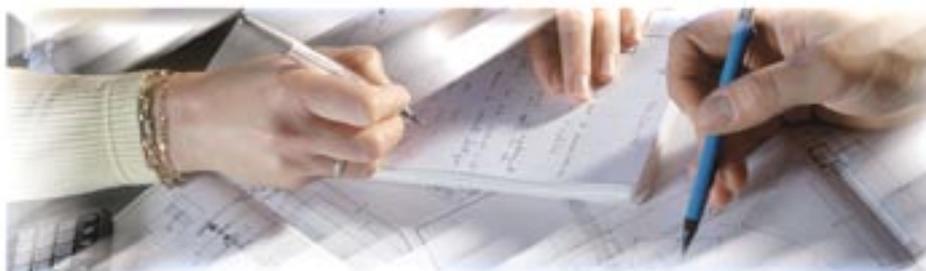


High Voltage disconnectors

The specialists



Coelme and Egic:



As specialists, we have been dedicated to one single activity for over the past several dozen years: the HV disconnecter

As the safety device at the heart of each substation, the disconnecter must:

- preserve the insulation of the network's 2 parts, even in the case of exceptional events (earthquakes, short-circuits, operation over-voltages, lightning) due to the network or to weather conditions
 - be capable of operating in the most extreme environmental conditions.
- Its dependability is thus primordial, only a specialist can guarantee you this. The range is the largest on the market: 7 types of devices from 36 to 800 kV and from 1250 to 6300 A, not counting occasional adaptations.

Trustworthy technology...

Switchgear generally conforms to IEC standards. Some versions are also ANSI compliant and adaptations to other standards are possible.

Conductive materials

- Aluminium: castings and active parts.
- Bare or silver-plated copper for contacts and HV terminals.

Optimised protection: several procedures used

- Rustproofness of the material.
 - Hot dip galvanization.
 - Zinc iron alloy electrogalvanizing.
 - 800 hours of successful testing for salty mist on operating mechanisms
- at high technology's service.**
- Optimised contact pressure to limit contact resistance, to counter short-circuit electrodynamic stresses while limiting the operating torque. A spring for each contact finger for a permanent point contact.
 - Contacts designed to tighten under the effect of high current flow.

Demanding of ourselves, demanding of our supply partners

Centred around the design, assembly and factory reception process, the component production process is assigned to our network of supply partners. The large majority of them has ISO 9001 certification and all of them meet our internal quality criteria: in-house QA certification, component control in all cases.

Individual tests all along the assembly process allow material to be verified and approved (measurement of voltage drops, mechanical tests, etc.).

Lastly, reception tests, which are conducted in your presence, guarantee that our disconnecters correspond to your expectations.



the specialists of disconnectors

A complete range of choices that correspond to each need

Disconnectors:

Manual or motorised operation, with 3-pole (in general up to and including 245 kV, non-restrictive) or, simultaneous or independent 1-pole, control.

Making and breaking of busbar transfer currents up to 1600 A as in the IEC 61128 standard, with the possibility of extending up to 3200 A. Breaking of small magnetising and inductive currents of 0.5 A as in the IEC 60129 standard with the possibility of extending up to 10 A by adding arcing contacts.

	Horizontal break Separation of 2 conductors of the same level		Vertical reach Separation of 2 stacked conductors		Vertical break Separation of 2 conductors of the same level	
disconnector type	centre break	double-side break	pantograph	1 arm pantograph	vertical break	vertical break knee type
						
36 kV	■	■			■	
72-100 kV	■	■	■		■	
123 kV	■	■	■		■	
145-170 kV	■	■	■	■	■	
245 kV	■	■	■	■	■	■
300-420-550 kV	■	■	■	■	■	■
800 kV				■		■
rated current up to	4000	4000	4000	4000	4000	6300
short-circuit current up to	63 kA/3 sec	75 kA/3 sec	63 kA/3 sec	63 kA/3 sec	63 kA/3 sec	75 kA/3 sec
advantages	<ul style="list-style-type: none"> ■ economical and versatile ■ the most sold in the world 	<ul style="list-style-type: none"> ■ reduced phase to phase clearance ■ sturdy (forces on terminals, short-circuit, ice) 	<ul style="list-style-type: none"> ■ ultra compact device 	<ul style="list-style-type: none"> ■ the most compact of all disconnectors ■ high precision mechanics ■ high connection latitude 	<ul style="list-style-type: none"> ■ reduced phase to phase clearance 	<ul style="list-style-type: none"> ■ reduced phase to phase clearance and vertical dimensions ■ low operating time ■ high precision mechanics
disadvantages	<ul style="list-style-type: none"> ■ high phase to phase clearance and limited forces on terminals 	<ul style="list-style-type: none"> ■ higher costs and required torque than centre break disconnector 			<ul style="list-style-type: none"> ■ high vertical dimensions in open position 	

Performances that can be improved upon request.

Earthing that is either stand-alone or linked to the disconnector:

manual or motorised operation for 1 or 2 earthing(s) per disconnector, even 3 (depending on the configuration).

Making and breaking of induced currents as in the IEC 61129 class B standard.

Stand-alone earthing

	72-100-123 kV	145-170 kV	245 kV	300-420-550 kV
short circuit current	up to 75 kA/3 s			

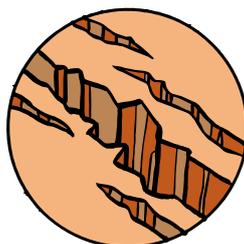
Controlling harsh environments



Ice thickness up to 20 mm operation up to - 50°C



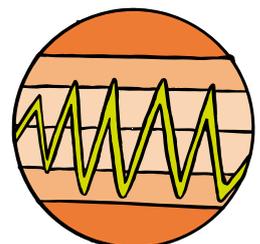
Protection of materials in harsh environments



Earthquake behaviour as in South American standards



IP 55 protection and 50°C under hot and windy environments



Mechanical tests up to 10 000 operations / 1 million oscillations ± 5°

Double force, single aim

Coelme is established in Santa Maria di Sala, near Venice, Italy, and has been involved in disconnecter manufacturing for more than 20 years.

The 13000 m² site, including 4250 m² of workshops and offices, is fully dedicated to this activity.

The company won its first ENEL (Italian National Utility) qualification in 1986 and is one of the major ENEL suppliers for disconnecting switches up to 420 kV.

Coelme has delivered more than 20000 disconnectors, up to 550 kV, in most of the types required by the market and to many of the major utilities and customers from more than 60 countries.

Egic has always been involved in the disconnecter's activity for more than 50 years.

The factory in Saint Genis-Laval, near Lyon, France consists of 6500 m² premises which extend on a 11500 m² site.

Since the 50's, Egic has been awarded as a constant and major supplier of EDF (French National Utility) for apparatus up to 420 kV. Worldwide, more than 50000 disconnectors of all the types required by the market and up to 800 kV have been delivered to most of the major utilities and customers from about 100 countries.

Pursuing a policy of technical excellence and best customer service, Coelme and Egic have joined their efforts in early 2001 to set-up a combined organisation and reinforce its vocation of partnership with the major international contractors, while keeping the versatility of a human-sized organization employing about 120 people. Both companies' quality systems are certified in compliance with ISO 9001 and offer together a full range of services including on-site or factory training, to optimize the use and the maintenance of your installations...

For well designed, sturdy, and dependable disconnectors

The analysis of the units operated by the main customers gives excellent results: for example EDF installed base, criticality rate 0.65%.



Our goal: your satisfaction

Continued quality service serves leading edge R&D technology

Coelme and Egic, as recognised disconnector designers, have entered into a long lasting period of innovative dynamics that allows them to design disconnectors that are less and less costly.

Over the past years, special effort has been taken by our development centres, located in Venice, Italy, and in Lyon, France, to develop new devices and expand ranges.

Our development seeks main support from the independent laboratory VOLTA (LED and SGEP-DTL & HPTS) and SVEPPI for:

- dielectric tests: wave generators up to 3600 kV, industrial frequency tests up to 1200 kV
- high power tests up to 2000 MVA
- climatic chamber: 230 m³ from - 65 to + 85 °C.



In addition to VOLTA and SVEPPI, certification is also carried out in the most reputable HV laboratories (Les Renardières/EDF, CESI, KEMA, etc.).

Shock and vibration tests: CECAM, SOPEMEA, VIRLAB and ISMES laboratories.

Adapted answers

Designers, we adapt to your needs:

- adaptation to your design: wide range, horizontal-vertical-hanging mounting, in line-parallel-diagonal, parallel-perpendicular earthing
- accessories for network upgrades: switching devices, short-circuit devices up to 75 kA/3 sec, remote control (motorization, information dependability, interlocking)
- compatibility with surrounding equipment
- support from VA Tech T&D if needed (network studies).

Contractors, we will make your task easier:

- training and/or supervision for installation and commissioning
- dependable partner for deadlines and complete logistics are ensured (420 3-pole sets in 123 and 420 kV were delivered for only one project)
- customised offers for financing
- simple installation - increased modularity of devices
- simplified interfaces.

End-users, we offer you continuous service:

- on average, a disconnector works for 25 years with reduced maintenance in normal operating conditions
- recognised sturdiness and dependability.

Answers to your service needs

Installation

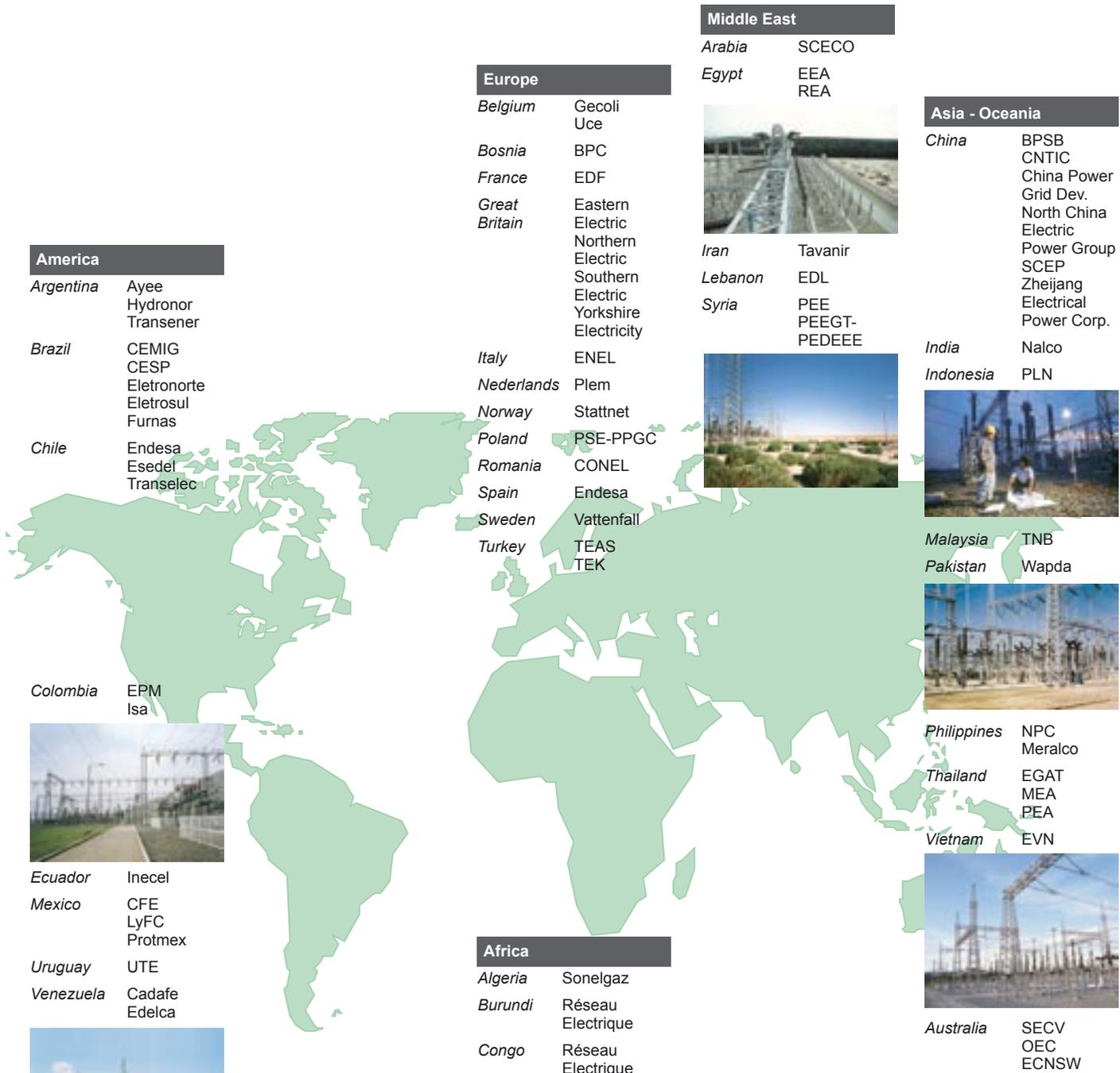
Our on site intervention teams offer to erect, test and commission devices upon request.

New equipments can be installed or equipments being used can be upgraded.

After sales service

Traditional after sales activity:

- replacement parts, exchange, repairs
 - assistance
 - preventive maintenance
- Processing special requests:
- refurbishment or upgrading of live parts
 - motorization of manually operated devices manufactured by ourselves or others
 - replacement of insulators for pollution level improvement
 - addition of busbar transfer or induced currents switching devices



America

- Argentina* Ayee
Hydronor
Transener
- Brazil* CEMIG
CESP
Eletronorte
Eletrosul
Furnas
- Chile* Endesa
Esedel
Transelect
- Colombia* EPM
Isa
- Ecuador* Inecel
- Mexico* CFE
LyFC
Protmex
- Uruguay* UTE
- Venezuela* Cadafe
Edelca



Europe

- Belgium* Gecoli
Uce
- Bosnia* BPC
- France* EDF
- Great Britain* Eastern Electric
Northern Electric
Southern Electric
Yorkshire Electricity
- Italy* ENEL
- Netherlands* Plem
- Norway* Stattnet
- Poland* PSE-PPGC
- Romania* CONEL
- Spain* Endesa
- Sweden* Vattenfall
- Turkey* TEAS
TEK

Middle East

- Arabia* SCECO
- Egypt* EEA
REA
- Iran* Tavanir
- Lebanon* EDL
- Syria* PEE
PEEGT-
PEDEEE



Asia - Oceania

- China* BPSB
CNTIC
China Power Grid Dev.
North China Electric Power Group
SCEP
Zhejiang Electrical Power Corp.
- India* Nalco
- Indonesia* PLN
- Malaysia* TNB
- Pakistan* Wapda
- Philippines* NPC
Meralco
- Thailand* EGAT
MEA
PEA
- Vietnam* EVN



Africa

- Algeria* Sonelgaz
- Burundi* Réseau Electrique
- Congo* Réseau Electrique
- Morocco* ONE - RAD
- South Africa* BPC
- Tunisia* STEG
- Tanzania* Réseau Electrique
- Zaire* Réseau Electrique

- Australia* SECV
OEC
ECNSW

Contractors

- | | |
|--|---|
| <i>Austria</i> VA Tech. Elin | <i>Korea</i> Hyosung
Hyundai
Lucky Goldstar (LGEN-LGIS)
Samsung Corp |
| <i>France</i> Cegelec
Spie
Norelec
Alstom | <i>Spain</i> Abengoa
Elecnor
Foster Wheeler
Isolux |
| <i>Germany</i> ABB
Siemens | <i>Great Britain</i> VA Tech.
Reyrolle |
| <i>Argentina</i> SADE | <i>Ireland</i> ESB-ESBI |
| <i>Italy</i> Ansaldo | <i>United States</i> Bechtel
Fluor D. |
| <i>Japan</i> Mitsubishi
Heavy Industries (MHI) | |
| <i>Mexico</i> Grupo Tres | |

Members of Southern States group

COELME
Via G. Galilei, 1/2
30036 S.Maria di Sala - VE
Italia
Tel.: +39 041 486022
Fax: +39 041 486909
Email: contact@coelme-egic.com
www.coelme-egic.com

EGIC
86, chemin de la Mouche - BP 6
69563 St-Genis-Laval Cedex
France
Tel.: +33 4 72 66 20 70
Fax: +33 4 72 39 08 65
Email: contact@coelme-egic.com
www.coelme-egic.com