

Electromechanical and Electronic Components



APPLICATIONS

High-Speed Trains | Light Rail Vehicles | Locomotives |
Metros | Passenger Coaches | Regional and Commuter Trains |
Special Vehicles



Microelettrica Scientifica

STATE-OF-THE-ART ELECTROMECHANICAL AND ELECTRONIC COMPONENTS FOR RAIL APPLICATIONS



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GREATER SPEED, MORE CAPACITY, OVER LONGER OPERATIONAL PERIODS: THE FRONTIERS OF RAIL AND URBAN TRANSPORTATION SYSTEMS are changing continuously and Microelettrica Scientifica is evolving with them through continuous innovation in its products and technologies.

TRACTION INNOVATION

For almost 60 years Microelettrica Scientifica products have accompanied and often anticipated the evolution of rail transportation all over the world. Today, Microelettrica Scientifica contactors, disconnectors, power resistors, DC high-speed circuit breakers, high-voltage metering transducers and now also COMET fans have become the standard of reference for a growing number of leading rail vehicle customers all over the world.

CONTINUOUS EVOLUTION

Our processes, from product conception to product validation, from choice of materials to final routine tests, are accurately controlled to guarantee total performance and safety. Customer satisfaction is important to us and we are committed to offering innovative solutions that improve the cost/performance/features balance of our products.

ELECTROMECHANICAL AND ELECTRONIC COMPONENTS

RAIL
VEHICLE
SYSTEMS



WE WORK TOGETHER WITH OUR CUSTOMERS

It is our philosophy to manage the evolution of our products in full coordination and collaboration with our customers. From the first contact and throughout the development process a close working relationship with our customer is important to us. In this way we can help in selecting and defining the product which best fits the requirements of the individual customer. Most product developments start from a wide range of consolidated products and technologies. In case of special requirements we are always eager to develop custom-specified products and both in research and development and manufacturing capabilities our company is well structured to meet the requirements of the most demanding projects.

MADE IN MICROELETTRICA SCIENTIFICA

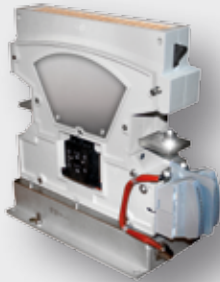
Always aiming for the best results, Microelettrica Scientifica develops and manufactures its entire range at its facility based close to Milan, Italy. We also run operations in United States, South Africa, China, Brasil, France and Turkey. Customers have access to immediate local assistance and the possibility of localization of Microelettrica Scientifica products. Our customers know they can always count on quality, excellence and accuracy of Microelettrica Scientifica products and services.

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PRODUCTS

- Contactors
- Disconnectors
- DC High Speed Circuit Breakers
- Resistors
- High Voltage Transducers
- Fans
- Protection Relays

POWER IS NOTHING WITHOUT CONTROL



SWITCHES ARE REMOTELY CONTROLLED DEVICES USED TO OPEN OR CLOSE AN ELECTRIC CIRCUIT OR CHANGE ITS CONFIGURATION. They are divided into contactors and disconnectors.

Contactors: are able to open and close under load conditions. Today they are used to connect and disconnect high power traction converters, auxiliary converters, auxiliary circuits (heating, climate control, compression, lighting, magnetic brakes).

Disconnectors: are mainly used in multi-system locomotives to change the configuration of the traction circuit when the catenary voltage changes. The devices operate at no load and are also used to disconnect a failed device if necessary. Our products are characterized by their high customization potential. This makes it possible to address the customer's individual requirements.

CUSTOMER BENEFITS

- High performance with reduced weight and size
- Wide choice of ratings to fit the most diverse applications
- Highly configurable for improved system integration

CONTACTORS	
LTHS	Flexible Line, up to 2000V and 1500A / pole.
LTC	Compact Line, up to 2000V and 1000A / pole.
LTHH/LTE/LTP	Higher Voltage Line, up to 4000V and 1300A / pole.
DISCONNECTORS	
LTHM/P-U/D	Flexible Line, up to 4000V, 800 or 1500 A /pole.
LTMP	Modular Line, up to 4000V, 1000 or 2000 A /pole.
INTEGRATED FUNCTIONAL UNITS	
IFU	Customized Integrated Functional Unit products. Up to 4000V and 6000A per pole.
LPRC	New modular integrated system for line and precharge function. Up to 2000V and 1000A.

ELECTROMECHANICAL AND ELECTRONIC COMPONENTS

HIGH SPEED CIRCUIT BREAKERS (HSCBS)

Our HSCBs are designed using the latest 3D CAD technologies and are suitable for every rail application. Whenever the protection of the system is required, our HSCB works as a close partner with the propulsion designers. The HSCB protects the circuit from short circuits and overcurrent faults. It reacts to the increase of the current in a very short time (5ms) and this is the reason why it is denominated as a high speed circuit breaker. Every HSCB is designed according to the EN60077.

CUSTOMER BENEFITS

- High performance
- Possibility of co-design with customer
- High flexibility and customization
- Reduced maintenance

IR6040SV	1,5/3kV (dual voltage vers. aval.), 4000A lth, coi l/ permanent magnet holding, uni and bi-directional trip
IR6025SV	1,5/3kV (dual voltage vers. aval.), 2500A lth, coil / permanent magnet holding, uni and bi-directional trip
IR2000SV	750V/1,5kV (dual voltage vers. aval.), 3000A lth, coil / permanent magnet holding, uni and bi-directional trip
IR6021SV	1,5/3kV (dual voltage vers. aval.), 2100A lth, coil / permanent magnet holding, uni and bi-directional trip
IRA	3000V DC, 3000A lth, holding coil, uni directional trip

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RESISTORS

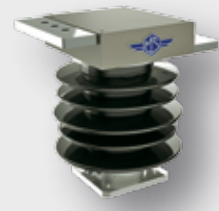
Our resistors are made mostly of alloy and ceramic materials and as a result, provide total compliance with the most severe standards of flammability and insulation levels. Each brake resistor is designed, tested and validated to provide a 100 % customized solution for each project / vehicle.

CUSTOMER BENEFITS

- Design, type-testing and validation are done in close co-operation with our customers
- Automated plant production complies with ISO 9000 Quality Standards requirements and guarantees active element quality
- Economical and suitable for life cycle of over 25 years

Breaking	Convection / forced cooled, roof, undercar or in-vehicle
Continuous	Filter, damping, etc, multifunctional units possible
Impulsive	Crowbar, charging, discharging, also in aluminum-case
Compact Resistors	Compact and modern design, low inductance, can be subjected to pulse loads
Frame Resistors	Flat modular design, high energy absorption capacity, low-inductance version, can be subjected to pulse loads

PRECISION MEASUREMENT



HV-Meters are devices installed on the train to detect, measure and convert line voltage, ranging from 600 V DC to 25,000 V AC, into output signals that reproduce it exactly at low voltage level. The output signals are used by the vehicle logic, the propulsion control system, the voltage indicator on the control desk unit or other electronic measurement.

CUSTOMER BENEFITS

- Extensive solutions to train logic interface
- High level of electronic safety
- High level of integration
- Low weight and size
- High accuracy
- Smoke emission free
- Maintenance-free

Metering	
Eletrafo	Compact solution, measurement of catenary voltage
Integrameter	Integrated solution for catenary voltage and absorbed current measurement
Ecometer DC Ecometer AC Ecometer AC/DC	Most recent evolution of our innovative on-board metering line. Compact and easy-to-mount solutions for the on-board high accuracy metering and detection of voltage, current and active / reactive energy according to EN 50463
City Metering	Ultra-compact energy metering solution with data transmission for LRV / Trams
Switchmeter	AC Vacuum Circuit Breaker for rolling stock applications with integrated voltage, current and energy measuring functions
Thepsys	Thermal protection system for braking resistors provided with digital (threshold alarm / diagnostic) and analogic (4-20 mA proportional to temperature) outputs

ELECTROMECHANICAL AND ELECTRONIC COMPONENTS



FANS AND BLOWERS

QUALITY AND KNOW HOW

Energy-saving and low-noise design concepts have always been applied to all our products, from large (12 meters) impellers for power plants, to small centrifugal units for power converters and traction motors. The design of our products is supported by exhaustive testing, performed over many years in both our test facilities and at customers' sites. COMET products and components undergo extensive verifications by both calculation (F.E.M. and mechanical analysis) and test (chemical analysis, fatigue tests), before they are brought to market, to guarantee the maximum degree of reliability. All materials used are certified and traceable, especially for ATEX units. The entire production cycle of the most critical components, including the final test on all products, is carried out at our facility, with a full check of quality and production times.

Fans	
AF/LA Series	Medium performance direct driven axial fan series
AFH Series	High-performance axial cooling fan series for traction motors, brake resistors and other applications
Centrifugal fan units	Higher reliability centrifugal fans for critical applications such as traction motors, transformers, inverters / converters
OR/COR/ORV Series	Compact high-performance open-running centrifugal fan series (plug-fans) for traction motors, transformers, inverters/converters
CNX/MXF Series	High pressure levels, compact and easy to install centraxial and mixed flow fans for traction motors, brake resistors

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 **ZELISKO**

 **SYDAC**

 **RAILSERVICE**
We go on track

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