



GE VERNOVA

GE Vernova
Power Conversion & Storage

S-TIER 50

MEDIUM VOLTAGE SWITCHGEAR
17.5KV/ 50KA-1S
AIR INSULATED SYSTEM



THE ENERGY TO CHANGE THE WORLD

GE Vernova Power Conversion & Storage

As innovators in advanced energy conversion and storage systems, we empower our utility and industrial customers by solving their most challenging electrification problems and accelerating their transition to a sustainable, decarbonized future.

WHAT WE DO



Innovation is our DNA. More than 2,000 engineers and R&D associates collaborate with GE Vernova's Global Research Business to advance fundamental energy conversion technologies.



Our expertise includes pioneering developments in superconductivity, energy storage, power systems, high-speed motors, permanent magnet generators and high-voltage direct current systems.



Our mission is to transform energy to improve customer processes. We solve recurring problems such as turning electrical energy into mechanical energy by a motor, turning mechanical energy into electrical energy by a generator or adjusting the frequency and current by means of a converter or inverter





CONTENT

Sustainability Overview	8
Applications and Benefits	10
S-Tier 50	12
Type Applications	14
Interlocks	20
Technical Data	22
Type Test Certificate	24
TierVac VCB and TierVac FC	26

ALIGNING GE VERNOVA'S BUSINESS SUCCESS WITH SUSTAINABILITY SUCCESS

OUR SUSTAINABILITY FRAMEWORK

Catalyze access to more secure, sustainable, reliable, and affordable electricity, and help drive global economic development

LEADING GOALS

Be a leading provider of



Be a leading provider of new power generating capacity and grid capacity for the world



Address electrification in regions underserved by reliable, affordable, and sustainable electricity



Support workforce development, with a focus on underserved populations globally

Innovate more while using less, safeguarding natural resources

LEADING GOALS

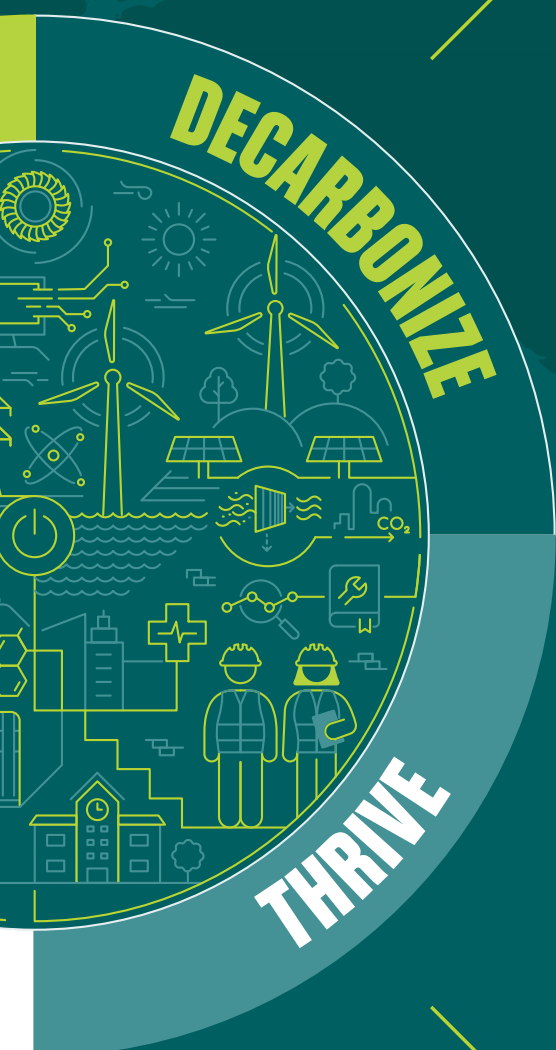


Carbon neutrality for Scope 1 and 2 GHG emissions by 2030



90% of our top products covered by our 4R circularity framework by 2030





Invent, deploy, and service the technology to help decarbonize and electrify the world

LEADING GOALS



Improve the trajectory on carbon intensity for near-term impact



Innovate toward our 2050 Scope 3 net zero ambition for use of sold products

Advance safe, responsible, and fair working conditions in our operations and across our value chain

LEADING GOALS



Fatality-free operations



Demonstrate progress on inclusive culture and equal employment opportunity for all employees



Embed and implement ethical decision-making into business decisions



Partner with suppliers to promote and uphold human rights in our value chain

APPLICATIONS

Power Generation



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Metal Industry



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Marine Offshore



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Chemical Industry



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Mining



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Power Quality



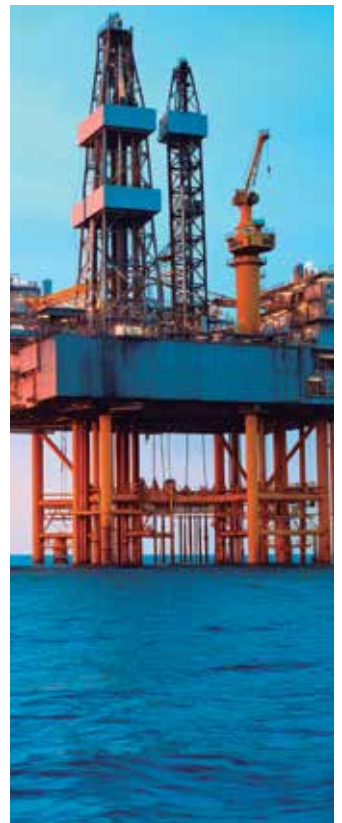
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Hydro



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Oil & Gas



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Designed for wide range of applications, S-Tier 50 meets the highest quality and performance standards. S-Tier 50 solutions are flexible, scalable and configurable to support your specific needs.

Our broad experience lets us better understand your needs as we develop a path to achieve your desired outcome. We bring a complete range of technologies and industry knowledge together to enable cleaner, safer, more competitive, and more efficient operations.

BENEFITS



Easy Maintenance: Designed for minimal maintenance requirements, ensuring long-term reliability and reduced downtime.



Material Selection: Constructed with high-quality materials to enhance durability and efficiency.



Compact Design: Engineered with reduced dimensions to improve space utilization without compromising performance.



Standardization: Incorporates standardized components to simplify integration and reduce complexity.



Personnel Safety: Prioritizes personnel safety with robust safety features and compliance measures.



Simplified Inspection: Facilitates straightforward inspection processes to ensure consistent performance checks.



Easy Installation: Features easy mounting and connection capabilities for quick and efficient setup.



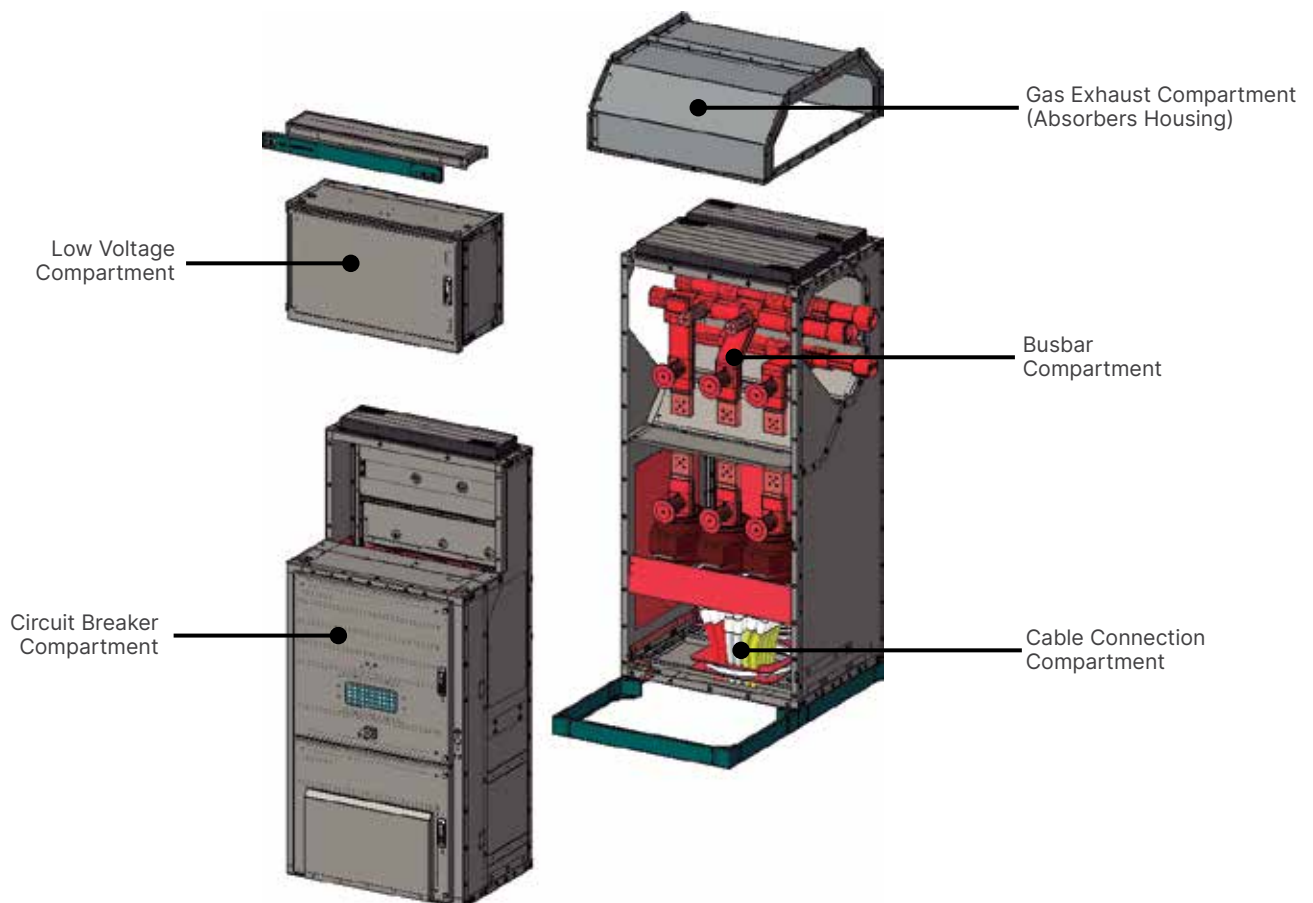
Compliance: Compliant with IEC 62271-200.

S-TIER 50

S-Tier 50 is a metal-enclosed switchgear, fully type tested as per IEC 62271-200, with service continuity category LSC2B PM, designed for medium voltage (MV) applications up to 17.5kV. It is developed for indoor applications, with internal arc classification (IAC) AFLR for 50kA – 1s.

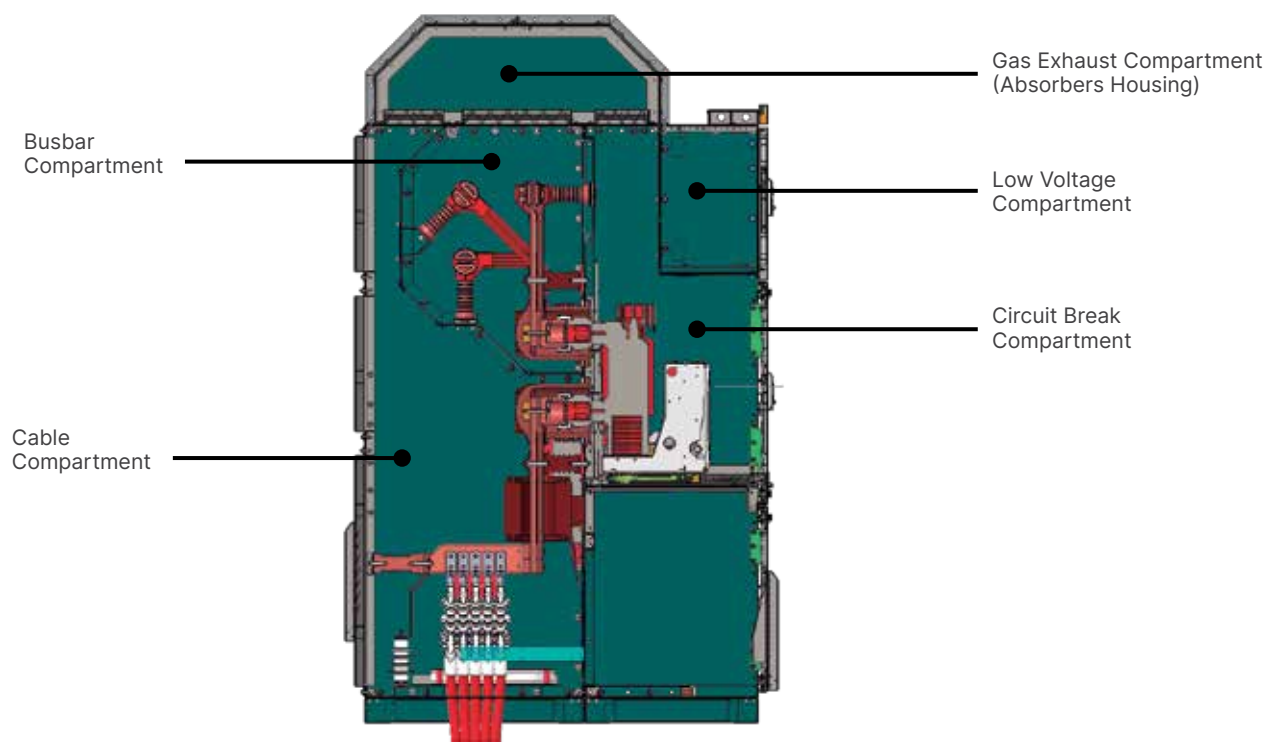
Within the switchgear, GE Vernova provides an exclusive switching device, the TierVac 50 Vacuum Circuit-Breaker. It is fully type-tested according to IEC 62271-100 with additional requirements, ensuring its above-market ratings.

The S-Tier 50 consists of several enclosures, coupled according to customer specifications. Each enclosure consists of five separate compartments.



Busbar Compartment

The main busbar compartment is located at the rear top of the S-Tier 50 enclosure. It is completely isolated from other compartments. The conductor material used is D-Shaped copper busbar covered with heat shrink insulation sleeves and the bolt connections are covered by insulating covers.



Switching Device Compartment

The switching device compartment is developed with withdrawable part, which can be moved between the connected position and disconnected position. Can be used the TierVac 50 VCB or TierVac FC, for the circuit break it is possible used manual or motorized removal. To isolate the power compartments (cable and busbar), when in disconnected position, a shutter system is used. It covers both compartments automatically and it is made of metal plates.

Cable Compartment

Current transformers, surge arresters, voltage transformers and earthing switch is placed in the cable compartment. The drive mechanism of the earthing switch is located at the door featured with mechanical and electrical interlocks. As customer requests, removable voltage transformer can be used.

Low Voltage Compartment

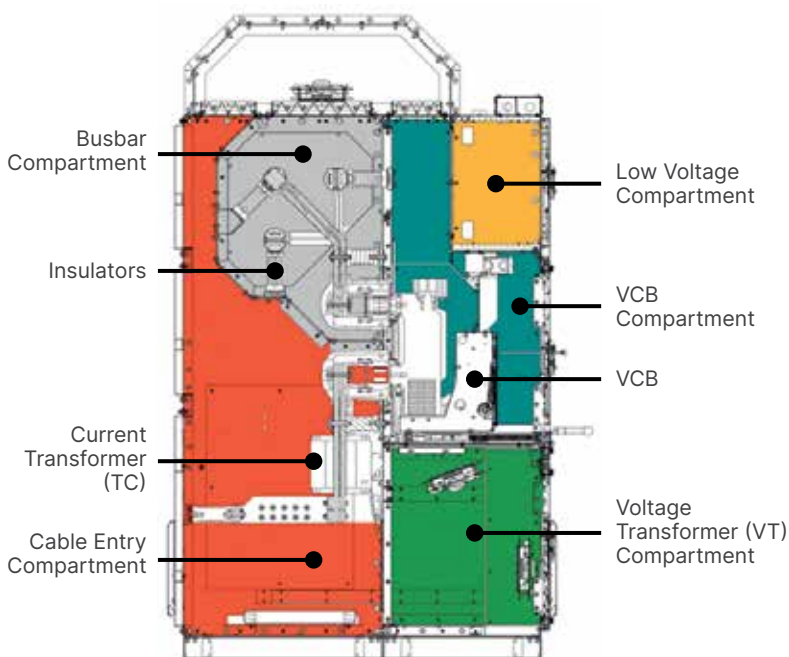
The control compartment is located at the front top of the S-Tier 50 enclosure. From the switching device compartment up to the low voltage compartment, the control wiring goes through an internal duct located at the left side.

TYPICALS

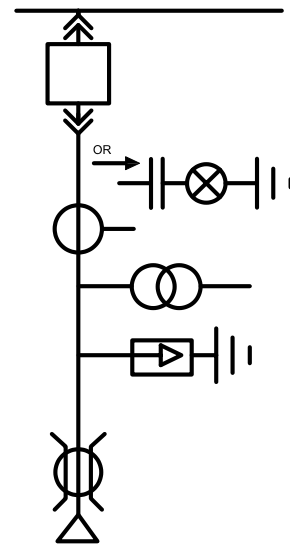
The S-Tier 50 line has been designed to provide versatility and high performance in electrical systems and to meet a wide range of needs. The product can be configured for specific panel applications, ensuring flexibility and efficiency.

Incomer

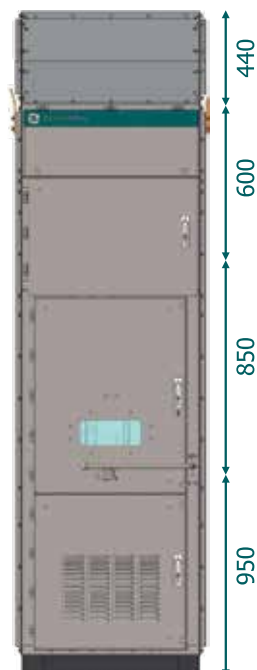
S-Tier 50 incomer column is equipped with TierVac50 withdrawable circuit breaker, insulators (if necessary, can be capacitive insulators), surge arresters, current transformer (optional), voltage transformer (optional) and current transformer.



Possible Configurations

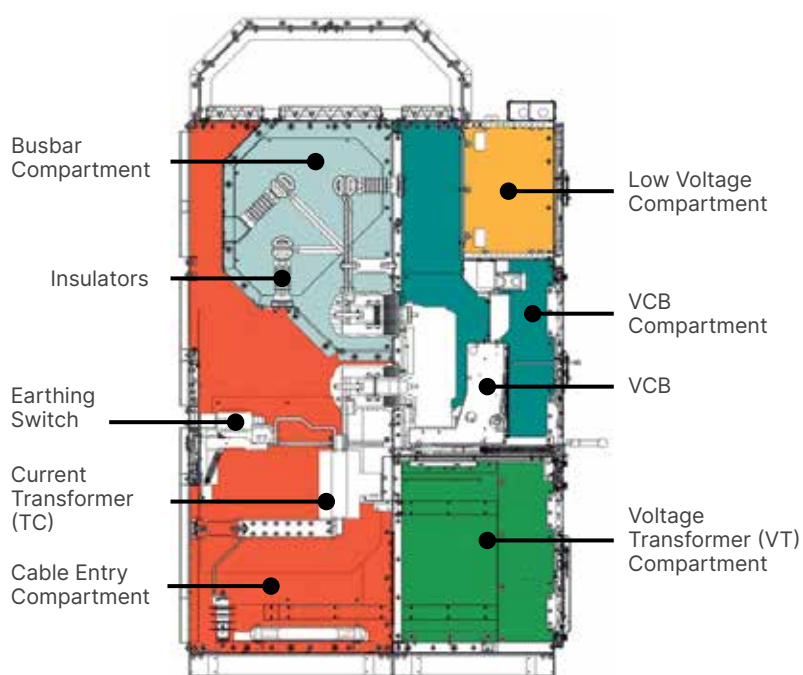


Dimensions

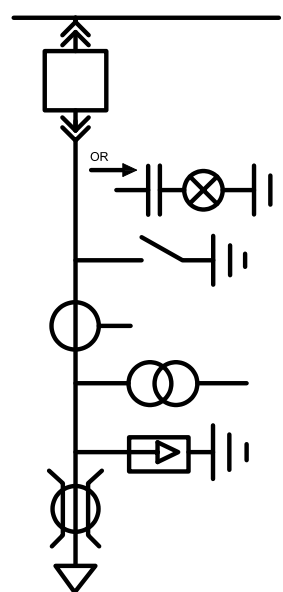


Feeder/Outgoing

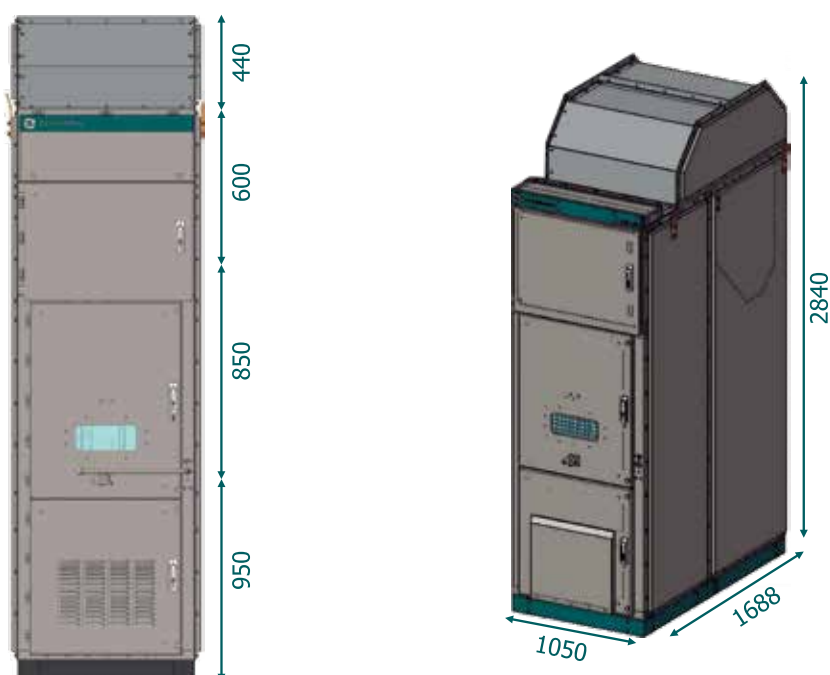
S-Tier 50 feeder/outgoing column is equipped with TierVac50 withdrawable circuit breaker, insulators (if necessary, can be capacitive insulators), surge arresters, current transformer, voltage transformer (optional) and earthing switch.



Possible Configurations

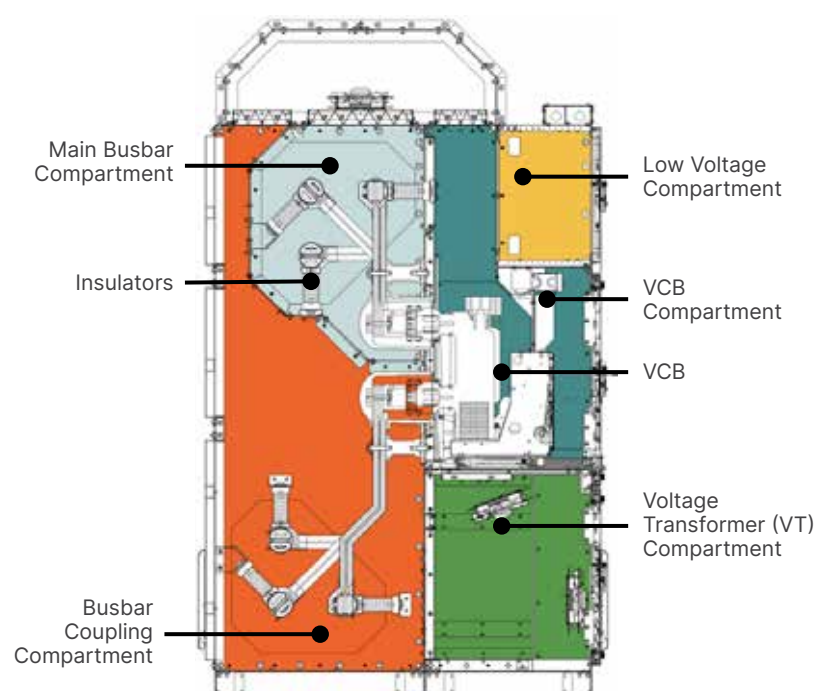


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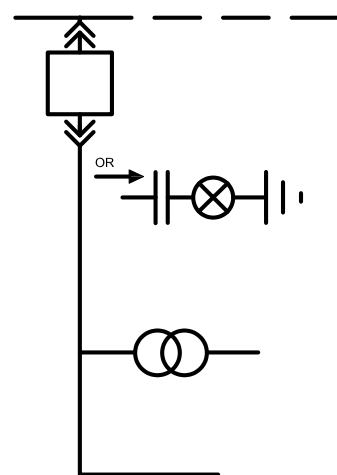


Bus Coupler (TIE)

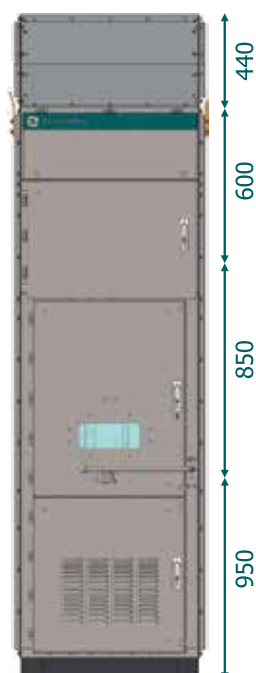
S-Tier 50 BUS TIE column is equipped with TierVac50 withdrawable circuit breaker, insulators (if necessary, can be capacitive insulators), and voltage transformer (optional). Other application is the **Bus Riser** that is same column without TierVac50.



Possible Configurations

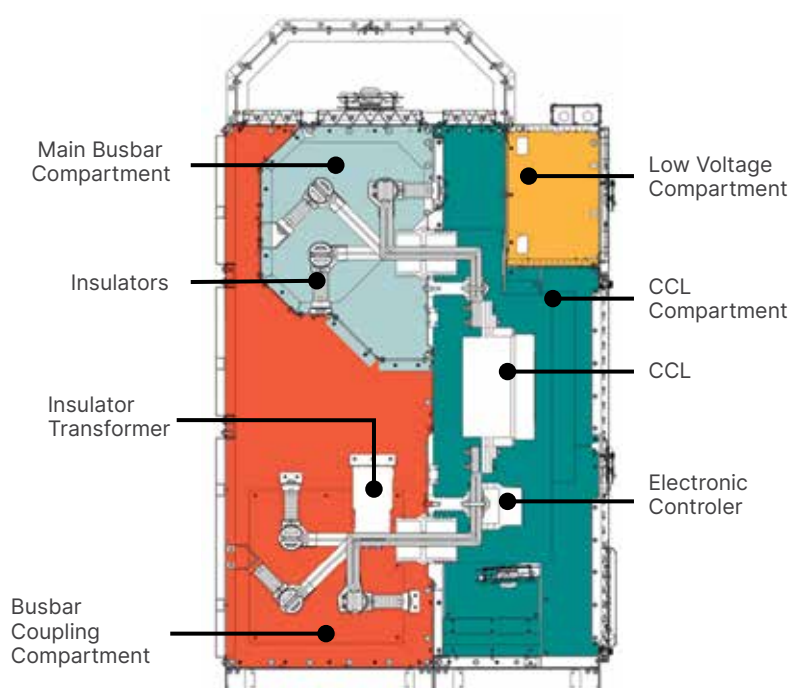


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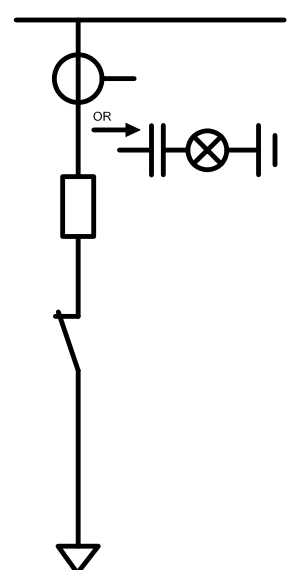


Commutating Current Limiter (CCL) – Special Application

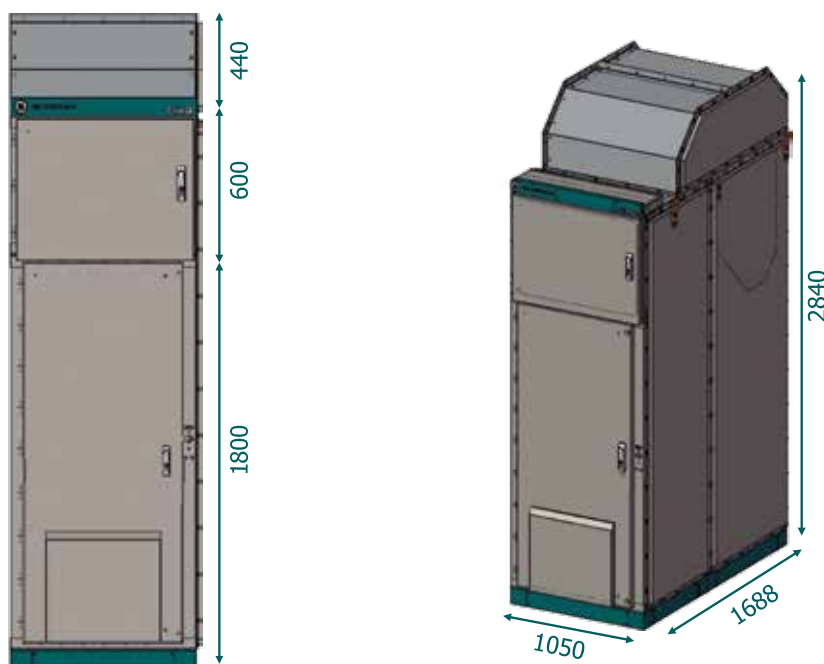
S-Tier 50 can be equipped with Commutating Current Limiter (CCL) composed of limiter fuse, high-speed disconnect, electronic controller and insulator transformer and insulators (if necessary, can be capacitive insulators).



Possible Configurations



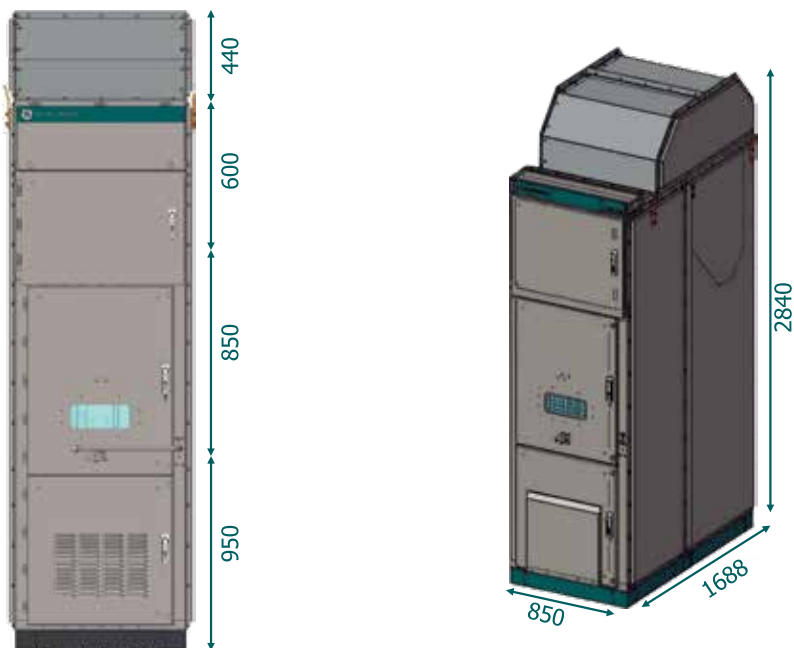
Dimensions



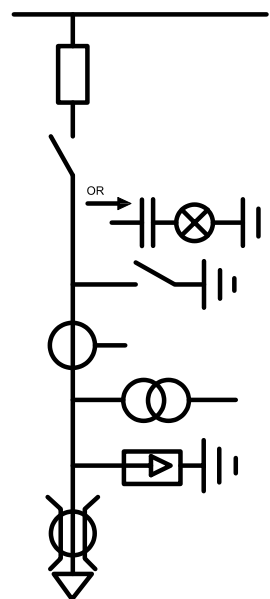
Outgoing

S-Tier 50 outgoing column is equipped with fuse contactor, insulators (if necessary, can be capacitive insulators), surge arresters and voltage transformer (optional), currents transformers and earthing switch.

Dimensions



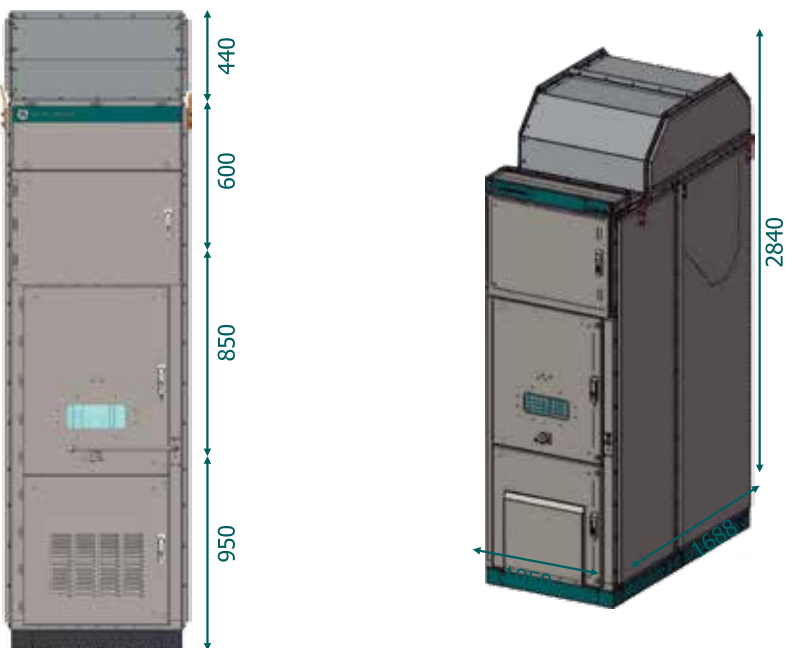
Possible Configurations



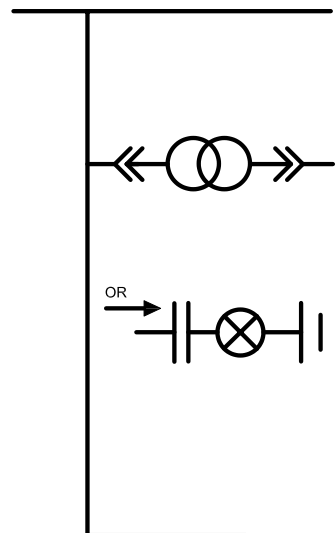
Outgoing

S-Tier 50 metering column is equipped with withdrawable voltage transformer to measurements.

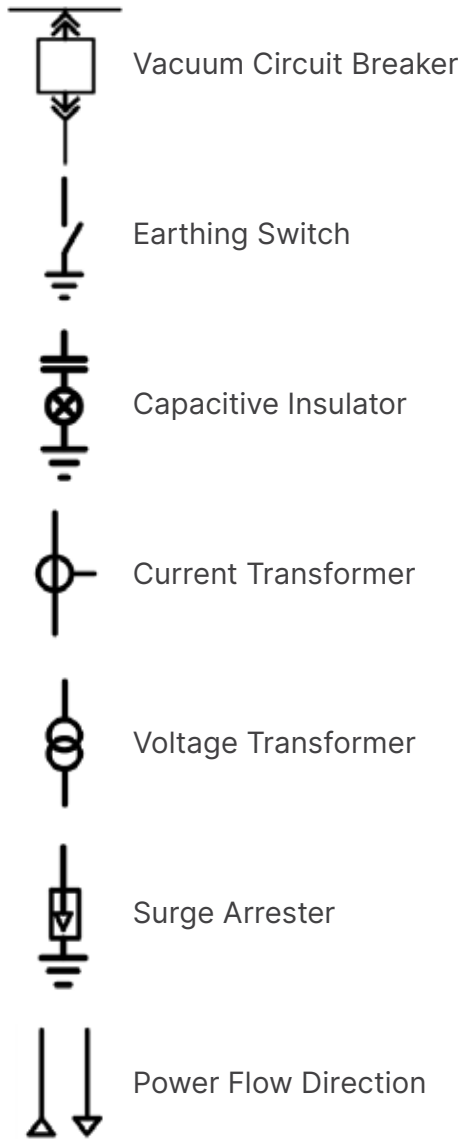
Dimensions



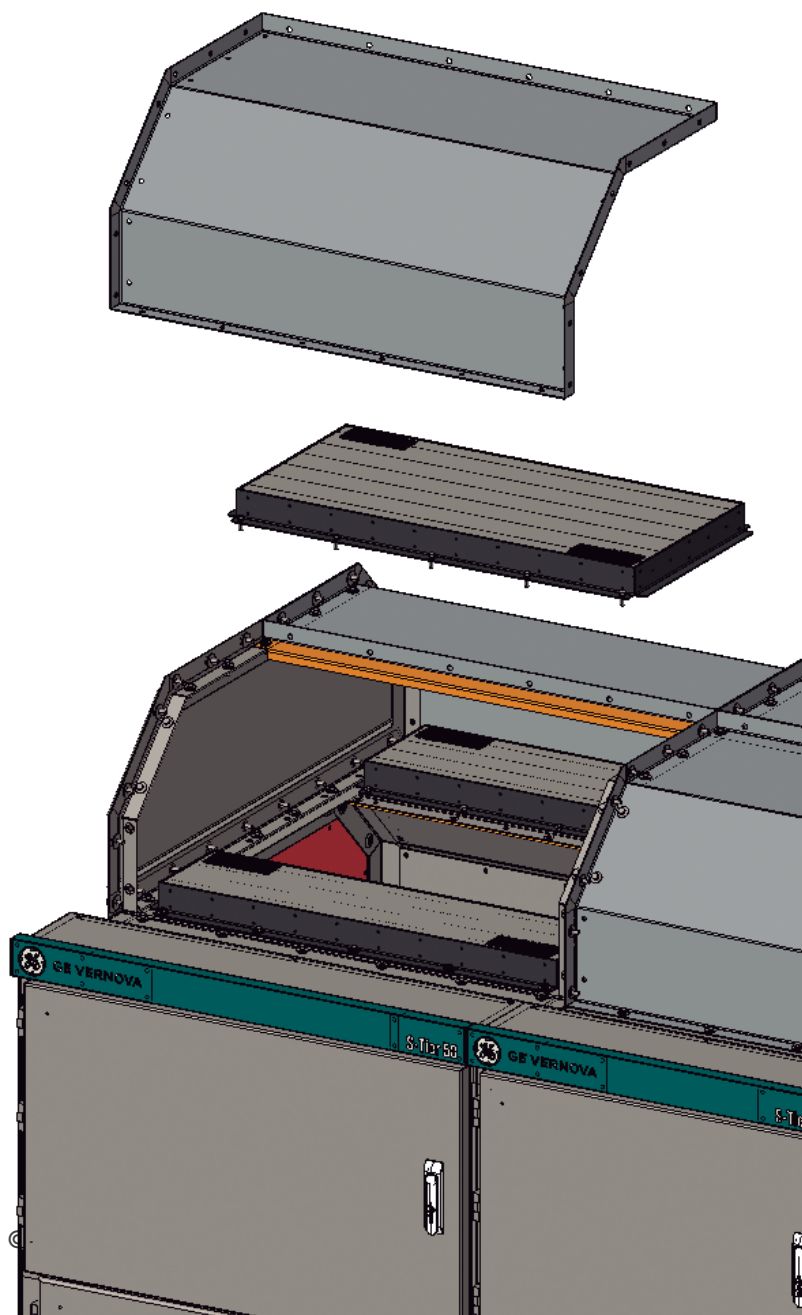
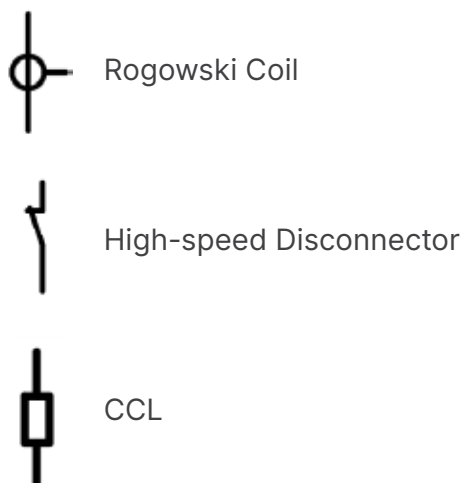
Possible Configurations



Symbols



For CCL



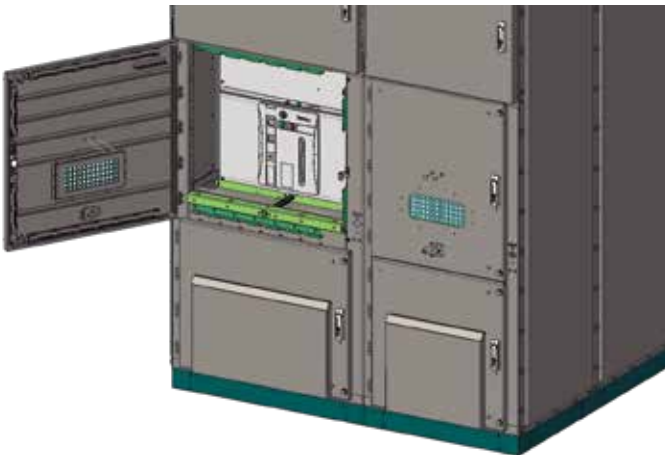
INTERLOCKS

Interlocks are provided to protect both site operators and equipment, preventing hazardous situations caused by improper operation of the equipment.

S-Tier 50 has several interlocks as per IEC 62271-200 design requirements. It is worth mentioning that interlocks can also be developed by logic in the relays according to customer needs (It shall be tested during commissioning).

Interlocks*

- It is impossible to operate the switching device in an intermediate position.
- It is impossible to rack-in or out the switching device when it is closed.
- It is impossible to rack-in the switching device when the earthing switch is closed.
- It is impossible to open the switching device compartment door if the device is in connected position.



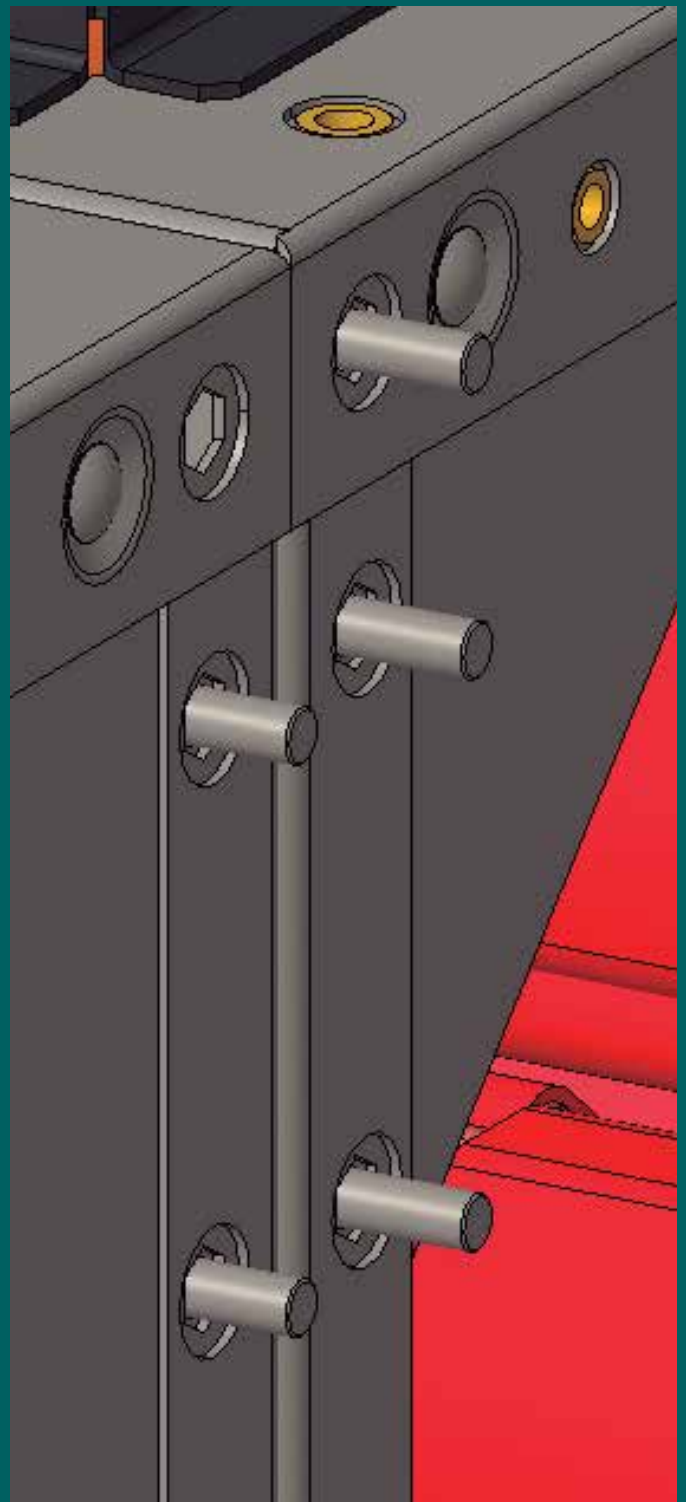
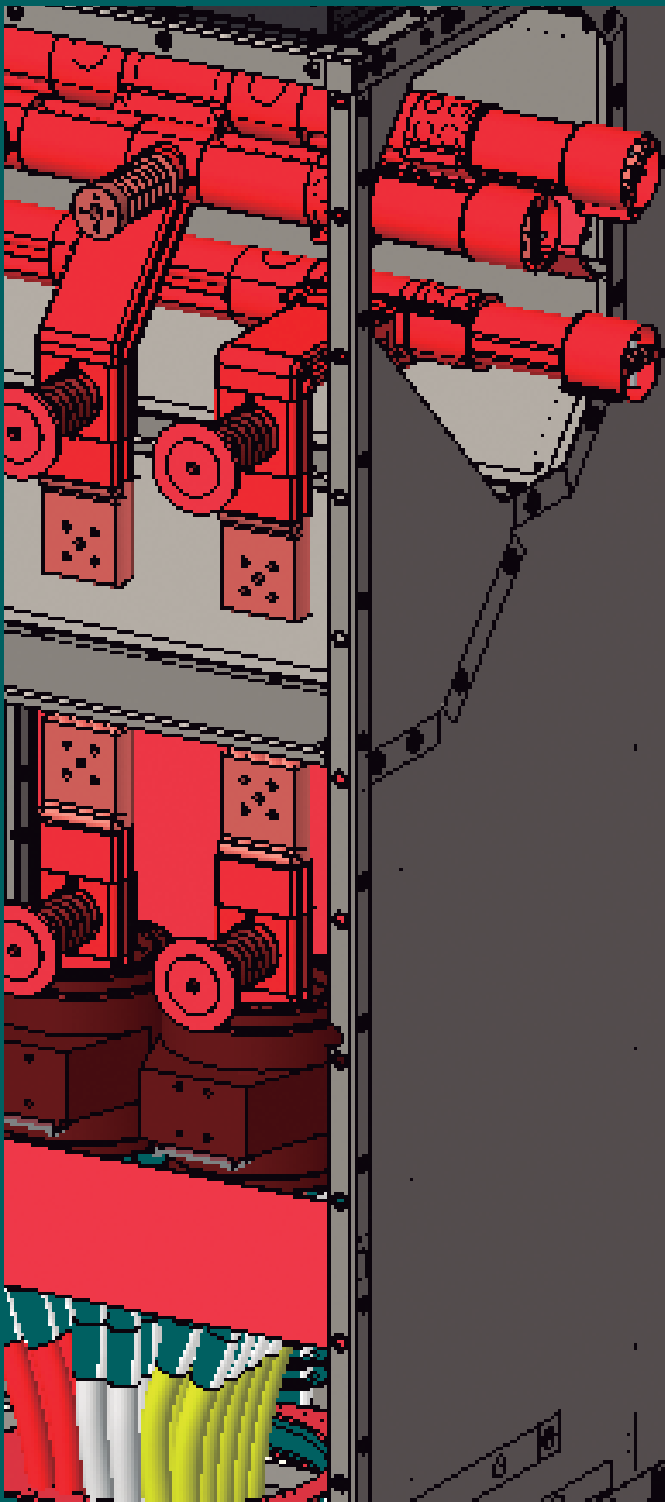
Connected/Inserted Position



Disconnected/Extracted Position

*The interlocks presented are the primary ones, for additional information and other interlocks, please consult our sales consultants.

S-Tier 50 is designed with innovative connectors that ensure seamless integration between its columns. This advanced design not only simplifies the assembly process but also enhances the overall structural integrity. The effortless connection system allows for quick and efficient installation, making it suitable for a wide range of applications.



TECHNICAL DATA

Description		Units	Ratings
Rated Voltage (Ur)		kV	17.5
Frequency (fr)		Hz	50-60
Power-Frequency Withstand Voltage (Ud)	Between phases and earth	kV	38
	Between insulation distance	kV	45
Lightning Impulse Withstand Voltage (Up)	Between phases and earth	kV	95
	Between insulation distance	kV	110
Rated Current (Ir)	(At 40°C)	A	up to 5000*
Rated Short-Time Withstand Current (Ik)		kA	50
Rated Duration of Short-Circuit (tk)		s	1
Rated Peak Withstand Current (IP)		kA	130
Internal Arc Classification (IAC)		-	A FLR
Arc Fault Current (IA)		kA	50
Arc Fault Duration (tA)		s	1
Ambient Temperature		°C	-5 to +40

*With forced cooling

Loss of Service Continuity Class

LSC2B

Safe access to the functional unit compartment with busbar energized, as well as with adjacent units energized.
The MV cables are located in separated compartment.
Functional unit cable in maintenance may remain energized.

Partition Classes

PM (Metal Partition)

All partitions between compartments are metallic and properly grounded, ensuring safe access

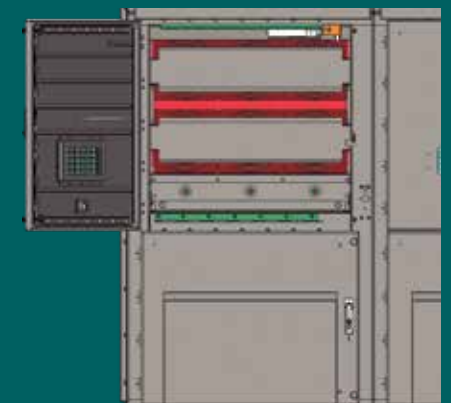
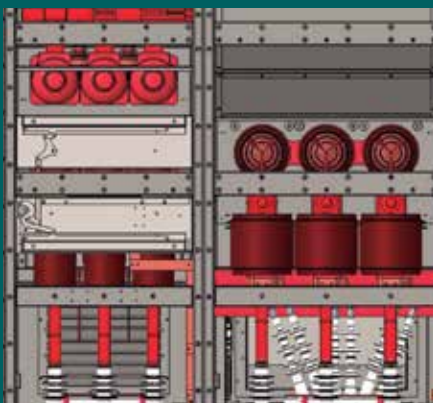
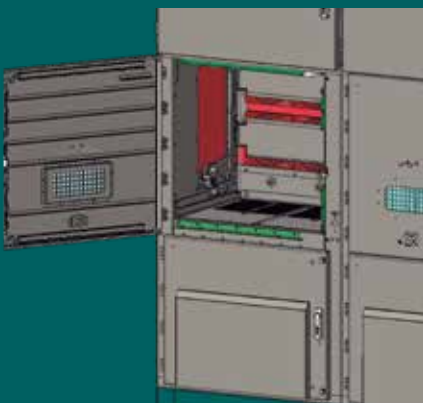
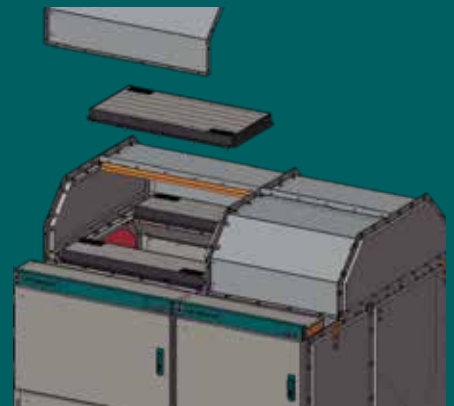
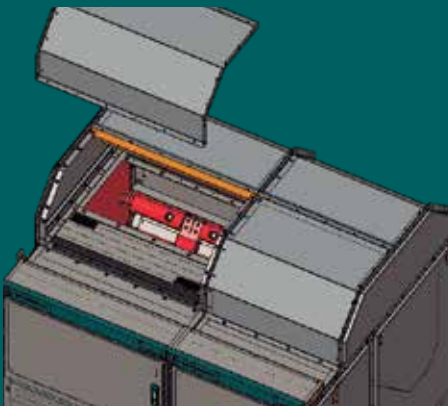
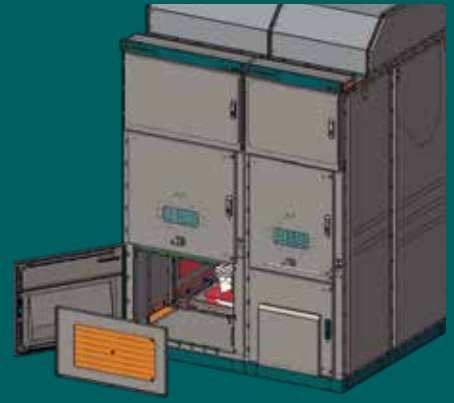
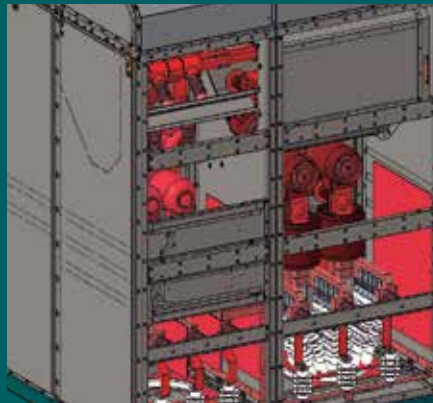
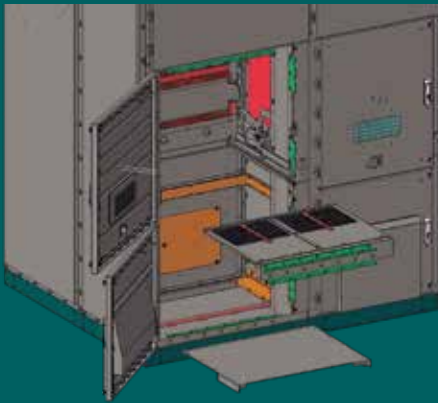


TYPE TEST CERTIFICATES

Type Test	Standard	Item	Requirements	Certificate Number	Laboratory
Short-time Withstand Current and Peak Withstand Current Tests (Incomer + Outgoing)	IEC 62271-200	7.6	50kA – 1s	3557	Cepel
Short-time Withstand Current and Peak Withstand Current Tests (TIE + CCL)	IEC 62271-200	7.6	50kA – 1s	3559	Cepel
Temperature Rise Tests	IEC 62271-200	7.5	5000A	3142	Cepel
Temperature Rise Tests	IEC 62271-200	7.5	3400A	3141	Cepel
Power Frequency Voltage Tests	IEC 62271-200	7.2.7.2	38kV	2024221	USP
Lightning Impulse Voltage Tests	IEC 62271-200	7.2.7.3	95kV	2024221	USP
IP Protection Code	IEC 62271-200	7.7.1	IP42	88318	USP
IK Protection Code	IEC 62271-200	7.7.2	IK10	88318	USP
Mechanical Operation Tests – TierEs 50	IEC 62271-200	7.102	50 Times (25C - 25O)	88318	USP
Mechanical Operation Tests – TierVac 50	IEC 62271-200	7.102	50 Times (25C - 25O)	88318	USP
Mechanical Operation Tests – TierVac 50	IEC 62271-200	7.102	"25 Insertion 25 Removal"	88318	USP
Lifting	IEC 61439-1	10.2.5	1.25 x Max. Weight	88318	USP
Terminal Fault Tests – TierVac 50	IEC 62271-100	7.107	50kA – 17.5kV	C4006946	CESI
Electrical Endurance Tests – TierVac 50	IEC 62271-100	7.112	E2 – List 3	C4006946	CESI
Internal Arc Test	IEC 62271-200	7.105	50kA – 1s – A FLR	C4007176	CESI
Breaking Tests – CCL	IEC 60282-1	7.60	80kA-13.80kV	2168-24	KEMA B.V.

STIER-50 FEATURE

S-Tier 50 was designed for back-to-back or back-to-wall installation, as its technology allows easy operation and maintenance only by its front.



TIERVAC VCB

TierVac represents a significant advancement in Vacuum Circuit Breaker (VCB) technology, designed and developed by GE Vernova specifically for integration with the S-Tier 50. This VCB is produced and type-tested in compliance with IEC 62271-100 standards, incorporating supplementary criteria to ensure suitability for near-generator environments, characterized by elevated X/R ratios.

Moreover, the TierVac has undergone type-testing at increased transient recovery voltage (TRV) levels, exceeding standard values, thereby ensuring reliable interruption performance in applications subjected to these special conditions.



Description		Units	Rating		
Rated Current (Ir)		A	1250 – 2000	2500 – 3150	*4000 – 5000
Rated Frequency (fr)		Hz	50 – 60	50 – 60	50 – 60
Rated Voltage (Ur)		kV	17.5	17.5	17.5
Rated Power Frequency Withstand Voltage (Ud)		kV	38	38	38
Rated Lightning Impulse Withstand Voltage (Up)		kV	95	95	95
Transient Recovery Voltage (Uc)	T10	kV	39.10	39.10	39.10
	T30	kV	36.90	36.90	36.90
	T60	kV	36.70	36.70	36.70
	T100	kV	40.70	40.70	40.70
Rated Short-Circuit Breaking Capacity (Isc)		kA	50	50	50
Rated Short-Time Withstand Current (Ik)		kA	50	50	50
Rated Duration of Short-Circuit (tk)		s	1	1	1
Rated Peak Withstand Current (Ip)		kA	130	130	130
Percentage of DC Component		%	44	44	44
Resistance		μΩ	≤ 17	≤ 17	≤ 17
Rated Single Capacitor Bank Breaking Current (Isc)		A	400	400	400
Opening Time		ms	20 – 50	20 – 50	20 – 50
Closing Time		ms	30 – 70	30 – 70	30 – 70
Sequence of Operation		-	O – 0.3s – CO – 180s – CO		
Mechanical Endurance		Cycles	10000 (M2)	10000 (M2)	10000 (M2)
Electrical Endurance		-	E2	E2	E2

*With forced cooling

TIERVAC FC



TierVac FC is GE Vernova's solution for medium voltage vacuum fused contactor. It is designed in compliance with the standards of IEC 62271-106 for vacuum fused contactors and IEC 62271-200 for combined applications with switchgear. Its withdrawable design offers flexibility and ease of use, accommodating a wide range of operational needs. The customizable option to include or exclude a mechanical latch provides adaptability. Engineered to support global systems operating at both 50 Hz and 60 Hz, it is suitable for multiple applications, especially in medium voltage

motor control. Additionally, TierVac FC is robustly constructed to perform under special environmental conditions, including shock, vibration, and high ambient temperatures, making it exceptionally well-suited for marine applications.

Description			Units	Rating
Rated Current (Ir)			A	400 without fuse 315A with fuse
Rated frequency (fr)			Hz	50/60
Rated making capacity			kA	4.0
Rated breaking capacity (Isc)			kA	3.2
Rated short time withstand current (Ik)			kA	6.0
Rated peak withstand current (Ip)			kA	15
Rated short circuit duration (tk)			s	1
Rated expected short circuit breaking current			kA	≤ 50 (due to fuse)
Rated expected short circuit making current			kA	100
Take-over current			kA	4.0
Resistance			μΩ	300
Control circuit	Rated voltage (Ur)		V	110Vdc, 125Vdc, 220Vdc, 240Vdc, 110Vac, 127Vac, 220Vac
	Rated power	Electrical latching	VA	≤1000/100 (absorbing/holding)
		Mechanical latching	VA	≤1200/350 (closing/opening)
Auxiliary Circuit	Form			6NO+6NC
	Rated value			AC/DC 220V/5A
Control circuit, auxiliary circuit to earth power frequency withstand voltage			kV	2
Rated operating frequency	Long-term or mechanical latching		h	300
	Short-term			600
Mechanical endurance			10000 times	30
Electrical endurance			10000 times	10 (AC-3)
Closing time			ms	≤150
Mechanical characteristics	Opening time		ms	"≤150 (electric holding)
	3-phase synchronism			≤60(mechanical holding) "
				≤3

Technical Characteristics				Units	7,2 kV	12 kV
Main circuit	Power frequency withstand voltage (Ud)	Between phases, phase to earth	kV	32	42	
		Across Insulating Distance	kV	32	42	
	Lightning impulse withstand voltage (Up)			60	75	



Contact US

Use phone or mail to log your case.
Use contact details listed/complete form and return via email.



Case Details

Provide accurate the issue details and include company name, site, location, and best contact information.



Communication

Our agents will confirm a unique case reference number and explain next steps to resolve the issue.



Site Intervention

If our remote support and related instructions are not suitable enough, then our team will appoint time for our Field Service Engineers to come locally.



gevernova.com/power-conversion

CONTACT US: salesgepclatam@gevernova.com

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GEA35554_S-Tier 50 Medium Voltage Switchgear and Controlgear 17.5kv 50ka-1s Air Insulated System_EN_20250507



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