



宏于電機股份有限公司
HORNGYU ELECTRIC CO., LTD.

Have your
ELECTRICITY CONNECTED

承諾 當責 創新 服務
Commitment Responsibility Innovation Service

CNS15156-200 / IEC 62271-200

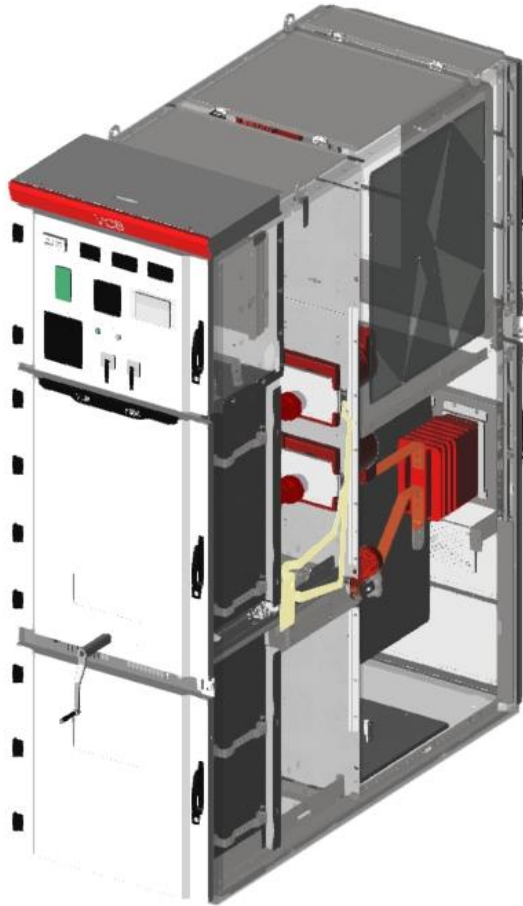
IS-24 High Voltage Switchgear and Controlgears

Introduction

Our High voltage switchgear and Controlgear, with IEC62271-200 & CNS15156-200 standards compliant, is applied to 3-phase rated voltage range of 1kV up to 52kV AC power system for power transmission and distribution with features of circuit controlling , monitoring, and protecting.

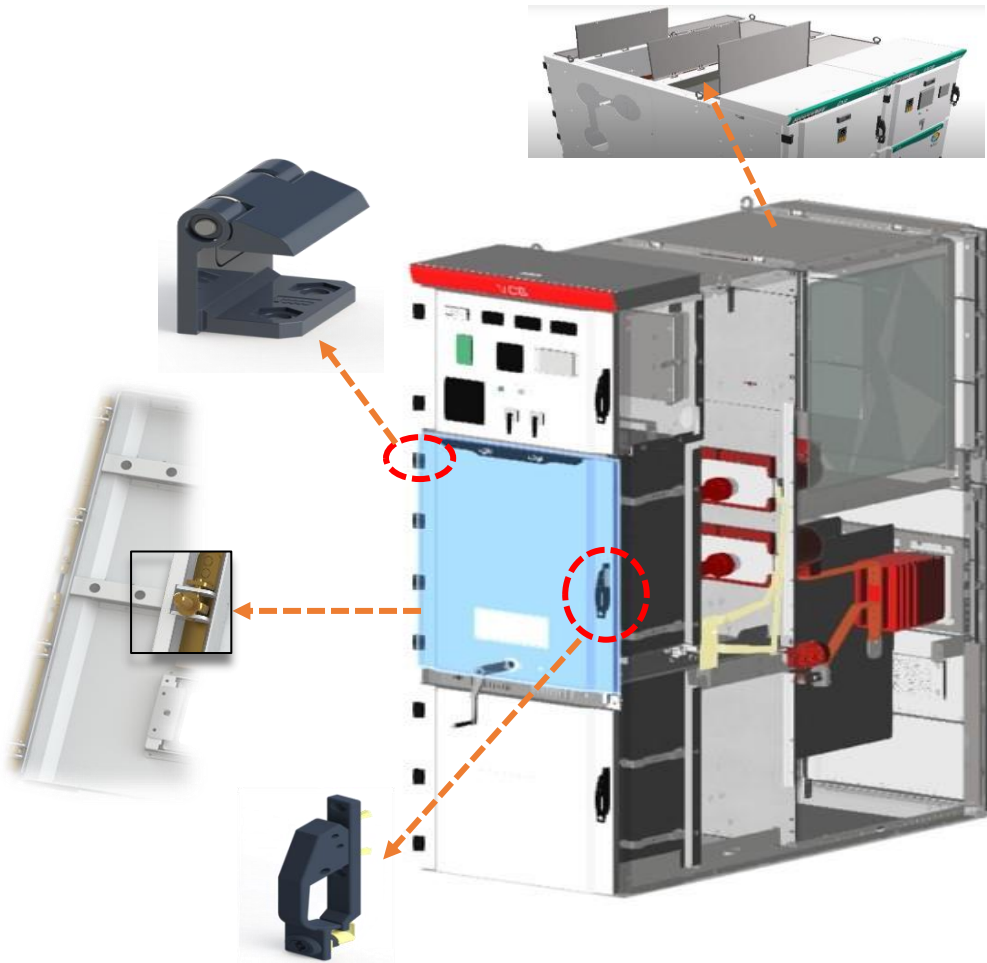
IS-24, type test certificated with rated voltage AC 12/24 kV, approved by International Laboratory Accreditation Cooperation (ILAC) and Taiwan Electric Research & Testing Center (TERTEC), it's built with completed and reliable function to prevent false operation, IS-24 is the most reliable solution in power distributing system for a safer environment of power supply.

Features 櫃體特點



- Quality control - Taiwan's largest busbar processing manufacture , Quality control from busbar processing & Metal enclosures design/assembly and Reliability tests.
- Modularization –To minimum the assembly error, to maximum the productivity & flexibility of stock management .
- Safety – Main circuits with individual compartments with interlocking-controlled devices, interlocking-controlled ES & electrical cables doors, high-sensitivity flooding alarm, Explosion-proof protection, temperature and humidity monitoring in the main circuit compartments, Grounding continuity of enclosure DC30A
- Eco-Friendly –Rivet assembly to reduce pollution of welding process and to save cost in replacing unit w/o shell reworking.
- Intelligent- Safe energy & maintenance management, monitoring system of power consumption and environment.
- Volume-Enclosure with Lean and compact design , to save space of substation.
- User-Friendly - Handcart for easy removing unit and saving time & labor cost in maintenance.

High corrosion resistance Explosion-proof



Enclosure shell made by 2.0 steel, and the structure made by galvanized aluminum sheet with high corrosion resistance, special bending processing technique to enhance the structure strength.

Eco-Friendly

Enclosures riveted assembly w/o any welding pollution and saving cost in replacing components w/o reworking the shell.

Explosion-proof protection

Explosion-proof pressure relief plate

Explosion-proof hinge

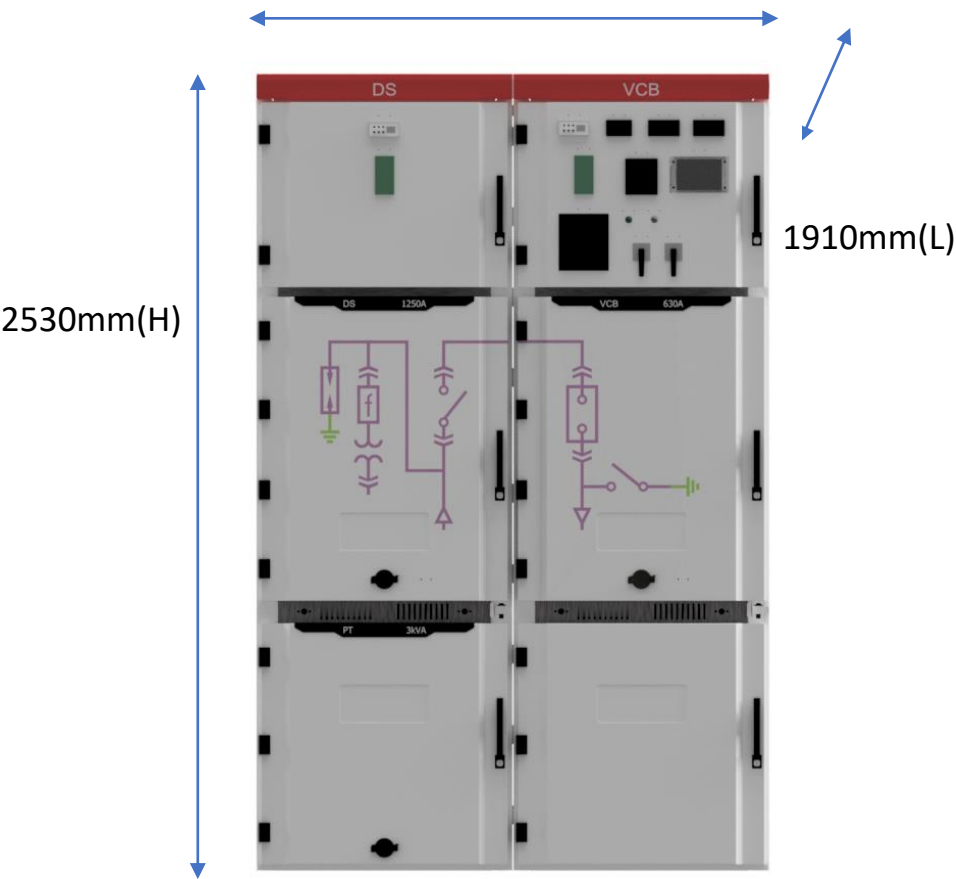
Explosion-proof bolt

Explosion-proof lock handle

Specifications 技術規格

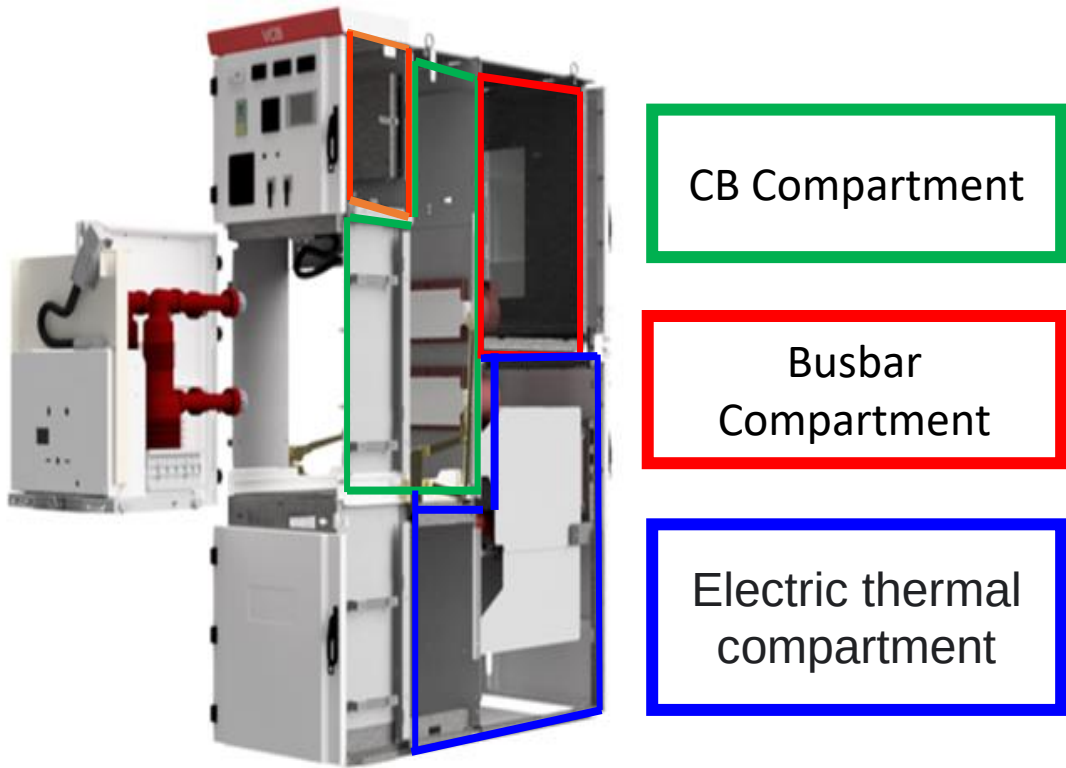
Lean and Compact appearance

Voltage level : 24kV , (W) 1000mm or 800mm



No.	Rated Specifications	Unit	Rated parameters
1	Dimension (W×D×H)	mm	800(1000)×1910×2530(2330) ※ 800mm is the smallest size in Width . ※ Available for customized dimension.
2	Phase	Ph	3
3	Rated Voltage (Ur)	kV	3.3/7.2/12/24
4	Rated Current (Ir)	A	630/1250/1600/2000/2500
5	Rated Frequency (fr)	Hz	50/60
6	Rated Short Time Withstand Current (Ik) (main circuit and earthing circuit)	kA	16/25/31.5
7	Rated Peak Short Circuit Withstand Current(Ip) (main circuit and earthing circuit)	kA	42/65/82
8	Rated Duration of Short Circuit (tk) (main circuit and earthing circuit)	s	3
9	Rated Power Frequency Withstand Voltage (Ud)	kV	28/50
10	Rated Lighting Impulse Withstand Voltage(U _p)	kV	75/125
11	Partial Discharge	pC	≤100
12	Rated supply voltage of closing and opening device and auxiliary and control circuit (U _a)	V	110~220 AC/DC

The highest safety level of Individual & Interlocked-Controlled Compartment .



No.	Rated Specification		Unit	Rated Parameters
13	Internal arc-fault test	Rated short time withstand current	kA	16/25/31.5
		Rated duration of short time withstand current	s	0.5/1
		Rating of internal arc	-	IAC
		Accessible type	-	A type(F、L、R)
14	Compartment	CB compartment	-	Interlock-controlled
		Busbar compartment	-	Interlock-controlled
		Cable compartment	-	Interlock-controlled
15	Loss of service continuity category		-	LSC2B
16	Partition / Shutter		-	PM
17	Rating of Earth Switch characteristics	-	kA	25
		-	s	3
		Class	-	E1/E2
		Class	-	M1/M2

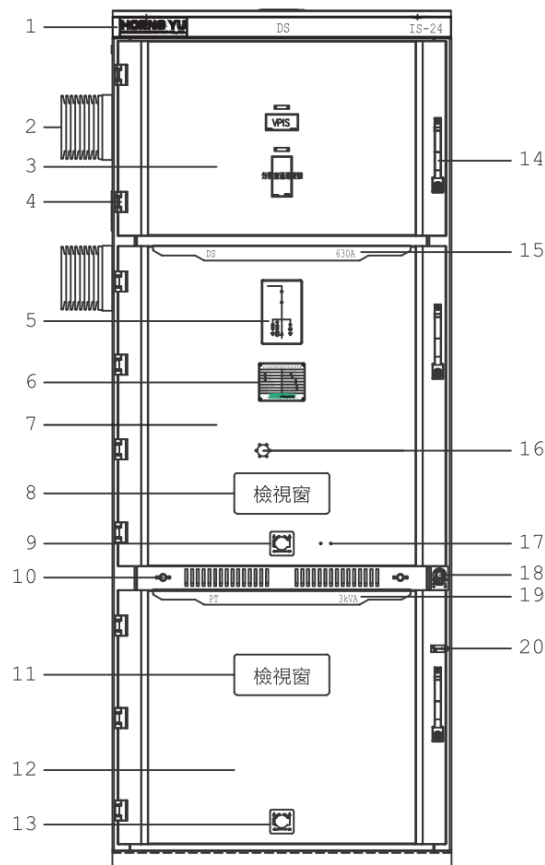
Specifications 技術規格

High corrosion shell,
spray salt test R10 , Seismic(Earthquake) resistance test.

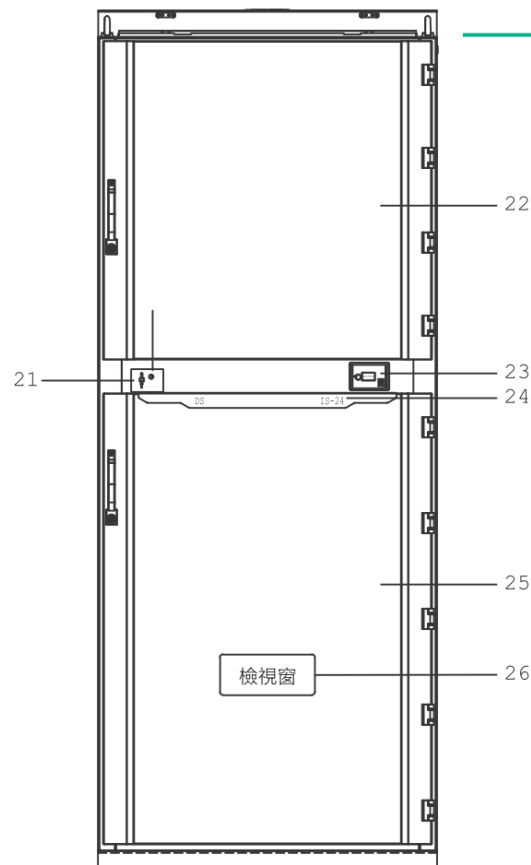


No.	Rated Specification	Unit	Rated Parameters
18	IP Rating (IP) (Enclosure door close / open)	-	IP4X / IP2X IP45 (weather proof test)
19	Corrosion Resistance on salt spray	Hr	≤1000 (RN10)
20	Electromagnetic compatibility (EMC)	-	Level 3
21	Ground continuity of enclosure (DC 30A)	V	≤ 3
22	Seismic(Earthquake) resistance	g	X axis ≥0.6 Y axis ≥0.5 Z axis ≥0.4 (Approved by 7 th the highest level of national test)
23	Materials of enclosure	-	Galvanized zinc alloyed steel (front door /rear door and side cover made by paint SPHC)
24	Paint color	-	RAL7035(standard) 、 5Y 7/1 ※ customized specifications available.

Front View



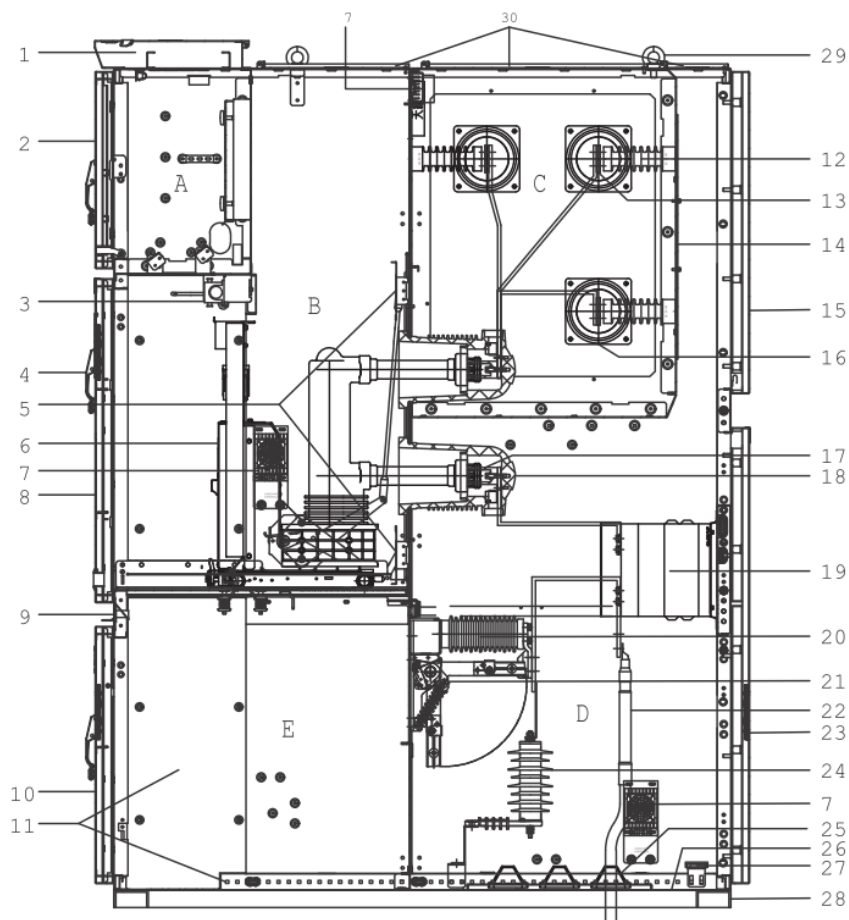
Rear View



1. Name bar marked with manufacturer, panel name, and type
2. 24kV wall insulating bushing
3. Dashboard on LV compartment (explosion-proof front panel)
4. Door Hinge
5. Analog busbar system plate (Optional)
6. Nameplate
7. Explosion-proof front panel of CB compartment
8. Inspection window of CB compartment
9. Opening for CB operation (lockable)
10. Mortise of CB trolley fixed position
11. Inspection window of Spare compartment
12. Spare compartment door (SPHC Painting)
13. Opening for PT trolley operation (lockable)
14. Door handle (optional: lock or power the prevention lock)
15. Nameplate of CB rated current
16. Emergency trip opening (optional)
17. Emergency dismantlement screw of door interlock device

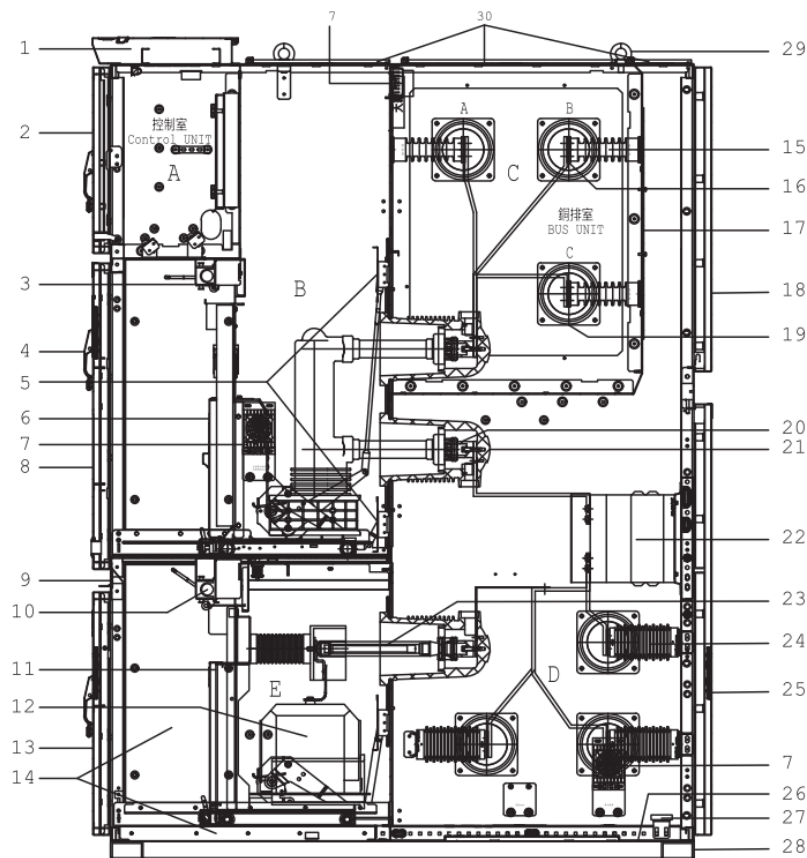
18. Opening for earthing switch operation (lockable)
19. Nameplate of PT specification
20. Emergency dismantlement screw of Front door of Spare compartment
21. Electromagnetic lock of below rear Door (optional)
22. Upper rear panel
23. Luminaire for Cable compartment (optional)
24. Nameplate marked with panel name and type
25. Below rear panel
26. Inspection window of Cable compartment

CB(DS)+ES



- A. LV compartment
- B. Breaker compartment (Vacuum Circuit Breaker/Disconnecting Switch)
- C. Busbar compartment
- D. Cable compartment
- E. Spare compartment
- 1. Name bar and cable tray
- 2. Door of LV control room (SPHC painting)
- 3. Plug and socket for Vacuum Circuit Breaker cable (Position interlock)
- 4. Door handle (With Lock)
- 5. Safety metal shutters
- 6. Withdrawable Vacuum Circuit Breaker
- 7. Heater and hygostat (Optional: ventilation fan)
- 8. Front panel of Vacuum Circuit Breaker compartment (SPHC painting)
- 9. Cabinet (Galvanized zinc alloyed steel)
- 10. Front door of Spare compartment (SPHC Painting)
- 11. Metal cable tray for control line
- 12. Voltage insulator
- 13. Horizontal busbar
- 14. Partition of Busbar compartment with repairment opening
- 15. Upper rear panel
- 16. Wall Insulation bushing
- 17. Vacuum Circuit Breaker contactor (Silver plating)
- 18. Vacuum Circuit Breaker insulation bushing
- 19. Current Transformer
- 20. Capacitive insulator
- 21. Earthing switch
- 22. High Voltage cable
- 23. Below rear door
- 24. Lightning arrester (Silicone tube)
- 25. Tower shaped cable sheath
- 26. Soleplate
- 27. Horizontal earthing busbar
- 28. Mounting base
- 29. Eye bolt
- 30. Pressure relief device

CB(DS)+PT



- A. LV compartment
- B. Breaker compartment (Vacuum Circuit Breaker/Disconnecting Switch)
- C. Busbar compartment
- D. Cable compartment
- E. PT compartment
- 1. Name bar and cable tray
- 2. Front panel of LV compartment (SPHC Painting)
- 3. Plug & socket for Vacuum Circuit Breaker cable (Position interlock)
- 4. Door handle (With Lock)
- 5. Safety metal shutters
- 6. Withdrawable Vacuum Circuit Breaker
- 7. Heater and hygrostat (optional: ventilation fan)
- 8. Front panel of CB compartment (SPHC painting)
- 9. Cabinet (Galvanized zinc alloyed steel)
- 10. Plug & socket for PT cable
- 11. PT trolley
- 12. PT(Potential transformer)
- 13. Front door of Spare compartment (SPHC painting)

- 14. Metal cable tray for control line
- 15. Voltage insulator
- 16. Horizontal busbar
- 17. Partition of Busbar compartment With repairment opening
- 18. Upper rear panel
- 19. Wall Insulation bushing
- 20. Vacuum Circuit Breaker contactor (Silver plating)
- 21. Vacuum Circuit Breaker insulation bushing
- 22. CT(Current transformer)
- 23. PT fuse
- 24. Capacitive insulator
- 25. Below rear panel
- 26. Soleplate
- 27. Horizontal earthing busbar
- 28. Mounting base
- 29. Eye bolt
- 30. Pressure relief device

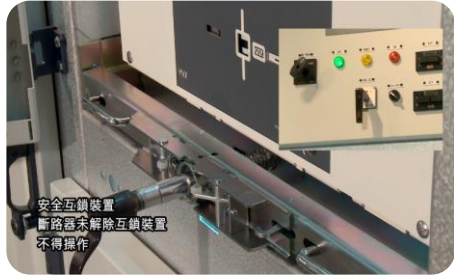
Interlocking device 互鎖裝置

Interlock-controlled accessible compartment

1

Prevent false operation when CB is connected on load.

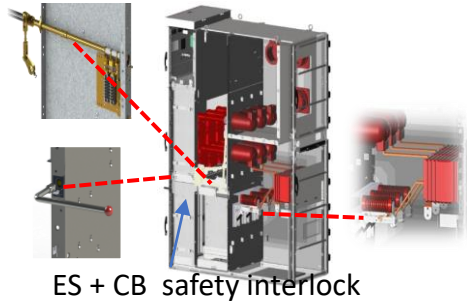
The rack is unlocked to move only AFTER CB is disconnected and in OFF status to prevent false operation when Circuit Breaker is electrical loaded.



2

Prevent ES to connect when the CB still connected on load.

Earthing Switch could be unlocked to connection ONLY WHEN the Circuit Breaker is disconnected.



3

Prevent power supplying when the ES connected.

Circuit Breaker can only be moved to connected position AFTER Earthing Switch disconnected to prevent the power supplying when Earthing Switch still connected on.



4

Prevent the removable parts been pull out when it's on load.

The auxiliary circuit control plug is locked when circuit breaker still connected to prevent it's pulled out when still on load.



5

Prevent operator open the compartment when still on load.

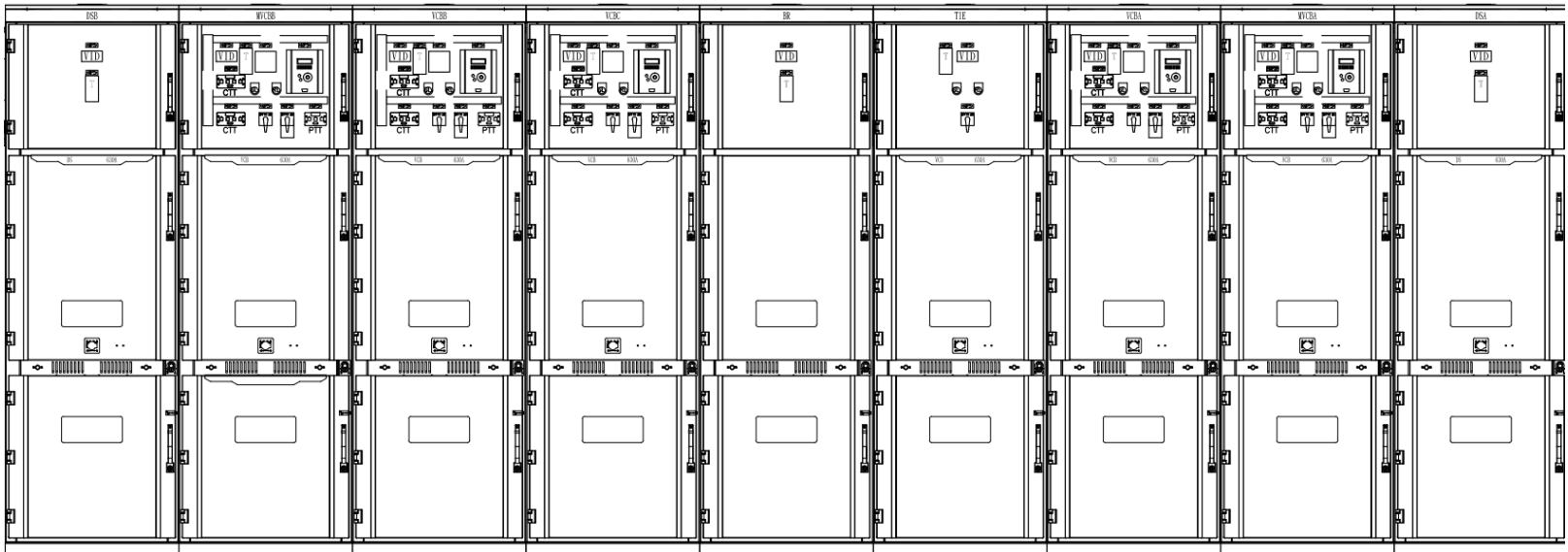
The cable termination compartment can be unlocked and opened ONLY WHEN the Circuit Breaker is disconnected and the Earthing Switch in connection. (panel not on load and on earthed status)



Cabinet Scheme櫃體方案

Name bar	DS	MCB+PT	FEEDER	FEEDER	JUNCTION BOX	TIE	BUS RISER	FEEDER	MCB+PT	DS
System diagram										
Dimension	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D	800Wx2530Hx1910D

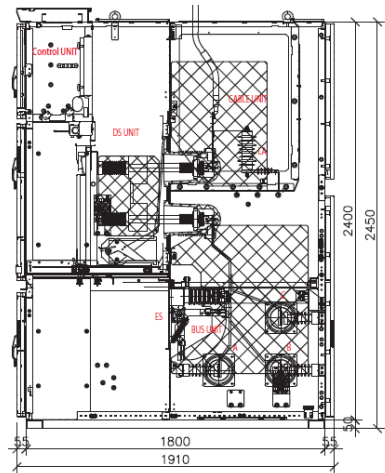
This is HVEC standard method as example for reference, please contact us for more information or customized method.
(Earthing Switch is optional)



Cabinet Scheme 櫃體方案

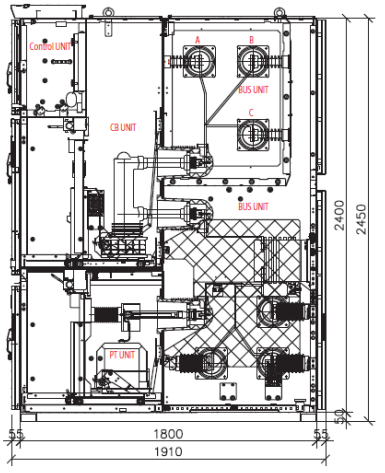
DS PANEL

(DS+ES)



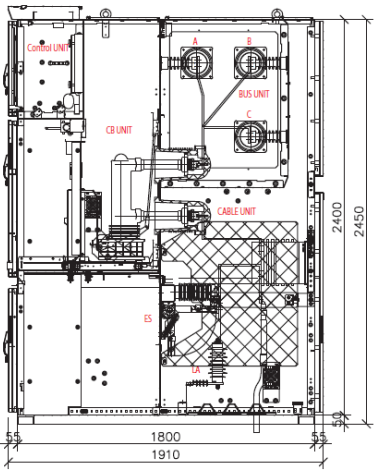
Main CB PANEL

(CB+PT)



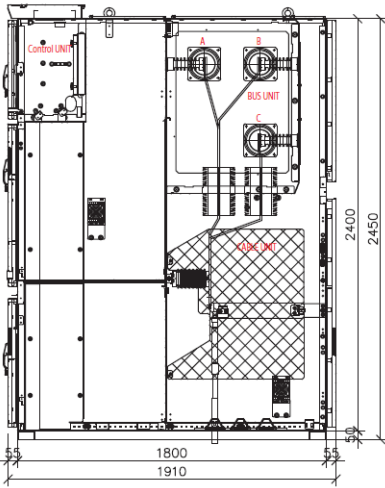
FEEDER PANEL

(CB+ES)



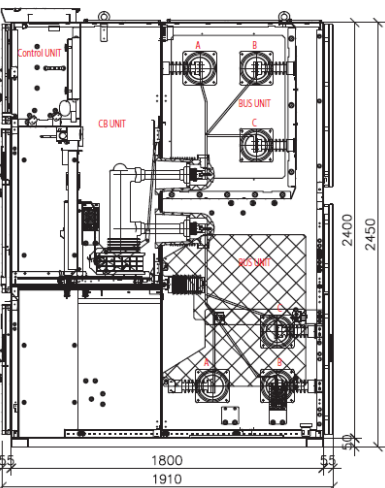
JUNCTION PANEL

(Busbar)



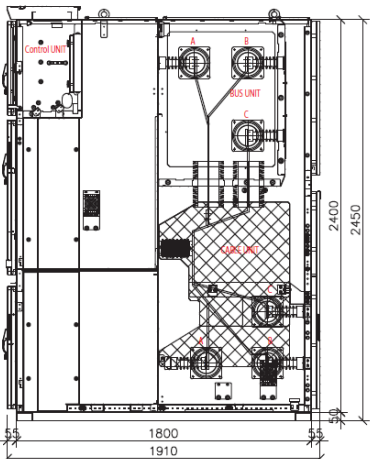
TIE PANEL

(CB)

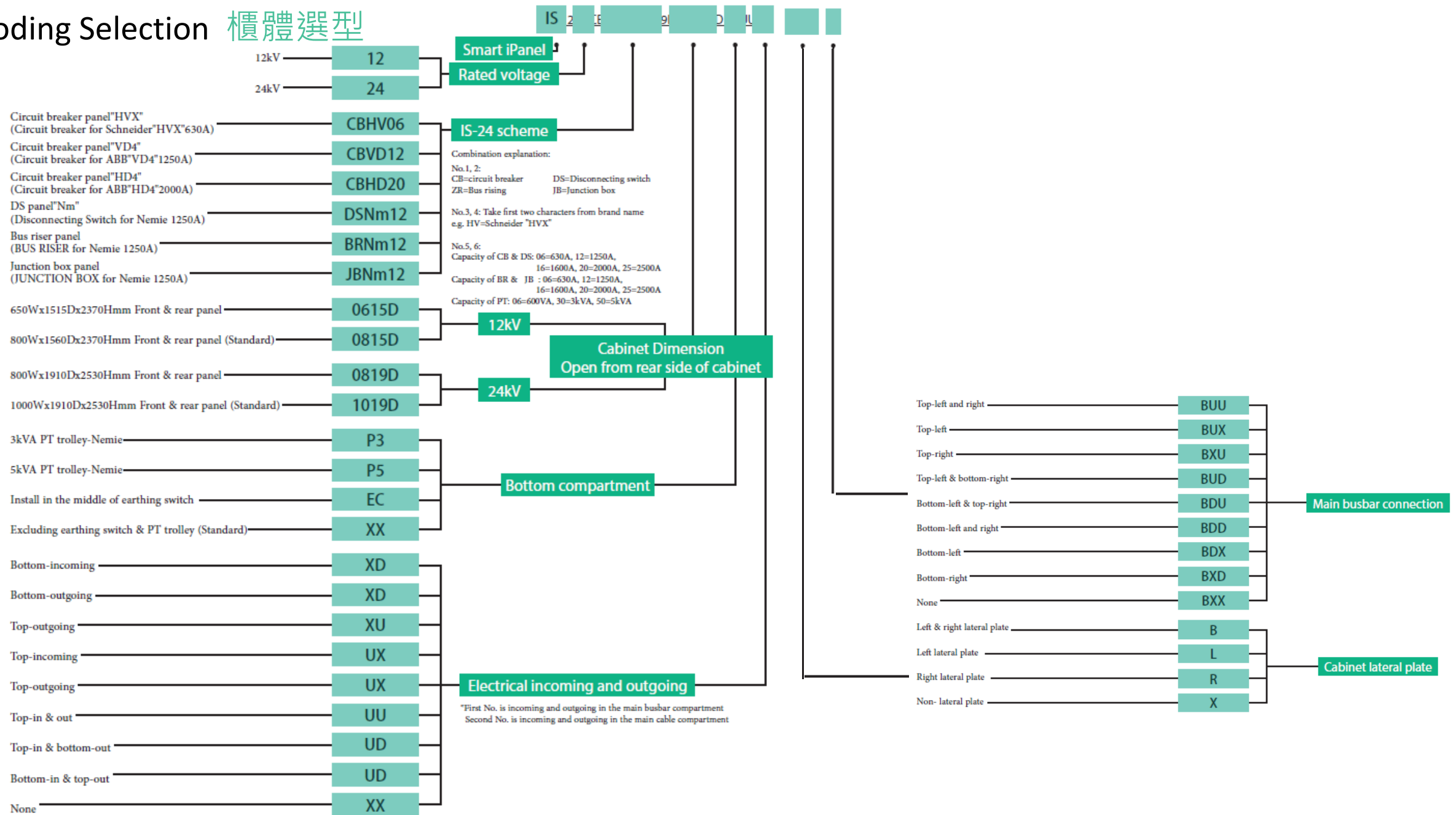


BUS RISER PANEL

(Busbar)



Coding Selection 櫃體選型



Certification 櫃體認證



Certificate of High voltage Electric equipment manufacturer (IEC62271-200 & CNS15156-200)



Type-test approval certificate by Bureau of Energy, Ministry of Economic Affairs, R.O.C. (IEC62271-200 & CNS15156-200)



Type-test approval certificate of Arc Fault, short circuit, and Insulation ability (IEC62271-200 & CNS15156-200)



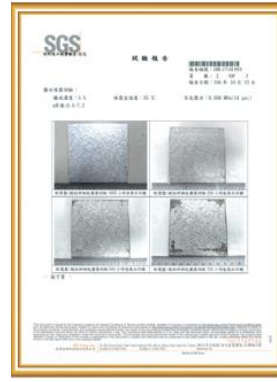
EMC approval certificate



Partial Discharge approval certificate



Seismic(Earthquake) Resistance approval certificate



Salt Spray Test approval certificate (Approved Level : R10)



Type-test of Earthing Switch approval certificate (IEC62271-201)



Type-test of Disconnecting Switch approval certificate (IEC62271-201)

Applications in various filed 銷售實績

➤ **Public Work--**

Aviation – Taiwan Taoyuan International Airport

Traffic transportation - Taiwan West Coast Expressway / THSR Yanchao Depot

Power - Taiwan Power Research Institute

Public – Taipei Water Department

➤ **Solar power--**Formosa Solar Renewable Power Co., Ltd / Kouhu Power Plant

➤ **Medical system--**Taiwan National University & Hospital / CHANGHUA CHRISTIAN HOSPITAL

➤ **Petrochemical--**CPC Corporation, Taiwan (was government undertaking, now leading company in the filed)

➤ **Telecommunication--**Chunghwa Telecom (was government undertaking, now leading company in the filed)

➤ **School--**

Domestic school- National Taiwan University of Science and Technology

Foreign school - Mahidol University, Thailand

➤ **IT industry--** Advanced Semiconductor Engineering, Inc. / G-TECH OPTOELECTRONICS CORPORATION

➤ **Construction--**Farglory (Taiwan leading constructor , Farglory Group)

Projects –Taiwan Public Works公共工程

Taoyuan International Airport Terminal 2
Substation Replacement Project



Voltage Rating	22.8kV
Q' ty	23

Ministry of transportation and communication
new project of Tunnel Security Control



Voltage Rating	22.8kV
Q' ty	12

Projects –Taiwan Power Research Institute台灣電力公司綜合研究所

New Taipei city project -New substation



Voltage Rating	22.8kV
Q' ty	5

Energy conversion system



Voltage Rating	22.8kV
Q' ty	8

Projects –Solar Power太陽能電力工程

iPVita Solar power



Voltage Rating	36 kV
Q' ty	8

Yu Shu Power Co., Ltd



Voltage Rating	22.8kV
Q' ty	8

Projects –Chemistry Industry化學工業

Fuying Technology Chemical
Substation renewal and production line extension project

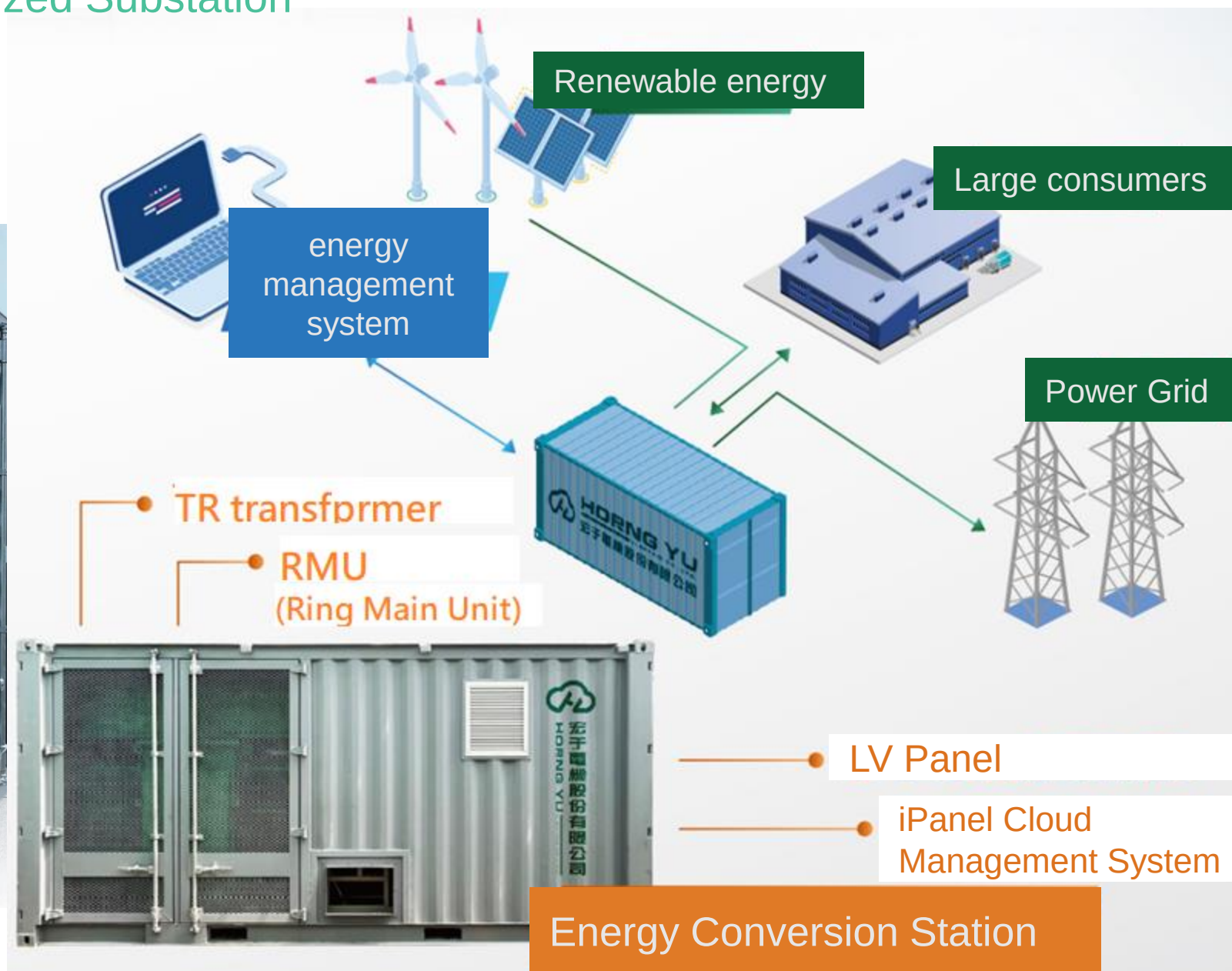


Voltage Rating	22.8kV
Q' ty	4



Voltage Rating	380/220V
Q' ty	10

Projects –Intelligent Modularized Substation



Projects : Strategic alliance partner- **Schneider**策略聯盟合作專案

- Company : Schneider Electric. Taiwan
- Application : Business building power supply system. IS-06 480V LV Switchgears

Schneider
Electric



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THANK YOU

