



LOMBARDIA - ITALY

Factory



CONTACTPLASMA
Terranova dei Passerini (Lodi)

Factory



Our products are ENEL Homologated and we are AEM & ACEA suppliers (Public Utilities of the most important Italian Cities like Milan, Rome and Turin). We list here below the main Utilities of which we are official suppliers:

ENEL Italy - AEMD Turin Italy - AEM Milan Italy - ACEA Rome Italy - IREN Italy - EDP Portugal
ONE Morocco - PLN Indonesia - EEEB Colombia - EDCO Jordan - JEPCO Jordan
WED UAE - KESH Albania - ZETDC Zimbabwe - HANOI PC Vietnam - South Africa
Poland - Russia

CONTACTPLASMA

was born in 1985 in 200 m² department.

Today Contactplasma has an extension of 15.000 m², 300 m² of offices, 1.000 m² warehouse and 2.500 m² factory.

Contactplasma export is about 80% of the total turnover.

Actually Contactplasma is present in 54 Countries and our products are sold all over the World.

Factory



Factory



About us

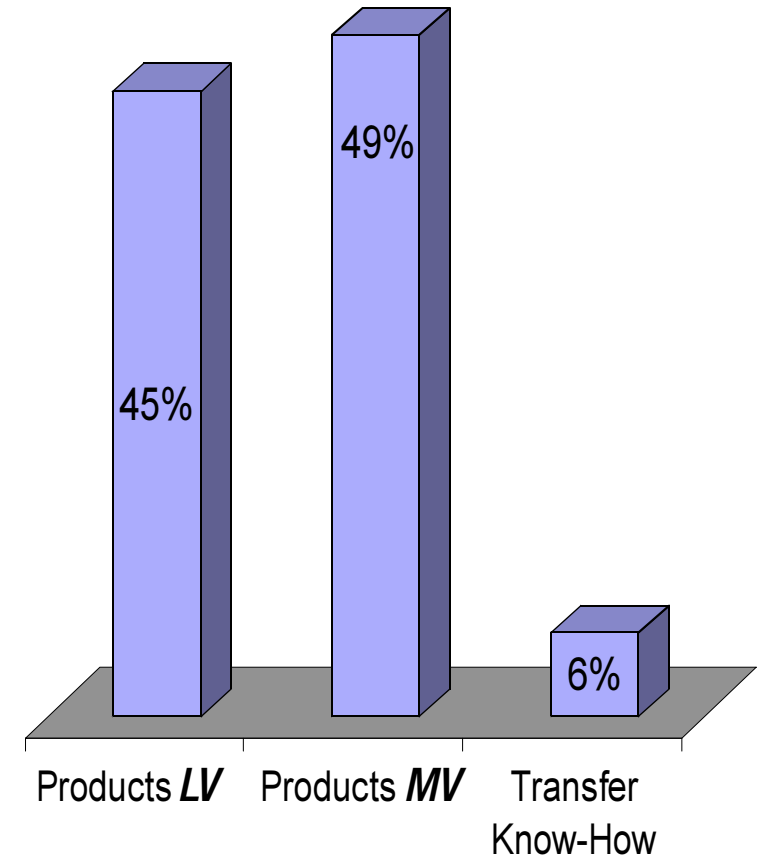
Contactplasma was established by Giampietro Tosi, today President and Technical Manager

Property: Tosi family

People: around 50 firm's personnels

Activity:

Engineering and design, research, development, innovation and manufacture of Medium Voltage Vacuum Circuit Breakers, Medium Voltage Switch-Disconnectors, Metal-Enclosed Medium Voltage Switchboards, Ring Main Units and Panels, Low Voltage Switch-Disconnectors and Switch-Disconnectors-Fuses. Low Voltage Change-over Switch-Disconnectors, Change-over Switch-Disconnectors-Deviators and By-pass, Customer service. Know-how transfer.



Company's Policy

Contactplasma was born with the goal to remain a small Company flexible and internationalized to operate in confidence and safety of ownership and firm's personnels. Contactplasma has done investments of his energies inside quality and efficient of our devices, stabilizing strong and solid partnerships with big and medium companies worldwide.

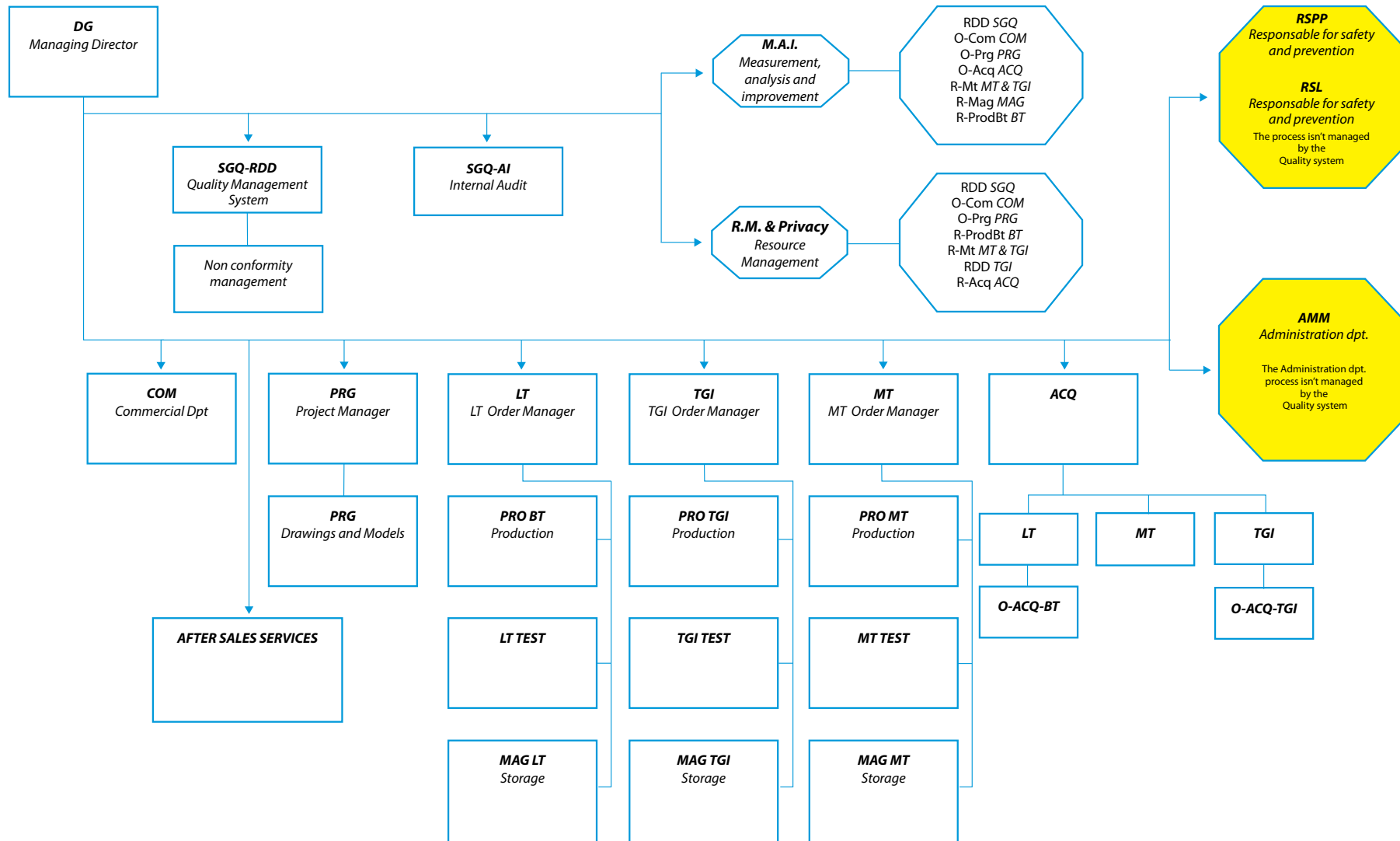
Today situation is different. Global economical acceleration, the necessity to maintain investment level to innovation and development of our products in a market always more competitive, needs of our partnershipsthat are become bigger, needs of new big companies that have started to use our products have pushed our management to change Contactplasma policy and to accept an accelaration of size of Contactplasma toward a medium size Company.

Contactplasma has implemented certification ISO 9001 in 1997, among first 1000 italian companies.

Today Contactplasma Manufacturing Method is Certified ISO 9001 by Bureau Veritas.



Organization chart



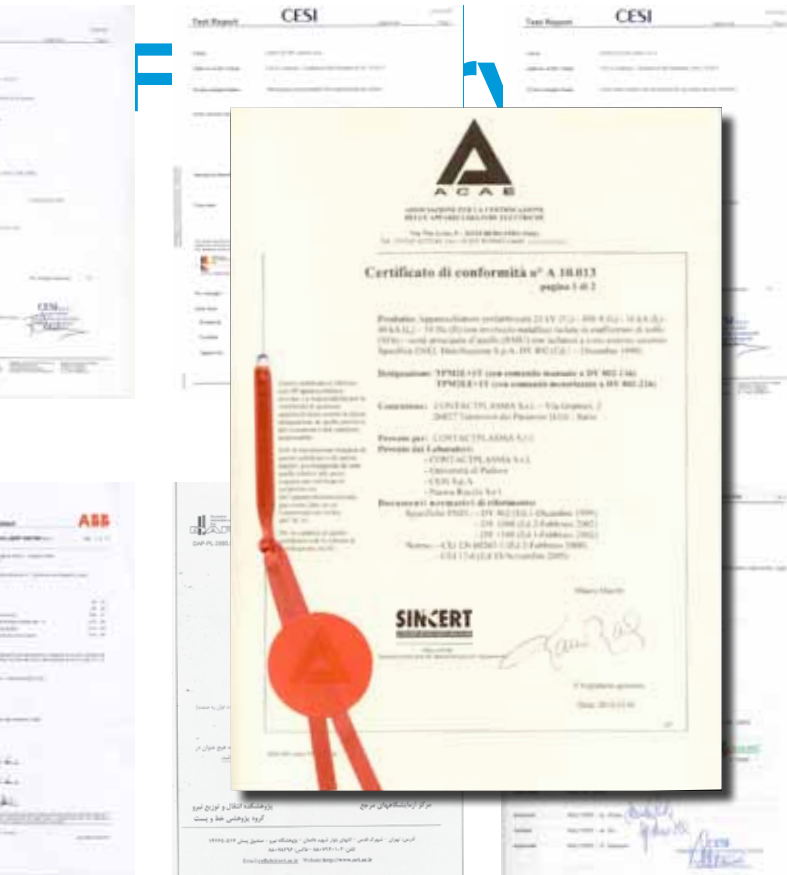


PRODUCTS PATENTED AND CERTIFIED BY THE MOST IMPORTANT

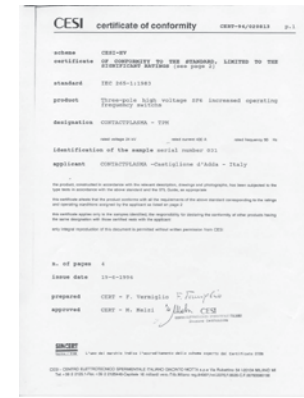


INTERNATIONAL TESTING LABORATORIES AND AUTHORITIES

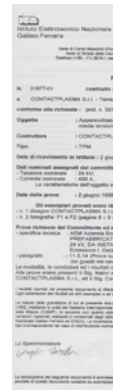




PRODUCTS PATENTED AND CERTIFIED BY THE MOST IMPORTANT



INTERNATIONAL TESTING LABORATORIES AND AUTHORITIES



Low voltage products

- **Switch-Disconnectors** from 32 A to 8000 A, 3-4-6-8 poles, with possibility of release coil up to 250 A and motor-driven from 32 A up to 8000 A and possibility of remote control.

Standards and features: IEC60947-3 AC 23A 690 V from 32 A up to 1000 A & IEC 60947-3 AC22 A 500 V from 1250 A up to 8000 A. DC21-DC22-DC23 **DC Switch-Disconnectors**.

Possibility to manufacturer switch-disconnectors with different features customerized

- **Switch-disconnectors-fuses** from 32 A up to 2000 A with fuse holders DIN IEC 43620, NFC 62210, BS 88, with possibility of release coil up to 160 A and motor-driven from 100 A up to 2000 A and possibility of remote control.

Standards and features: IEC 60947-3 AC 23 A 690 V from 32 A up to 2000 A. DC21-DC22-DC23 **DC Switch-Disconnectors fuses**.

Possibility to manufacturer switch-disconnectors-fuses with different features customerized.

Customerized versions available to be used in mine-duty, railways stations, tunnels, power stations, high-speed trains, low temperatures applications, railways high-speed cabinet.



Low voltage products

- ❑ **One-case change-over switches and deviators** from 125 A up to 1600 A 3-4-6-8 poles;
- ❑ **One-case change-over switches-fuses and deviators** from 125 A up to 1600 A 3-4-6-8 poles;
- ❑ **Change-over switches and deviators** from 100 A up to 8000 A 3-4 poles;
- ❑ **By-pass change-over switches and deviators** from 125 A up to 5000 A 3-4 poles;
- ❑ **Change-over switches and deviators** from 100 A up to 8000 A with motor-driven mechanism, electronic control card and automatic transfer control card.
- ❑ **Change-over switches-fuses and deviators** from 100 A up to 2000 A with motor-driven mechanism, electronic control card and automatic transfer control card.

Standard and features: IEC 60947-6-1 AC 32 A 500 V from 100 A up to 8000 A.

Customerized versions available to be used in mine-duty, railways stations, tunnels, power stations, high-speed trains, low temperatures applications, railways high-speed cabinet.





Low voltage products

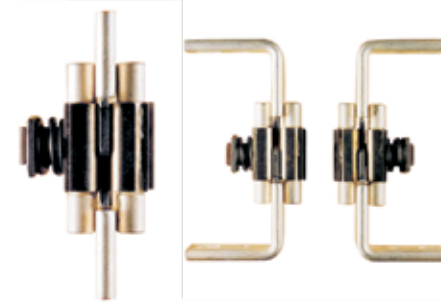
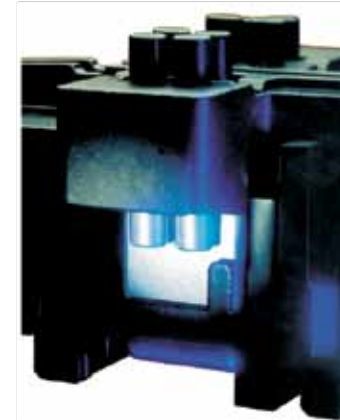
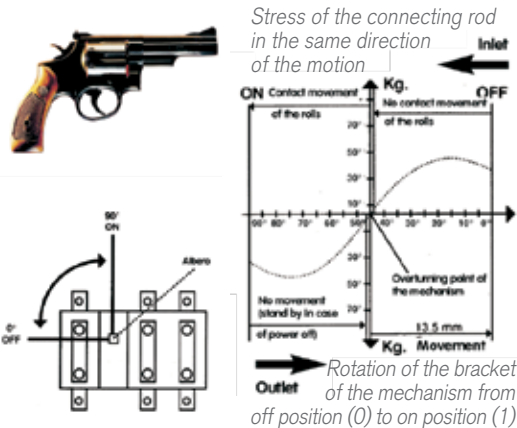
Self Centring Rotary Oscillating Contact for switches

Parallel electrical currents generate higher contact pressure and high short circuit current

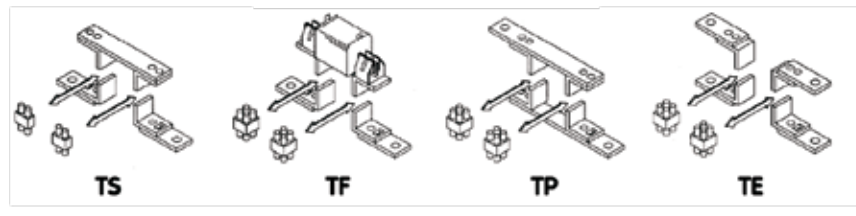
Mobile contact device consists in two sets of copper rolls silver plated that are preloaded per each phase. The rolls are supported by a steel slide preloaded by spring that allows them to move separately. A complete set of rolls at 3 phases is supported by a frame. The innovation consists in the specific position of the contacts system. The electrodynamic force (F) of the parallel currents through the copper rolls and the thrust of the springs that acts on each roll, generate a contact pressure always bigger than the repulsion force of surface potentially unplane. In this way in case of high dispersion currents it's possible to reduced the voltaic arc. If due to the power insertion during short circuit might be generated the melting, the copper rolls will rotate, protecting in this way the contact surface.

More points of contacts means better breaking

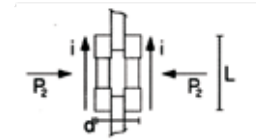
Two sets of copper rolls silver plated preloaded by spring can be connected in parallel way or separately. If it is necessary high breaking, for example AC 23, are available the types TS and TF. In this case the sets of contacts can be mounted in series to obtain the distribution of the current on four contact points per each phase. If it is sufficient lower breaking, for example AC 21, are available the TP types. In this case the sets of contacts are mounted in parallel to obtain high nominal current. Types TE have 6 poles and are suitable for AC 21.



Considering the partition of the current in "n" tracks per each group of contacts (n copper rolls), all the electro-dynamic repulsion forces will be reduced of "n" factor.

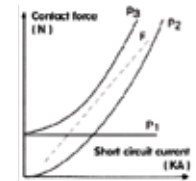


ELECTRODYNAMIC FORCES



L: rolls length
d: center distance of the rolls

Contact force related to the short circuit current
Contact force (N)



L: rolls length
a: center distance of the rolls
C: constant, related to the area of the contact

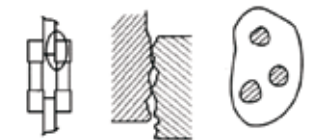
$$P_{21} = 0,1 \cdot \frac{i^2 \cdot L}{a} \cdot C$$

$$F = n \cdot C \cdot \left(\frac{i}{n} \right)^2 = C \cdot i^2$$

$$P_{21} = (P_1 + P_2) > F$$

Contact pressure (spring)

REPULSION FORCE



F: repulsion force
I: short circuit (peak value)
C: constant



Low voltage products



ONE-CASE CHANGE-OVER SWITCH-DISCONNECTORS AND DEVIATORS

CKS & DKS 125A ÷ I600A AC 33A 500 V AC 32A 690 V

ONE-CASE MOTOR DRIVEN CHANGE-OVER SWITCH-DISCONNECTORS AND DEVIATORS WITH INTEGRAL MOTOR-REDUCTION GEAR

CKM & DKM 125A ÷ I600A AC 33A 500 V AC 32A 690 V

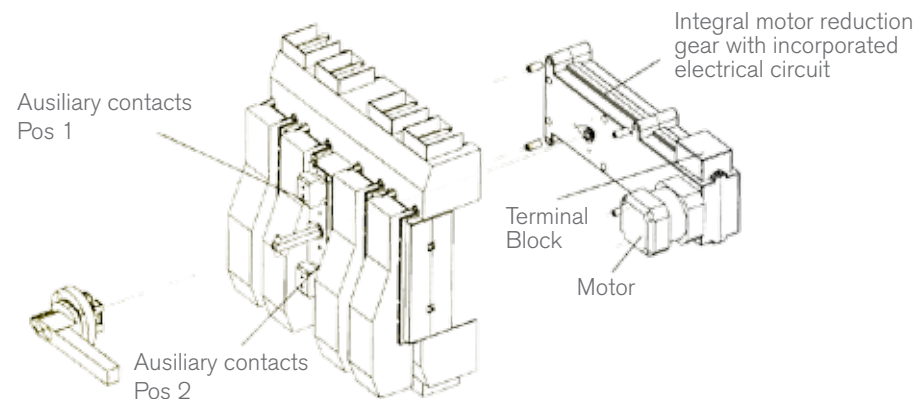
Auxiliary Supply 220V - 240V alternating current 50/60 Hz - 24 V direct current - different tension on request



[Electronic card on request](#)

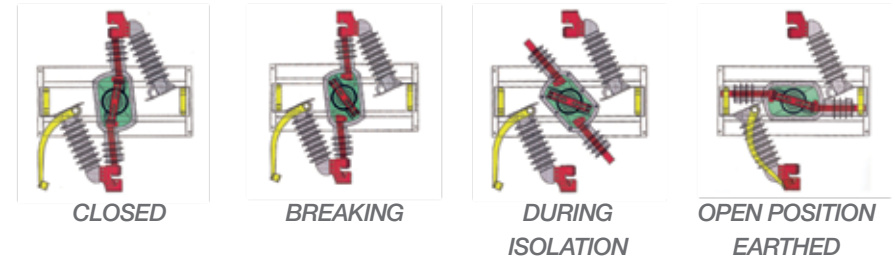
- EN 60947-3
- NFC 63130
- VDE 0660
- BS 5419
- CEI EN 50081-1
- CEI EN 50081-2
- CEI 110-24

- A** Terminal Block
- B** Signalling LEDs
- C** Manual-automatic key selector



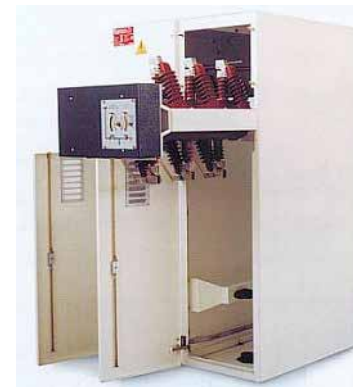
INTEGRAL: the motor reduction gear for motor driven operation can be installed in a second time by the user as other accessories (plug-in system).

Medium voltage products



- ❑ SF6 Switch-Disconnectors up to 36 kV **TH** series
- ❑ Air Switch-Disconnectors up to 12kV and 17kV **TH** series

- ❑ Air insulated and SF6 breaking Switch-Disconnectors up to 24kV **TGA** series
- ❑ SF6 insulated pole mounted Switch-Disconnectors up to 36 kV **THO** type



Standard and features: IEC 62271-105 IEC 62271-102 from 200 A up to 1250 A.

Medium voltage products

- ❑ SF6 Insulated Metal-Clad Ring Main Unit for distribution networks up to 36 kV
TPM type
- ❑ Medium Voltage Switchboard up to 24 kV **AIR 12 - AIR 17 - AIR 24**
Standard and features: IEC 62271-200 up to 1250 A.
- ❑ Vacuum Circuit Breaker & Air Isolator & Earthing Switch up to 24 kV-1250 A
TGI 3 in 1
Standard and features: IEC 62271-100 up to 1250 A.



TPM



TGI 3 in 1



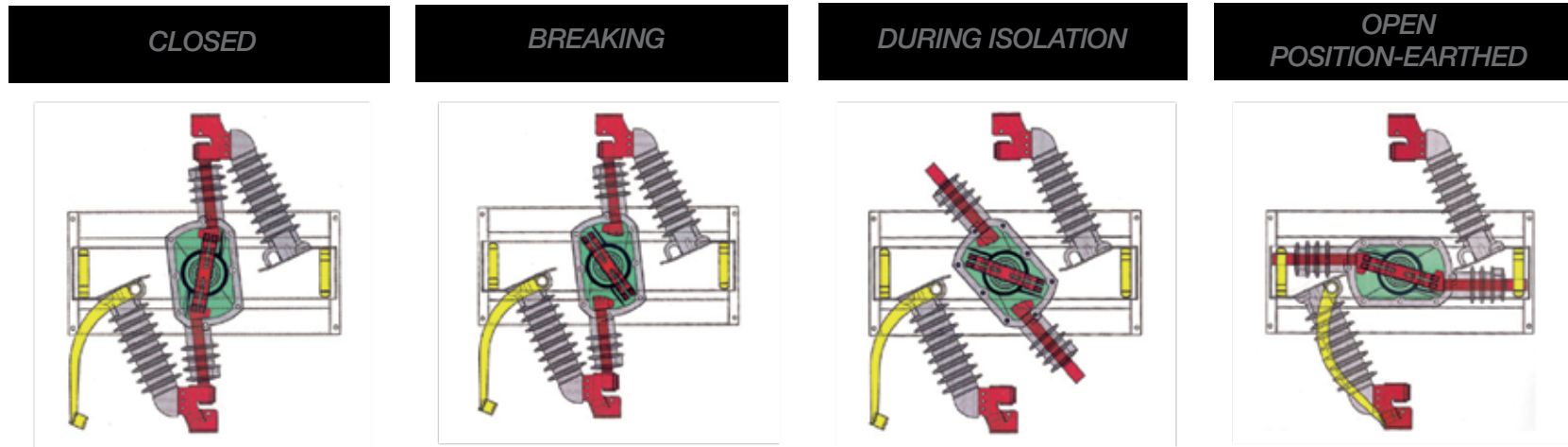
TPM



AIR 12 - AIR 17

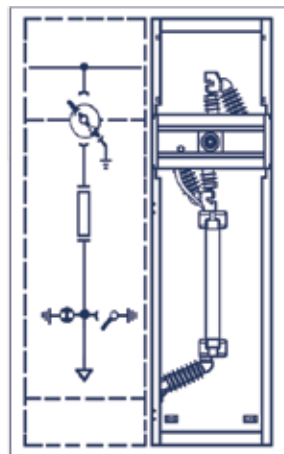
Customerized versions available to be used in mine- duty, railways stations, tunnels, power stations, high-speed trains, low temperatures applications, railways high-speed cabinet.

M.V. - TGA Switch/AIR 24 Switchboard



Logical evolution of load-break switch through a compact and fully safe design

TGA 24KV 630A TYPE ROTARY SWITCH-DISCONNECTOR



- a) metal segregation between the bus bars and equipment cubicles
- b) isolation in air
- c) breaking in SF6 GAS (small volume only for break) at relative pressure of 0 BAR= 100 Kpa
- d) isolation in air visible from all sides
- e) panel dimension: 480 x 900 x 1800 (h)
- f) closing in air

M.V. - TGA Switch/AIR 24 Switchboard

CHARACTERISTICS OF OTHER PRODUCTS PRESENT ON THE MARKET



- a) bus-bars compartment and users compartment segregation by metal partitions
- b) isolation in air
- c) disconnection in air
- d) isolation in air visible on all parts
- e) compartment size 700 x 1150 x 2250
- f) making in air



- a) bus-bars compartment and users compartment insulating segregation
- b) isolation in SF6
- c) disconnection in SF6 (big volume and quantity for isolation) at pressure 0,5 BAR= 150 Kpa
- d) visible isolation only through inspection windows thanks to the clearness of SF6
- e) compartment size 500 x 900 x 1800
- f) making in SF6

CONTACTPLASMA PRODUCT: AIR 24kV



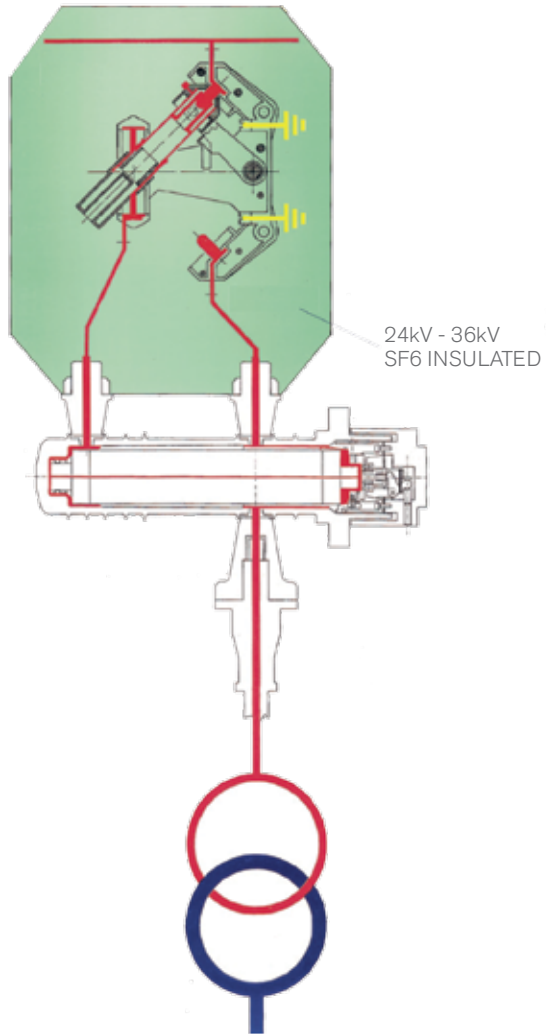
- a) bus-bars compartment and users compartment segregation by metal partitions
- b) isolation in air
- c) breaking in SF6 (reduced quantity) at pressure 0 BAR = 100 Kpa
- d) isolation in air visible on all parts
- e) compartment size 480 x 900 x 1800
- f) making in air



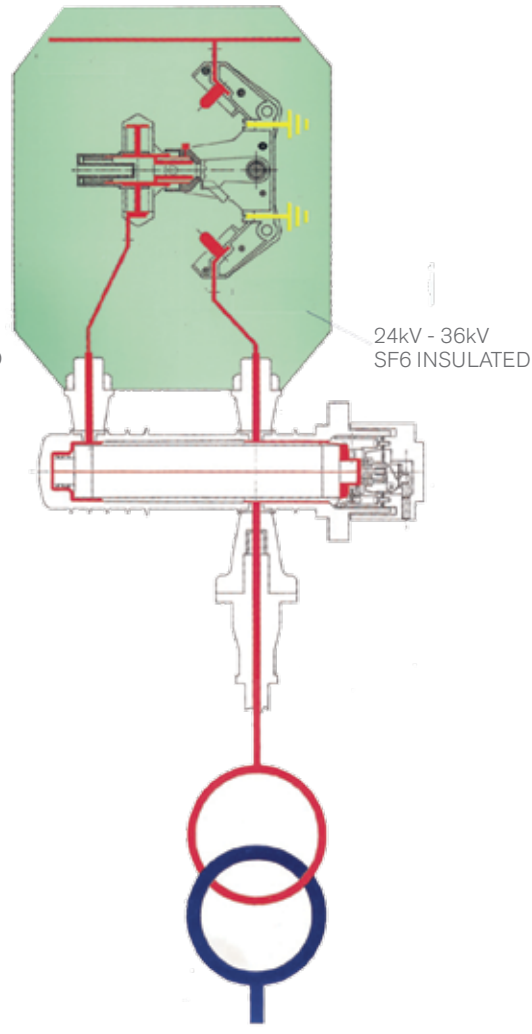
M.V. - TH Switch/TPM RMU



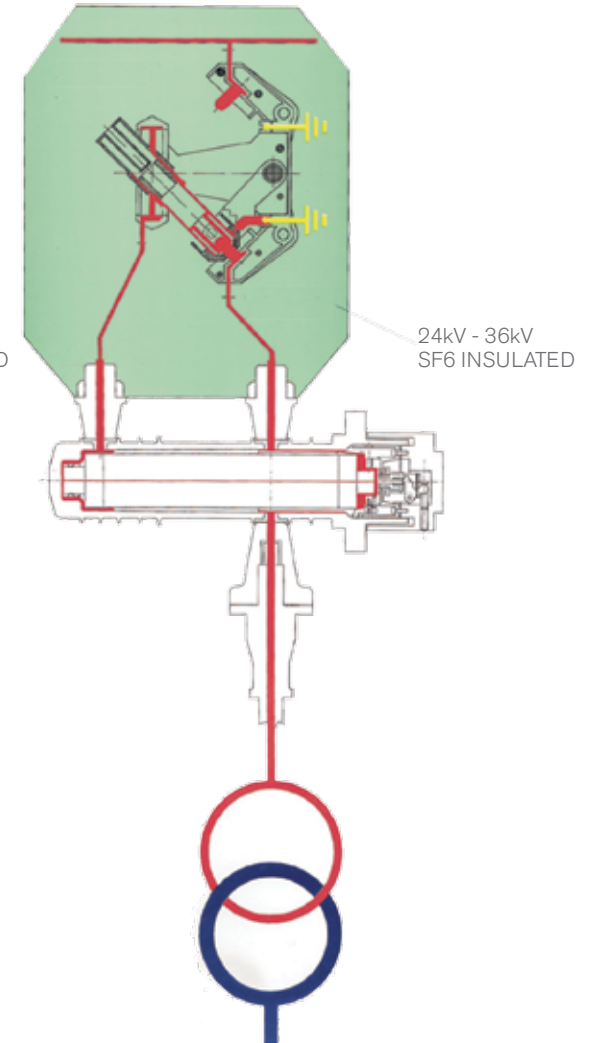
CLOSED POSITION



OPEN POSITION



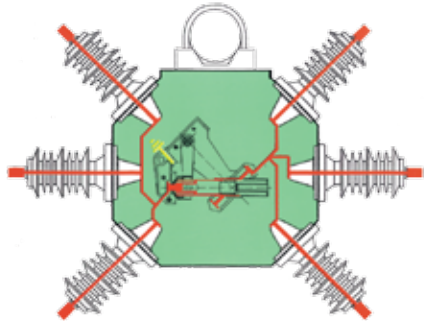
OPEN POSITION-EARTHED



M.V. - THO Pole Mounted Switch

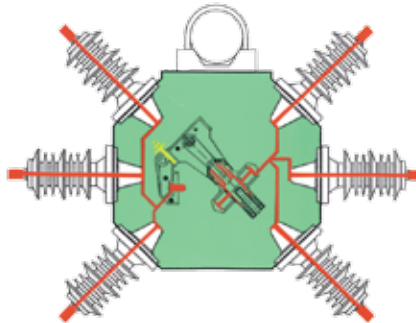


CLOSED POSITION



24kV - 36kV
SF6 INSULATED

OPEN POSITION



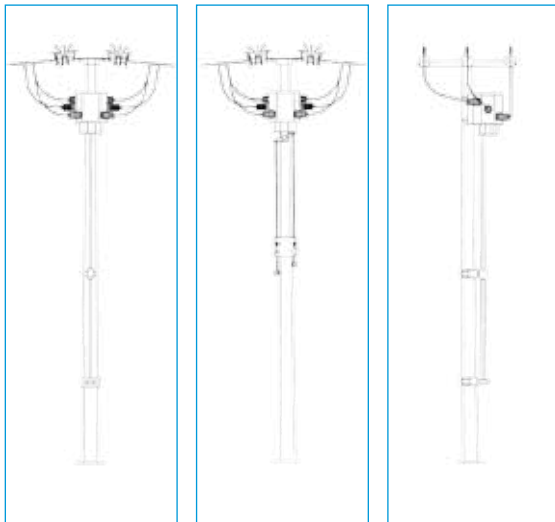
24kV - 36kV
SF6 INSULATED

SF6 insulated, pole mounted switch-disconnector

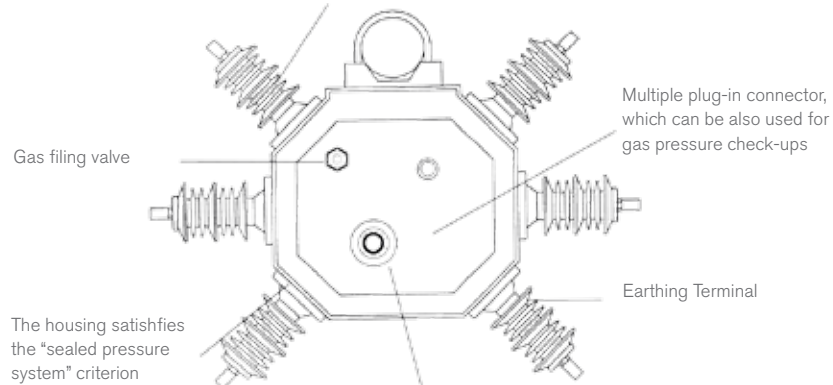


THO/T TYPE SWITCH

SF6 gas insulated, pole mounted switch-disconnector for demanding environments



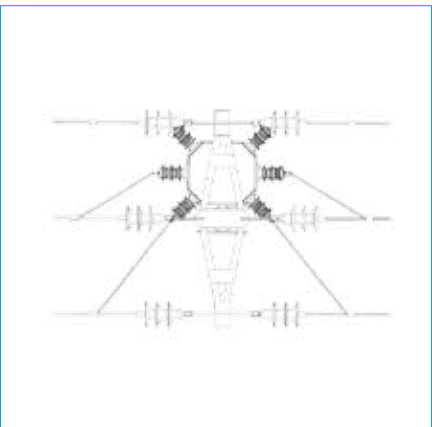
The detachable insulators are of silicone rubber. Silicone is flexible, water resistant and unbreakable material with excellent electrical properties



The housing satisfies the "sealed pressure system" criterion according to IEC 60265-1 this means that no refilling is required during the expected operating

The reliable position indicator is clear and easy to see from ground level even at night

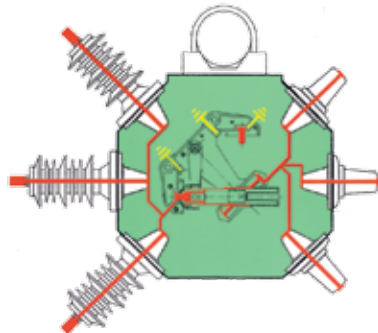
I **O**
CLOSED OPEN



M.V. - THO/T Pole Mounted Switch

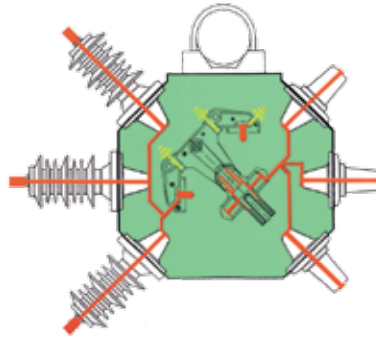


CLOSED POSITION



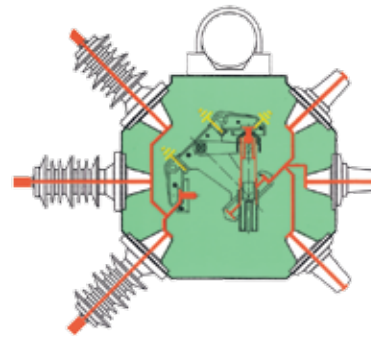
24kV - 36kV
SF6 INSULATED

OPEN POSITION



24kV - 36kV
SF6 INSULATED

OPEN POSITION-EARTHED



24kV - 36kV
SF6 INSULATED

SF6 insulated, pole mounted switch-disconnector



THO/T TYPE SWITCH
SF6 gas insulated, pole mounted switch-disconnector for demanding environments



Series 400/630 external cone bushings

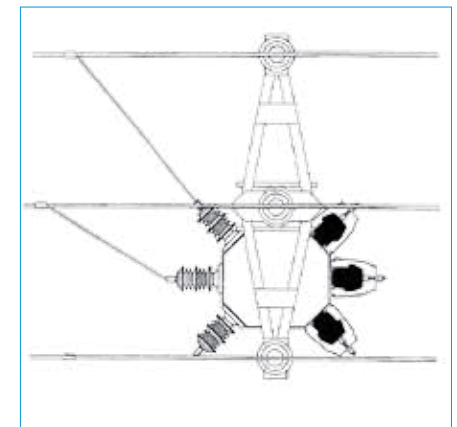
The detachable insulators are of silicone rubber. Silicone is flexible, water resistant and unbreakable material with excellent electrical properties

Gas filling valve

The housing satisfies the "sealed pressure system" criterion according to IEC 60265-1 this means that no refilling is required during the expected operating life

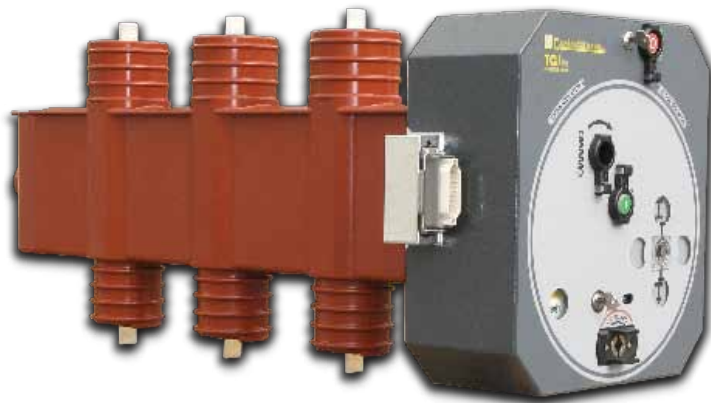
The reliable position indicator is clear and easy to see from ground level even at night

Multiple plug-in connector which can be also used for gas pressure check-ups



3 IN 1

VACUUM CIRCUIT-BREAKER – AIR ISOLATOR EARTHING SWITCH



12 - 17,5 - 24 kV
630 - 800 - 1250 A
12,5 - 16 - 20 - 25 kA

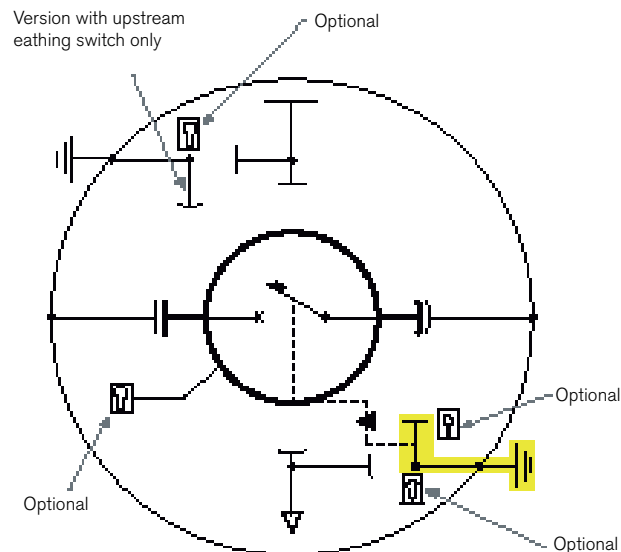
Decades of experience Contactplasma srl in the field electromechanical devices for the breaking, isolation and power distribution, led the realization of a device at high performance: TGI.

TGI has vacuum breaking and visible isolation in air, these two features are irreplaceable qualities of this unit and they complete its points of strength. The breaking in vacuum is itself free of any type of maintenance, having the tendency to improve with increasing of load operations. The isolation in air allows to forget all the problems related to the use of gas; the air does not present the need to be contained in a sealed tank, self-resets in case of discharge, it is ecological and does not submit all environmental problems that may incur with the use and disposal of gas.

TGI embodies the logical evolution in the modern design of power distribution satisfying three different electrical installations requirements (breaking/interruption, isolation and earthing). TGI allows the execution of all those operations normally required in the exercise of secondary electrical distribution systems.

Purchasing TGI you can condensate, in only 50 cm width, all the functions of circuit-breaker, air rotary line isolator and earthing switch. The particular structure of the apparatus also allows both simple assembly of the constituent elements, both the easy replacement and modification.

PATENTED ONE LINE DIAGRAM



M.T. - TGI



3 IN 1

VACUUM CIRCUIT-BREAKER – AIR ISOLATOR EARTHING SWITCH

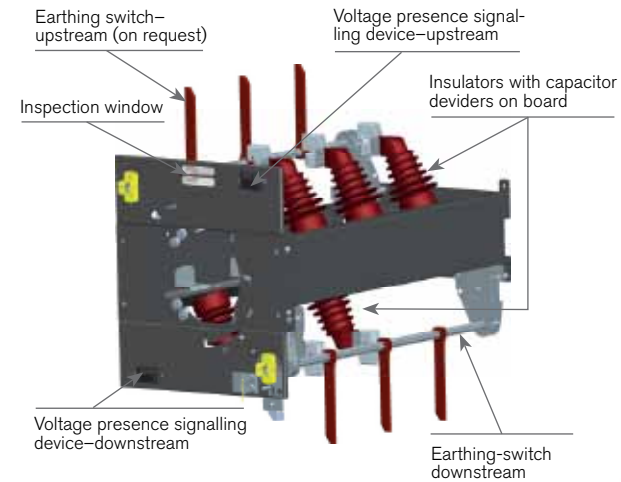
TGI is composed by a mobile removable part and a fixed part. The rotating body complete with lateral operating mechanism constitutes the mobile part, while the

frame with the six insulators (with the possibility of capacitor deviders on board) and the earthing switch are the elements of the fixed part.

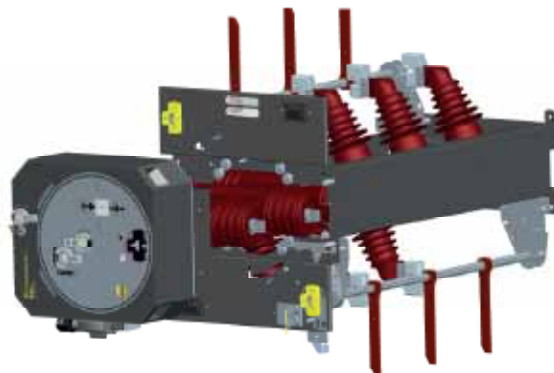
ROTATING BODY – MOBILE PART - VACUUM CIRCUIT-BREAKER, AIR ISOLATOR AND OPERATING MECHANISM



FRAME – FIX PART FOR THE ROTATING BODY FITTING

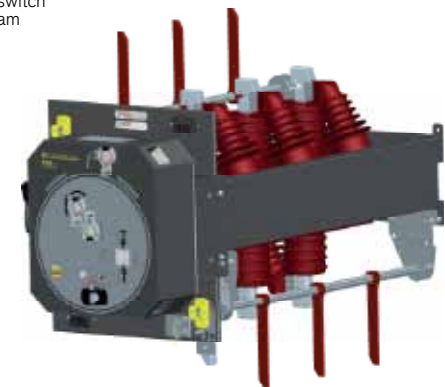


FITTING/REMOVAL ROTATING BODY – FRAME



TGI - 3 IN 1 ONE DEVICE FOR THREE FUNCTIONS:

- Vacuum circuit-breaker
- Air rotary isolator
- Earthing switch

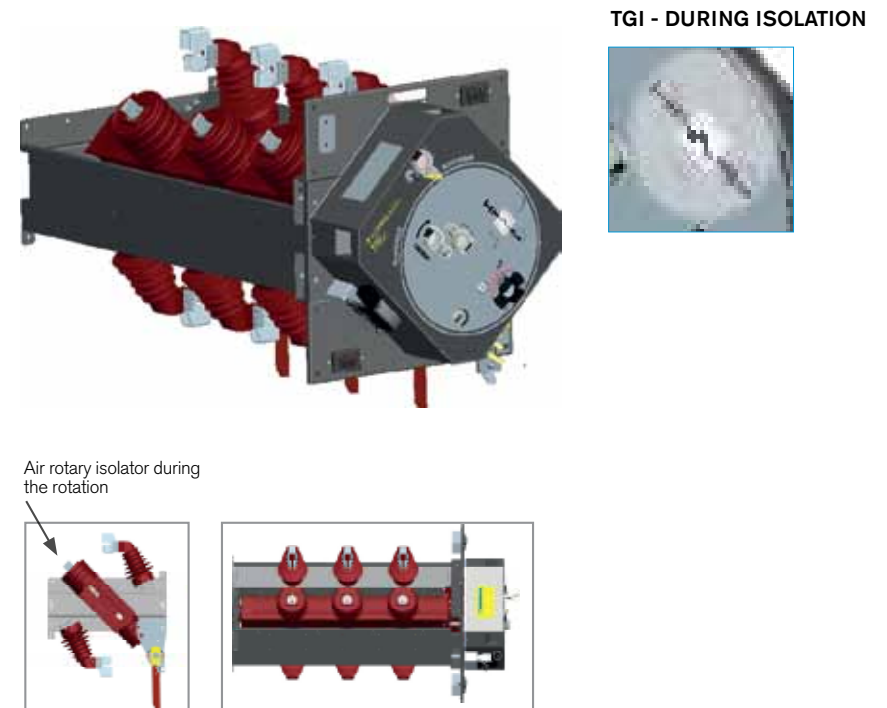
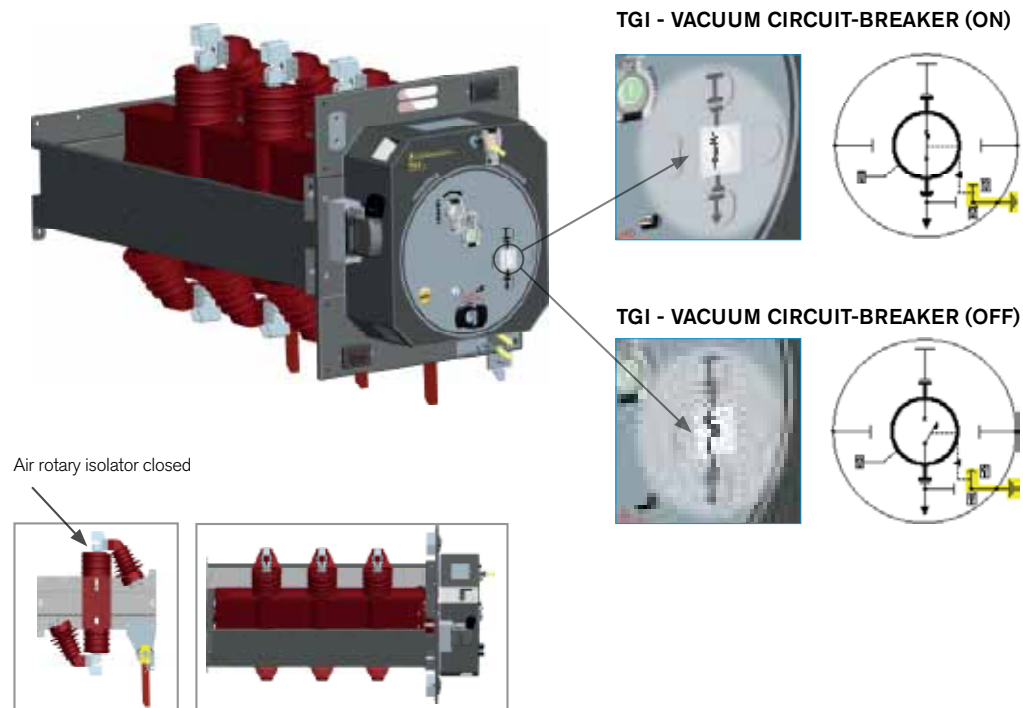


M.T. - TGI



SIMPLE AND VERSATILE

The three functions, vacuum circuit-breaker, air isolator, and earthing-switch, are performed by a single device, composed of a rotating body plus a frame, which includes all interlocks required to comply all the Standards for safety and the correct sequence of operations.

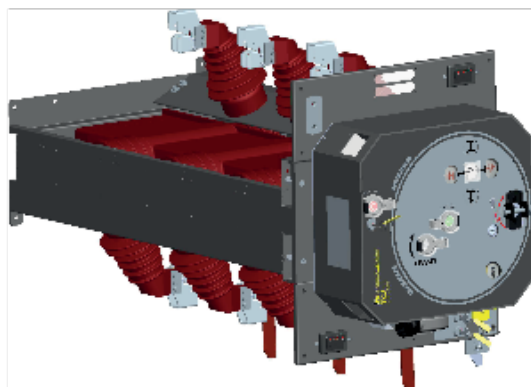


M.T. - TGI

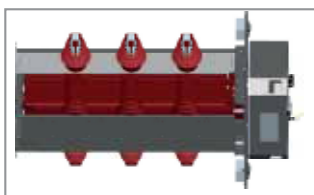
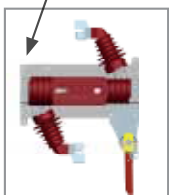


SIMPLE AND VERSATILE

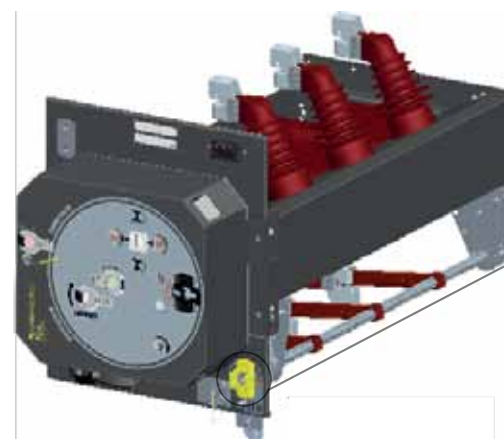
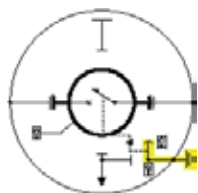
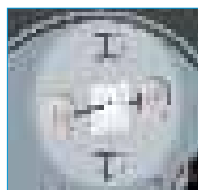
The three functions, vacuum circuit-breaker, air isolator, and earthing-switch, are performed by a single device, composed of a rotating body plus a frame, which includes all interlocks required to comply all the Standards for safety and the correct sequence of operations.



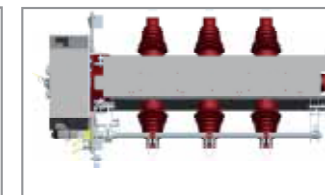
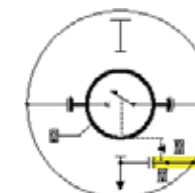
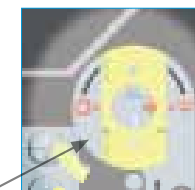
Air rotary isolator in open position (isolated)



TGI - ISOLATED



TGI - EARTHED



Earthing-switch closed in earth position

M.T. - TGI



VISIBLE ISOLATION REMOVAL FACILITY



The isolation must be clearly indicated and possibly visible. TGI has both these functionalities, allowing to the operators direct visual inspection of the compartments in tension. Being isolated in air allows also a visual check of the state of isolation.

Mounted on a frame that allows full rotation of the entire device, TGI is removable during maintenance and installation. This easy operation allows to facilitate the assembly stages and then installation of the switchboard also in situation of reduced space.

Mounted inside switchboard of AIR 24 series, the unit TGI shows its positive features; this type of panels allows total and simple accessibility ensuring easy connection of cables and fluent installation.

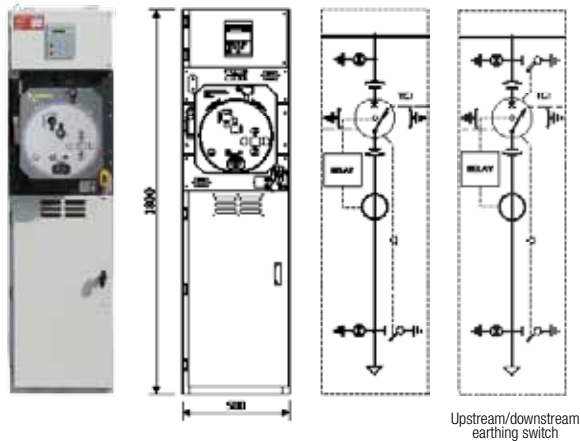
M.T. - TGI



SWITCHBOARDS

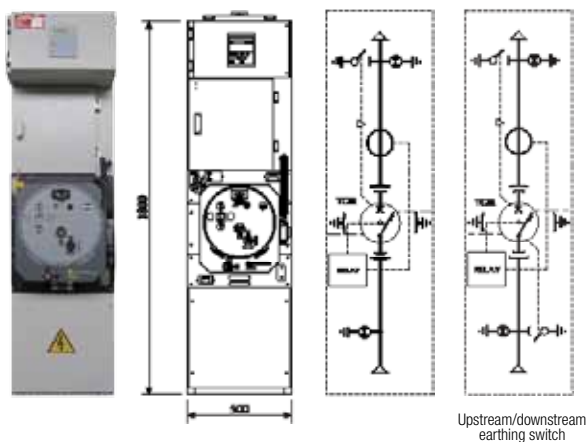
MAIN PANEL TYPES

IGT – equipped with TGI



Upstream/downstream earthing switch

IGTR – equipped with TGIR overturned



Upstream/downstream earthing switch

The modular panels of AIR 24 series equipped with TGI (IGT type panel) and TGIR overturned version (IGTR type panel) allow to condense into just 50 cm all the functions of "traditional" Medium Voltage Panel composed by line isolator, circuit-breaker and earthing switch.

Modular and compatible with all other panels of AIR 24 series, allow to realize various combinations to meet all the needs of modern Medium Voltage systems.



Outdoor version

Suitable for installation inside booths, kiosks, containers and prefabricated structure, or on request available in "outdoor" versions which don't requires any further protection to withstand to the weather conditions.

Availability from 2018

L.V.

One case manual and motor-driven change-over switches and deviators
enlargement of the series up to 2000 A 3-4-6-8 poles



New series of change-over switches, deviators and by-pass
from 32 A up to 125 A 3-4-6-8 poles

M.V.

Vacuum circuit-breaker, air isolator and earthing switch

TGI 3 in 1 36 kV



M.V. switchboard R.M.U. with vacuum circuit-breaker

TPM/I



Pole mounted outdoor Auto-recloser

THO/RC



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Thank you for your attention