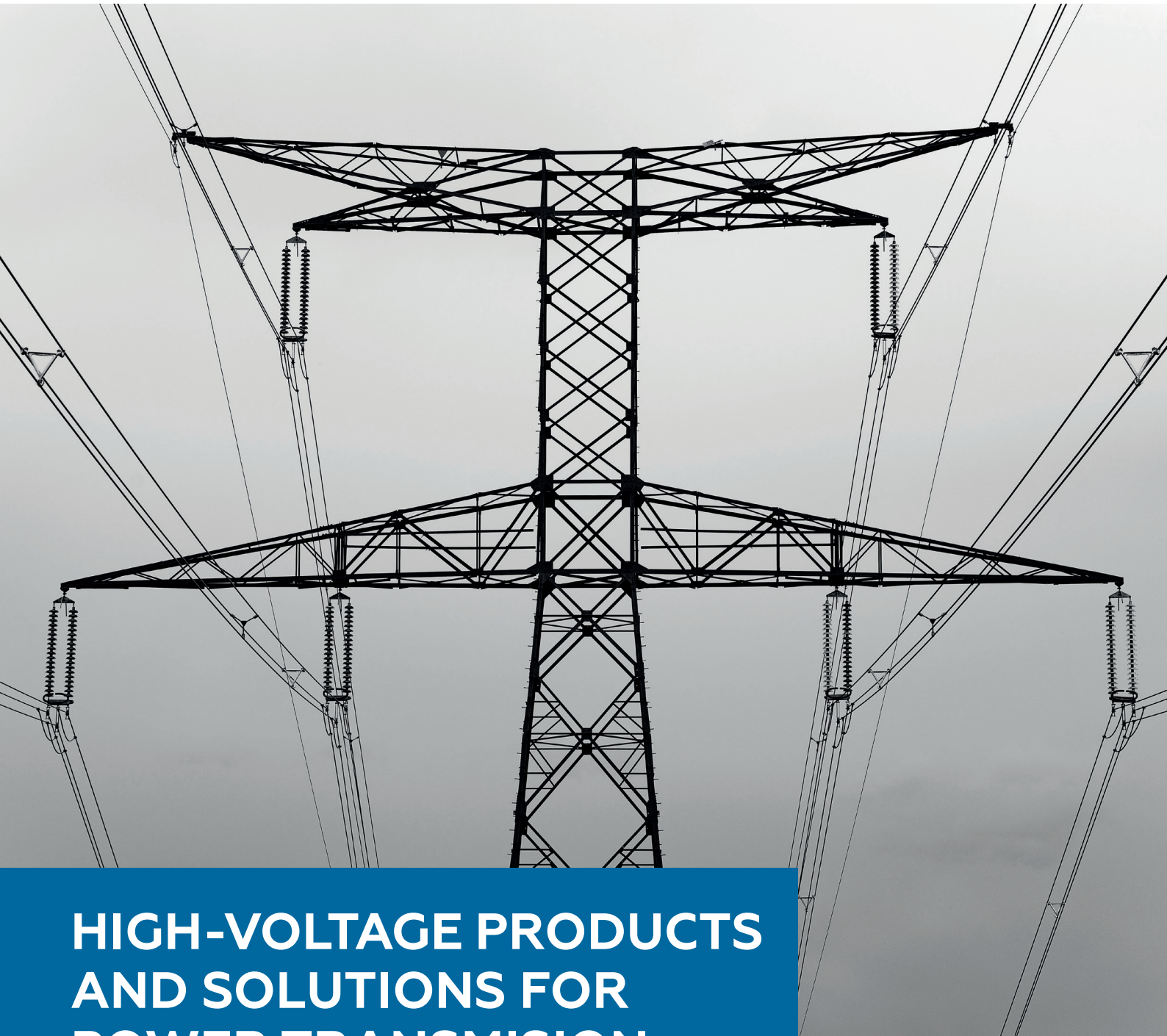




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HIGH-VOLTAGE PRODUCTS AND SOLUTIONS FOR POWER TRANSMISSION CATALOG

high-voltage

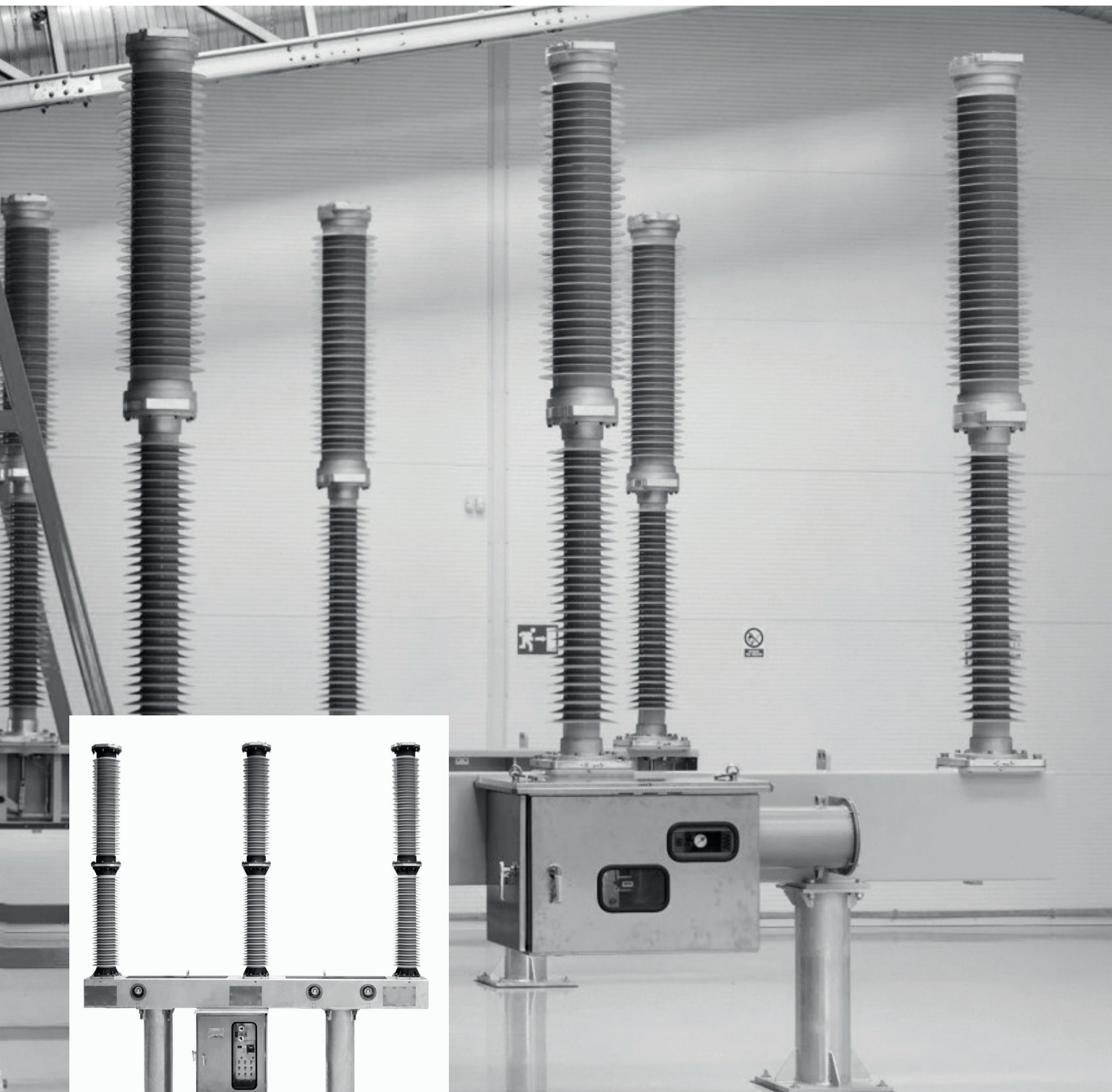
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123 kV SF6 Circuit Breaker

This equipment is type tested by an European Accredited laboratory to strictly fulfil or exceed the latest EN/IEC norms. (IEC 62271-100/2012, IEC 62271-1/2011)

TECHNICAL CHARACTERISTICS		M.U.	VALUE
1	Rated Voltage	kV	123
2	Rated Frequency	Hz	50
3	Rated Current	A	2500/3150*
4	Short circuit breaking current	kA	40
5	Short circuit closing current (peak)	kA	100
6	Rated duration of the short circuit	s	3
7	First pole factor		1.5
8	Insulation withstand voltage at power frequency (1 min.)	between open contacts	265
		to earth/between phases/ between open contacts	230
9	Insulation withstand voltage at 1,2/50µs	between open contacts	630
		to earth/ between phases/ between open contacts	550
10	Out of phase breaking current	kA	10
11	Rated line charging breaking current	A	31.5
12	Rated cable charging breaking current	A	140
13	Insulation type		composite / porcelain*
14	Rated operation sequence		D-0,3s-ID-180s-ID
15	Class		E2, M2, S2, C2
16	Rated pressure of SF6 gas (20°C)	MPa	0.60
17	Minimum pressure of SF6 gas (20°C)	MPa	0.50
18	Signalizing / blocking level of SF6 gas (20°C)	MPa	< 0,55 / < 0,50
19	SF6 losses (year)	%	< 0,1

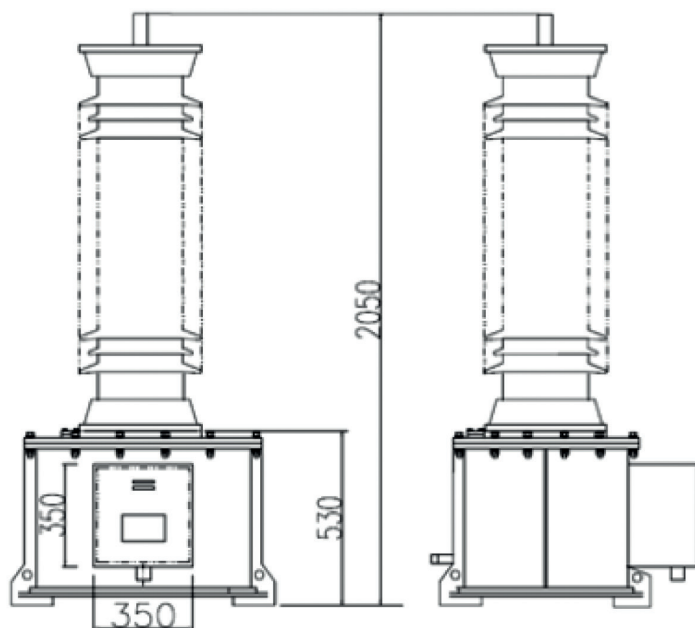
123 kV SF6 Circuit Breaker



123 kV Voltage Transformer

This equipment is type tested by an European Accredited laboratory to strictly fulfil or exceed the latest EN/IEC norms. (EN 61869-2)

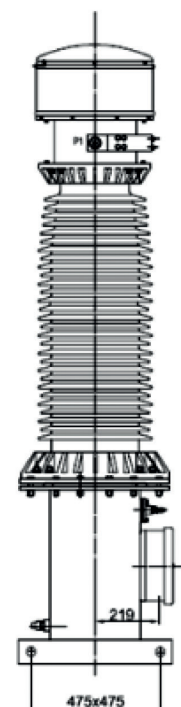
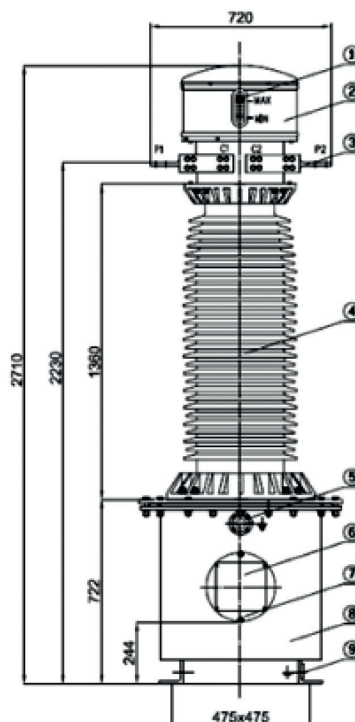
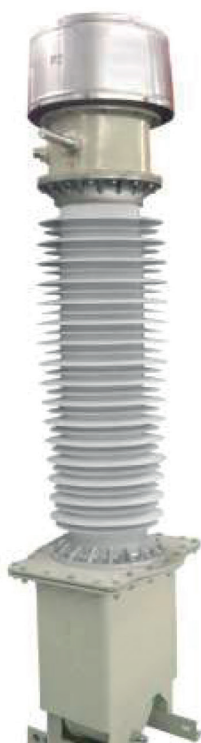
TECHNICAL CHARACTERISTICS			VOLTAGE TRANSFORMERS FOR OUTDOOR USE, TYPE TCI
Transformer type			TCI 123 kV
Maximum dielectric withstand, kV			123 / 230 / 550
Primary voltage, V			110000/ $\sqrt{3} \pm 15 \%$
Secondary voltage, V			100 / $\sqrt{3}$; 100; 110 / $\sqrt{3}$; 110
Frequency, Hz			50
Accuracy class	measurement		0,2; 0,5; 1
	protection		3P; 6P
Secondary power, VA	measure	Cl. 0,2	10; 25; 50; 60; 100
		Cl. 0,5	10; 25; 30; 50; 60; 100; 200; 500; 800
		Cl. 1	10; 25; 30; 50; 60; 100; 200; 500; 800
	protection	Cl. 3P,6P	10; 25; 30; 50; 60; 100; 200; 500; 800
Secondary voltage for class 3P and 6P, V			100 / $\sqrt{3}$; 100; 110 / $\sqrt{3}$; 110
Total simultaneous burden, VA			1500
Environmental temperature			-40°C... + 50°C
Maximum altitude, m			2000



123 kV Current Transformer

This equipment is type tested by an European Accredited laboratory to strictly fulfil or exceed the latest EN/IEC norms. (EN 61869-5)

TECHNICAL CHARACTERISTICS			CURRENT TRANSFORMER FOR MEASUREMENT TMCC
Transformer type			TMCC 110
Maximum dielectric withstand, kV			123 / 230 / 550
Number of current switching steps in primary side			Minimum – 2x50 A; Maximum – 2x2000 A
Secondary current, A			1A; 2A; 5A;
Frequency, Hz			50
Accuracy class			0,2S,0,2,0,5S,0,5,1
Power, VA	Accuracy class (measure)	0.2S	5;10;25;50;60;100
		0.2	5;10;25;50;60;100
		0.5S	5;10;25;30;50;60;100
		0.5	5;10;25;30;50;60;100
		1	10;25;30;50;60;100;200;500;800
Short circuit current			$I_{th} = 40 \text{ kA/1s}$
Short circuit current (peak value)			$I_{din} = 2,5 \times I_{th}$



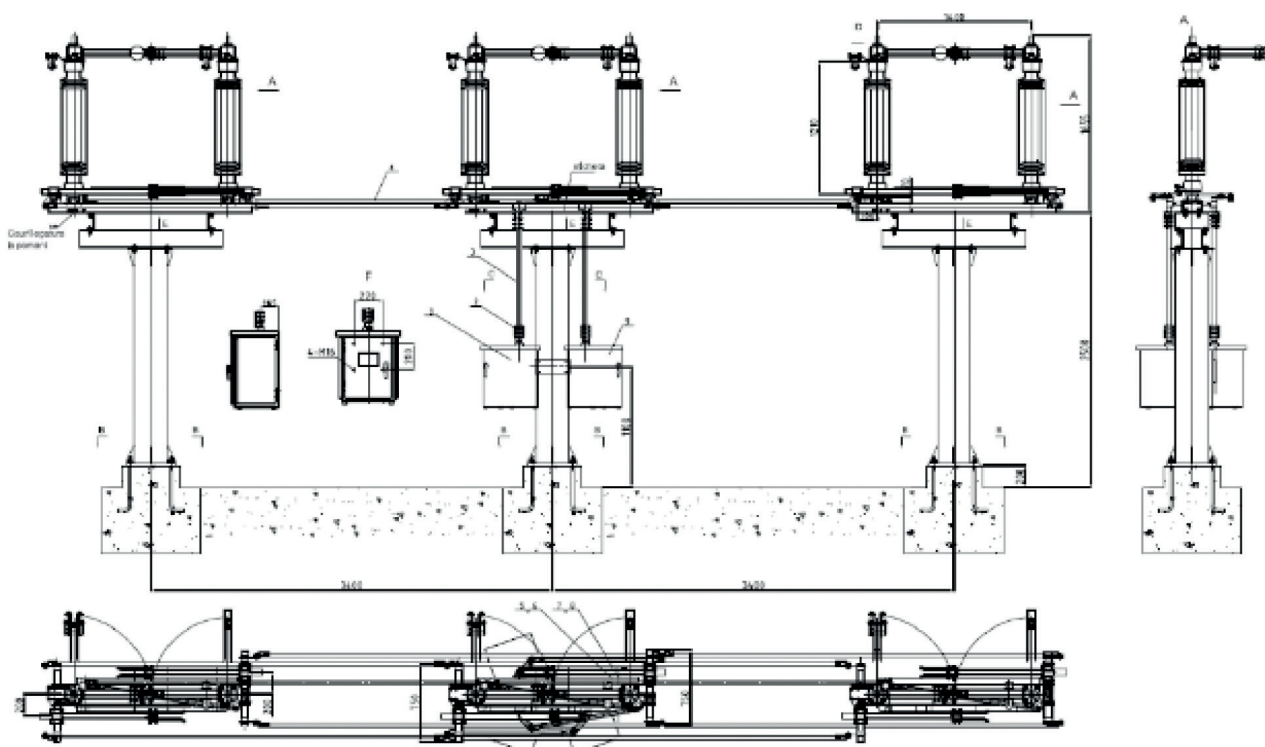
123 kV Disconnectors

Complete solutions for 123 kV Disconnectors refurbishing:

- Replacement of the disconnector and of the operating mechanism and maintaining the existing support;
- Replacement of the main blades, the insulators and the operating mechanisms and maintaining the existing support and the existing kinematic
- Replacement of the main blades and the insulators and maintaining the existing support, operating mechanism and the kinematic.

TECHNICAL CHARACTERISTICS

Maximum ice tickness	24 mm
Protection degree of the operating mechanism's box	IP54
Rated input voltage of the operating mechanism	220 V c.a., 400 V c.a.
Rated command voltage of the operating mechanism	110 V c.a., 110 V c.c., 220 V c.a., 220 V c.c.
Dimension between the insulator's axes of the same pole	1400 mm



ZnO Surge Arresters for 110-400 kV Overhead Transmission Line

TECHNICAL CHARACTERISTICS		M.U.	VALUE		
1	Maximum system voltage	kV	123	245	420
2	Continuous operating voltage (Us)	kV	84	180	255
3	Rated voltage (U _R)	kV	108	228	318
Temporary overvoltage stability					
4	at 1 second	kV	114,48 kV/Ur	262	357
	at 10 seconds	kV	108 kV/Ur	251	336
5	Rated discharge current, wave 8/20 μs	kAmax	10	10	10
Residual voltage at switching impulse:		Amax.			
	at 500 A max. (30/60 μs wave)		211	435	676
	at 1000 A max. (30/60 μs wave)			453	710
6	at 2000 A max. (30/60 μs wave)				744
	at 5000 A max. (8/20 μs wave)		249	511	778
	at 10000 A max. (8/20 μs wave)		268	548	838
	at 10000 A max. (8/20 μs wave)		298	593	914
7	Permissible impulse current, wave 4/10 μs	kAmax	100	100	100
8	Withstand voltage at lighting impulse of the housing (1,2/50 ms wave)	kV max	742	1166	2100
9	Withstand voltage at industrial frequency, 50 Hz, 1 minute, wet conditions	kVef	312 kV rms la 60 Hz	977	800 kV rms la 60 Hz

Note:

Technical data and testing per IEC 99-4.

3 pcs. Subbases insulators and 1 pc. surge counter with a build-in milliammeter are included for each arrester.

110-400 kV Insulators and Strings with Composite Insulators

Composite Insulator for 110-400kV Overhead Lines and Substations

TECHNICAL CHARACTERISTICS	M.U.	VALUE															
Maximum system voltage	kV	123				245				420							
Rated voltage	kV	110				220				400							
Dry lightning impulse voltage withstand (1,2/50 μ s wave)	kVmin	550				1050				1550							
Wet power - frequency withstand voltage (50 Hz, 1 min.)	kVef	230				460				680							
50% dry lightning impulse voltage (1,2/50 μ s wave)	kVmax	690				1310				1930							
Wet switching impulse withstand voltage (wave 250/2500 μ s)	kVmax	440				750				1050							
Rated discharge current, wave 8/20 μ s	kAmax	10				10				10							
Short circuit current (1 sec.)	kA	31,5				31,5/40				40							
RIV level	μ V	2500				2500				2500							
Specified mechanical load (SML)	kN	120				160				120				160			
Mounting length	mm	1240	1270	1240	1332	2276	2432	2588	2497	2497	2653	3673	3517	3747	3895	3895	3813
Specified creepage distance	mm/ kV	20.24	20.14	31.14	31.11	20.57	25.59	31.22	22.04	26.22	31.22	20.33	25.50	31.45	21.12	25.35	31.45
Coupling (CEI 120)		Ø 16				Ø 20				Ø 16				Ø 20			

Note:

Technical characteristics and testing per CEI 1109

Electrical characteristics available for insulators equipped with arcing horns

110-400 kV Insulators and Strings with Composite Insulators

Strings Equiped with Composite Insulator for 110-400kV Overhead Lines and Substations

TYPE	SYMBOL		
	110 KV	220 KV	400 KV
Strings for overhead lines			
Single suspension string	LSS-110-120-II(III,IV)-185/32 (240/40)	LSS-220-120(160)-II(III,IV)- (300/50) 450/75	LSS-400-120(160)-II(III,IV)-2x450/75
Double suspension string	LDS-110-120-II(III,IV)-185/32(240/40)	LDS-220-120(160)-II(III,IV)- (300/50) 450/75	LDS-400-120(160)-II(III,IV)-2x450/75
Single tension string	LSI-110-120(160)-II(III,IV)- 185/32 (240/40)	LSI-220-120(160)-II(III,IV)- (300/50) 450/75	
Double tension string	LDS-110-120(160)-II(III,IV)- 185/32 (240/40)	LDI-220-120(160)-II(III,IV)- (300/50) 450/75	LDI-400-160-II(III,IV)-2x450/75
Triple tension string			LTI-400-160-II(III,IV)-2x450/75
Strings for substations			
Single suspension string	LSSs-110-120(160)-II(III,IV)- (300/50) 450/75	LSSs-220-120(160)-II(III,IV)-(2x)450/75	LSSs-400-120(160)-II(III,IV)-2x450/75
Double suspension string	LDSV-110-120(160)-II(III,IV)- (2x)(300/50) 450/75	LDSV-220-120(160)-II(III,IV)-(2x)450/75	LDSV-400-120(160)-II(III,IV)-2x450/75
V" type double tension string	LIVs-110-120(160)-II(III,IV)- (2x)450/75	LIVs-220-120(160)-II(III,IV)-(2x)450/75	LIVs-400-160-II(III,IV)- 2x450/75

Example of double tension string 110 kV:

- Swivel type B = 1 buc.;
- Double twisted eye OD 20 = 2 buc.;
- Single yoke Js 300/16 = 2 buc.;
- Composite insulator 110 kV = 2 buc.;
- Arcing horn CP110 = 4 buc.;
- Suspension eye OTp = 4 buc.;
- Compression clamp TPDF(c) = 1 buc.;

Note:

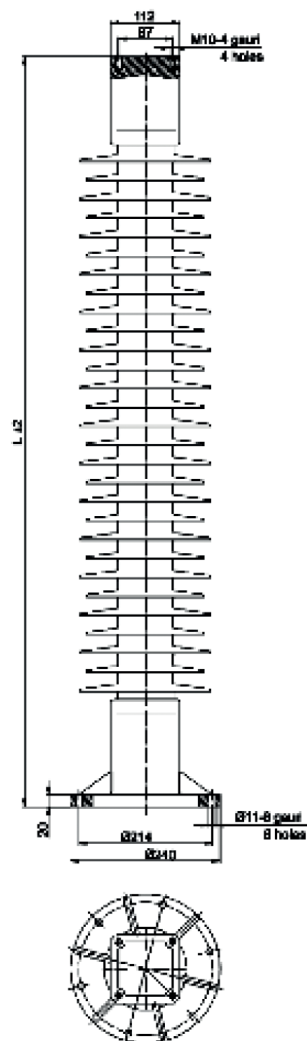
Full equiped strings for 110-400 Overhead Lines and Substations, per your request.

110-400 kV Station Post Insulators

Composite Post Insulators for 110 kV Disconnectors and Busbar Support

Technical data	Unit	Value	
		ICS 110-550	ICS 110-650
Nominal system voltage	kV	110	110
Minimum creepage distance	mm	3820	5000
Dry lightning impulse voltage (1,2/50 μ s)	kV	550	650
Wet power frequency withstand (1 min.)	kV	230	275
Specified tensile load (STL)	kN	100	100
Specified cantilever load (SCL)	kN	10	10
Specified torsion load (ST ₀ L)	kNm	4	4
Length (L)	mm	1210	1515
Life span	years	40	40

SYMBOL: ICS 110 – 550 (650)	
ICS	Composite post insulator
110	Nominal system voltage (kV)
550 (650)	Dry lightning impulse voltage (kV)



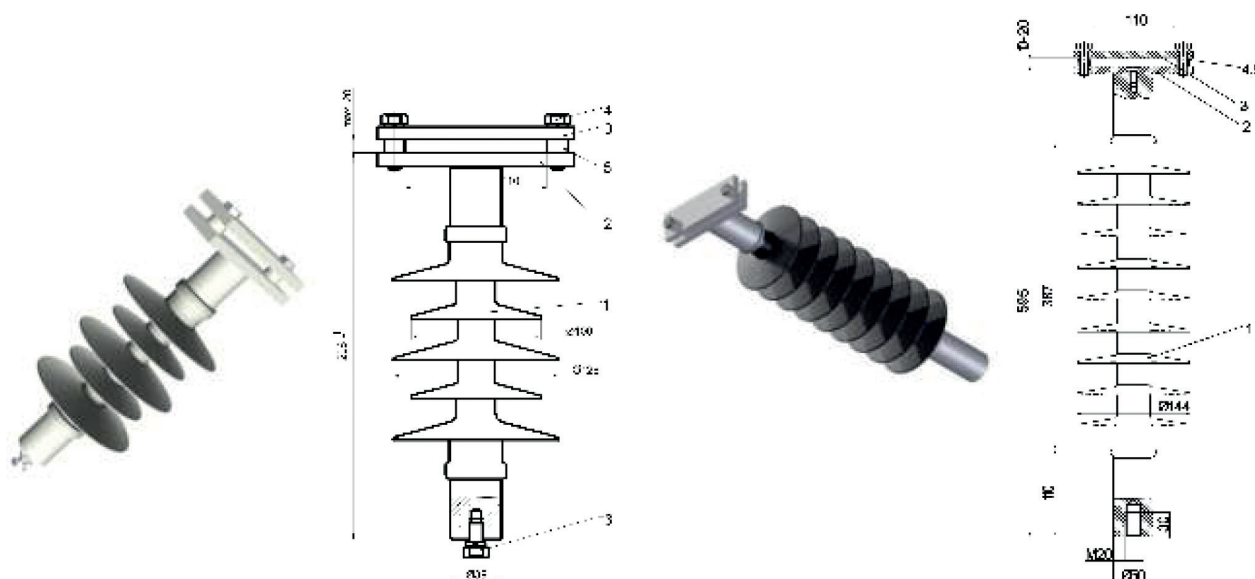
110-400 kV Station Post Insulators

Station Post Insulators for Flat Busbars

Technical data	Unit	Value	
		ICS-24A/SB	ICS-CF/SB
Maximum system voltage	kV	24	33
Creepage distance	mm	605	1207
Crosssection of the busbar	mm x mm	20x100	20x100
Dry lighting impulse voltage (1,2/50 μs)	kV	125	250
Wet power-frequency withstand (1 min.)	kV	50	125
Specified tensile load (STL)	kN	40	100
	kN	4	6
Maximum design cantilever load (MDCL)	kN	2	5
Weight	kg	2.77	5.00
Life span	years	40	40

SYMBOL: ICS – 24A / SB	
ICS	Composite post insulator
24	Maximum system voltage (kV)
A	For apparatus
SB	For busbars

SYMBOL: ICS – CF / SB	
ICS	Composite line post insulator
SB	For busbars



Note: Effective width of busbar, rated current in the busbar and the material of busbar will be mentioned in your order.

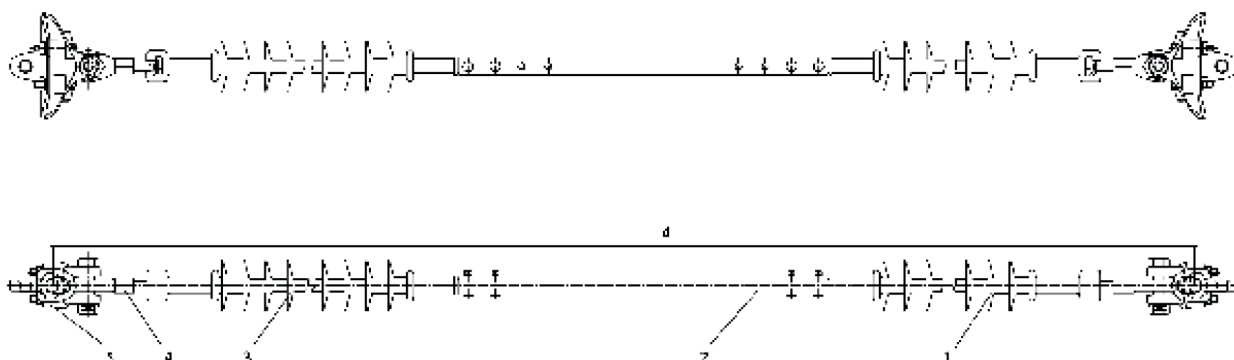
110-400 kV Interphase Spacer

Interphase Spacer for 110 kv Overhead Line

SYMBOL	
DI	110 / d
DI	Interphase spacer
110 kV	Rated voltage
D	Distance between OHL conductors (mm)

COMPONENCE	PCS.
Insulator 1	1
Spacer	1
Insulator 2	1
Suspension eye type OTp	2
Clamp	2
Aluminium band (enfold around the conductor "in situ")	1

CHARACTERISTICS	UM	VALUES
Rated Voltage	kV	110
Maximum system voltage	kV	123
Dry lightning impulse withstand voltage (1,2 / 50µs)	kVmax	550
Dry lightning impulse withstand voltage (1,2 / 50µs)	kVef	230
Creepage distance	mm	2477
Total creepage distance	mm	4954
Tensile load	kN	50
Distance between conductors	mm	min. 3000 max. 7000
Life span	years	min. 40



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