

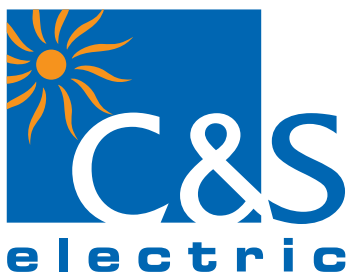
We touch your electricity everyday!



Ring Main Units

Vacuum Circuit Breakers

Switchgear



## Medium Voltage Switchgear

For Primary and Secondary Distribution



## C&S Electric Ltd.

C&S Electric Ltd. is a leading manufacturer of electrical and electronic equipment in India. It is India's largest exporter of industrial switchgear & power busbar products. C&S Electric products are used in applications ranging from power generation, transmission and distribution, protection and final consumption.

C&S Electric has the following product verticals:

- Switchgear
- Power Busbars
- Protection and Measurement Devices
- Lighting
- Diesel Generator
- Solar Solutions
- Electrical EPC

## C&S PRODUCT PORTFOLIO



## SUBSIDIARIES/ JOINT VENTURES



Etacom ISD BV



C&S (Nantong) Electric Ltd.



C&S Himoinsa Pvt. Ltd.



TC Electric Controls LLC



## 18 State-of-the-art Manufacturing Plants India | China | Belgium

- Locations in Noida, Haridwar, Pantnagar, Bhiwani, Guwahati, Nantong (China) and Boom (Belgium)
- Dedicated logistics warehouses - Delhi, Noida, Lucknow, Indore, Mumbai, Ahmedabad, Bangaluru, Bhubaneswar, Kolkata and Ranchi
- 2,000,000 sq.ft. covered area
- Latest precision tools, machinery & testing equipment
- Oracle ERP environment



C&S Haridwar Campus at SIDCUL Haridwar - INDIA



C&S (Nantong) Electric Plant - CHINA



C&S+Eta-com Plant - BELGIUM



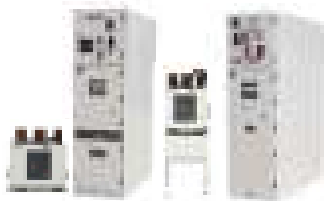
## MV Switchgear

- 3.6kV to 36kV Air Insulated Switchgear
- 12kV & 24kV SF6 Insulated Ring Main Units

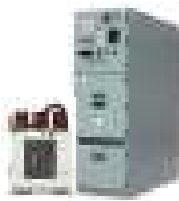
Medium Voltage Switchgear products are manufactured in state-of-the-art production facility at Greater Noida in National Capital Region. MV Switchgear products find use in growing market for Medium Voltage Switchgear in India, both for primary and secondary distribution segments. Primary distribution switchgear are used in power plants and heavy industries likewise, secondary distribution switchgear are used in light industries and distribution network of power utilities and real estate projects.

C&S Electric is one of the leading suppliers of Ring Main Units and Air Insulated Switchgear to various power utilities in India and are contributing in big way to strengthen the power distribution network in various states in India.

### Switchgear for Primary Distribution



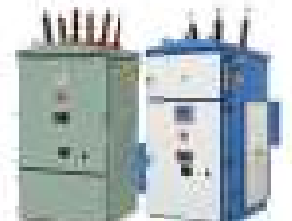
12kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



24kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



36kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker



33kV Outdoor Vacuum Circuit Breaker- Kiosk

### Switchgear for Secondary Distribution



SF6 Insulated Indoor Ring Main Unit



SF6 Insulated Indoor/Outdoor Ring Main Unit



SF6 Insulated Outdoor Ring Main Unit





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG

### General characteristics

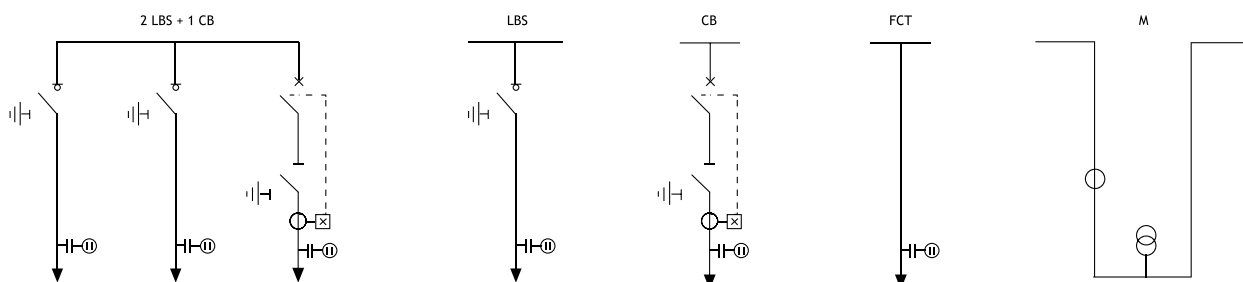
- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Resistant to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank
- With Canopy / Enclosure for outdoor use



### Technical data

Electrical Data				
Rated voltage	kV	12	17.5	24
Insulation level				
- lightning impulse (1.2/50 µs)	kVp	75	95	125
- power frequency (50 Hz/1 min)	kVrms	28	38	50
Rated current	A	630	630	630
Rated short-time current	kArms	21 for 3s	21 for 3s	16 for 3s
Short circuit making current	kAp	52.5	52.5	40
Mechanical characteristics				
Protection degree		Mechanism - IP2X Cable Compartment - IP3X Tank - IP67 Canopy / Enclosure - IP54		
Standard colour		RMU - RAL 7035 Canopy / Enclosure - RAL 7012		
Normal service conditions				
Ambient temperature	°C	basic:-5..+40 options:-10.. +55		
Dimensions (2LBS+1CB)				
Height	mm	1470		
Width	mm	1190		
Depth	mm	727		

### Typical functions





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG

### General characteristics

- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Insensitive to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank
- For outdoor & indoor use

### Technical data

#### Electrical Data

Rated voltage	kV	12	17.5
Insulation level	kV peak	75	95
	kV rms	28	38
Rated current	A	630	630
Rated short-time current	kA rms	21 (3s)	21 (3s)
Short circuit making current	kA peak	52.5	52.5

#### Mechanical characteristics

Protection degree		RMU - IP54	Tank - IP67
Standard colour		RAL - 7032	

#### Normal service conditions

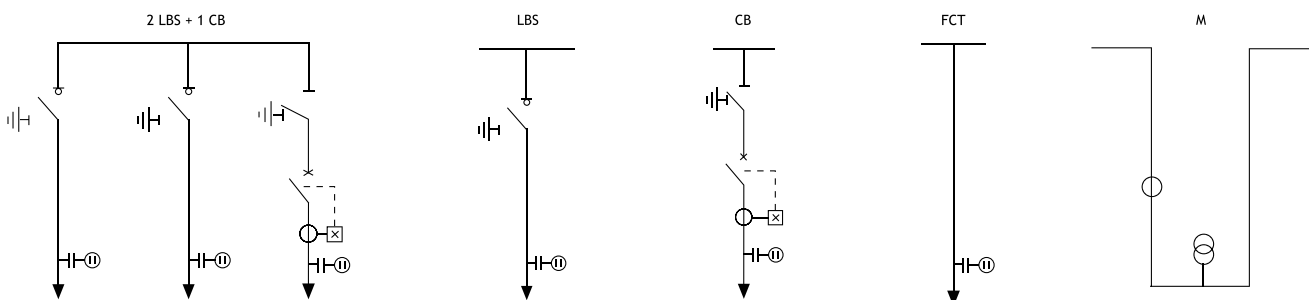
Ambient temperature	°C	basic: -5..+40	options: -10.. +55
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#### Dimensions (2LBS+1CB)

Height	mm	1912
Width	mm	1255
Depth	mm	790



### Typical functions





# Switchgear for Secondary Distribution



## Ring Main Unit: CSG

### General characteristics

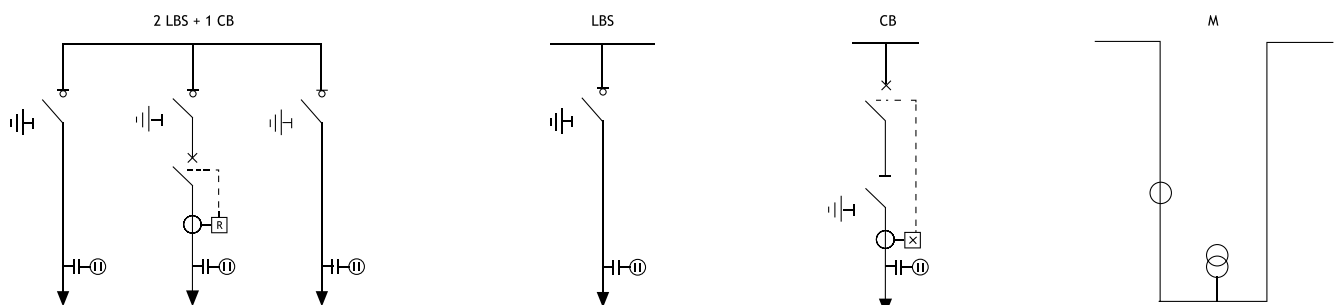
- SF6 insulated compact switchgear
- Equipped with SF6 switch disconnecter
- Equipped with vacuum circuit breaker
- Developed according to international standard IEC 62271-200
- Resistant to environmental conditions
- Modular or compact versions
- Internal arc resistant
- SCADA compatible motorised unit, on request
- Stainless steel tank
- For outdoor & indoor use



### Technical data

Electrical Data			
Rated voltage	kV	12	17.5
<b>Insulation level</b>			
- lightning impulse (1.2/50 μs)	kVp	75	95
- power frequency (50 Hz/1 min)	kVrms	28	38
Rated current	A	630	630
Rated short-time current	kArms	21 for 3s	21 for 3s
Short circuit making current	kAp	52.5	52.5
Mechanical characteristics			
Protection degree			RMU - IP54 Tank - IP67
Standard colour			RAL - 7012
Normal service conditions			
Ambient temperature	°C		basic: -5..+40 options: -10.. +55
Dimensions (2LBS+1CB)			
Height	mm		1755
Width	mm		840
Depth	mm		1125

### Typical functions





# Switchgear for Primary Distribution



## 12kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA

### General characteristics

- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

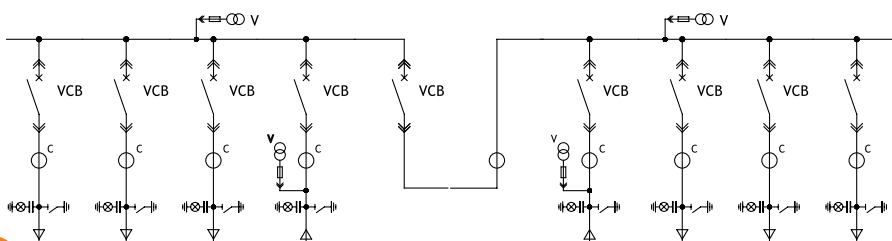
### Technical data

Electrical Data		
Rated voltage	kV	12/17.5*
Insulation level	kVp	75/95*
	kVrms	28/38*
Rated frequency	Hz	50
Rated current	A	630 to 3150
Breaking current	kArms	25/40
Making current	kAp	63/100
Rated short-time current	kArms	25 for 3s/40 for 3s
Mechanical characteristics		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
Normal service conditions		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
Dimensions		
Height	mm	2150
Depth	mm	1560
Width	mm	600
	mm	750
Upto 1250A, 25kA	mm	750
	mm	850
Upto 1250A, 1600A, 40kA	mm	750
	mm	1000



\*on request

### Typical functions





# Switchgear for Primary Distribution



## 12kV Air Insulated Switchgear with Floor Mounted Vacuum Circuit Breaker: CSA

### General characteristics

- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with floor mounting vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

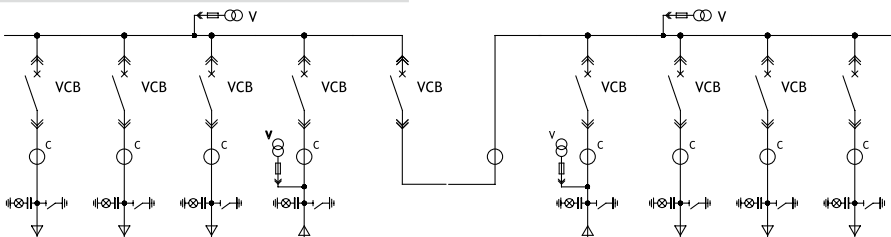
### Technical data

<b>Electrical Data</b>		
Rated voltage	kV	12
<b>Insulation level</b>		
- lightning impulse (1.2 / 50 $\mu$ s)	kVp	75/95*
- power frequency (50Hz / 1 min)	kVrms	28/38*
Rated frequency	Hz	50
Rated current	A	630 to 1250A
Breaking current	kArms	25
Making current	kAp	63
Rated short-time current	kArms	25 for 3s
<b>Mechanical characteristics</b>		
Protection degree	IP4X (others on request)	
Standard colour	RAL 7035 (others on request)	
<b>Normal service conditions</b>		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
<b>Dimensions</b>		
Height	mm	2150
Depth	mm	1560
Width Upto 1250A, 25kA	mm	600

\*on request



### Typical functions





# Switchgear for Primary Distribution



## 24kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA

### General characteristics

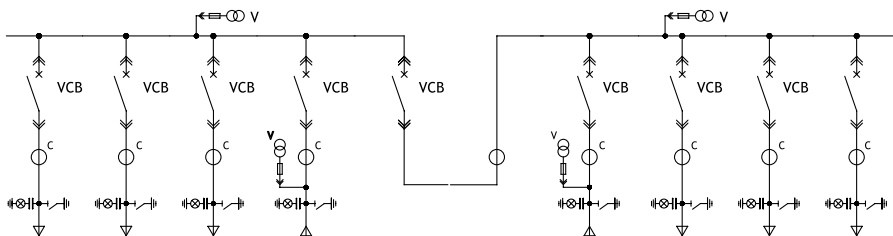
- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

### Technical data

<b>Electrical Data</b>		
Rated voltage	kV	24
<b>Insulation level</b>		
- lightning impulse (1.2 / 50 μs)	kVp	125
- power frequency (50Hz / 1 min)	kVrms	50
Rated frequency	Hz	50
Rated current	A	630 to 1600
Breaking current	kArms	25
Making current	kAp	63
Rated short-time current	kArms	25 for 3s
<b>Mechanical characteristics</b>		
Protection degree		IP4X (others on request)
Standard colour		RAL 7035 (others on request)
<b>Normal service conditions</b>		
Ambient temperature	°C	basic: -5..+40 option: -10..+55
<b>Dimensions</b>		
Height	mm	2350
Depth	mm	1700
Width		
Upto 1250A, 25kA	mm	800
1600A, 25kA	mm	800



### Typical functions





# Switchgear for Primary Distribution



## 36kV Air Insulated Switchgear with Draw-Out Vacuum Circuit Breaker: CSA

### General characteristics

- Modular construction
- Extensible
- Small installation area
- Easy to operate
- Operated exclusively from the front
- Internal arc resistant
- Equipped with vacuum circuit breaker with increased mechanical and electrical life
- Several optional equipment available
- Reduced maintenance and increased reliability
- Racking-In and racking-out of MV breaker behind arc-proof doors

### Technical data

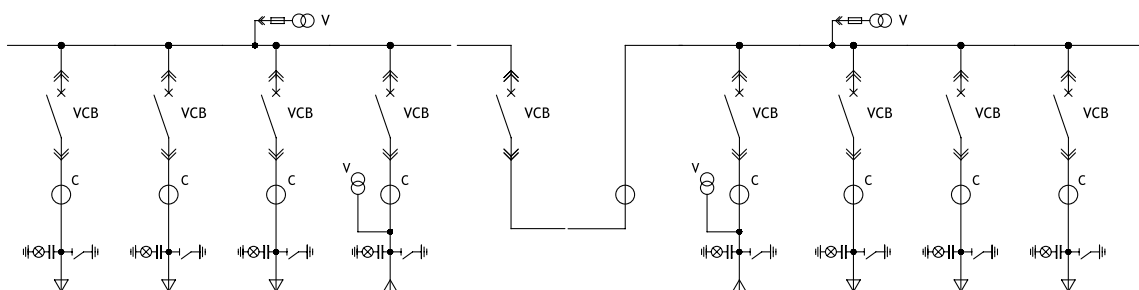


Electrical Data		
Rated voltage	kV	36
<b>Insulation level</b>		
- lightning impulse (1.2/50 μs)	kVp	170
- power frequency (50 Hz/1 min)	kVrms	70
Rated frequency	Hz	50
Rated current	A	630 to 1600
Rated breaking current	kArms	25
Rated making current	kAp	63
Rated short-time current	kArms	25 for 3s
Mechanical characteristics		
Protection degree		IP4X (others on request)
Standard colors		RAL 7035 (others on request)
Normal service conditions		
Ambient temperature	°C	basic: -5 .. +40 option: -10 .. +55
Dimensions		
Height	mm	2250
Depth	mm	2570
Width	mm	1200

\*on request



### Typical functions





# Switchgear for Primary Distribution



## Vacuum Circuit Breaker with Cassette : CSC

### General characteristics

- Compact construction
- Equipped with Vacuum Circuit Breaker tested in accordance with IEC 62271-100
- Comes with all interlocks required as per IEC 62271-200
- Easy to operate & integrate in panel
- Built-in racking-in and racking-out mechanism, fixed & moving contacts, safety shutters
- Offers retrofit solutions for old switchgear
- Several optional equipment available
- Reduced maintenance and increased reliability
- Ideal solution for panel builders

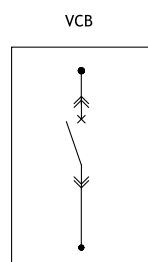
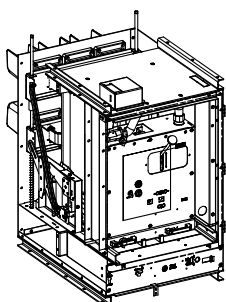


### Technical data

Electrical Data		
Rated voltage	kV	12
Insulation level - lightning impulse (1.2 / 50 $\mu$ s)	kVp	75
	kVrms	28
Rated frequency	Hz	50
Rated current	A	630/ 1250
Breaking current	kArms	25
Making current	kAp	62.5
Rated short-time current	kArms	25 for 3s
Mechanical characteristics		
Protection degree		IP4X (others on request)
Standard colour		RAL 7035 (others on request)
Normal service conditions		
Ambient temperature	$^{\circ}$ C	basic: -5..+40 option -10..+55
Dimensions		
Height	mm	1000
Depth	mm	600
Width	mm	1046

\*on request

### Typical functions





# Switchgear for Primary Distribution



## Outdoor Vacuum Circuit Breaker Kiosk: CSS

### General characteristics

- Compact solutions for substations
- Integrated unit with CB, CTs, PTs and protection
- Suitable for outdoor installation
- Available with OH conductor or cable termination arrangement
- Equipped with vacuum circuit breaker
- Reduced maintenance and increased reliability
- Suitable for renewable generation applications

### Technical data

<b>Electrical Data</b>		
Rated voltage	kV	36
<b>Insulation level</b>		
- lightning impulse (1.2/50 $\mu$ s)	kVp	170
- power frequency (50 Hz/ 1 min)	kVrms	70
Rated frequency	Hz	50
Rated current	A	630/800
Breaking current	kArms	25
Making current	kAp	62.5
Rated short-time current	kArms	25 kA for 1s or 3s
<b>Mechanical characteristics</b>		
Protection degree		IP55
Standard colour		RAL 7035 (others on request)
<b>Normal service conditions</b>		
Ambient temperature	C°	basic: -5..+40 Option -10..+55
<b>Dimensions</b>		
Height	mm	2774 (without base frame)
Width	mm	1200





# Installations



11kV RMU



22kV RMU



11kV Motorised RMU



11kV VCB Panel



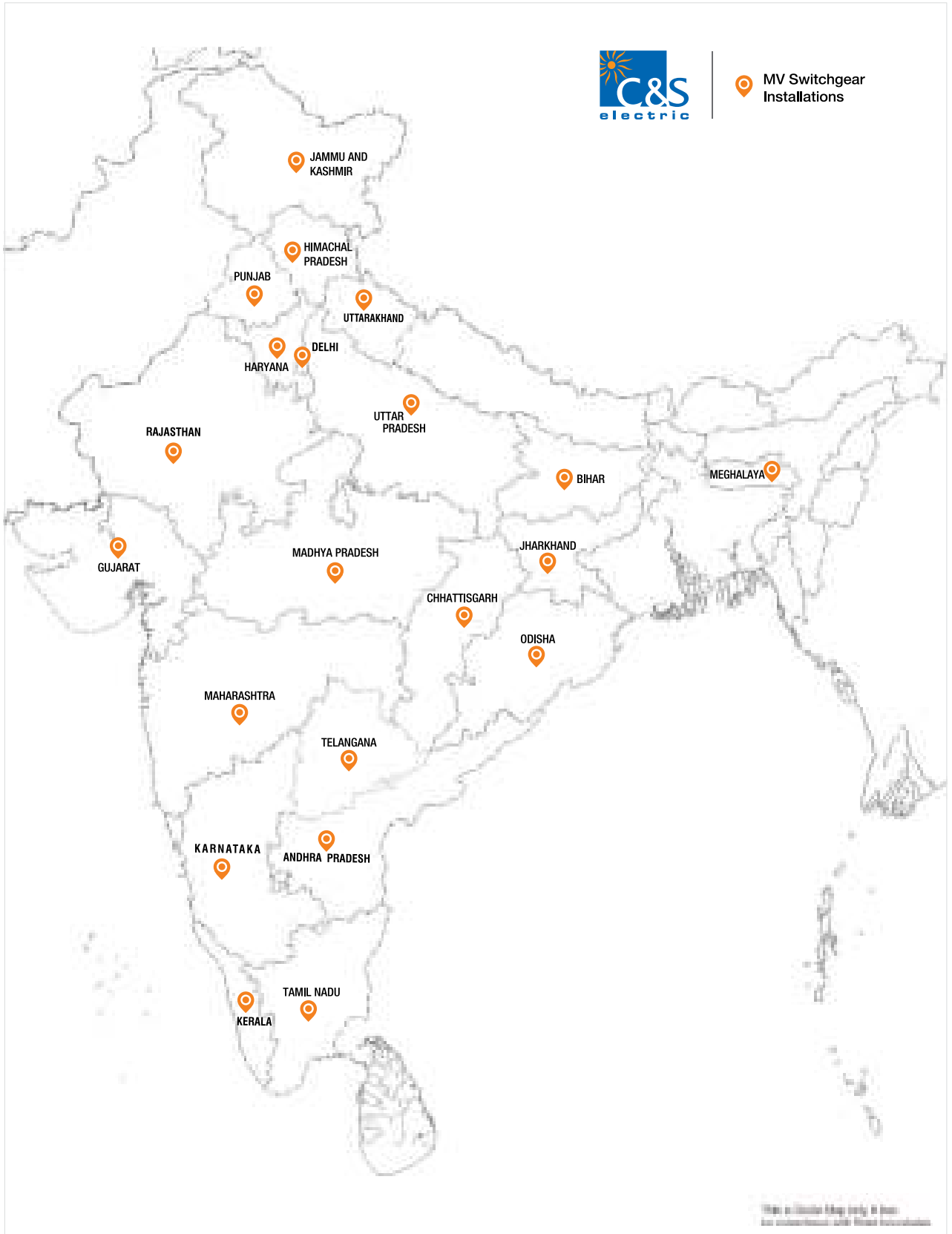
22kV VCB Panel



33kV VCB Panel

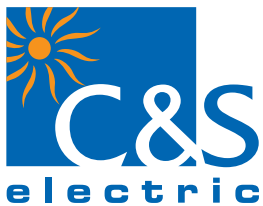


# Installations





Medium Voltage Switchgear Plant at Greater Noida



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