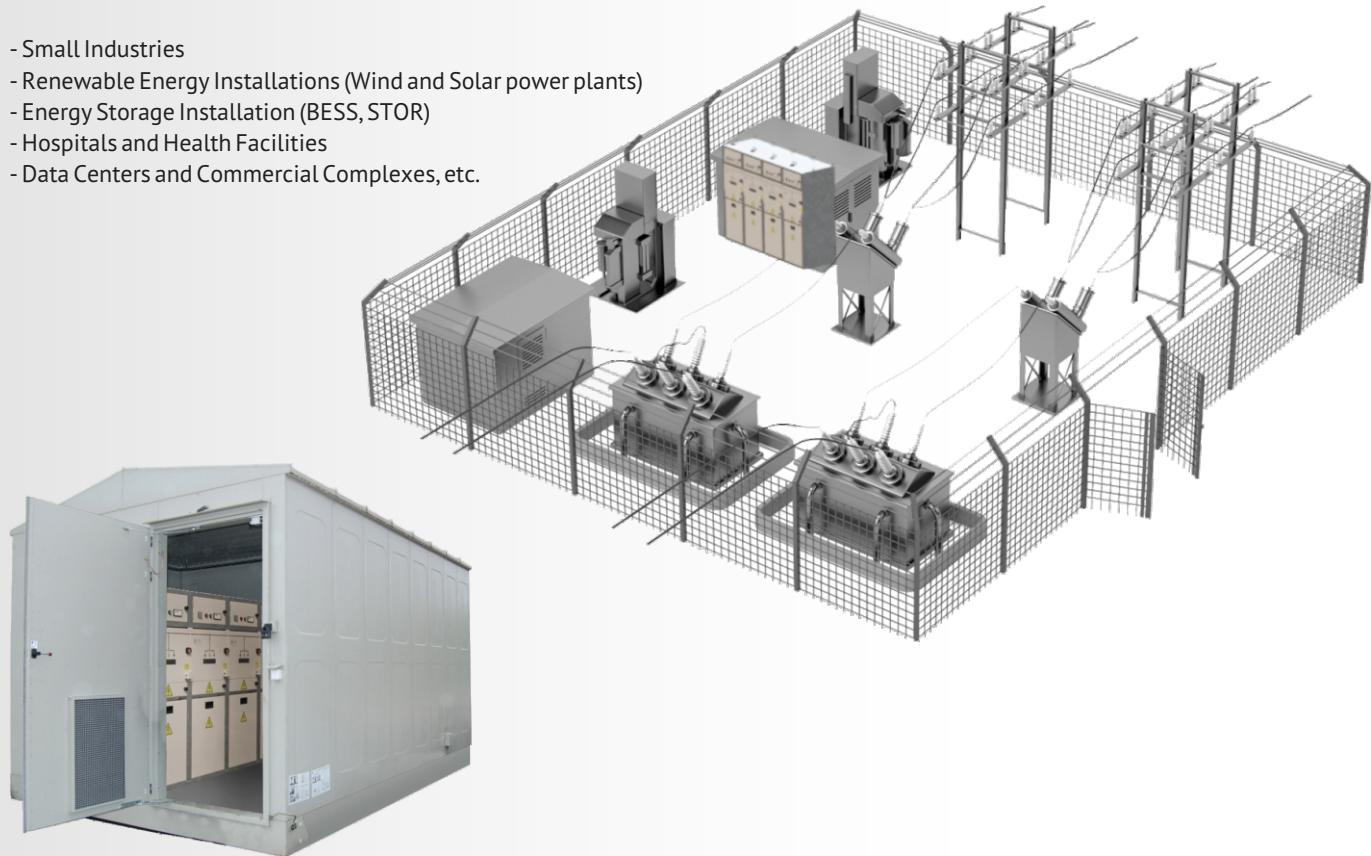
VERSATILE RMU SOLUTIONS

Introduction

The SCELL_Mono switchgear is designed to meet both current and future environmental regulations, fully adhering to EU Regulation No. 517/2014, which reduces the use of fluorinated gases in industrial applications. It also aligns with the European Commission's April 2022 proposal, part of the EU's Green Deal, aiming to phase out the use of F-gases in new switchgear by 2030, where alternative technologies are available. SCELL_Mono thus not only meets present standards but is also prepared for upcoming regulatory changes, helping equipment owners maintain low operating costs in a sustainable manner.

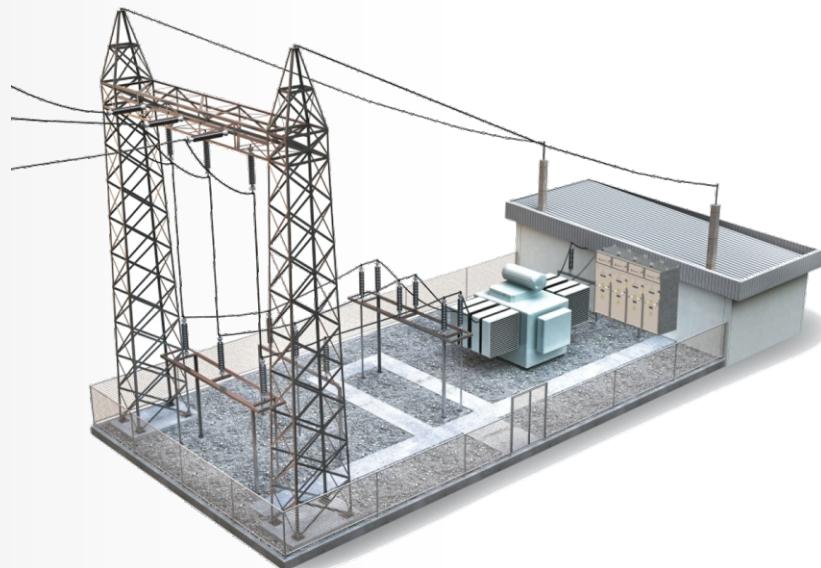
The SCELL_Mono switchgear, TE Energy's latest innovation, is specifically designed for use in ring main unit stations, providing essential control and protection for DNO cable networks. In addition to traditional substation use, it is also ideal for diverse sectors such as:

- Small Industries
- Renewable Energy Installations (Wind and Solar power plants)
- Energy Storage Installation (BESS, STOR)
- Hospitals and Health Facilities
- Data Centers and Commercial Complexes, etc.



Well-suited for primary distribution

Besides its typical RMU applications, the SCELL_Mono's extensible design and robust accessories, with a 1250A current rating and 25kA short-circuit withstand capacity, allow it to be used in more demanding applications such as primary distribution. This versatility makes the SCELL_Mono suitable not only for secondary distribution networks but also for scenarios requiring higher power handling and more complex network configurations.

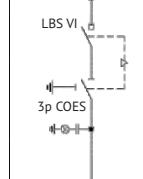
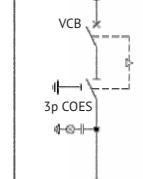
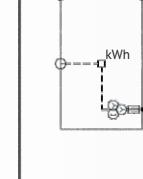
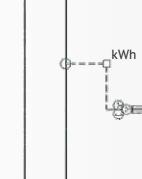
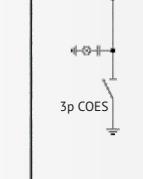
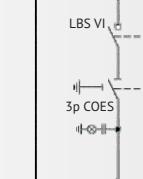
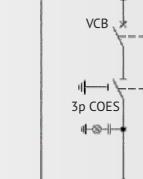


CONFIGURATIONS

Main switching devices

	LBS	Isc breaking capacity	Ir rated current	Operation	Auxiliary supply	Protection	Motor
1		Isc=Load	Ir=630A Ir=1250A	Manual Remote	Self/dual-powered	Short-circuit indicator	Upgrade accessory
2		Isc breaking capacity Isc=20kA Isc=25kA	Ir rated current Ir=630A Ir=1250A	Operation Manual Remote	Auxiliary supply Self/dual-powered 24-220VDC/ 100-230VAC	Protection Self-powered relay Full-scale IED	Motor Upgrade accessory

Selection

	LBS	VCB	Metering (uplink)	Metering (lowlink)	Busbar earthing	LBS Coupler LHS/RHS	VCB Coupler LHS/RHS
	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A	24kV;20/25kA; 630A/1250A
							

Options

	L	V	CMU	CML	BE	CLL/CLR	CVL/CVR
Cable VT	✓	✓					
Busbar VT	✓	✓				✓	
Cable CT/CS	✓	✓					
Busbar CT/CS	✓	✓				✓	✓
Coupler CT/CS	✓	✓				✓	✓
2 cables per phase ¹	✓	✓					
Front attachment ²	✓	✓					
Rear gas exhaust ³	✓	✓	✓	✓	✓	✓	✓
Surge arresters ⁴	✓	✓					

Accessories

LBS/VCB motor	✓	✓				✓	✓
COES motor	✓	✓				✓	✓
Self-powered IED		✓					✓
Time-Limit Fuse		✓					
SC indicator	✓	✓	✓	✓	✓	✓	✓
Remote trip	✓	✓				✓	✓

¹ Adding surge arresters requires a front attachment.

² The front attachment can house 2 more cables per phase or 1 cable plus surge arresters.

³ This adds 150 mm in depth.

⁴ One cable per phase and surge arresters can fit in the cable compartment.

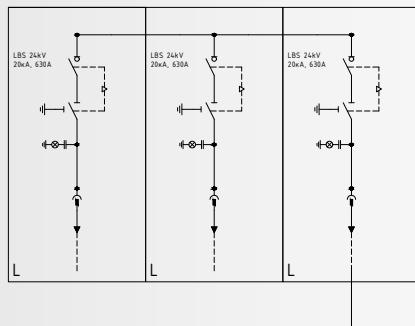
TYPICAL INSTALLATIONS

RMU for Cable Transit Compact Substations

The SCELL_Mono can be used as an RMU (Ring Main Unit) for secondary distribution networks. Its extendable and modular compact design offers complete solutions for compact secondary substations (concrete, metal, GRP) such as cable transit substations and transformer substations up to 4 MVA.

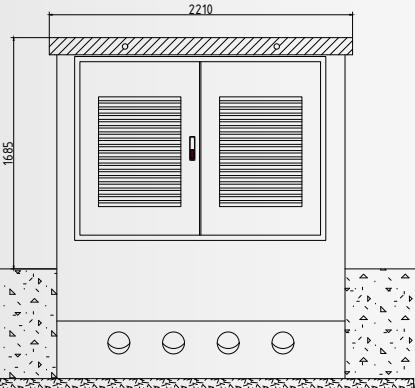
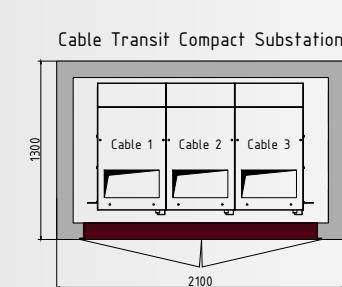
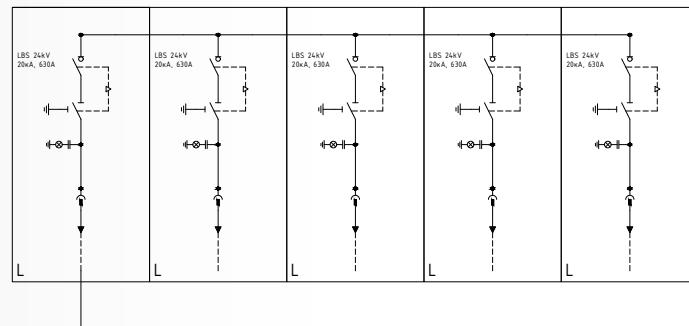
1	2	3
Cable 1	Cable 2	Cable 3

24kV, 630A, 20kA, 3-way RMU
Cable Transit Compact Substation

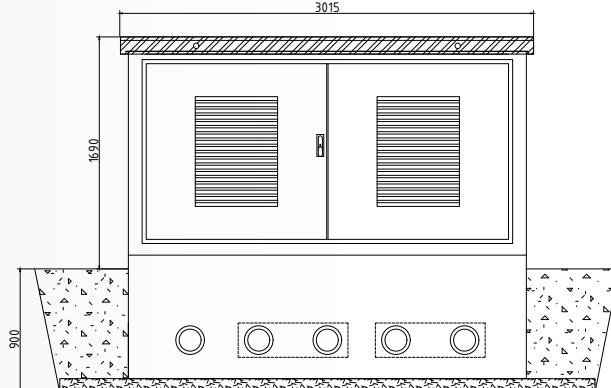
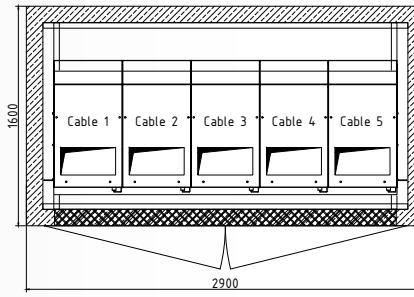


1	2	3	4	5
Cable 1	Cable 2	Cable 3	Cable 4	Cable 5

24kV, 630A, 20kA, 5-way RMU
Cable Transit Compact Substation



Cable Transit Compact Substation

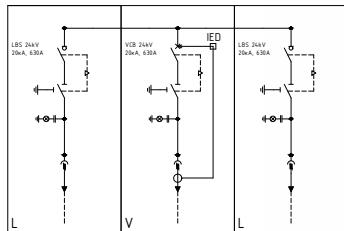


TYPICAL INSTALLATIONS

RMU for Transformer Compact Substations

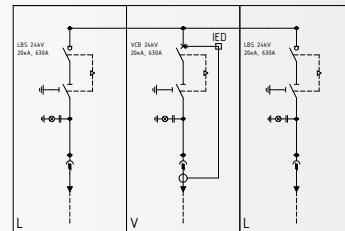
1	2	3
Line in	Transformer	Line out

24kV, 630A, 20kA, 3-way RMU
Transformer Compact Substation

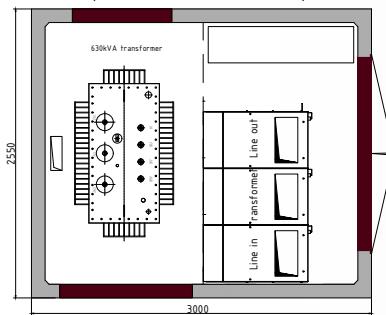


1	2	3
Line in	Transformer	Line out

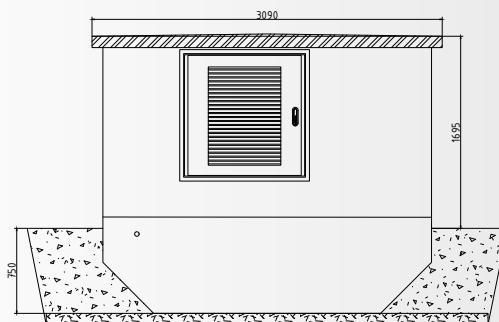
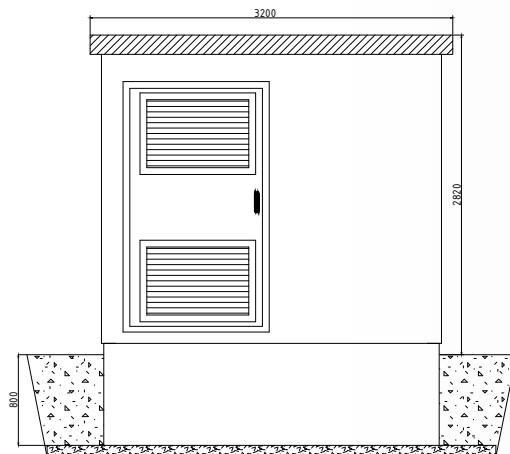
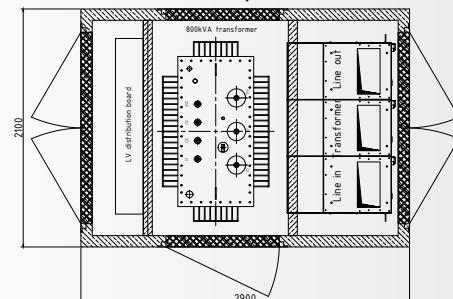
24kV, 630A, 20kA, 3-way RMU
Transformer Compact Substation



Transformer Compact Substation
(with internal service corridor)



Transformer Compact Substation
(externally serviced)



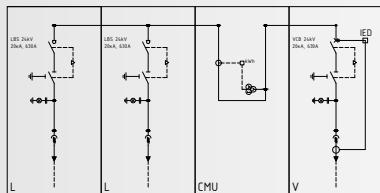
TYPICAL INSTALLATIONS

RMU for Transformer Compact Substations with Metering

2-section RMU for 2x Transformer Compact Substations

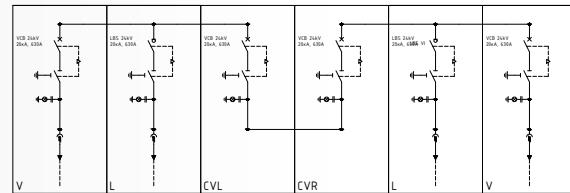
1	2	3	4
Line in 1	Line in 2	Metering	Transformer

24kV, 630A, 20kA, 4-way RMU
Transformer Compact Substation with Metering

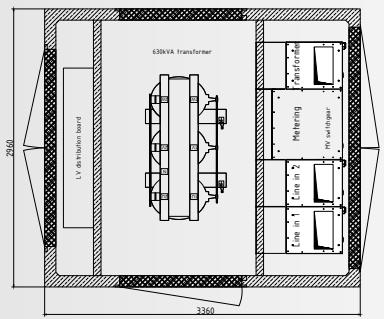


1	2	3	4	5	6
Transformer	Line in 1	LHS Coupler	RHS Coupler	Line in 2	Transformer

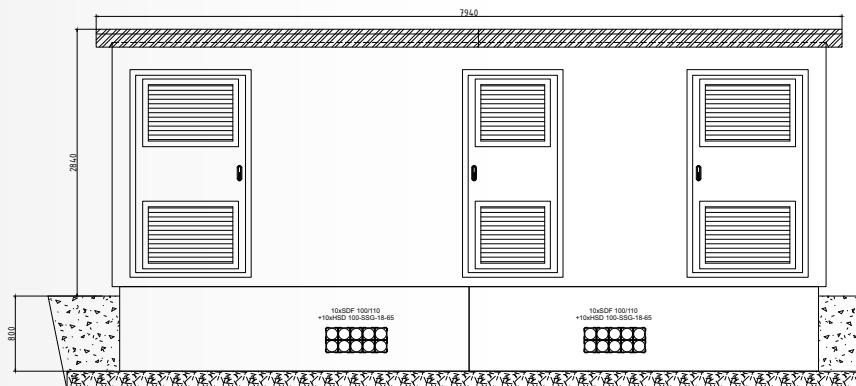
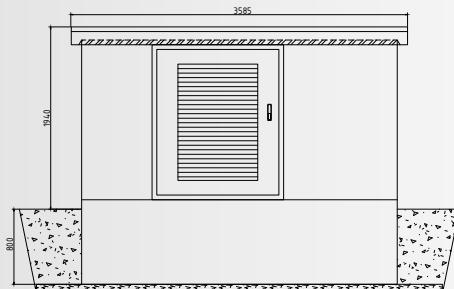
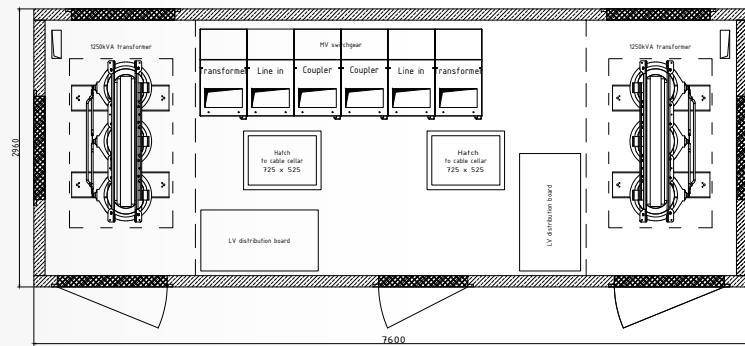
24kV, 630A, 20kA, 2-section RMU
2xTransformer Substation



Transformer Compact Substation with Metering
(externally serviced)



2x1250kVA Transformer Substation
(with internal service corridor)



DESIGN

Overview

1	Busbar compartment	6	Type A plug-in voltage transformers
2	Monoblock insulated compartment:	7	Main earthing busbar
2A:	LBS or VCB switching devices	8	LV compartment
2B:	Close–Open–Earthed Switch (COES)	9	Facia mechanical indication mimics
3	Cable compartment	10	LBS/VCB manual controls
4	Type A or C plug-in terminations	11	Inspection window
5	Ring-core current transformers	12	COES manual control slot

Operation principle

All switching devices can be operated manually without any auxiliary power supply, ensuring reliable operation in all conditions.

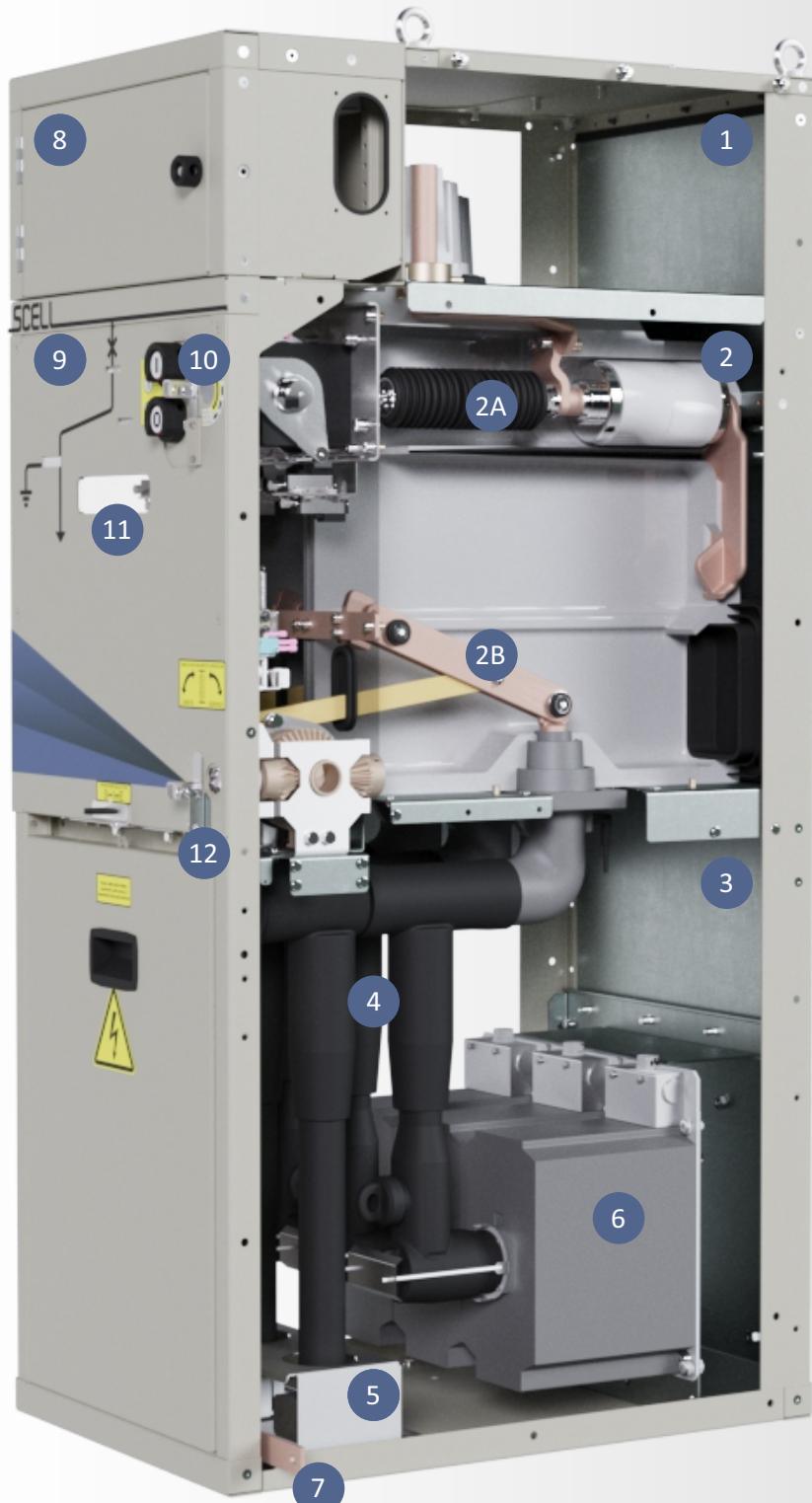
VCB/LBS: Switching is facilitated by a spring mechanism and front-panel controls.

COES: Operated easily via the manual handle.

A mechanical interlock between the VCB/LBS and the COES prevents incorrect or unsafe operation.

Optional remote control

All switching devices, including the COES, can be fitted with an auxiliary-powered motor, enabling remote operation and seamless integration with SCADA systems for monitoring and control.



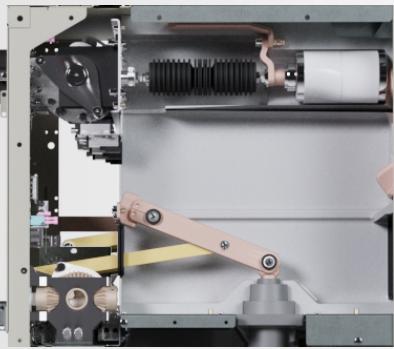
DESIGN

Switching devices

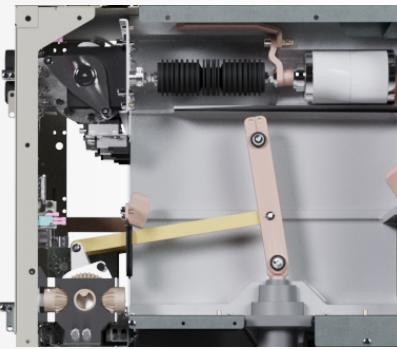
The SCELL_Mono offers a choice of either a vacuum circuit breaker (VCB) or load-break switch (LBS), paired with a versatile three-position Close–Open-Earthed Switch (COES) up to 24 kV, rated current up to 1250 A, and short-circuit withstand capability up to 25 kA. This design ensures flexible switching capabilities for various applications, allowing users to select the most suitable configuration based on specific operational needs.

The VCB, LBS, and COES feature a unique operating mechanism that uses flat spiral springs to store the energy required for operation. The spiral springs offer an exceptionally efficient method for operating switching devices. Compared to the compression or extension springs commonly found in most other devices, the spiral spring design is more compact, making it particularly well-suited for space-constrained environments, such as SF₆-free, air-insulated switchgear. Additionally, the spiral spring design enables faster opening and closing times, which are essential for protecting sensitive equipment.

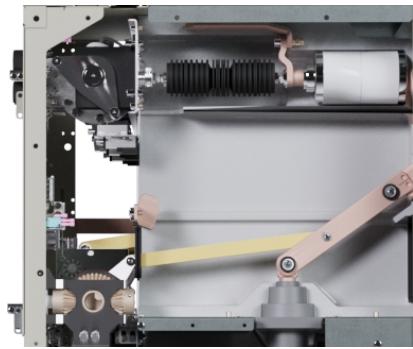
The standard Close–Open-Earthed Switch (COS) has three distinct positions: EARTHED (1); ISOLATED (2); SERVICE (3)



EARTHED



ISOLATED



SERVICE

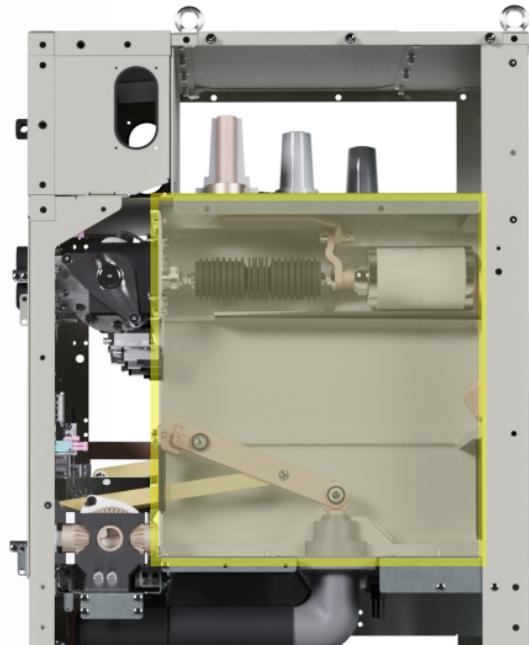
Atmospheric pressure sealed natural-air GIS

The switchgear features a naturally air-insulated Monoblock compartment that is fully sealed and rated IP67, with a transparent inspection window allowing visual monitoring of the COES.

Being completely sealed, the internal air pressure aligns with the external atmosphere, providing a fully reliable, maintenance-free insulation environment that requires no pressure monitoring or gas refilling. At the same time, by using natural air insulation instead of gases like SF₆, the design significantly reduces the carbon footprint.

Designed for the toughest environments

The switchgear meets the C5-M corrosivity class (ISO 12944) for marine environments, ensuring long-term durability and reliable performance even in highly corrosive coastal and offshore conditions.



ACCESSORIES

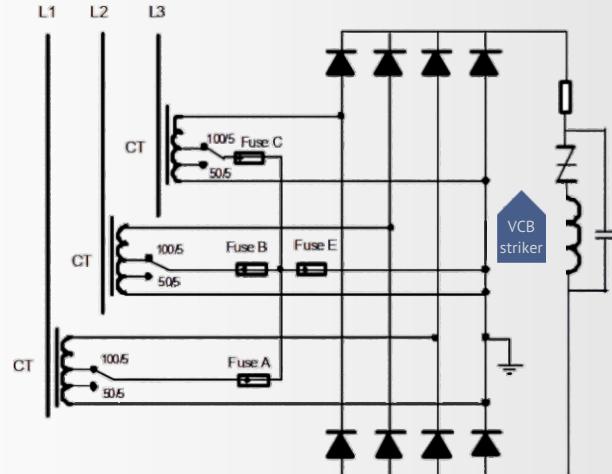
Optional features

The SCELL_Mono offers a range of options, including but not limited to:

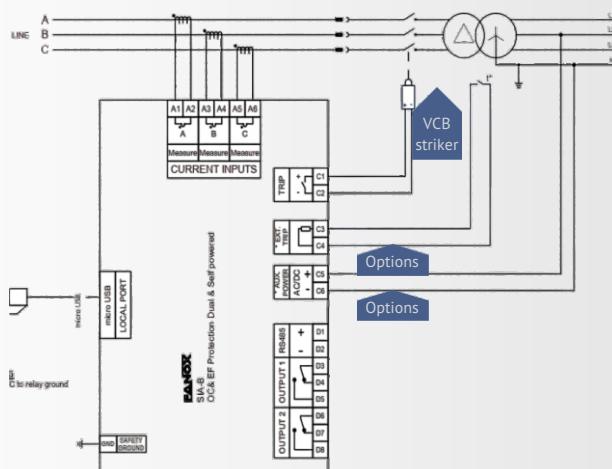
- Additional trip and close coils
- Motor-operated switching devices (VCB, LBS, COES)
- Cable-side voltage transformers
- Current and voltage sensors
- Self-powered relays; Time-Limited Fuse (TLF) for transformer protection; feeder protection relays; short-circuit indicators

Typical transformer protection schemes

Time-Limited Fuse (TLF) device installed in LV compartment and wired to cable CTs.



Self-powered relay with specific CTs or standard CTs.



TECHNICAL SPECIFICATIONS

Panel type	SG25_SCELL_Monoblock	
Rated voltage, kV	24	
Rated frequency, Hz	50/60	
Rated PF withstand voltage, kV	50/60 (across open contacts)*	
Rated impulse withstand voltage, kV	125/145 (across open contacts)*	
IAC Classification	A-FL; A-FLR with rear attachment	
IA Isc, Duration kA, s	20/25, 1	
Loss of service continuity	LSC2B	
Partition type	PM	
Partial discharge level at 1.1 x Urated, pC	<20	
Ingress protection	IP4X (Monoblock compartment IP67)	
Temperature range	-25...+55°C	
Maximum relative humidity	95%	
Corrosivity Class	C5-M (marine environment)	
Maximum altitude, m a.s.l.	1000	
Local operation	Manual or TLF or self-powered IED	
Remote operation auxiliary voltage, V	24/110/220 DC or 100...230 AC	
Rated short-time withstand current, kA	20/25	
Rated peak withstand current, kA	52/64	
Rated duration of short circuit current (t), s	3	
Rated current, A	630/1250	
Equipment	VCB parameters IEC 62271-100	
Operating mechanism	Spring-operated (manual or motor-charged)	
Type of vacuum interrupters	TD-24/630-20	TD-24/1250-25
Rated voltage, kV	24	
Rated frequency, Hz	50/60	
Rated PF withstand voltage, kV	50	
Rated impulse withstand voltage, kV	125	
Rated current, A	630	1250
Mechanical endurance Class	M1 (2,000 CO); M2 (10,000)	
Electrical endurance Class	E1; E2	
Capacitive currents switching Class	C1	
Autoreclosing cycle	0-15s-CO-15s-CO; 0-0.3s-CO-15s-CO	
Rated short circuit breaking current, kA	20	25
Rated making current, kA	52	64
Rated short-time withstand current, kA	20	25
Rated duration of short circuit current, s	3	

* Across COES and VCB/LBS open contacts. Both of switching devices are capable of performing as an “isolation device” as per IEC 61140

Equipment	LBS parameters IEC 62271-103	
Operating mechanism	Spring-operated (manual or motor-charged)	
Type of vacuum interrupters	TF-24/630-20	TF-24/1250-25
Rated voltage, kV	24	
Rated frequency, Hz	50/60	
Rated PF withstand voltage, kV	50	
Rated impulse withstand voltage, kV	125	
Rated current, A	630	1250
Mechanical endurance Class	M2 (5,000 CO)	
Electrical endurance Class	E3	
Capacitive currents switching Class	C1	
Rated breaking current, A	630	1250
Rated making current, kA	52	64
Rated short-time withstand current, kA	20	25
Rated duration of short circuit current, s	3	
Equipment	COES parameters as Disconnector IEC 62271-102	
Rated Voltage, kV	24	
Rated Current, A	630/1250	
Rated peak withstand current, kA	52/64	
Rated short-time withstand current, kA	20/25	
Rated duration of short circuit current, s	3	
Mechanical endurance Class	M1	
Equipment	COES parameters as Earthing switch IEC 62271-102	
Rated Voltage, kV	24	
Rated peak withstand current, kA	52/64	
Rated short-time withstand current, kA	20/25	
Rated duration of short circuit current, s	3	
Mechanical endurance Class	M1	
Electrical endurance Class	E2	

Applicable standards

HV switchgear and control gear: common specifications	IEC 62271-1
AC metal enclosed switchgear and control gear	IEC 62271-200
Alternating current circuit breakers	IEC 62271-100
Alternating current disconnectors and earthing switches	IEC 62271-102
Alternating current switches	IEC 62271-103
Current transformers	IEC 61869-2
Voltage transformers	IEC 61869-3
Ingress protection	IEC 60529
VPIS systems for rated voltages between 1kV and 52kV	IEC 62271-206
EU LV directive	2014/35/EU
EU EMC directive	2014/30/EU

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In line with the growing focus on sustainability, we are fully committed to Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD). LCA is a method used to evaluate the environmental impact of a product throughout its entire life cycle, from raw material extraction to disposal. Building on this, an EPD is a detailed report that communicates the environmental performance of a product based on recognized standards. Together, these practices help us minimize our carbon footprint and reinforce our commitment to reducing environmental impact as part of our ongoing sustainability efforts.



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