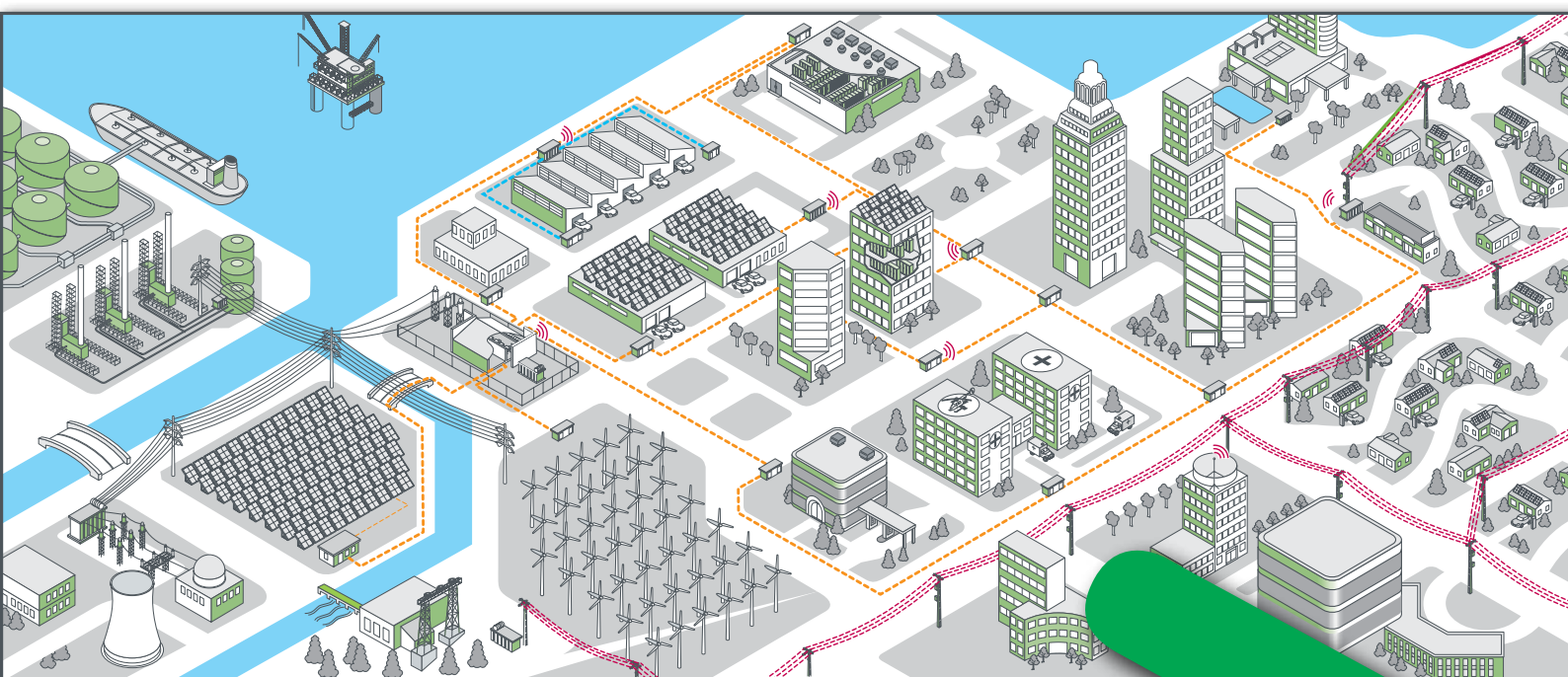


Discovering our offer at a glance

Products and equipment for

Medium Voltage distribution networks

2014










Products and equipment for Medium Voltage distribution networks











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Indoor Circuit Breakers

 PE57191	 PE56230	 PE56232	 PE56502	 PE56501	 PE57954	 PE56001
LF	LFP	SF1	SF400	SF2	Evolis 17.5 kV	Evolis 24 kV
IEC	IEC	IEC	IEC	IEC	IEC	IEC
Rated voltage (kV)						
12	17.5	12	17.5	12	17.5	24
Max. rated current						
3150 A	5000 A	1250 A	2500 A	1250 A	3150 A	2500 A
Max. rated short circuit current						
50 kA	40 kA	50 kA	31.5 kA	25 kA	40 kA	31.5 kA
SF6	SF6	SF6	SF6	SF6	Vacuum	Vacuum
Fixed or withdrawable Circuit Breaker	Fixed Circuit Breaker High power version for power pant	Fixed Circuit Breaker Front or side mounting Conventional spring Integrated VIP trip unit (without auxiliary power supply) in SFset up to 24 kV (for side mounted) Suited for capacitor bank application	Withdrawable Circuit Breaker Front mounted	Fixed Circuit Breaker Front mounted	Fixed or withdrawable Circuit Breaker	Fixed Circuit Breaker Side mounted VIP integrated trip unit

Indoor Circuit Breakers









							Cradle/Cassette						
													
HVX	HVX embedded pole		VR	VAH	VXC	ISF2	PMX cradle						
IEC/ANSI/GB (Chinese)/GOST standards	GB (Chinese) standards		ANSI	IEC/ANSI/IEEE	IEC	IEC	EC						
Rated voltage (kV)													
12	17.5	24	12	24	36	40.5	15	27	17.5	36	38	36	24
Max. rated current													
2500 A	2500 A*	3150 A	2500 A	2500 A	3000 A	2750 A	8000 A	2500 A	4000 A	3150 A	3150 A		
Max. rated short circuit current													
50 kA	31,5 kA	50 kA	31.5 kA	31.5 kA	31.5 kA	63 kA	40 kA	63 kA*	31.5 kA	40 kA	40 kA	40 kA	
Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	SF6	Vacuum		
Fixed or withdrawable Circuit Breaker	Fixed or withdrawable Circuit Breaker		Withdrawable	Fixed or withdrawable Circuit Breaker.	Fixed or withdrawable Circuit Breaker.	Fixed Circuit Breaker for electrical arc furnace	Cradle based on PIX switchgear						
* 3150A performance is possible. Please contact us		Embedded pole for better dielectric and environmental pollution withstand		For generator applications up to 130 MVA. * ANSI / IEEE C37.013 Generator Switching 63 kA, 4000 & 5000 A		The arc furnace Circuit Breaker with high switching numbers, maintenance free up to 25,000/75,000 cycles.							

Medium Voltage Circuit Breakers & Contactors

Indoor Circuit Breakers

Indoor Contactors

Outdoor Circuit Breakers

		Indoor Contactors						Outdoor Circuit Breakers				
Railway												
												
DSCF2305	PEM0284	PEM0247	PM103784	PM103789	PM103787	PEM0250	PEM0250					
NEX cradle	VXA-VXB	Rollarc	CBX	CLX	CPX	FVR	VOX					
IEC/GB	IEC/ANSI	IEC	IEC	IEC	IEC	ANSI	IEC / ANSI / EATS / GOST					
Rated voltage (kV)												
17.5	24	25	7.2	12	7.2	12	7.2	3.6	15	27	38	38
Max. rated current												
2500 A	2000 A	2500 A	400 A (AC4)	400 A (AC4)	315 A (AC4)	400 A (AC4)	400 A (AC4)	2000 A	2000 A			
Max. rated short circuit current												
31.5 kA	25 kA	40 kA	10 kA	8 kA	6 kA*	4 kA*	6 kA	4 kA	12.5 - 40 kA	12.5 - 25 kA	12.5 - 31.5 kA	40 kA
Vacuum	Vacuum	SF6	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum / SF6
Craddle based on NEX switchgear	1 or 2-pole circuitbreaker for railway application or as star point breaker for grounding application Fix installation or floor running truck - 16 2/3 Hz - 25 Hz - 50Hz - 60 Hz Indoor	Fixed or withdrawable contactor with magnetic holding or mechanical	Fixed vacuum contactor In version withdrawable fused vacuum contactor: CVX *(50kA in conjunction with fuses) 1 or 3 poles With magnetic holding or mechanical	Fixed vacuum contactor with magnetic holding or mechanical	Fixed vacuum contactor with magnetic holding or mechanical	Fixed vacuum contactor with magnetic holding or mechanical	Station breaker: fixed outdoor Dead Tank Circuit Breaker	Fixed outdoor Dead Tank Circuit Breaker				

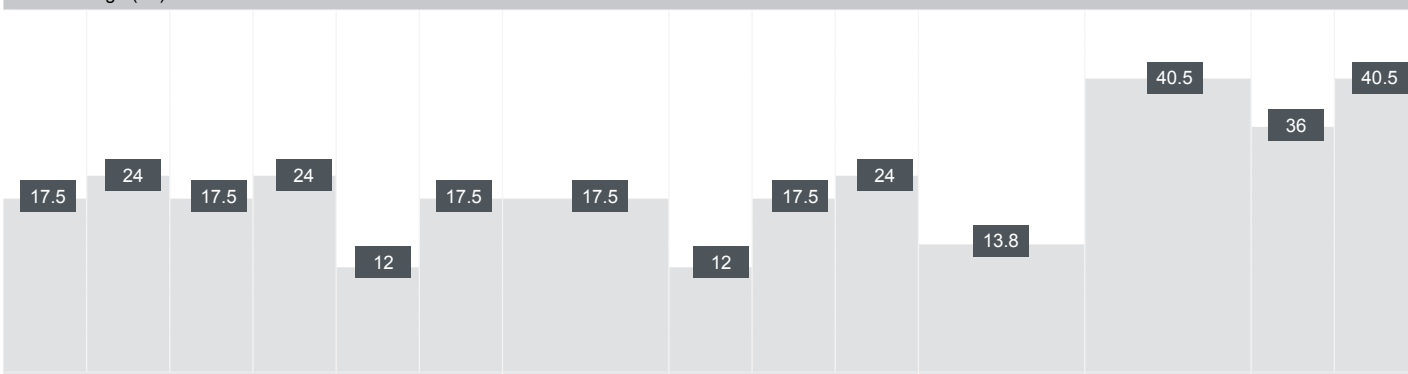
AIS for Primary Distribution

Air Insulated Switchgear up to 24 kV



MCset	PIX	PIX Double Busbar	PIX High	NEX				GenieEvo	DNF7	F400
IEC	IEC/ GOST	IEC	IEC/GOST	IEC/GB	IEC	IEC	IEC	IEC	IEC/GB/GOST	IEC / GOST

Rated voltage (kV)



LSC 2B PM	LSC 2B PM	LSC 2B PM	LSC 2B PM	LSC 2B PM	LSC 2B PM	LSC 2A-PI	LSC2B-PM	LSC2B-PM				
Max. rated current												
4000 A	2500 A	4000 A	2500 A	3150 A	5000 A	2500 A	2500 A	2000 A	2000 A	2000 A (SF CB) 2500 A (Vacuum CB). For 3150 A, please consult us.	2500 A	1250 A
											LSC2B-PM	









Max. rated short circuit current												
50 kA	31.5 kA	40 kA	31.5 kA	31.5 kA	50 kA	31.5 kA	31.5 kA	25 kA	25 kA	31.5 kA	40 kA	31.5 kA
Vacuum* SF6 SF6	Vacuum*	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum / SF6	SF6	SF6
Single busbar system, Withdrawable Circuit Breaker	Single busbar system, Withdrawable Circuit Breaker	Double busbar system, Withdrawable Circuit Breaker	Single busbar system, Withdrawable Circuit Breaker	Single busbar system, Withdrawable Vacuum Circuit Breaker	Single busbar system, Withdrawable Vacuum Circuit Breaker	Single busbar system, Withdrawable Vacuum Circuit Breaker	Single busbar system, Fixed type Rear cable access	Single busbar system	Single busbar system	Single busbar system	Single busbar system	Single busbar system
* Limited 31.5 kA / 2000A. Above, please consult us.	* SF6 technology, please refer to MCset									* up to 48 kV/20 kA		
Indoor	Indoor	Indoor	Indoor			Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
IAC	IAC	IAC	IAC			IAC	IAC	IAC	IAC	IAC	IAC	IAC

Medium Voltage Switchgears









Air-Insulated Switchgear (AIS) for Primary Distribution

Motor Control

Air-Insulated Switchgear (AIS) for Secondary Distribution

		Motor Control		AIS for Secondary Distribution						
	Railway 									
Masterclad	PIX DC	Motorpact	PIX MCC	SM6-24	SM6-36	HVL	HVL/cc			
ANSI/UL	IEC/EN	IEC/NEMA	IEC	IEC	IEC	ANSI	ANSI			
Rated voltage (kV)										
15	27	0.75	1.5	7.2	7.2	12	24	36	38	38
				LSC2A-PI	LSC 2B-PM					
Max. rated current										
4000 A	2750 A	4000 A	3150 A	5000 A (busbars)	630 A & 1250A	630 A	1250 A	1200 A	1200 A	
					400 A contactor					
Max. rated short circuit current										
63 kA	40 kA		50 kA	50 kA	25 kA	20 kA	25 kA	20 to 61 kA	32 kA	40 kA
Vacuum	Air	Vacuum	Vacuum	SF6 Vacuum CB	SF6 CB	Open-air switch	SF6 switch			
Single busbar system	For light railway segment (tram/metro) Width 650 mm	Withdrawable double busbar for S3 DOL RVSS RVAT Reversing 2-speed	Withdrawable Direct line-up with PIX Front access cabling (rear option) DOL and feeder applications	Complete system of modular cubicles	Complete system of modular cubicles	Fusible and non-fusible designs, over toggle, stored energy and motor-operated mechanisms available	Fusible and non-fusible designs, over toggle, stored energy and motor-operated mechanisms available			
Indoor & Outdoor		Indoor & Outdoor NEMA	Indoor	Indoor	Indoor					
IAC		IAC	IAC	IAC	IAC	IAC	IAC	IAC	IAC	IAC








Gas-Insulated Switchgear (GIS) for Primary Distribution



Main Products						Railway	
GMA	CBGS-0	WS	GHA	CBGS 2	WI	GHA Rail	WI Rail
 PM1103068	 PE60697	 PM1102831	 PM1103068	 PM1102833	 PM1102834	 PE60705	 PM102706
IEC / GOST / CNS	IEC/ANSI (UL)	IEC / GOST / CNS	IEC / GOST / CNS	IEC	IEC / GOST / CNS	IEC/GB (China)	IEC/EN
Rated voltage (kV)							
24	36	38	36	40.5	52	52	1 x 27.5, 2 x 27.5, 1 x 27.5, 2 x 27.5
Max. rated current							
2500 A	2000 A	2000 A	2500 A	2500 A	2000 A	2500 A	2000 A
Max. rated short circuit current							
31.5 kA	31.5 kA	31.5 kA	40 kA	25 kA	40 kA	25 kA	31.5 kA
Vacuum	SF6	Vacuum	Vacuum	SF6	Vacuum	Vacuum	Vacuum
Single busbar system Fixed type Mainly with C.B. but also switch-disconnector functions Less Space-More Power very compact design Flexible busbar system Outer cone cable connection No gas handling	Single busbar system Fixed type Mainly with C.B. but also switch-disconnector functions Compact design at 36kV Flexible busbar system Outer cone cable connection No gas handling	Single and double busbar system Fixed type CB applications Separated gas-compartments for CB and busbar Same small footprint for SBB and DBB, spacious cable connection inner cone	Single and double busbar system Fixed type CB applications Separated gas-compartments for CB and busbar Compact design, flexible cable connection for outer cone and inner cone, no gas handling	Single and double busbar system Fixed type CB applications Separated gas-compartments for CB and busbar Spacious cable connection inner cone	Single and double busbar system Fixed type CB applications Separated gas-compartments for CB and busbar. Same small footprint for SBB and DBB, spacious cable connection inner cone	Single busbar system Fixed type For traction application 1 or 2 pole solution BIL 200 kV, suitable for traction side container Substation No gas handling	Single busbar system Fixed type For traction application, 1 or 2 pole solution BIL 250 kV, suitable for traction side container Substation
Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor	Indoor
IAC	IAC	IAC	IAC	IAC	IAC	IAC	IAC

Medium Voltage Switchgears

Gas-Insulated Switchgear (GIS) for Primary Distribution

Gas-Insulated Ring Main Units for Secondary Distribution

Gas-Insulated Ring Main Units for Secondary Distribution								
								
CBGS-0	CBGS-2	Ringmaster	FBX	RM6	DVCAS	Flusarc		
IEC	IEC	IEC	IEC	IEC	IEC/ANSI/UL	IEC		
Rated voltage (kV)								
1 x 27.5	1 x 27.5, 2 x 27.5	13.8	12	24	12	24	36, 38	36, 40.5
Max. rated current								
1250 A	2000 A	630 A	630 A	630 A	630 A	630 A	630 A	630 A
			option busbar 1250A					
Max. rated short circuit current								
25 kA	25 kA	21 kA	25 kA	21 kA	25 kA	20 kA	20 kA	25 kA
SF6	SF6	SF6 CB SF6 LBS	Vacuum CB SF6 LBS	SF6 CB SF6 LBS	Vacuum CB SF6 LBS	Vacuum CB SF6 LBS	Vacuum CB SF6 LBS	Vacuum CB SF6 LBS
For railway application 1 pole (170kV BIL)	For railway application 1 or 2 poles (250kV BIL) Single busbar system Fixed type For traction application, 1 or 2 pole solution BIL 250 kV, suitable for traction side container Substation	Compact and modular switchgear combining all MV functional units	Compact and modular switchgear combining all MV functional units	Compact and modular switchgear combining all MV functional units	Wind dedicated modular switchgear combining all MV functional units used in wind farms	Compact and modular switchgear combining all MV functional units		
Indoor	Indoor	Indoor and outdoor	Indoor	Indoor	Indoor	Indoor & Outdoor	Indoor	Indoor
IAC	IAC	IAC	IAC	IAC	IAC	IAC	IAC	IAC

2SIS		MV Fuses			
 PM1100589		 PE90706			
Premset	Fusarc CF	Solefuse	Tepefuse, Fusarc CF	MGK	
IEC	DIN/IEC	IEC/UTE	IEC/DIN/UTE	AFNOR	
Rated voltage (kV)					
12	15	36	36	36	
				7.2	
Max. rated current					
630 A	250 A	5000 A (busbars) 400 A contactor			
Max. rated short circuit current					
25 kA	63 kA	50 kA	63 kA	50 kA	
Vacuum CB					
Compact modular switchgear with 3-in-1 architecture for breaking-disconnection and earthing	Fuses for distribution transformer protection from 3.6 kV to 36 kV	Fuses for distribution transformer protection from 3.6 kV to 36 kV	Fuse for measurement transformer protection up to 24 kV (Tepefuse) and up to 36 kV (Fusarc CF) Back-up technology	Motor protection fuse range	
Indoor & Outdoor					
IAC					

Medium Voltage Switchgears








Shielded Solid Insulation System (2SIS)

Medium Voltage Fuses

Medium Voltage Instrument Transformers

MV Instrument Transformers









Indoor CT / VT	Sensor	Low Voltage Ring Core	Outdoor CT / VT	Indoor CT / VT	Combined Outdoor Unit	Outdoor VT
IEC	IEC	IEC	IEC	IEC/IEEE	IEC/IEEE	IEC/IEEE
Rated voltage (kV)						
40.5	24	0.72	40.5	36	36	72
Max. rated current						
2500 A	2500 A	5000 A	2500 A	3000 A	600 A	1500 A
Max. rated short circuit current						
50 kA	40 kA	40 kA	50 kA	50 kA	50 kA	40 kA
Dry	Dry	Dry	Dry	Dry	Dry	Dry
Medium Voltage Current Transformer, Voltage Transformer	Ring type and Medium Voltage Low Power Current Transformer (LPCT)	Ring type Low Voltage Transformer	Outdoor Current Transformer and Voltage Transformer	Ring or Bar type Current Transformer and Voltage Transformer	Outdoor combined CTs VTs measure units for acrian and underground applications	Outdoor Current Transformer and Voltage Transformer

Indoor Switch-Disconnectors			Pole mounted switchgears			
						
LBSkit	L-TRI 5	TRI	PM6	PM6 52	RL series	N series
IEC	IEC	IEC	IEC	IEC	IEC/ANSI	IEC/ANSI
Rated voltage (kV)						
12	36	36	36	36	52	38
Max. rated current						
630/1250 A	630/1600/2500 A		630 A	630 A	630 A	800 A
Max. rated short circuit current						
25 kA	20 kA	20 kA	16 kA	12.5 kA / 3 s	16 kA	16 kA
SF6	AIR	AIR	SF6	SF6	Vacuum / SF6	Vacuum / SF6
Indoor load break switch, disconnecter and accessories	Indoor load break switch disconnecter and accessories	Indoor disconnecter and accessories	Load break switch Remote controlled with Easergy T200 P control unit Manual or automatic load break switch Sectionalizer capabilities		Load break switch Remote controlled with ADVC controller Manual or automatic load break switch Sectionalizer capabilities on voltage and current	Recloser Remote controlled with ADVC controller Advanced protection, control and communication

Medium Voltage Disconnectors, Switches, Switch-Disconnections, Reclosers










Indoor Switch-Disconnectors

Pole-Mounted Switchgears









Railway							
							
U series	W series	SBC	SDR	CBR	22 CB	NE	TILF
IEC/ANSI	IEC/ANSI	IEC	IEC	IEC	IEC	IEC/SNCB	IEC/SNCB
Rated voltage (kV)							
27	24	36	15	27.5	27.5	25 (1ph)	3.8
Max. rated current							
630 A	400 A	630 A	2000 A	2000 A	1000 A	2000 A	3150 A
Max. rated short circuit current							
12.5 kA	6 kA	20 kA	25 kA/ 40 kA	8 kA/ 25 kA	25 kA	16 kA	25 kA
Vacuum / Epoxy	Vacuum / Epoxy	Air	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Recloser	Single Wire Earth Return (SWER) recloser	Air break switch and disconnector	Fixed load break switch for AC railway application	Fixed Circuit Breaker for AC railway application	For locomotives and Electric Multiple Units (EMU)	Single pole load break switches for DC railway networks	Single pole load break switches for DC railway networks
Remote controlled with ADVC controller	Remote controlled with ADVC controller	Manually operated			Outdoor on locomotive top		
Advanced protection, control and communication	Advanced protection, control and communication		Outdoor	Outdoor	On board		

MV components for switchgear control

Feeder Automation

 PM1102820	 PE60285	 PM1102822	 PE60243 V3	 PE60716	 PE60717	 DM1103088	 PE60718	 PM1102801
GemStart 5.4	GemStart 5	GemView	GemControl	Easergy L500	Easergy T200I - T200E	Easergy R200-ATS100	Easergy Flair 200C	Easergy PS100
<p>Ideal for IEC MV & LV motor starters with ratings from 0.5 kW to 2 MW. Partnered with PIX MCC and also suitable for Motorpact / OKKEN</p> <p>Applications: Integrated Motor Control and Protection. Multi line LCD front panel, multi voltage input solution requiring no interposing relays. Exclusive Memory Module (PAMM), Self Tuning protection. Industry leader and standard in many Oil & Gas applications world-wide</p> <p>Protocols: Modbus RTU, Profi bus DP V1 using Generic Motor Management profile for plug and play solutions</p>	<p>Hand Held Programmer Exclusive to GemStart5 Highest possible security. Avoids the use of laptop Requires a Key for protection modification</p> <p>Applications: Ensures full compliance with best practice and permit to work principles in Oil & Gas applications. Work at a convenient height with user friendly control and reset buttons. Only authorised operators may configure or reset trips</p>	<p>PLC and PC based solution for MV & LV Process control systems. Partnered with GemStart 5, PIX MCC and LV Switchgear</p> <p>Applications: Intelligent Motor Control and Monitoring System (IMCS) to Chevron, Shell, BP, Exxon Mobil, Conoco Philips and most other Oil & Gas standards Predictive maintenance, trending, alarms, plant visualisation in a semi standard / custom package. Completes the Oil & Gas solution offer.</p> <p>Protocols: Modbus RTU, Profi bus DP V1, Ethernet TCP I/P A library of other protocols is available to integrate other devices and protection relays</p>	<p>Smart Switchgear Management Digital control & monitoring solution for air-insulated and gas-insulated switchgear from simple to complex applications, due to its very scalable design</p> <p>Applications: Switchgear central control unit, central monitoring and central information source, separated from protection function. Advanced front panel for safe and intuitive guided operation. Base Unit with open SCADA-Communication for standard IEC-protocols and industry protocols. Software based on robust standard PLC software. Direct process control possible</p> <p>Protocols: IEC 60870-5-101 Modbus-RTU Profibus-DP IEC 60870-5-103 IEC 60870-5-104 IEC 61850, Modbus TCP</p>	<p>Remote control system</p> <p>Capacity 500 Easergy type devices Network and substation views Alarm logs, archives</p> <p>Data configuration Professional communications and database editor Data creation via dialogue boxes</p> <p>Protocols Modbus, Modbus IP, IEC 101/104</p> <p>Communication Permanent and non permanent: telephone/ GSM, radio, direct public and dedicated private line Periodic call management</p> <p>Option Webview, Multistation and Horn/Lamp indication options</p>	<p>Switch monitoring and control unit</p> <p>Fault indicator: phase and earth fault</p> <p>Capacity 1-16 switches</p> <p>Battery autonomy 16 h</p> <p>Motorisation 24 - 48 VDC</p> <p>Protocols Modbus/IP, IEC 870-5-101/104, DNP3, DNP3/IP</p> <p>Communication Radio, PSTN, GSM, GPRS, 3G</p> <p>Programmation IEC 61131-3</p> <p>Modbus IEDs concentrator</p>	<p>Switch monitoring and control unit</p> <p>Control and monitoring through embedded devices in MV switchgear Premset, SM6 (end 2014)</p> <p>Fault indicator: Flair 23DM</p> <p>Control unit: SC110</p> <p>Backup power supply: PS100</p> <p>Protocols Modbus/IP, IEC 870-5-101/104, DNP3, DNP3/IP</p> <p>Communication Radio, PSTN, GSM, GPRS, 3G</p> <p>Modbus IEDs concentrator</p>	<p>Detection Phase and earth fault</p> <p>Installation Wall-mounted</p> <p>Earthing system: direct, impedent, compensated, isolated</p> <p>Measurement U, I, P, Q, S, cosφ 6 D.I., 3 D.O.</p> <p>Protocols Modbus/IP, IEC 870-5-101/104, DNP3, DNP3/IP</p> <p>Communication 1 communication port Transmission interfaces: PSTN, radio, GSM, GPRS, Ethernet, RS232, RS485...</p> <p>Modbus IEDs concentrator</p>	<p>Power supply and battery charger for MV/ LV substation.</p> <p>24V or 48V for motor and IEDs supply 12V for communication device supply</p> <p>Autonomy up to 48h 90W for 24/48V permanent load 300W 1mn for motor supply 10kV insulation</p> <p>Monitoring of battery to detect end of life through Modbus communication</p>
Digital	Digital	PLC / PC / Software	Digital	Scada	Digital	Digital	Digital	Digital
					<p>Associated with all types of MV switchgear</p> <p>T200E associated with Ringmaster only; limited to 4 switches.</p> <p>Ensure remote control and automated management. Embedded web server. Local and remote configuration</p>	<p>Ensure remote control and automated management. Embedded web server. Local and remote configuration</p> <p>ATS100: automatic source transfer with dedicated front panel. Lines, generator, bus tie</p>	<p>MV substation remote monitoring unit</p> <p>Battery 220 VAC backed-up supply</p> <p>Embedded web server. Local and remote configuration</p>	<p>7 to 40 Ah lead long life battery Input voltage: - 110 to 240 VAC - 110 VDC</p>

Remote monitoring and control

Fault Passage Indicators for Underground Networks			Telecontrol interface for pole-mounted load-break switch		Remote Monitoring for Overhead Networks	Fault Passage Indicators for Overhead Networks	Remote monitoring and control
							
Easergy Flair 219, 279	Easergy Flair 510, 570, 590	Easergy Flair 21D, 22D, 23D, 23DM	Easergy T200P	ADVC	Easergy Flite 116-SA/G200	Easergy Flite	ILIS
<p>Detection phase and earth fault</p> <p>Setting on site by dip switch</p> <p>Installation wall mounted 3 phases or / and earth CT</p> <p>Earthing system direct, impedant</p>	<p>Detection phase and earth fault</p> <p>Setting on site by HMI through push buttons</p> <p>Installation wall mounted 3 phases or / and earth CT</p> <p>Earthing system direct, impedant, compensated, isolated</p>	<p>Detection phase and earth fault</p> <p>Setting on site by dip switch or with keyboard</p> <p>Installation DIN format integrated into switchgear</p> <p>Earthing system direct impedant, compensated, isolated</p> <p>Measurement ammeter, maximeter</p>	<p>Switch or sectionaliser monitoring and control unit</p> <p>Fault indicator: phase and earth fault</p> <p>Measurement Current, voltage, real power, reactive power, power factor, demand, cosφ</p> <p>Capacity 2 switches</p> <p>Battery autonomy 16h</p> <p>Motorisation voltage 24-48 VDC</p> <p>Protocols Modbus, Modbus/IP, IEC 870-5-101/104, DNP3, DNP3/IP</p> <p>Communication Radio, PSTN, GSM, GPRS 3G</p> <p>Modbus IEDs concentrator</p>	<p>Control Controls recloser</p> <p>Protection Phase and earth current, directional, voltage, frequency, harmonics</p> <p>Detection Phase and earth faults, directional</p> <p>Measurement Current, voltage, real power, power factor, demand, harmonics, supply outages, waveform capture</p> <p>Setting By laptop, operator control panel, Scada</p> <p>Installation Mounted on the pole or substation frame</p> <p>Protocols DNP3, IEC 870-5-101/104 Modbus/IP and DNP3/IP</p> <p>Communication Radio, modem, GSM, V23, RS232, RS485, 10BaseT Ethernet</p>	<p>Detection Phase-to-phase and phase-to-earth fault</p> <p>Installation clip on or G200 pole mounted</p> <p>Protocols IEC 870-5-101, Serial DNP3 and TCP/IP, Modbus</p> <p>Communication 915 MHz short range radio communication 1 SCADA communication port Transmission interface: radio, GSM, GPRS</p>	<p>Detection phase and earth fault</p> <p>Setting on site by dip switch</p> <p>Installation clip on or pole mounted</p> <p>Earthing system direct, impedant, compensated, isolated</p>	<p>ILIS (Intelligent Light Information System) Monitors light levels within Switchgear compartments Applications: Detects and disconnects ARC faults to limit damage to equipment. Diffuse light collection from all directions, rapid timed disconnect between 5 and 250mS. Monitors up to 4 compartments per column and up to 5 columns on 4 independant loops</p>
Digital	Digital	Digital	Digital	Digital		Digital	
<p>Phase and earth fault indicator for underground network</p> <p>Power supply: - Flair 219: lithium battery - Flair 279: 220 VAC with backup lithium battery</p> <p>1 output contact</p>	<p>Phase and earth fault indicator for underground network</p> <p>Power supply : - Flair 510: Lithium battery - Flair 570: 110-220 VAC with backup Li battery - Flair 590: 110-220 VAC with backup super capacitor</p> <p>2 output contacts 2 input contacts</p>	<p>Phase and earth fault indicator for underground network. Self powered by CTs</p> <p>Power supply : - Flair 510: Lithium battery - Flair 570: 110-220 VAC with backup Li battery - Flair 590: 110-220 VAC with backup super capacitor</p> <p>2 output contacts 2 input contacts</p>	<p>Associated with a pole mounted switch</p> <p>Ensures remote control and automated management</p> <p>Embedded web server. Local and remote configuration</p>	<p>Advanced controller associated with N, U and W Series reclosers, and RL Series sectionaliser</p> <p>Remote setting with WSOS monitoring and control software</p> <p>Electronics sealed to IP65, 316 grade stainless steel enclosure</p> <p>Control recloser Load Break Switch/ Sectionaliser type RL series</p>	<p>Communicating fault current detector for overhead lines Single-phase ammetric detector</p>	<p>Earth and phase-to-phase fault indicators for overhead distribution lines Lithium battery power</p>	

Protection

 PM102703	 PE88000	 PE88022	 PE88023	 PE88024	 PM100502	 PM100522	 PM100527
Sepam series 10	Sepam series 20	Sepam series 40	Sepam series 60	Sepam series 80	MiCOM series 10	MiCOM series 20	MiCOM series 30
Protection relay for basic applications	Protection relay for standard applications	Multi-function protection relay for demanding applications	Multi-function protection relay for high-performance applications	Multi-function protection unit for critical and customised applications	Protection relays for basic electrical schemes	Protection relays for standard electrical schemes	Multi-function protection relays for complex electrical schemes
Secondary Power Distribution Networks	Utility MV and Industrial Distribution Networks	Utility MV and Industrial Distribution Networks	Utility MV and Industrial Distribution Networks	Utility MV, Generation and Industrial Distribution Networks	MV Industrial and Building Networks, Secondary and Primary Distribution Networks	Primary Distribution, MV Substations and Industrial Networks	Industrial Networks, Railways and Utility MV, HV Substations
Feeder Transformer	Feeder Busbar Transformer Motor	Feeder Generator Transformer Motor	Feeder Generator Transformer Motor Capacitor	Feeder Busbar Transformer Motor Generator Capacitor	Feeder Motor	Feeder Motor Busbar Line Differential	Feeder Motor Transformer Line Differential Distance Rail
Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital
	Modbus RTU DNP3 IEC 60870-5-103 Modbus TCP/IP	Modbus RTU Modbus TCP/IP DNP3 IEC 60870-5-103 IEC 61850	Modbus RTU Modbus TCP/IP DNP3 IEC 60870-5-103 IEC 61850	Modbus RTU Modbus TCP/IP DNP3 IEC 60870-5-103 IEC 61850	Modbus RTU, IEC 60870-5-103	Modbus RTU DNP3 IEC 60870-5-103 Courier	Modbus RTU DNP3 IEC 60870-5-101 IEC 60870-5-103 Courier IEC 61850
Panel	Panel	Panel	Panel	Panel	Wall/Surface, Panel or DIN Rail	Panel or Rack (with adaptor)	Panel, Wall/ Surface or Rack



PM100526

PM103532

MiCOM series 40	VAMP
Multi-function protection relays for complex electrical schemes	Dedicated Arc Protection Schemes
Industrial Networks, Generation and Utility MV, HV Substations	
Feeder Motor Transformer Line Differential Distance Busbar Generation	Arc Protection Communication Protocol
Digital	Digital
Modbus RTU DNP3 IEC 60870-5-103 Courier IEC 61850	Modbus RTU Modbus TCP IEC 61850 DNP3 TCP Profibus IEC 60870-5-101 IEC 60870-5-103
Panel or Rack	Panel or DIN Rail






Medium Voltage Transformers

Oil Immersed Distribution Transformers

Medium Power Transformers

Dry type Transformers

Special transformers

Oil Immersed Distribution Transformers	Oil Immersed Medium Power Transformers	Dry type Transformers	Special Transformers	
				
MINERA ODT Pole and ground mounted	MINERA MP	TRIHAL	SPT	
			Oil immersed type	Dry type
Rated voltage (kV)	170	36	170	52
36				
Power ratings				
From 25 kVA up to 3.15 MVA	> 3.15 up to 80 MVA	From 100 kVA up to 15 MVA	Up to 80 MVA	Up to 30 MVA
Frequency				
50 Hz - 60 Hz	50 Hz - 60 Hz	50 Hz - 60 Hz	50 Hz - 60 Hz	50 Hz - 60 Hz
Dielectric				
Mineral Oil – IEC60296 L Class Fire resistant oil (Vegeta) K Class (K2 - K3)	Mineral Oil – IEC60296 L Class Fire resistant oil (Vegeta) K Class (K2 - K3)	Cast Resin encapsulated Certified C3* E3 F1	Custom solutions. Special applications - Compact Minera Siltrim - Minera EX (Zone 1 and 2) - Photovoltaic Minera PV - Compact Minera PAD - Full cast Tricast - Furnace transformer - Rectifier transformer - Generator transformers - Motor starting reactors - Others upon request - IP54, IP55 Dry Type Outdoor Transformers - Auto transformers - Single Phase Transformers - Self Protected Transformer - Dry Type Transformer with OLTC	
Optimized efficiency				
Standard losses High Efficiency (Minera HE & HE+)	Standard losses High Efficiency (Minera HE & HE+)	Standard losses High Efficiency (Trihal HE)		
Cooling system				
ONAN – Natural air ONAF – Air forced (up to 40%)	ONAN, ONAF, ODAF, ODWF or OFAF	AN - Natural air ANAF / AF – Air forced (up to +40%)		
Tank / Enclosure types				
Hermetically sealed Breathing type	Hermetically sealed, gas cushion transformers Free-breathing with expansion tank	Common Design – Indoor use IP21, IP31, IP23 Custom Enclosure – Outdoor use IP35, IP44		

Power Factor Correction



PB108151



PEB0727







Propivar NG	CP 200 series
IEC	IEC
Rated voltage (kV)	

36

36

Max. rated current	
900 kVAR	14400 kVAR
Max. rated short circuit current	
	31.5 kA
"All film" with or without internal fuses	Vacuum / SF6
Power factor correction on MV networks or devices	Power factor correction and harmonic filtering on MV networks Fixed or automatic capacitor banks for motor, substation, or global distribution Indoor or outdoor installation






Medium Voltage / Low Voltage Prefabricated Substations (PSS)

Standard Substations - Integrated		Standard Substations - Compact		Standard Substations - Walk-in	
					
IEC	BS	MV Switching kiosk IEC / AS / HN	MV/LV external operations IEC / AS / HN	MV/LV internal operations IEC / HN	MV/LV Underground IEC
Rated voltage (kV)					
36	17.5	36	36	36	36
Transformer maximum power (kVA)					
630	2000	Non applicable / without transformer	2000	1250	1 x 1000 2 x 630
Enclosure material					
Without (frame mounted)		■ ■	■ ■ ■	■ ■ ■	■
Mode of operation					
Indoor	Indoor / Outdoor	Outdoor	Outdoor	Indoor	Indoor
Description					
The MV and LV equipment are delivered directly mounted ensuring a safety, and fast solution. They can be installed in existing building, in a substation or outdoor* *BS version		Outdoor operations type of substation allows reduce footprint and speed of installation. Internal equipment arrangement can be fitted to any type of access		Indoor operation provides to operator protection against bad weather and better working conditions. It offers fast delivery, safety and quick erection versus traditional construction. MV/LV Underground substations are invisible and fully integrated into the environment, allowing space saving whilst maintaining a high level of safety	
Application					
Distribution Buidings	Distribution, industry, buidings	Distribution, buildings	Distribution, industry, wind, buildings	Distribution, industry, wind, buildings	Distribution, buildings
Reconfiguring the MV network and protecting the MV/LV transformer with our MV switchgear ranges. Supplying LV energy with oil transformer (Minera ranges or equivalent). Distributing and protecting the LV network with Opus and Prisma Plus ranges. Managing functions remotely with Easergy Flair 200C, Easergy T200 and Easergy W200		Protection and reconfiguration of the MV undergrounded network. Equipped with MV Ring Main Units switchgears. Managing functions remotely with Easergy Flair 200C, Easergy T200 and Easergy W200	Reconfiguring the MV network and protecting the MV/LV transformer with our MV switchgear ranges. Supplying LV energy with oil transformer (Minera ranges or equivalent) and with cast resin dry type transformer (Trihal ranges or equivalent). Distributing and protecting the LV network with Opus and Prisma Plus ranges. Managing functions remotely with Easergy Flair 200C, Easergy T200 and Easergy W200	Reconfiguring the MV network and protecting the MV/LV transformer with our MV switchgear ranges. Supplying LV energy with oil transformer (Minera ranges or equivalent) and with cast resin dry type transformer (Trihal ranges or equivalent)*. Distributing and protecting the LV network with Opus and Prisma Plus ranges. Managing functions remotely with Easergy Flair 200C, Easergy T200 and Easergy W200 *Non applicable to underground substations	

■ Metal ■ GRC (Glass ReinforcedCement) ■ Concrete



Customized substations

 P1E00726	 P1M102835	 P1E00813	 P1E00317	 P1E00325
Specific substations (PSS)	Prefabricated Substations	Electrical House (E-House)	Mobile substations	Trackside substations
All voltage levels IEC, HN Building codes: Eurocodes (according to specific type of substations)	MV	All voltage levels IEC, AS, BS, ANSI/NEMA... Building codes: Eurocodes, IBC, BCA	All voltage levels IEC, AS, BS, ANSI/NEMA... Building codes: Eurocodes, IBC, BCA	
Rated voltage (kV)				
36	40.5	up to 72	up to 72	15, 27.5, 2 x 27.5
Transformer maximum power (kVA)				
3150	MV switchgear Automation RTU UPS	MV switchgear MV MCC LV switchgear LV MCC, VSD,... Automation UPS RTU,...	10MVA transformer HV/MV switchgear on & off-load tap changers blackstart genset, UPS RTU & Sat Com Cable reel	MV switchgear Automation UPS RTU
Enclosure material				
■ ■ ■	■	■	Truck mounted	■
Mode of operation				
Indoor	These substations offer modularity of their dimensions to respond to all equipment requirements	These substations offer modularity of their dimensions to respond to all equipment requirements	Complete stand-alone substation permanently mounted on a standard semi trailer to offer full mobility at highway speed without escort	These substations offer modularity of their dimensions to respond to all equipment requirements
Description				
These tailor made substations offer modularity of their dimensions to respond to all equipment requirements	Pre-fabricated primary substation complete with its ancillary equipment ready to be shipped, allowing minimal site work	Pre-fabricated substation comprising primary supply and processcontrol switchgear, complete with ancillary equipment ready to be shipped, allowing minimal site work	Emergency power supply to back-up any HV/MV transformer within a Utility network in less than 4 hours	Electrical supply of catenaries for main lines, high speed lines or freight lines
Application				
Primary and Secondary distributions, Large industries, Oil & Gas, Mine & Metal, Solar & Wind	Primary distribution, Large industries Oil & Gas Mining & Metals Solar & Wind	Oil & Gas - Upstream, midstream, downstream Utilities - HV/MV substations Mining & Metals Energy - Intensive industries Utilities - Primary or reflection substations Railways - Trackside substations	Primary distribution	Railways Mining & Metals

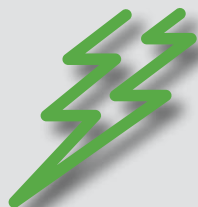
■ Metal ■ GRC (Glass ReinforcedCement) ■ Concrete

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+



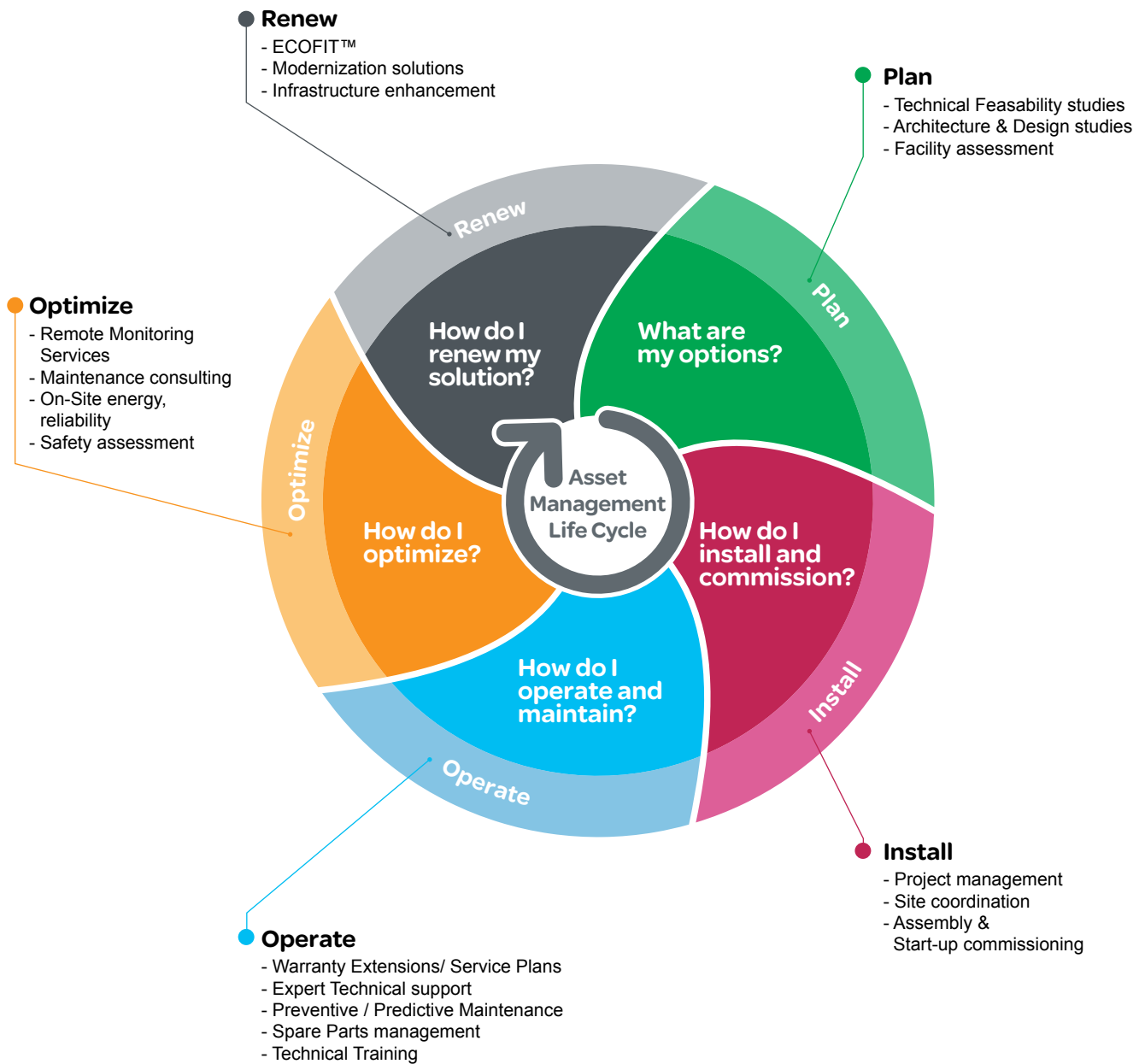
Your Electrical
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Reliability, and
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Comprehensive Installed Base Services



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