

MEDIUM VOLTAGE SWITCHGEAR

MV SWITCHGEAR



A night-time photograph of the Chicago skyline across a body of water. In the foreground, the dark silhouettes of industrial structures, including tall chimneys and scaffolding, are visible on the right side. The city lights are reflected in the water.

LPINZ MV SWITCHGEAR RANGE





















SMART SOLUTIONS









FOR ELECTRICAL DISTRIBUTION IN COMMERCIAL, MINING, DATA CENTRES AND INDUSTRIAL APPLICATIONS



TECHNICAL PRODUCT	AIR INSULATED SWITCHGEAR					GAS INSULATED		
	Secondary Switchgear			Primary Switchgear		Secondary Switchgear	Primary Switchgear	
								
	Magnefix MD4	Xiria Family	Xiria Plus	Power Xpert FMX	Power Xpert UX	RVAC	Uring	Power Xpert XGIS
RATED VOLTAGE (KV)	12	3.6 / 7.2 / 12 / 17.5 / 24	3.6 / 7.2 / 12	3.3/7.2/12/17.5/24	3.3/7.2/12/17.5/24/36	3.6 / 7.2 / 12 / 17.5 / 24	12/24/36	36/38
POWER FREQUENCY WITHSTAND (KV)	28	10 / 20 / 28 / 38 / 42 / 50	10 / 20 / 28 / 38	28/38/50	28/38/50/70	28/50	28/50/70	70/80
SF6 FREE SOLUTION								
CURRENT RATING	400A	630 A	630A / 1250 A (CB)	630A/ 800A/ 1250A/ 1600A/ 2000A	630A/ 800A/ 1250A/ 1600A/ 2000A/ 2500A/3150A/ 4000A*	630 A / 1250 A(12kV)	630 A	1250A/ 2000A/ 2500 A
MAXIMUM SHORT CIRCUIT CURRENT	14.4kA	20kA / 3 Sec	25kA / 3 Sec	25kA/3 Sec	*50kA upto 12kV 25kA for 24kV 31.5kV for 36kV"	*20kA 3 Sec 25kA option for 12kV"	*21kA till 24kV 16kV for 36kV"	31.5kA
INTERNAL ARC FOR 1 SEC	No	20kA	25kA	25kA	*50kA upto 12kV 25kA for 24kV 31.5kA for 36kV"	*20kA 25kA option for 12kV"	*21kA till 24kV 16kV for 36kV"	31.5kA
TYPE OF CONFIGURATIONS AVAILABLE	Circuit Breaker/ Switch disconnect/ Fuse switch	Circuit Breaker/ Load Break Switch/ Metering panel / Bus sectionalizer	Circuit Breaker/ Load Break Switch/ Fused Load Break Switch / Metering panel / Bus sectionalizer	Circuit Breaker Panel / Bus VT / Bus Sectionalizer	Circuit Breaker Panel / Bus VT / Bus Sectionalizer	Bus VT/ Load Break Switch/ Fused Load breaker switch/ Bus Sectionalizer/ Metering Panel	Bus VT/ Load Break Switch/ Fused Load breaker switch/ Bus Sectionalizer/ Metering Panel	Circuit Breaker Panel / Bus VT / Bus Sectionalizer
TYPE OF SWITCH	Fixed	Fixed	Fixed	Fixed	Withdrawable	Fixed	Fixed	Fixed
INDOOR/OUTDOOR	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
SWITCHING	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
INSULATION	Air/ Solid	Air/ Solid	Air/ Solid	Air/ Solid	Air/ Solid	Gas	Gas	Gas
DEGREE OF PROTECTION	IP31D	*IP31D IP2X (Door Open)"	*IP4X IP2X (Door Open)"	*IP4X (HV Compartment) IP3XD (LV Compartment)"	*IP4X (IP41/42 Optional) IP2X (Door Open)"	*Sealed gas tank = IP65 Front panel = IP3X"	*Sealed gas tank = IP65 Front panel = IP3X"	*Sealed gas tank = IP65 Front panel - IP4X (IP42 optional)"
LOSS OF SERVICE CONTINUITY CATEGORY	LSC1 /PI	LSC2B /PM	LSC2B /PM	LSC2B /PM	LSC2B /PM	LSC2B /PM	LSC2B /PM	LSC2B /PM
CABLE CONNECTIONS	Front Bottom	Front Bottom	"Front Bottom Rear top available on request"	"Front Bottom Rear top available on request"	"Front/ Rear Bottom Rear top available on request"	Front Bottom	Front Bottom	Front Bottom
FEATURES AND APPLICATION	*Compact unit dimensions (500mm Wide 3 Way RMU - Cable + Cable+ Transformer Outgoing)"	*Compact unit dimensions (depth of 600 mm)"	*Compact unit dimensions (Width of 400 mm)"	*Compact unit dimensions (Width of 500 mm)"	Lower ceiling height requirements with low height arc plenum(without arc absorber)	Flexibility in the combination of the electrical functions to meet most of the network configurations	Completely sealed system, all leave parts and switching functions are enclosed in a maintenance free stainless steel tank	*Compact design H = 2700 (106") W = 600 (24") @ 1250A W = 800 (32") @ 2000A"
	Floor mounted - Adjustable (1280-1508mm)	Cost effective robust self-powered circuit-breaker as transformer protection	Cost effective robust self-powered circuit-breaker as transformer protection	Internal arc free design due to single phase insulation	Single width panel with cable in/out option available	Any combination of load break switches and circuit-breakers can be placed in a panel unit	By offering compact (multi units) & extendable types, it is ideal solution specially for solar & wind farm industries	No Onsite Gas handling (Solid Shield Insulated Bus System)
	With normal service conditions (IEC 62271-201): 20 years without maintenance	Internal arc reducing design due to single phase insulation	Internal arc reducing design due to single phase insulation	Circuit Breaker with Electromagnetic operation (Operation 30,000)	Block Type CTs for higher number of protection and metering core accommodation	0.05%/year gas leakage to ensure over 30 years lifecycle	Sealing system checked by helium leakage detection system ensuring less than %0.1 annual leakage rate	
	Magnefix switchboards have a very modular construction. Any combination can be assembled.	Integrated cable test facility	Integrated cable test facility	Circuit breaker offered is Plug-in type for ease of replacement	*Multiple location for VTs (Bus/Cable) fixed/ withdrawable VT options"	Self Powered relay for compact solution	*3 Way Compact Switchgear LLF 24kV - 1650 X 450 X 960 36kV -1907 X 450 X 860"	
		One mechanism for all type of functions and panels, certified for 5000 X switching	One mechanism for all type of functions and panels, certified for 5000 X switching	*Special cable test facility outside HV compartment."	Remote racking and earthing behind close doors			
		*Mechanism inside the sealed enclosure (no rusting, sticking grease and influence from moisture and dust)"	*Mechanism inside the sealed enclosure (no rusting, sticking grease and influence from moisture and dust)"	Back to wall arrange possible	Additional electrical and mechanical key interlocks available for up and downstream interlocking or other			
		5-panels monoblock		Full Recycling or Re-use of material possible	Option for advanced monitoring systems, allowing preventative maintenance to be scheduled on real-time data, reducing unplanned down time			
		3-panel unit (W x D x H) (mm) - 1110 x 600 x 1305			Front access allow for back Wall Installation			
					UX 36 is provided with Floor rolling VCB			

SF6-FREE PRODUCT LINE



		Short Time Withstand (kA)									
		20kA-3s	25kA-3s				31.5kA-3s		40kA-3s	50kA-3s	
Rated Voltage (kV)	38kV										
	36kV										
	24kV	 Xiria Eaton	 FMX Eaton	 UX Eaton	 UX 36 Eaton	 UMC Ulusoy	 UX Eaton	 UX Eaton	 UX 36 Eaton		
	17.5kV										
	12kV										
		630A	2000A	2500A	3150A	4000A	2500A	4000A			
Rated Current (A)											

WITHDRAWABLE SWITCHGEAR – AIR INSULATED SOLUTIONS

POWER XPERT UX: 3.3KV to
33kV ,
4000A * , 50kA*



Primary Switchgear

POWER XPERT UX SYSTEMS YOU CAN RELY ON

POWER XPERT UX MEDIUM VOLTAGE SWITCHGEAR

- Designed and **3rd party tested** according to IEC 62271-200
- SF₆ free solution - **no SF₆** disposal at end of life
- Maximize **service continuity** through separate metal compartments LSC2B/PM
- **Insulated bus bar** system and **insulation-encapsulated circuit breaker pole units** to extend product life
- **Tin plating** standard on bus bar connections, silver available
- Protected against **harsh environments**
- Extensive offshore **marine certified** configurations available (Lloyds, BV, ABS, DNV)
- **Seismic compliance** with IBC and UBC Zone 4
- > 100 years of **experience and knowledge**



POWER XPERT UX KEY TAKE-AWAYS

RANGE OF WITHDRAWABLE PRIMARY SWITCHGEAR

- 7.2/12/17.5kV 4000A, 50kA for 3 sec.
- 24kV 2500A, 31.5kA for 3 sec.
- 36kV 2500A, 31.5kA for 1 sec.
- Integrated Arc Chamber with flexibility in arc channel solutions/
Internal Arc Class Rating: AFLR
- Single width panel solutions with cables in/out (top/bottom, top/top)
- 24/7 thermal monitoring system
- Back to back, front to front and 'U' or 'L' shaped configurations
- Option for full remote control of the switchgear
- Available with W-VACi, Vacuum circuit breaker, W-SLC, Vacuum contactors, W-SLN, Vacuum contactors



FIXED SWITCHGEAR – AIR INSULATED SOLUTIONS

XIRIA E:
3.3 to 22KV, 630 A
20KA

XIRIA PLUS:
11KV, 1250 A
25KA



Secondary Switchgear

FMX:
3.3- 22KV, 2000
A, 25KA



Primary Switchgear

XIRIA PLUS SOLID RMU

	UNIT	LBS	CB	FLBS
Rated voltage	kV	12	12	12
Frequency	Hz	50	50	50
Rated current	A	630	630/1250	100
BIL	kV peak		95 / 95	
Withstand voltage	kV 1min	28/38	28/38	28/38
Short time current	kA/s	25/3	25/3	Fuse curve
Peak current	kA	63	63	
Electrical life	class	E3/100	E2	
Mechanical endurance	Times	LBS: M1 5,000, ES: M1 3000	LBS: M2 10,000, ES: M1 3000	LBS: M1 5,000, ES: M1 3000
IAC	kA-s		AFLR 25kA -1s	
IP degree			Epoxy= IP67 Panel=IP3X	



XIRIA



International
Organization for
Standardization



INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

Rated Voltage: 24kV

Rated normal Current: 630A

Loss of service continuity: LSC2B

Partition class: PM

Internal Arc Classification (IAC): AFLR 20kA – 1s

FLEXIBLE PRODUCT FAMILY

- Complete range of panel types
- Extendable panel types available
- Extensive list of options
- Multiple configurations
- Long history in engineering and integration of third-party protection relays and Remote Terminal Units
- Design allows for future extensions and upgrades



SPECIALISTS IN PROVIDING QUALITY POWER SOLUTIONS



Powering Business Worldwide

FMX

Rated voltage	kV	24
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GENERAL

Lightning impuls withstand voltage	kV	125
Power frequency withstand voltage	kV	50
Frequency	Hz	50 - 60
Protection grade	IP	4X
Internal arc class		AFL 25kA-1s

BUSBAR SYSTEM

Rated current	A	2000
Short-time withstand current	kA - s	25 - 3
Peak withstand current	kA	63

CIRCUIT-BREAKER

Rated current	630/800/1250/1600/2000
Short-circuit breaking current	kA 25

MECHANISM

Rated operating sequence	O – 0.3s – CO – 15s - CO
Class	M2
Number of operations actuator	30.000
Number of operations interrupter	30.000



POWER XPERT XGIS

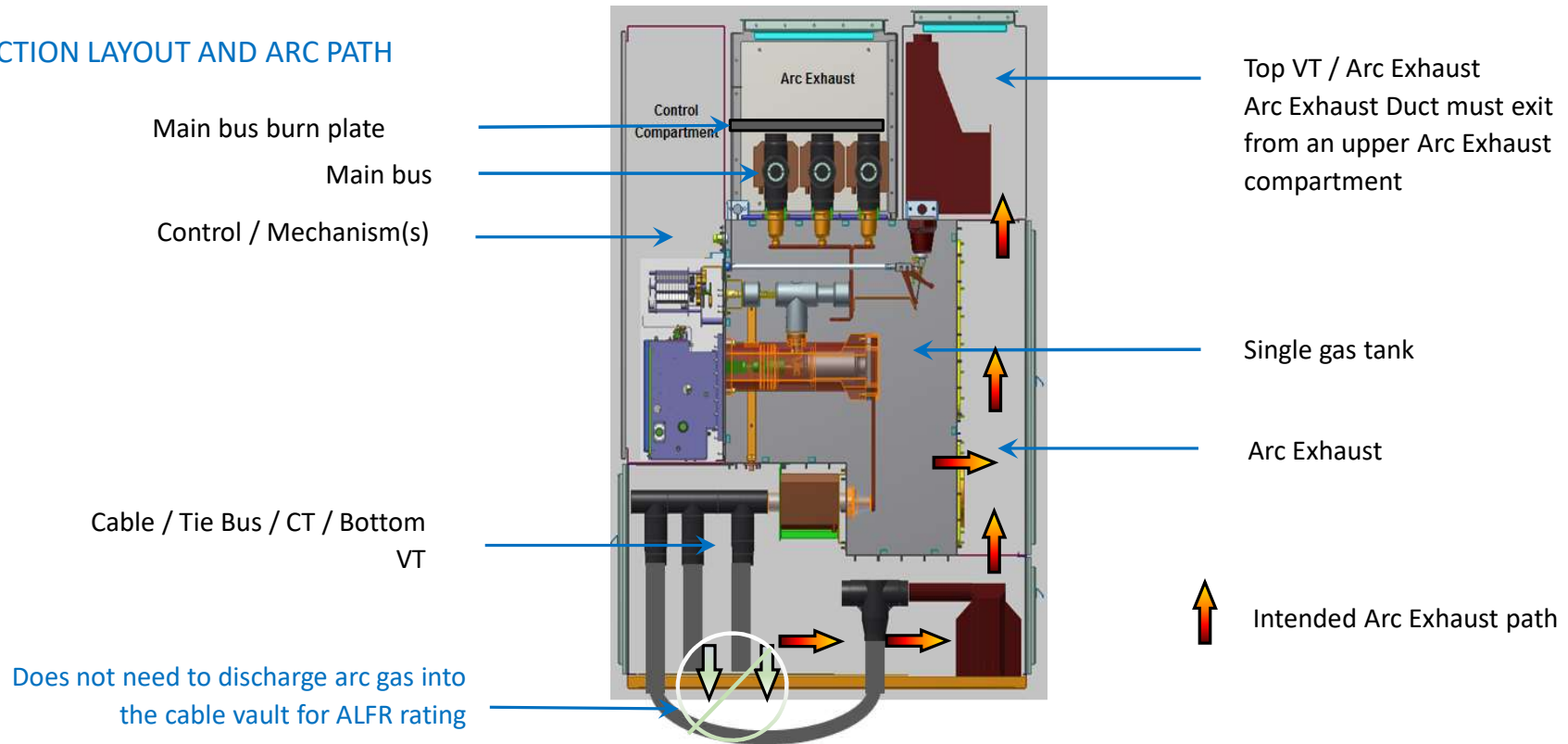
PRODUCT OVERVIEW

- Single tank per structure
- Utilizes SF6 for insulation
- Shielded Solid Insulation main bus
- Up to 38kV, 2500A and 31.5KAIC
- Meets IEC 62271 and witnessed by UL
- Engineering Services presence and Support



POWER XPERT XGIS

SECTION LAYOUT AND ARC PATH



POWER XPERT XGIS RATINGS

Rated Voltage	36/38 kV
Lightning impulse withstand voltage	170 kV
Power frequency withstand voltage	80 kV
Rated frequency	56/60 Hz
Internal arc class	AFLR
Loss of service continuity category	LSC2B
Earthing(ground) circuit	31.5 kA - 3s
External degree of protection	Available with IP4X
Primary live parts (tank) degree of protection	IP65
Busbar rated current	1250, 2500 A
Busbar rated short-time withstand current	31.5 kA - 3s
Busbar rated peak withstand current	82 kA
Breaker rated short-time withstand current	31.5 kA - 3s



UL witnessed and
STL certified to
IEC 62271-100 and
-200

RVAC SF6 RMU

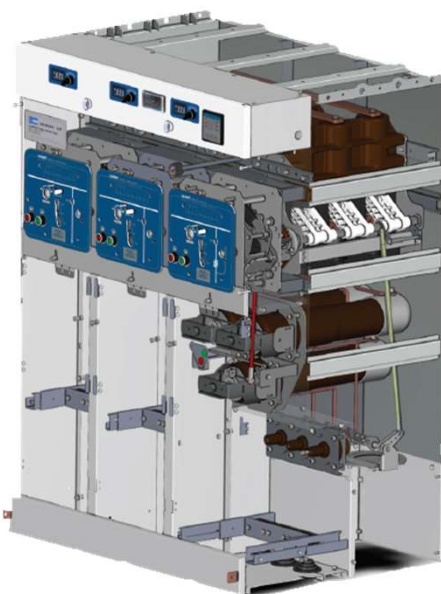
SECONDARY SWITCHGEAR

- Extensible secondary switchgear and Ring Main Unit (up to 4 way)
- SF6 Insulated and VCB
- CB, load break switch, fuse switch, VT, bus coupler and direct connection options.
- Ratings: 12-24kV up to 20kA-3s, 630A
- A-FLR 20kA/1s.
- LV Cabinet for protection relay
- Fully remote operation optional.



URING

COMPACT RING MAIN UNITS



TYPES		L MODULE	F MODULE	C MODULE	M MODULE	LLF - 3 WAY	LLC - 3 WAY
Rated Voltage		12/24kV - 36kV	12/24kV - 36kV	12/24kV - 36kV	12/24kV - 36kV	12/24kV - 36kV	12/24kV - 36kV
Rated Current		630A	200A	630A	630A(CT unit)	200/630A	630A
Short Circuit Withstand	24kV	21kA/3 sec	21kA	21kA/3 sec	21kA/3 sec	21kA/3 sec	21kA/3 sec
	36kV	16kA/3 sec	16kA	16kA/3 sec	16kA/3 sec	16kA / 3 sec	16kA/3 sec
		20kA/1 sec		20kA/1 sec	20kA/1 sec		20kA/1 sec
							25kA/1 sec
Internal Arc	24kV	20kA/1 sec AFL	20kA/1 sec AFL	20kA/1 sec AFL	20kA/1 sec AFL	20kA/1 sec AFL	20kA/1 sec AFL
	36kV	16kA/1 sec AFL	16kA/1 sec AFL	16-20kA/1 sec AFL	16-20kA/1 sec AFL	16-20kA/1 sec AFL	16-20-25kA/1 sec AFL
Power Frequency Withstand Voltage (1 min/rms)	24kV	50-60kV					
	36kV	70-80kV					
Lightning Impulse Withstand (peak)	24kV	125-145kV					
	36kV	170-195kV					
Protection Degree	Enclosure	IP 3X	IP 3X	IP 3X	IP 3X	IP 3X	IP 3X
	SF6 Tank	IP67	IP67	IP67		IP67	IP67

TRANSFORMERS

System Reliability

POWER DISTRIBUTION

- Oil Type Distribution Transformers
 - Hermetic and Conservator – { up to 36 kV and 5000 KVA }
- Dry Type Transformers Cast Resin
 - { up to 36 kV and 5000 KVA }
- Customized Solutions / Special Transformers
 - Dual voltage transformers
 - Rectifier transformer
 - Shunt reactor
 - Serial reactors limiting the short circuit current
 - Earthing Transformer
 - Start-up Transformer
 - Auto transformer
 - Traction Transformer



STANDARD SCOPE

OIL IMMERSED TYPE DISTRIBUTION TRANSFORMERS

They are an integral part of the production expertise of the Ulusoy Electric compact substation and produced according to IEC 60076 standards and also fulfilling the eco-design criteria. Tests are completed in Ulusoy Electric's accredited laboratory and delivered either separately or assembled in the substation.

CAPACITY (VOLTAGE-POWER) FOR OIL TYPE:

- Power: 25 kVA - 5000 kVA
- Voltage: up to 36 kV

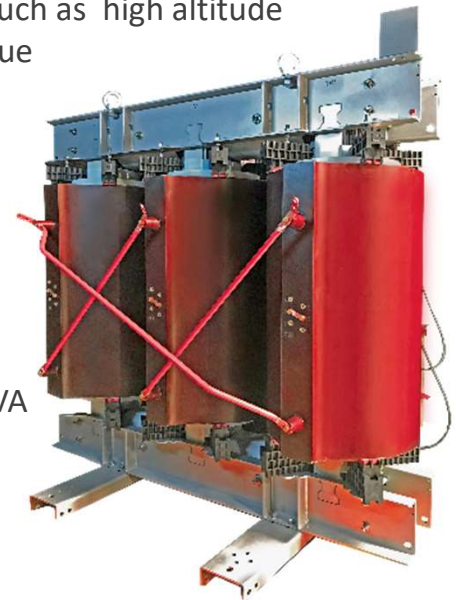


DRY TYPE DISTRIBUTION TRANSFORMERS

Ulusoy distribution transformers can work safely under difficult conditions such as high altitude and marine environment due to the compliance with E2, C2, F1 class with special and international standards.

CAPACITY (VOLTAGE-POWER) FOR DRY TYPE:

- Power: 250 kVA - 3150 kVA
- Voltage: up to 36 kV





THANK YOU FOR YOUR INTEREST.
FOR FURTHER INFORMATION ABOUT THIS PRESENTATION,
PLEASE CONTACT:

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PROTECTING THE SKY TOWER SINCE 2010

PRODUCTS AND SERVICES OVERVIEW

POWER QUALITY AND UPS

- Active Harmonic Filters
- Power Factor Correction and SVG
- Capacitor and Current Transformer
- Portable and Fixed Power Analysers
- On-Site Power Audit and Report
- UPS up to 1000kVA
- UPS Services
- Batteries and Load Banks
- Commissioning and Services
- Generators

Circuitor



EV CHARGERS

- Wall Box and Pedestal
- Floor Mount and Outdoor
- AC Fast Chargers from 12kW to 43kW
- DC Fast Chargers from 12kW to 400kW
- RFID, Wi-Fi, 4G, Bluetooth Connectivity
- Dynamic Load Management
- User Management and Billing
- Solar Canopy for EV Chargers
- Parking Guidance Systems
- OCCP Protocol and MID Meters



THYCON
KSTAR
EAT•N
VERTIV


COSMOS
Circuitor
 **CIRCONTROL**
Mobility & eMobility

HV EQUIPMENT

- Supply of Earthing, Grounding and Bonding Equipment
- Lightning Protection Design for HV Power Facilities
- Substation Earthing Design
- Exothermic Welding Equipment
- HV and MV Capacitors
- Power factor Correction and Harmonics Mitigation
- Power Plants - turn Key and Equipment Supply
- Koncar Transformers up to 1000mVA
- HVDC Power Transformers up to 550kV

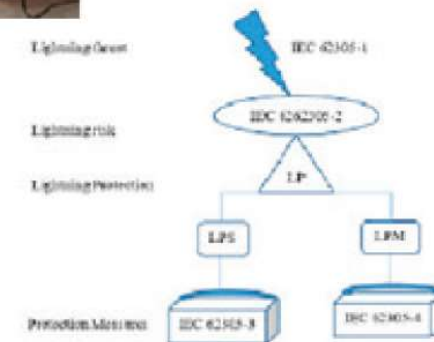


LIGHTNING AND SURGE PROTECTION

- Active Lightning Protection
- (NFC / IEC Compliant)
- AS / NZS 1768 Compliant Lightning Protection / Smoothweave LP
- Risk Assessment Reports
- Design and consultancy
- On-site Maintenance and Inspections
- Surge Diverter and Surge Filter with Bluetooth Monitoring App
- Lightning Warning System
- Chemical Rod



HVDC converter transformer delivered to New Zealand for Transpower



EARTHING AND EXOTHERMIC WELDING

- Copper Tape and Copper Bars
- Copper, Galv and Stainless Steel Earth Rods
- Earth bars and Earth Pits
- Rebar Clamps and Connectors
- Ground Enhancement Materials (GEM)
- Chemical Rod
- Rebarcons (Wricon Equivalent)
- Exothermic Weld, Graphite Molds, Weld Metal Pods, E-Ignitors
- Exothermic Welding Training



SERVICES

- Data Logger / Power Analyser Hire
- Power Quality Audits
- Harmonic / PFC Analysis
- PFC / Harmonic Filter Maintenance
- UPS Servicing and Maintenance
- Lightning Protection Risk Assessment
- Lightning Protection Design
- Soil Sensitivity Testing
- Earth Resistance Testing
- Earthing Design





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