



Susol *Super Solution*

MV SWGR

Business Proposal



LSIS



Becoming an advanced global partner means increasing the partner's value through following works in your place:

- ✓ Buying components
- ✓ Assembly
- ✓ Testing
- ✓ Using or reselling

Consulting services and technical assistance are provided by LSIS.

The logo for LSIS, featuring the letters 'LSIS' in a bold, white, sans-serif font with a stylized arrow pointing to the right above the 'S'.The logo for Custom Controls Technology Inc., featuring a circular icon with a stylized 'C' and 'T' inside, followed by the text 'Custom Controls Technology Inc.' in a white, sans-serif font.

Contents

1. Introduction

2. Product portfolio

3. General specification

4. Business package

5. Support services



Susol

Air Insulated Medium Voltage Metal Clad Switchgear

- High capacity and compact size
- Digital type switchgear
- Safety oriented
- Convenient maintenance
- CT maintenance in front access
- Arc-resistance
- Draw-out type for PT cradle

4.76kV ~ 15kV



Introduction - Application

Power plant



Industry

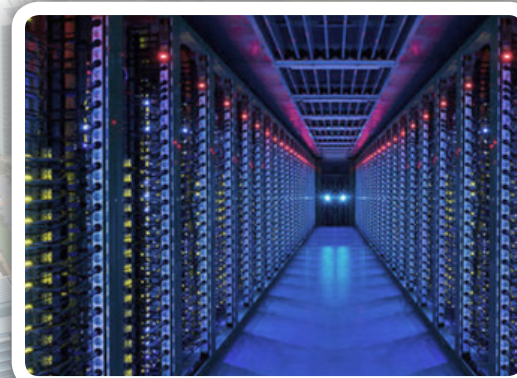


Medium Voltage Switchgear

Infrastructure



Data center



Safety considerations

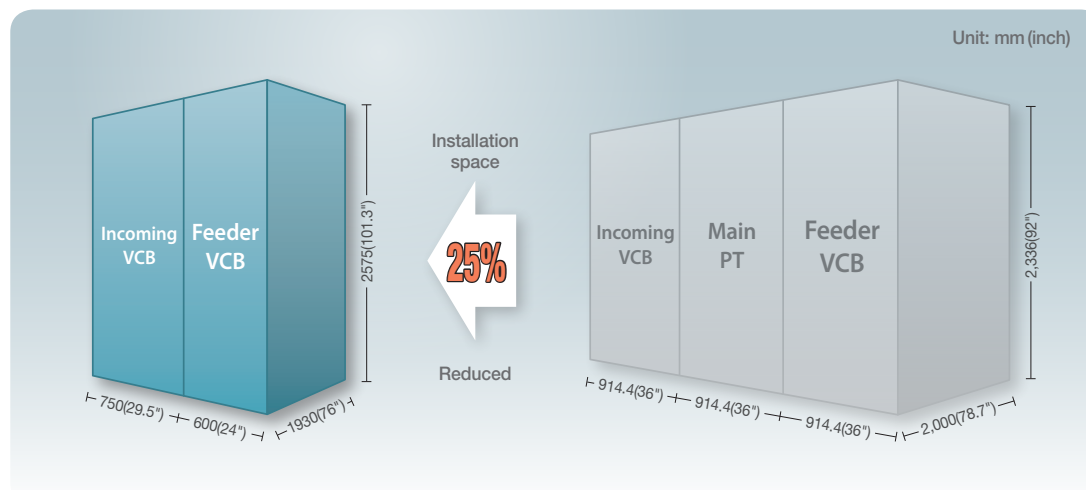
This switchgear provides the best protection rating out of Air Insulated Switchgear. Designed to remove explosion or damage to peripheral devices as possible in the event of internal arc happening.

- Metal clad type: each compartment is divided by metal partitions
- Short-circuit, short-time current and internal arc tests passed at IEEE C37.20.7
- Metal shutter and shutter padlock installed in CB compartment for safe maintenance



Compact size

- Up to 25% reduction in installation space 18% reduction in the width of switchgear with rating up to 2000A
- Integration: Incoming VCB and main PT are installed in a panel (from 2 panels before)



Note) 1. For models, up to 15kV 31.5kA 2000A panel
 2. Incoming and outgoing power cables are passed in bottom of own panel

Product portfolio - Features

Convenient maintenance

- Use of maintenance-free VCB (Susol series)
- Enough space to easily test and change the internal wiring
- Independent bus compartment structured not to affect any accident to adjacent panels
- Simplified inspection works

Digital type switchgear

- GIPAM is installed for establishing convenient and reliable power protection and monitoring system
- Monitoring and control system by IEC 61850



Susol VCB



X GIPAM
separate type touch screen applied



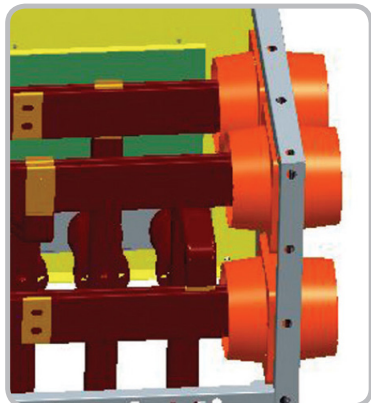
Medium Voltage Switchgear

Product portfolio - Components

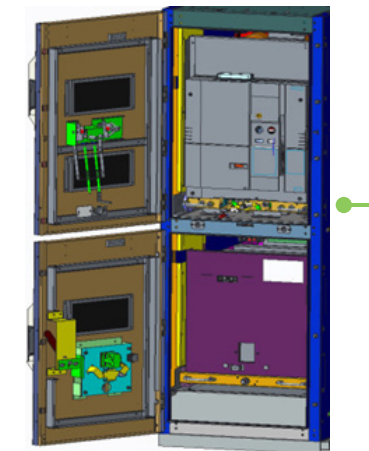
LV compartment



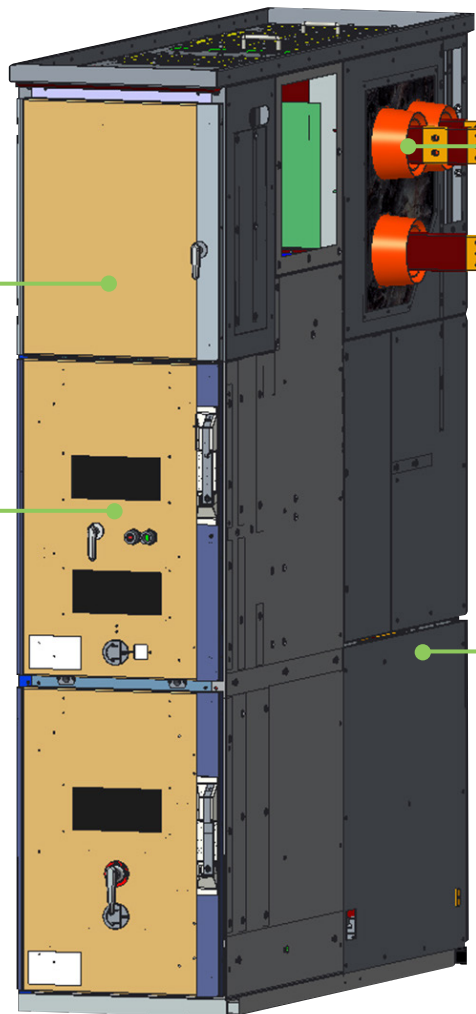
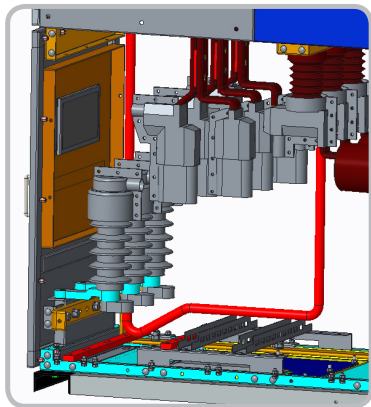
Bus compartment



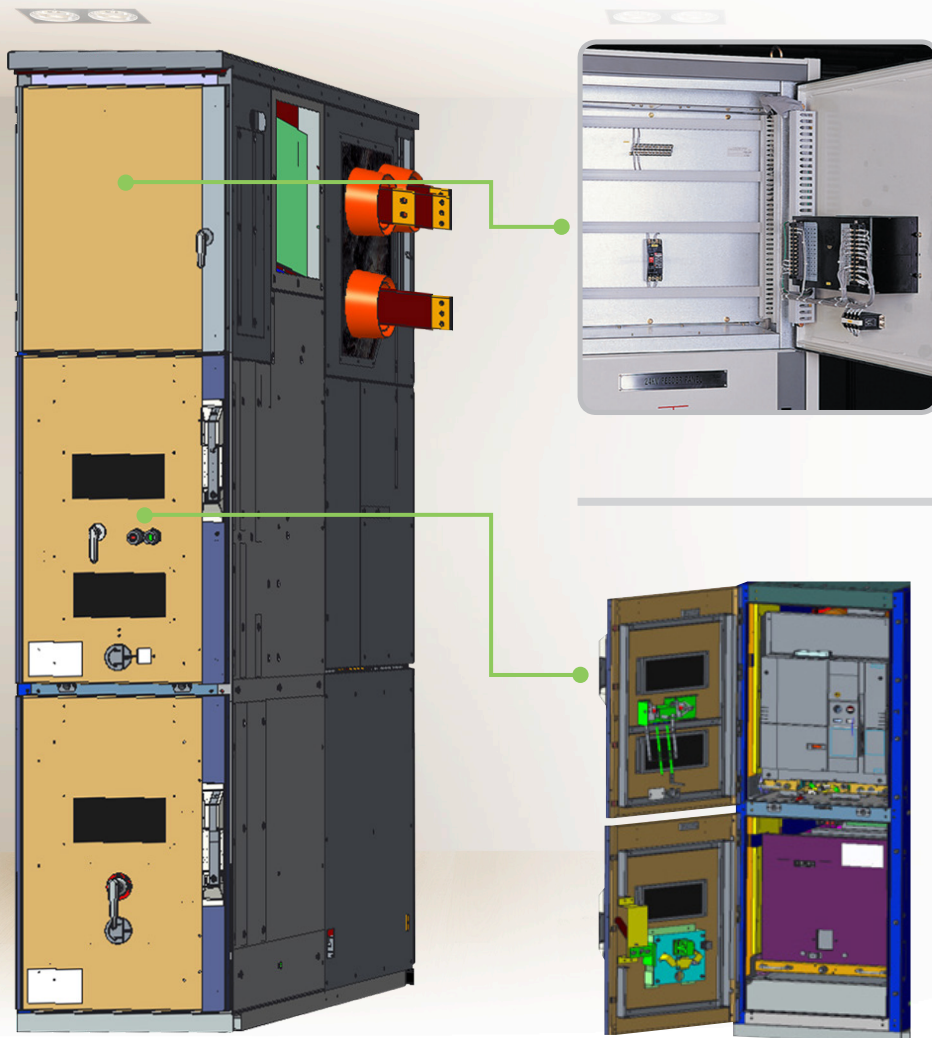
CB+PT compartment



Cable compartment



Product portfolio - Components



LV compartment

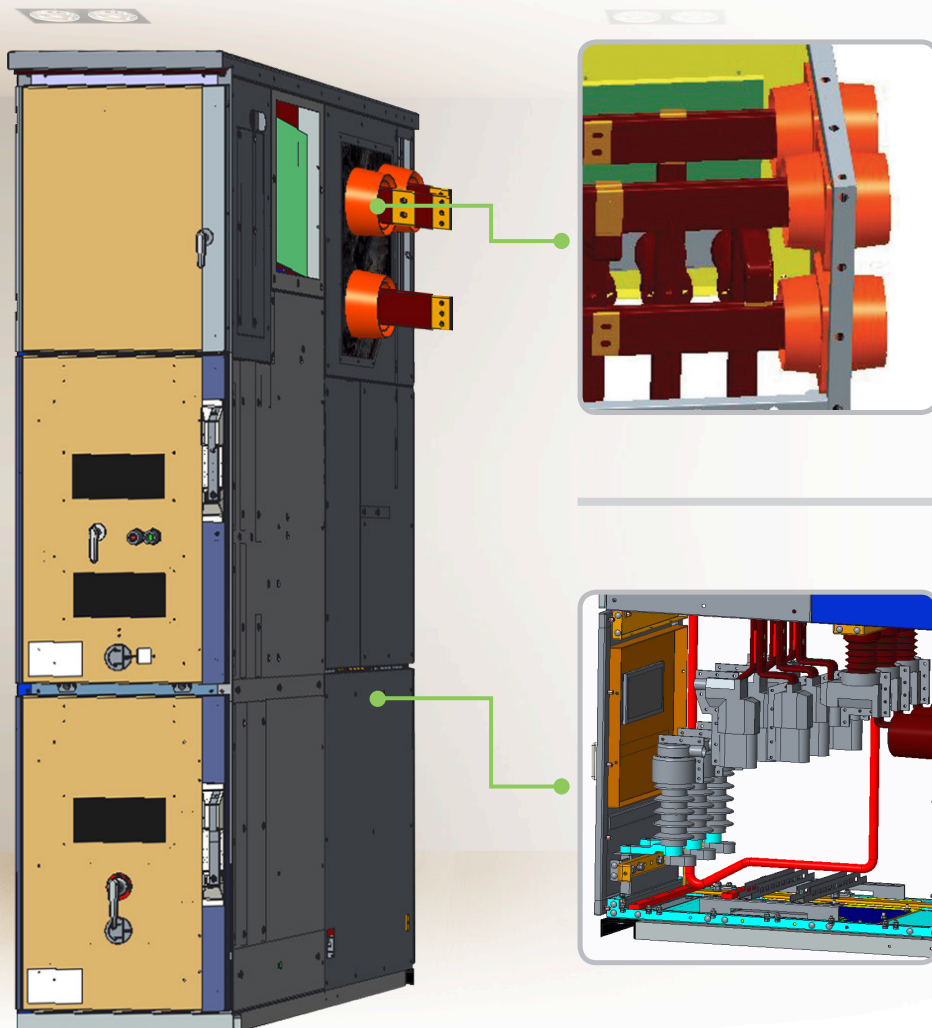
- Enough space to easily test and change the internal wiring
- Detachable structure for change and renovation

CB+PT compartment

- Can draw in and out CB without opening the door
- Viewing window for CB inspection
- Solid structure with hinge and locker
- Metal shutter and shutter padlock
- IP cover on the face of CB
- PT compartment is draw-out type

* Power fuse is not supplied

Product portfolio - Components



Bus compartment

- Independent bus compartment structured to prevent any accident from affecting adjacent panels
- Enough mechanical strength to withstand any internal accident

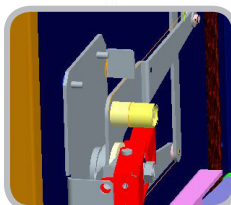
Cable compartment

- Sufficient spaces for connection busbar with power cable
- Incoming and outgoing power cables are passed in bottom of own panel

CB compartment accessories

Shutter Padlock

The hole is lockable by a padlock while the shutters (load and line side) is closed in order to increase safety during maintenance of a VCB draw-out position.



Inspection Window Viewing

Inspection window allows to see the status of the VCB on the closed door.

Emergency Trip Device

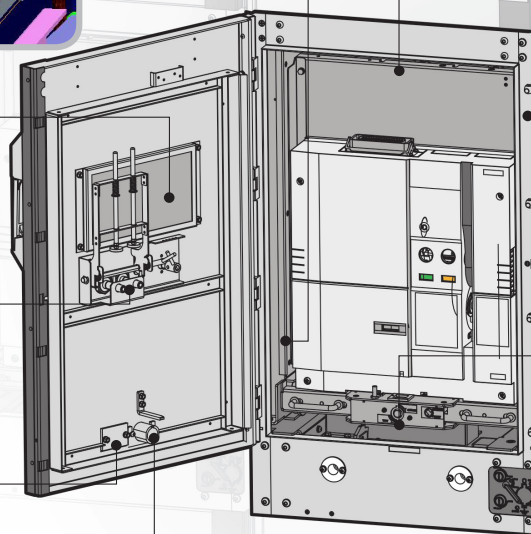
The VCB can be tripped with a trip device without opening the door.

Mechanical Position Indicator

Indicates the service and test position of VCB.

Draw-in and out Device

VCB can be drawn in and out on the closed door.



VCB Interlock

The device prevents that the circuit breaker is separated from the Jack terminal when it is in service position.

Interlocking Device between Door and VCB

When the VCB is in service position, customer can not open the door without releasing the interlock key.

Truck 3-Position Withdraw Structure

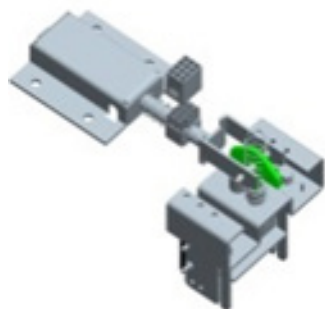
Truck 3-position withdraw structure was re-viewed as well as Susol VCB in accordance with ANSI standard.

Earthing Switch Padlock

To prevents an accident by being careless earthing switch operation, the locking of the earthing switch is available when the switch is in 'OFF' position.



CB compartment options



Mechanically Operated Cell Switch (MOC)

Auxiliary switch, which is mechanically operated in 'service' position, indicates 'ON' or 'OFF' condition of the breaker.



Truck Operated Cell Switch (TOC)

The auxiliary switch (4a4b/2a2b), which is operated when the breaker comes to 'service' position.



VCB Cradle Shunt & PT Cradle Shunt

Shunt is applied to draw in-out type equipment such as VCB and PT.

Shunt ensures that the device is fully grounded when the device is in Service position.

Especially, it is used to ground main circuit when using ground & test device.



Ground Ball Kit

Ground ball kit is used to discharge the residual current after VCB withdrawal or panel maintenance.

General specification

Susol

Medium Voltage Switchgears



Voltage		4.76kV		15kV	
Rated power frequency withstand voltage (kV/1min)		19		36	
Rated lightning impulse withstand voltage (kV[1.2x50])		60		95	
Rated short-time withstand current (kA/s)		31.5kA / 2sec			
Internal arc withstand current (kA/s)		31.5kA / 0.5sec			
Degree of protection		IP4X			
Rated current (A)		1200	2000	1200	2000
Size (inch)	Wide	23.6 inch (600mm)	29.5 inch (750mm)	23.6 inch (600mm)	29.5 inch (750mm)
	Height	101.3 inch (2,575mm)			
	Depth	76 inch (1,930mm)			
Standard		IEEE C37.20.2 / C37.20.7			

General specification

UL MV SWGR combined with the Susol UL VCB offers you complete ratings up to 15kV

- ✓ Strengthening of the high interrupting capacity and large current models
- ✓ Main circuit structure with high reliability
- ✓ Convenience of switchgear configuration and a variety of accessories
- ✓ Type testing is complete for all models according to latest standard, IEEE Std C37.09, IEEE Std C37.20.2, ANSI C37.54, ANSI C37.55, UL (CSA)

Susol

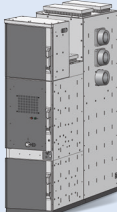
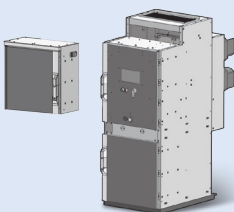
UL Vacuum Circuit Breakers

- Voltage: 4.76/15kV
- Interrupting current: 25/31.5kA
- Continuous current: 1200/2000A



Business package

Complete package, more than you can possibly imagine!

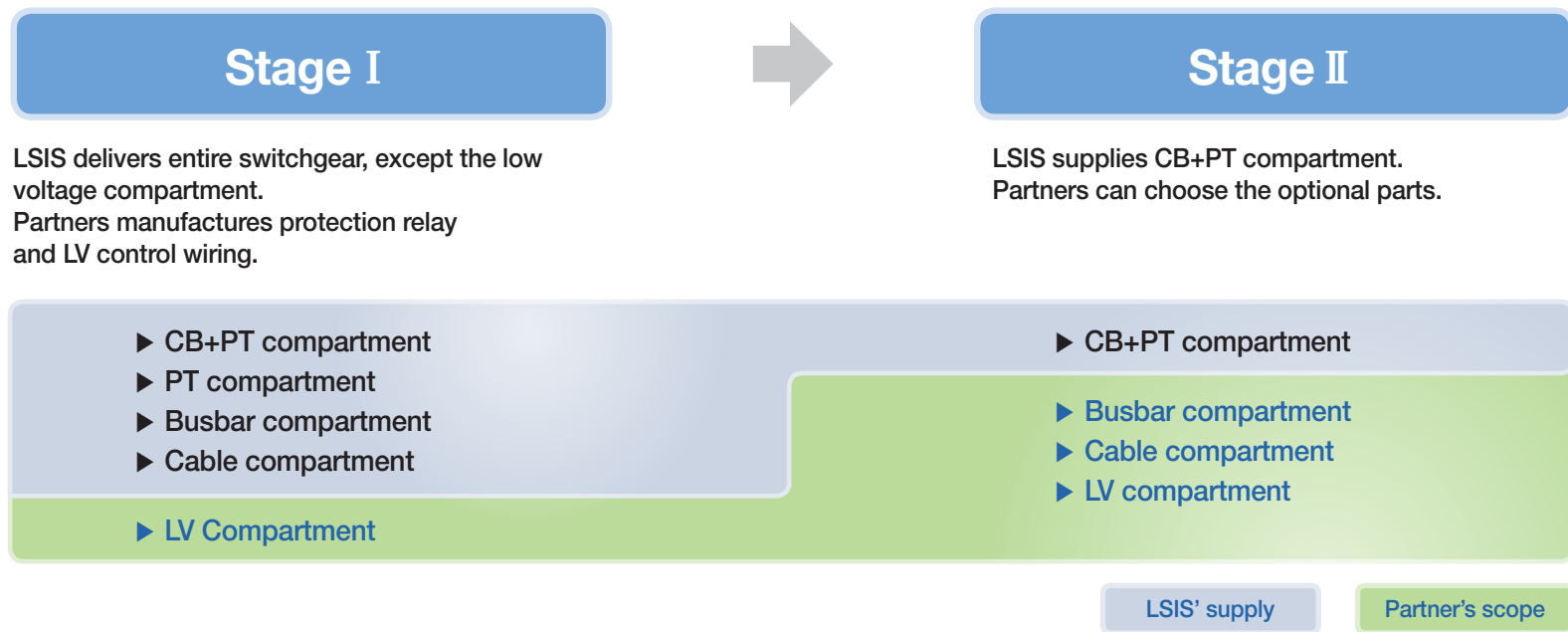
Business concept	Full package	Compartment
<p>●: Supply ◐: Discussable - : N.A</p>		
CB+PT compartment	●	●
Busbar compartment (Drawing)	◐	◐
Cable compartment (Drawing)	◐	◐
LV compartment (Drawing)	◐	◐
VCB	●	●
Ground & test device	●	◐
Technical consulting	◐	◐
Technical specification	◐	◐
Drawings	-	◐
Assembly guide/ manual	●	●
QC process drawing	●	●
Technical training	◐	◐
Assembly training	◐	◐
Inspection training	◐	◐

Compartment business

Product range

Compartments for 4.76kV~15kV Susol Medium Voltage Switchgears

Phases of supplying scope



Support services

- Technical consulting
- Technical specification & drawings
- Assembly guide / manual
- QC process drawing
- Technical, assembly and inspection training

Compartment business

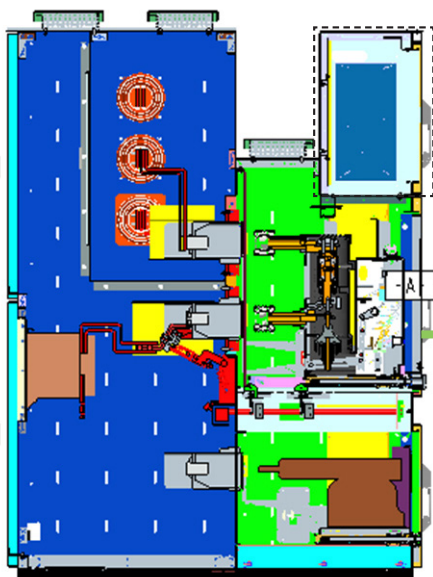
Stage I

LSIS

- CB+PT compartment
- Busbar compartment
- Cable compartment
- LV compartment (Only enclosure)

Custom Controls Technology Inc.

- Protection relay and LV control wiring
- Power fuse for PT
- Surge arrester
(If applicable on electric systems)



LSIS supply

Support services

Support services

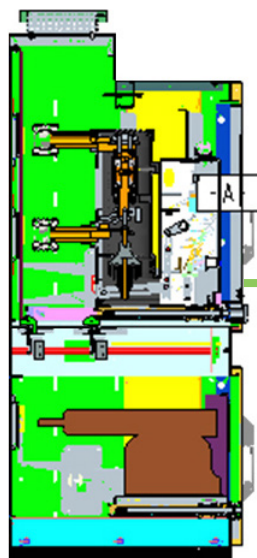
- Technical consulting
- Technical specification & drawings
- Assembly guide / manual
- QC process drawing
- Technical training
- Assembly training
- Inspection training

Compartment business

Stage II

LSIS

- CB+PT compartment
- Core parts and accessories
 - Bushings
 - CT

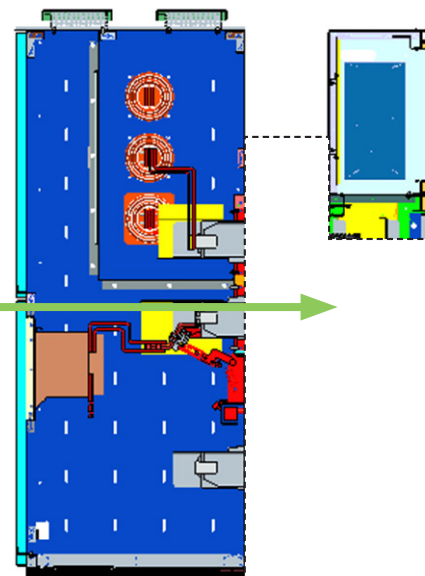


Custom Controls Technology Inc.

- LV compartment, protection relay and LV wiring
- Busbar compartment
- Cable compartment
- Power fuse for PT
- Surge arrester (If applicable on electric systems)

LSIS supply

Support services



Support services

- Technical consulting
- Technical specification & drawings
- Assembly guide/manual
- QC process drawing
- Technical training
- Assembly training
- Inspection training

Support services

Consulting services and technical assistance are provided according to the stage of business.

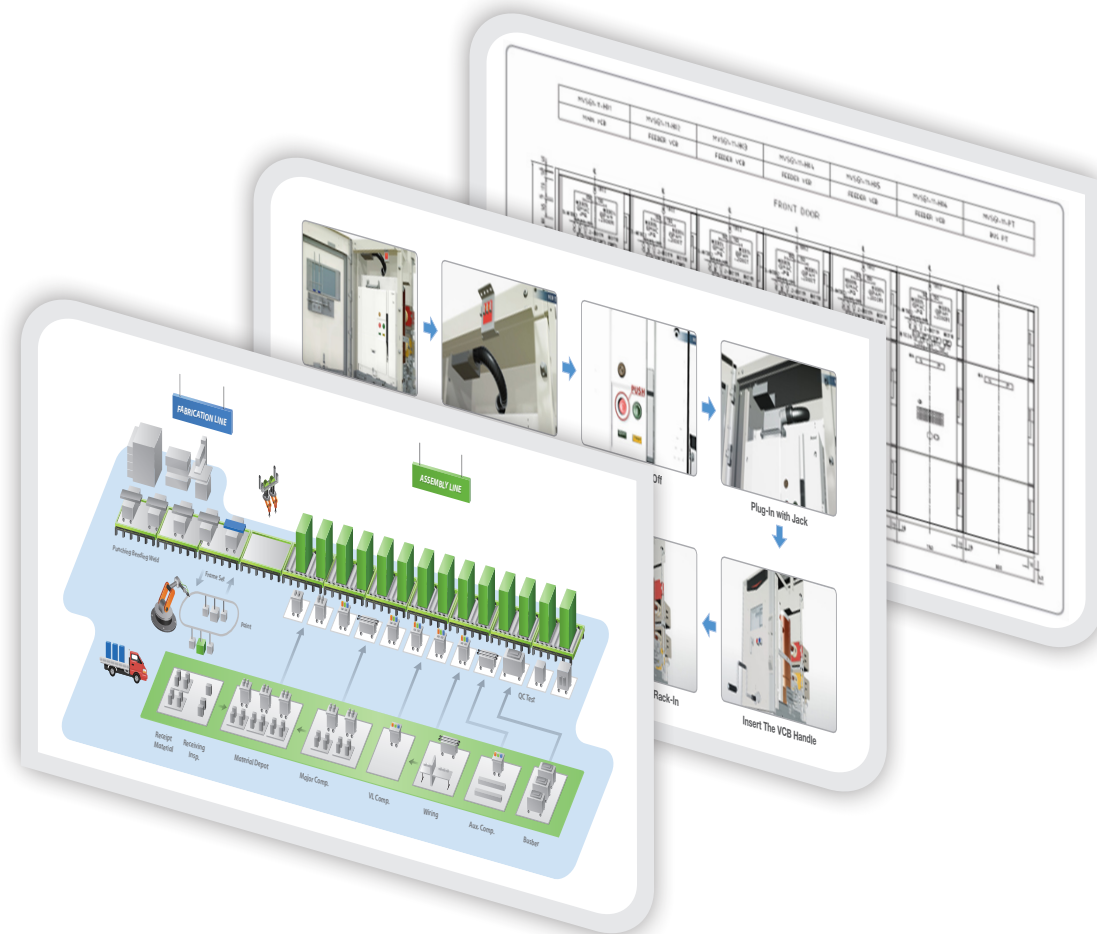
Technical documentation

- Design drawings
- Assembly guide/manual
- Operation & maintenance

Production training & support

- Technical training
- Assembly training
- Inspection training

Test certificates



Support services

Technical documentation

- Design drawings
- Assembly guide/manual
- Operation & maintenance

Production training & support

- Technical training
- Assembly training
- Inspection training

Test certificates

Design drawings

Bill of material

Assembly guide

Operation manual

Maintenance manual

2-1. Assembly Manual Bus&Cable Module Assy attachment

Operational Instruction	Operation Product	Frame Set Assy attachment	Registration No.	Date	2016-06-07	Page	1/1																																																																				
<table border="1"> <thead> <tr> <th>No.</th> <th>Name</th> <th>Code</th> <th>Qty</th> </tr> </thead> <tbody> <tr><td>1</td><td>Side Frame R</td><td>RC109710004</td><td>1</td></tr> <tr><td>2</td><td>Rear Bottom Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>3</td><td>Rear Top W/Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>4</td><td>Mid Top W/Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>5</td><td>Lefting Body</td><td>RC109710004</td><td>1</td></tr> <tr><td>6</td><td>Top Middle Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>7</td><td>Rear Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>8</td><td>Bottom Cover</td><td>RC109710004</td><td>1</td></tr> <tr><td>9</td><td>Knobble Cover</td><td>RC109710004</td><td>1</td></tr> <tr><td>10</td><td>Mid R/Frame</td><td>RC109710004</td><td>1</td></tr> <tr><td>11</td><td>Cable Tray</td><td>RC109710004</td><td>1</td></tr> <tr><td>12</td><td>Side Frame L</td><td>RC109710004</td><td>1</td></tr> <tr><td>13</td><td>Side Frame L</td><td>RC109710004</td><td>1</td></tr> <tr><td>14</td><td>Small Panel Channel</td><td>RC109710004</td><td>1</td></tr> <tr><td>15</td><td>Cable Tray</td><td>RC109710004</td><td>1</td></tr> <tr><td>16</td><td>Cable Tray</td><td>RC109710004</td><td>1</td></tr> </tbody> </table>								No.	Name	Code	Qty	1	Side Frame R	RC109710004	1	2	Rear Bottom Frame	RC109710004	1	3	Rear Top W/Frame	RC109710004	1	4	Mid Top W/Frame	RC109710004	1	5	Lefting Body	RC109710004	1	6	Top Middle Frame	RC109710004	1	7	Rear Frame	RC109710004	1	8	Bottom Cover	RC109710004	1	9	Knobble Cover	RC109710004	1	10	Mid R/Frame	RC109710004	1	11	Cable Tray	RC109710004	1	12	Side Frame L	RC109710004	1	13	Side Frame L	RC109710004	1	14	Small Panel Channel	RC109710004	1	15	Cable Tray	RC109710004	1	16	Cable Tray	RC109710004	1
No.	Name	Code	Qty																																																																								
1	Side Frame R	RC109710004	1																																																																								
2	Rear Bottom Frame	RC109710004	1																																																																								
3	Rear Top W/Frame	RC109710004	1																																																																								
4	Mid Top W/Frame	RC109710004	1																																																																								
5	Lefting Body	RC109710004	1																																																																								
6	Top Middle Frame	RC109710004	1																																																																								
7	Rear Frame	RC109710004	1																																																																								
8	Bottom Cover	RC109710004	1																																																																								
9	Knobble Cover	RC109710004	1																																																																								
10	Mid R/Frame	RC109710004	1																																																																								
11	Cable Tray	RC109710004	1																																																																								
12	Side Frame L	RC109710004	1																																																																								
13	Side Frame L	RC109710004	1																																																																								
14	Small Panel Channel	RC109710004	1																																																																								
15	Cable Tray	RC109710004	1																																																																								
16	Cable Tray	RC109710004	1																																																																								

5. OPERATION

7.2kV-12kV PT TRUCK FUSE REPLACEMENT MANUAL

PT TRUCK ASSY

Part Name	Qty	Unit
1) Pin Self Screw M5	2	C
2) Pin Washer M5	2	C
3) Spring Washer M5	2	C
4) Hex Nut M5	2	C
5) Side Frame L	1	C
6) Side Frame L	1	C
7) Side Support L	1	C
8) Cable Holder Cover	1	C
9) Pin Top Nut M5	2	C
10) Pin Head Screw M5	2	C
11) Pin Self Screw M5	2	C

Support services

Technical documentation

- Design drawings
- Assembly guide/manual
- Operation & maintenance

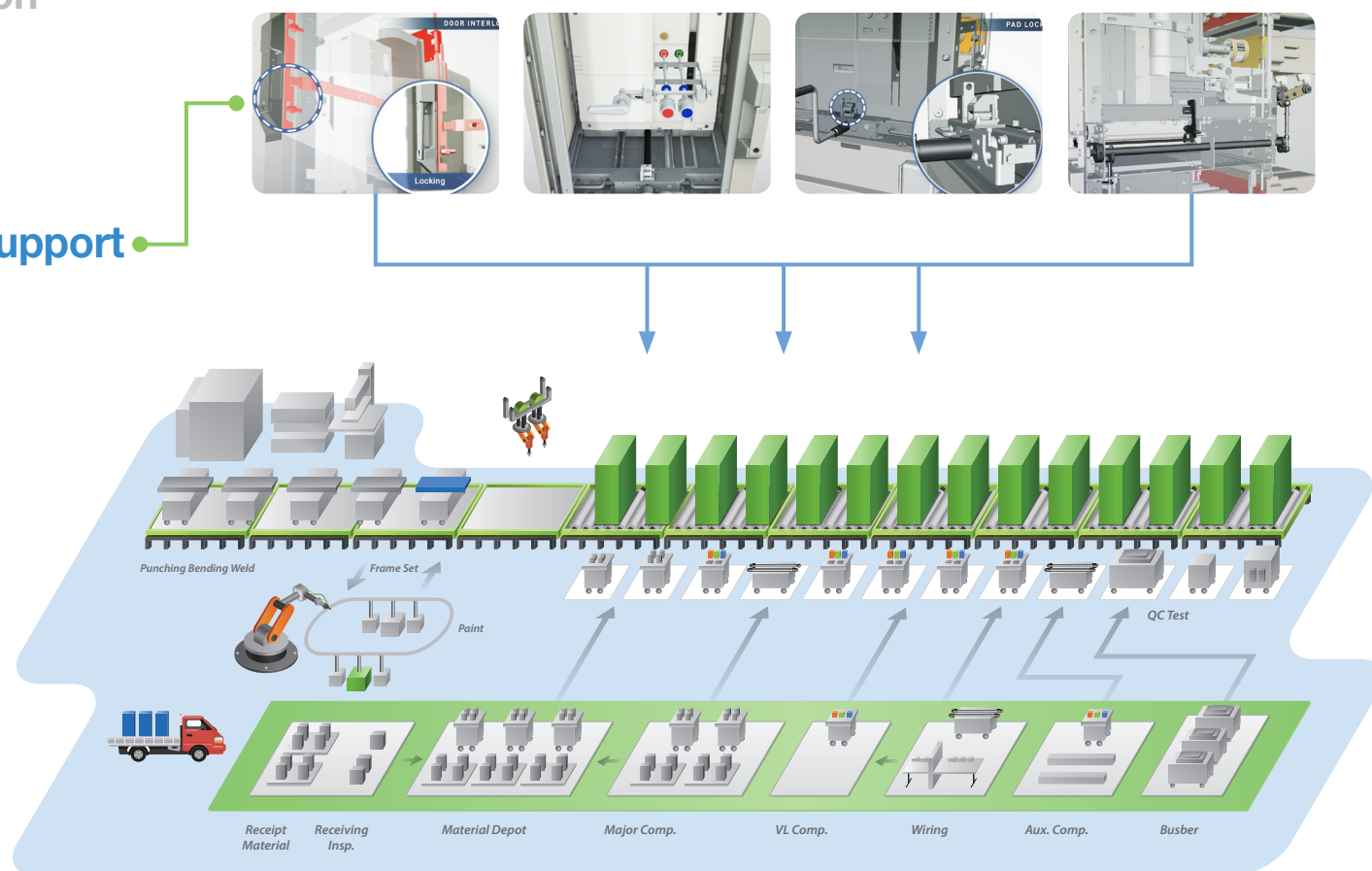
Production training & support

- Technical training
- Assembly training
- Inspection training

Test certificates

Production training & support

Technical, assembly and inspection training



Support services

Technical documentation

- Design drawings
- Assembly guide/manual
- Operation & maintenance

Production training & support

- Technical training
- Assembly training
- Inspection training



Test certificates



MV test cell

► Function

The site for testing medium-voltage circuit-breakers, switches, metal enclosed switchgear, transformers and power fuses

► Testing capability: Short-circuit test

3 ph, 7.2 kV, 63 kA 3 ph, 25.8 kV, 25 kA 3 ph, 38 kV, 16 kA

► Certificates



We open up a brighter future through
efficient and convenient energy solutions.



■ **Head Quarter**

127 LS-ro (Hogye-dong) Dongan-gu, Anyang-si,
Gyeonggi-Do, 14119, Korea
Tel: 82-2-2034-4902, 4684, 4429 Fax: 82-2-2034-4555

• **LSIS USA Inc. (Chicago, U.S.A)**

Tel: 800-891-2941 Fax: 847-383-6543 E-Mail: sales.us@lsis.com



Technical Question or After-sales Service

Customer Center-Quick Responsive
Service, Excellent technical support | **82-1644-5481**



■ **Head Quarter**

2230 West 77th Street Hialeah, Florida 33016,
United States
Tel: 1-305-805-3700 Fax: 1-305-818-5976

Website: <https://cct-inc.com/>
E-Mail: orders@cct-inc.com