



**ETM TIRONI**  
power transformers

COMPANY PROFILE ENG

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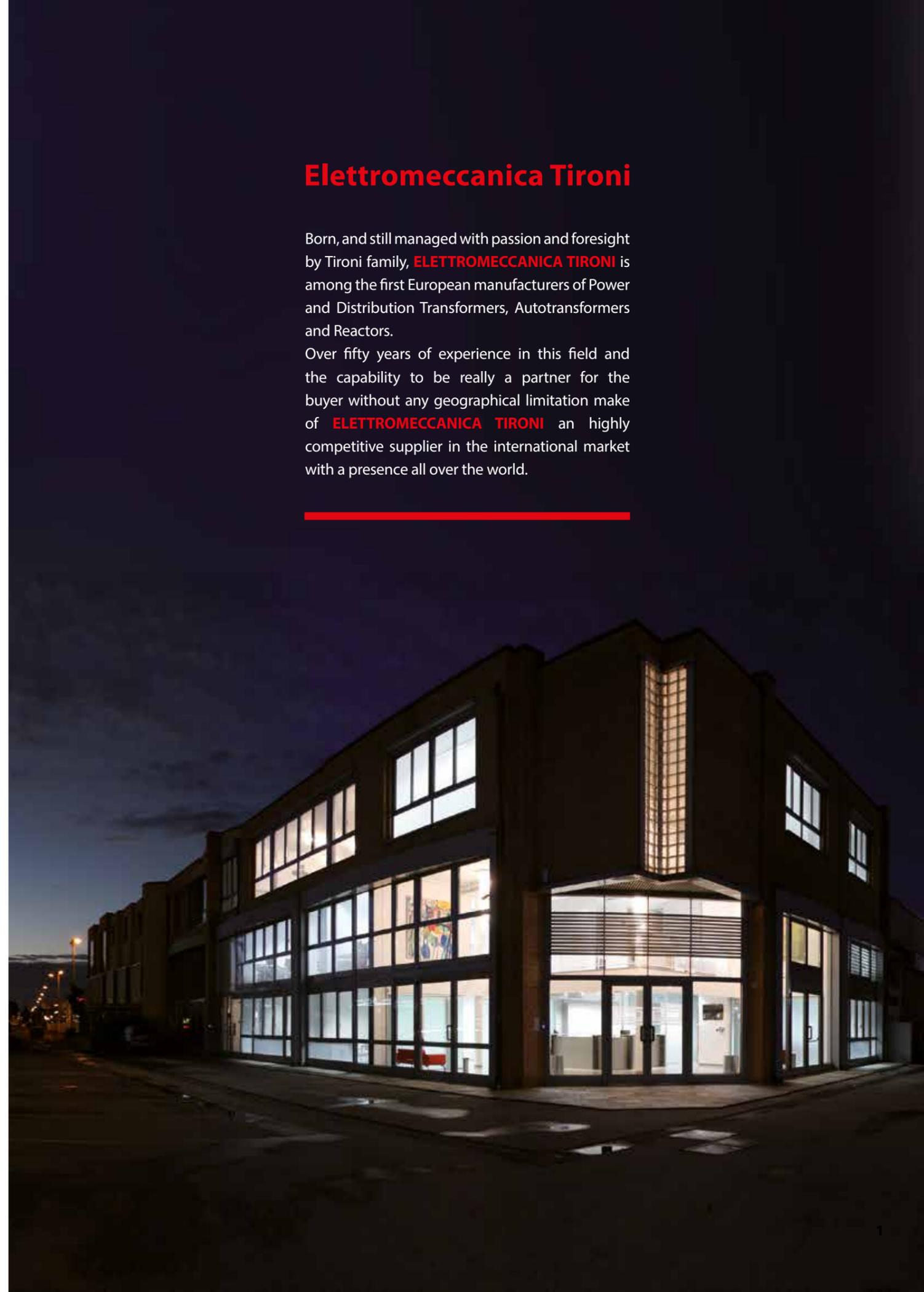


## Elettromeccanica Tironi

Born, and still managed with passion and foresight by Tironi family, **ELETTROMECCANICA TIRONI** is among the first European manufacturers of Power and Distribution Transformers, Autotransformers and Reactors.

Over fifty years of experience in this field and the capability to be really a partner for the buyer without any geographical limitation make of **ELETTROMECCANICA TIRONI** an highly competitive supplier in the international market with a presence all over the world.

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## History

Officially founded in 1960 by Carmelo and Luciano Tironi, **ELETTROMECCANICA TIRONI**'s experience in electromechanical sector was born in the 30s, when the two founders, respectively grandfather and father of the current President, were already responsible at a high level in other important companies of the same sector.

Only the sudden and early death of both the founders temporarily delayed the growth that the company could have achieved thanks to its healthy and technologically advanced structure.

For this reason until the 1970's the production has been generally focused on a niche market: The Special Transformer for Industry.

In 1972 when the current President, Maurizio Tironi joined the Company, he revitalized it and by 1974

had commenced an important series of technological and property investments. This was necessary to put in place adequate structures and technologies to compete with those of our more advanced competitors and, above all, from the will to be promoter of market evolution, both in quality and quantity terms.

The ability to offer these solutions to the world markets and the benefits of new technologies adopted, has led to years of constant growth of staff and turnover.

From these results, the company has expanded, from the 80's its presence on international markets, keeping faith with the principles of quality and high technological content has always characterized Tironi production.

With the arrival of the Millennium and the entry into the company of the fourth Tironi generation, a series

A success born in 1960 and increased with the passion of four generations



of actions were taken to give the new management the facility to further develop the business and achieve more ambitious goals.

Since 2010 important investments have been made to double the production area, inaugurate the third Testing Room for very high voltage transformers and provide the Company in general with the state-of-the-art technologies such as a white room for the winding, a Vapour Phase treatment plant and hovercraft flatbeds for the handling of large and very large transformers.





## Mission

**ELETTROMECCANICA TIRONI's** Mission is to produce power transformers and reactors of great quality and reliability, designed to respond to all different necessities of power and voltage of our customers worldwide.

Our goal has always been to be for our customers not only a simple supplier but also a real technological partner. A partner reliable and able to assure all the help and the assistance necessary to leave free the customers from any kind of preoccupation related to transformers installed in their substation.

Starting from the study of technical specification during the offer, finishing at the end of the life cycle of the trafo, **ELETTROMECCANICA TIRONI** is the partner to trust to transform electric energy in transmission and distribution, in small and large plant.

**ELETTROMECCANICA TIRONI's** transformers are always designed and manufactured in order to minimize the ambient impact and respecting highest quality standards. To achieve this, our company never ceases to invest with dedication, resources and time in research and in the continuous development of innovative solutions.

Not just a supplier,  
but a true  
technological  
partner.



Partner for electric energy  
transformation  
with customized  
and low environment  
impact solutions

## Certifications



**ELETTROMECCANICA TIRONI** Quality System complies with the following standards:  
**UNI EN ISO 9001:2015 | UNI EN ISO 14001:2015 | BS OHSAS 18001:2007 | certified by DNV GL.**



Quality  
and Security  
are guaranteed  
and certified



## Design

**ELETTROMECCANICA TIRONI** normally produces transformers and auto-transformers on order, according to its own technology, but according also to the site technical specifications established by the customer.

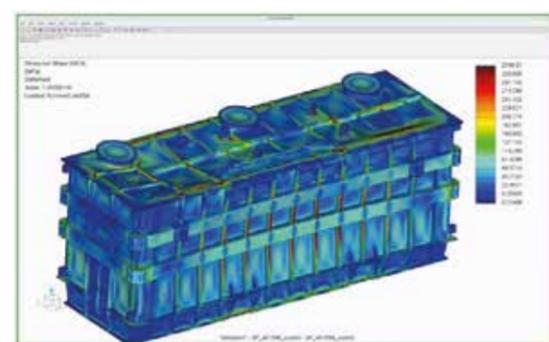
In the event of special needs, our design can be promptly adjusted to meet the customer needs and in accordance with the Technical Standards and Regulations of the country of destination, since the beginning of the production process.

To ensure this total flexibility, the company has a highly qualified technical structure and properly numerically sized, in order to be able to simultaneously work on a large number of projects, even very different from each other. In particular, **ELETTROMECCANICA TIRONI**'s Technical Department is composed by: an Electrical Design Dept., a Mechanical Design Dept., an Auxiliary Scheme Design Dept. and a R&D Dept.

Electrical Design is developed in detail thanks to a software – owned by ETM – highly sophisticated that allow a real-time design of all the main transformer's characteristics. This software is continuously developed and validated by the Calculation Dept. and contains 60 years of technological know-how. Of course, each new design realized with this software is however verified compared to other final elements' software.

The mechanical design develops according to the electrical design thanks to the use of 3D modelling programmes. The auxiliary circuit's design is carried-out by a special 2D software application based to Autocad.

## Standard Technology and customized manufacture



## Products

**ELETTROMECCANICA TIRONI** has designed and manufactured electrical transformers in oil for 60 years and now covers the following range of products:

- AUTO-TRANSFORMERS AND TRANSFORMERS FOR TRANSMISSION AND DISTRIBUTION, WITH POWER UP TO 500 MVA AND PRIMARY VOLTAGE UP TO 420 KV
- DISTRIBUTION TRANSFORMERS FROM 50 TO 2500 KVA
- FURNACE TRANSFORMERS FOR STEEL AND COPPER METALLURGICAL INDUSTRIES
- RECTIFIER TRANSFORMERS FOR AC / CC CONVERTING SYSTEMS
- SPECIAL TRANSFORMERS
- REACTORS
- PETERSEN COILS

The monthly production capacity consists of approx. 6 to 9 power transformers and autotransformers and approx. 100 ÷ 150 distribution transformers, that is about 550 MVA total monthly (divided into 470 MVA of Power and 80 MVA of Distribution) for a total of 6,600 MVA annually.

Despite the substantial correctness of the data, the production capacity of **ELETTROMECCANICA TIRONI** is affected by many factors such as size, weight and type of cooling system of the transformers produced. This means that with sufficient notification of an order, the company can easily satisfy a much higher diversity of equipment.

For every order **ELETTROMECCANICA TIRONI** sends a personalized activities programme to which the customer can refer for a schedule of any activities and/or repairs. This is updated and sent at least on a monthly basis to allow a continuous and proper planning of all activities of installation.

## A constantly growing production capacity



## Winding

Winding is realized in different production area, depending on low voltage, high voltage or very-high voltage transformers.

These last are realized in a “white room” completely segregated from the rest of production Dept.

High voltage and Very-high voltage departments are both equipped with modern winding machines having vertical or horizontal axe. All winding machines are equipped with proper instruments to assure a state-of-the-art winding realization.

The winding are typically realized with copper, enamelled and not, and isolated with pure cellulose made paper and thermally upgraded. Each winding is then verified and singularly treated, before the phase assembling.



“White Room”  
for high and very  
high voltage  
windings



A products line always  
in development

## Assembling

Once windings are completed and phases are treated, it starts the real active part assembling, performed inside the Assembling Department.

The core is realized with the best magnetic steel laminations available on the market and, before acceptance, it's verified in our tests room where actual losses are measured.

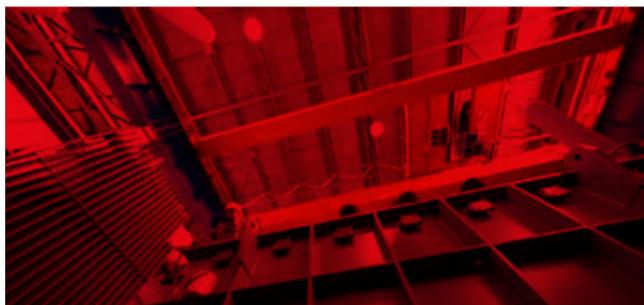
Then, we can proceed with the active part assembling that, as all the company processes, is carried-out strictly according to our in-house procedures (Normal Tironi) and to the specific prescription of the project.



Once the active part assembling is completed, the unit is introduced in the Vapour Phase Plant for the final treatment. The Plant, of last generation technology, grants a perfect and automatic drying process with the release of a detailed report which is made available to the customer.

The last activity before the tanking is the tightening of the active part that is set for the last time and compressed simultaneously on all the three phases together by means of a hydraulic and automatic plant.

After the last electrical tests it is possible to proceed with the tanking, the final oil filling and assembling of all the accessories and equipment.



Last generation  
Vapour Phase  
for drying treatments

Three independent  
test labs



## Factory Acceptance Tests

The transformer, completely assembled, is moved to one of our available Test Rooms for final tests.

In **ELETTROMECCANICA TIRONI** there are currently in operation three tests rooms :

- **DT: for distribution transformers;**
- **POT: for power transformers having LI up to 1.500.000 Volts;**
- **HPOT: for power transformers with LI up to 2.400.000 Volts.**

The three tests rooms are completely independent and are equipped in such a manner as to permit all the acceptance, type and special tests, in accordance with IEC 60076 STD (with the exception of the short-circuit withstand test that is usually performed care of external accredited laboratories (i.e. CESI in Milan or KEMA in The Netherland).

It is also operative the TIRONI Lab, an In-house chemical laboratory, where it is possible to perform dielectric tests, including DGA, for both mineral oils (news and recycled) and Ester oils (naturals and/or synthetics)



# Products

## Power transformers

Throughout its history the company has steadily expanded its products' applications and developed considerable experience, especially in the construction of:

AUTO-TRANSFORMERS AND TRANSFORMERS FOR TRANSMISSION AND DISTRIBUTION, WITH POWER UP TO 500 MVA AND PRIMARY VOLTAGE UP TO 420 kV

TRANSFORMERS FOR GENERATION, STEP-UP TO 500 MVA - 420 kV

TRANSFORMERS SUITABLE FOR TRANSPORT WITHIN THE RAILWAY GAUGES USED AS MOBILE STATIONS

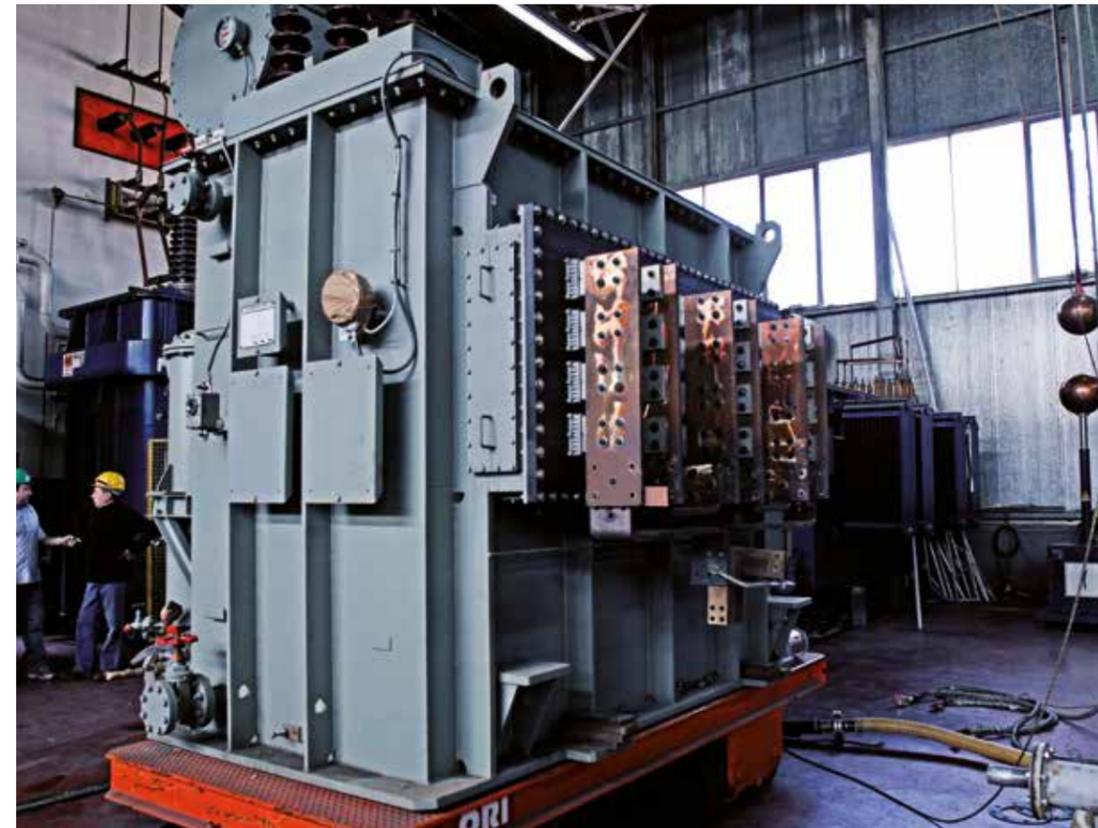
## Distribution and renewable energy transformers

The Company also has an active production line for transformers with secondary medium voltage distribution, covering the entire range from 50 to 2500 kVA with voltages up to 36kV.



A products line always in development





## Special transformers

**ELETTROMECCANICA TIRONI**, beside the production of power transformers and autotransformers has a complete range of transformers for industrial and special application. Typically produced in the factory at Modena, are the following items:

TRACTION TRANSFORMERS: HIGH VELOCITY TRAINS, METRO, RAILWAYS

FURNACE TRANSFORMERS FOR STEEL AND COPPER METALLURGICAL INDUSTRIES

GLASS FURNACE TRANSFORMERS

RECTIFIER TRANSFORMERS FOR AC / CC CONVERTING SYSTEMS

SPECIAL TRANSFORMERS

## Reactors

**ELETTROMECCANICA TIRONI** offers a designing and manufacturing facility of a full range of reactors with reactance for different applications.

HIGH VOLTAGE SHUNT REACTORS

HIGH VOLTAGE SERIES REACTORS

REACTOR FOR FURNACE PLANTS

COIL FOR THE GROUNDING OF THE HV NEUTRAL OF POWER TRANSFORMERS

PETERSEN COILS

EARTHING TRANSFORMERS



A long and important history of special products





## After sales service

With the goal of ensuring every customer total satisfaction, **ELETTROMECCANICA TIRONI** offers after sales service with all the necessary activities to ensure optimal installation of the transformer.

Delivery is made by specialized forwarders from **ELETTROMECCANICA TIRONI** and always under supervision. The transformers are usually transported by road or by sea, with one or more shock detectors installed in order to verify that during transport the transformers are not subjected to vibration and/or excessive shocks.

Any type of destination or transport, where there are special needs for access to the site or not, is analyzed in advance directly by **ELETTROMECCANICA TIRONI** with a site inspection made by our forwarding dept. and the forwarder. At the arrival of the transformer the same technicians will assist the offloading and then positioning of the transformer.

Once the transformer has been reassembled by **ELETTROMECCANICA TIRONI** staff, an engineer from the test room is sent to verify the proper execution of the work and to perform all the electrical tests necessary to verify the works done, the connections to the customers protections and to assist the customer to the final commissioning.

**ELETTROMECCANICA TIRONI** also provides a service for on-site maintenance of its products.

In the case an urgent intervention is needed on site this is performed throughout Europe, by skilled employees, within 24 - 48 hours from the request.

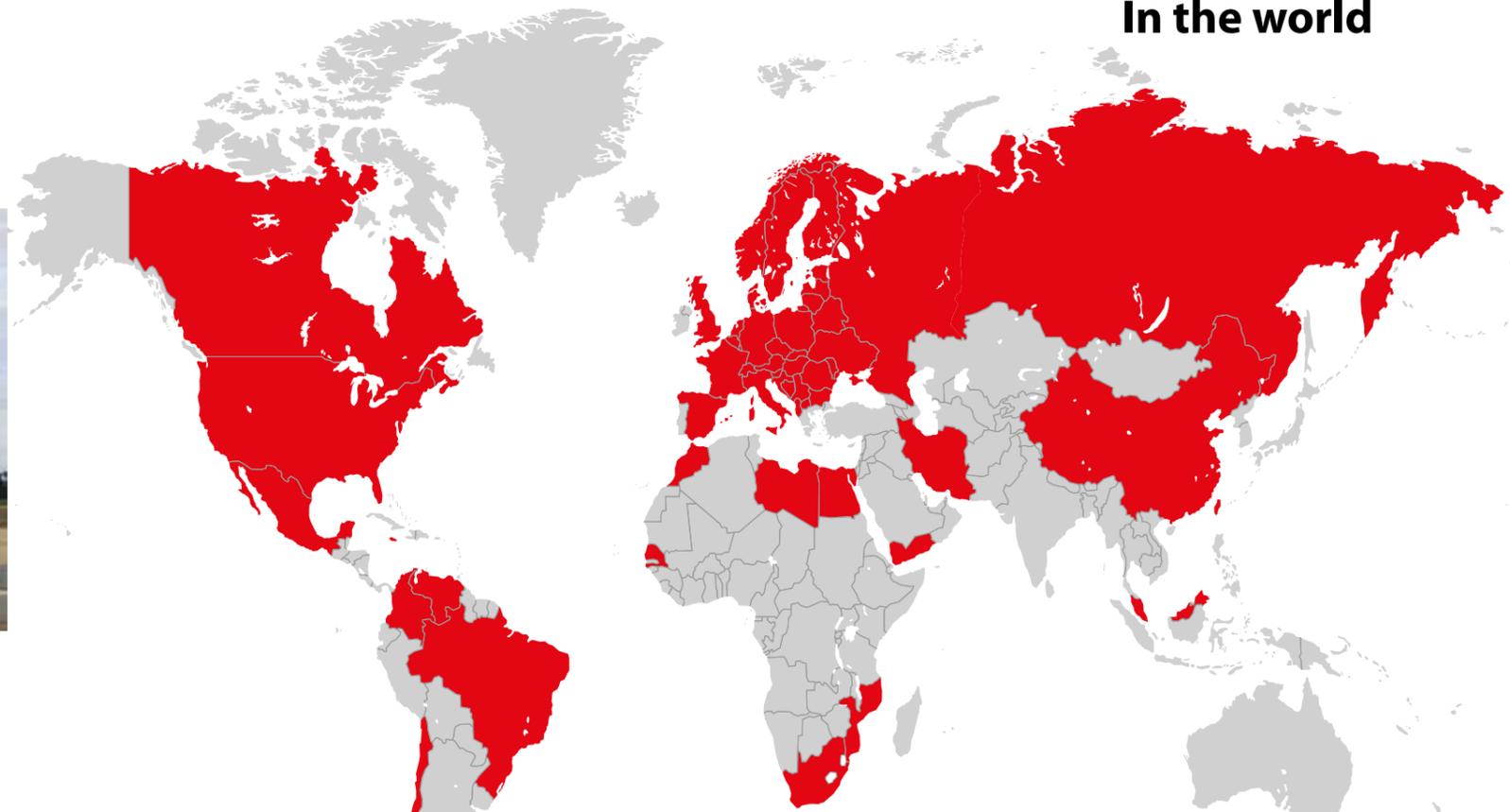
In special cases, however, the company can undertake to make the first intervention in a very short time and/or sign a real assistance contract.



## On Site Assistance within 48 hours



Our installations all over the world



## Corporate Social Responsibility



**ELETTROMECCANICA TIRONI** has always been conscious of the importance that its social commitment plays in the society and therefore is sensitive to all possible actions of economic support for its own employees and, more generally, for cultural, artistic, scientific, sporting or assistance events. This commitment takes the form of responsible behaviour proper to meet the expectations of the different corporate stakeholders: employees, the community and the region, the environment, customers, suppliers and other related subjects.

The ethical and social responsibility commitment coincides with the values that have allowed over time to evolve the quality of **ELETTROMECCANICA TIRONI** products in the wider dimension of the quality of the business-system. Responsibility, respect, integrity, sustainability, passion and skills are the synthesis of the founding values.

### Attention to all our Stakeholder

The ethical vision, corporate asset, it is important that this becomes a common heritage and to this end we need to communicate it clearly and effectively to the interlocutors - in a broader sense - of the Company. From this point of view from 2013 it is also published the "Annual and Social Report" so that all Stakeholders know the ETM's world and participate in the several initiatives that see the Company actively engaged in the spread and development of the "Corporate Social Responsibility" culture.

## Environmental sustainability



**ELETTROMECCANICA TIRONI** always work so that their production, trade and services do not cause any harm to the environment, adopting the principles of environmental protection and pursuing continuous improvement in the organization.

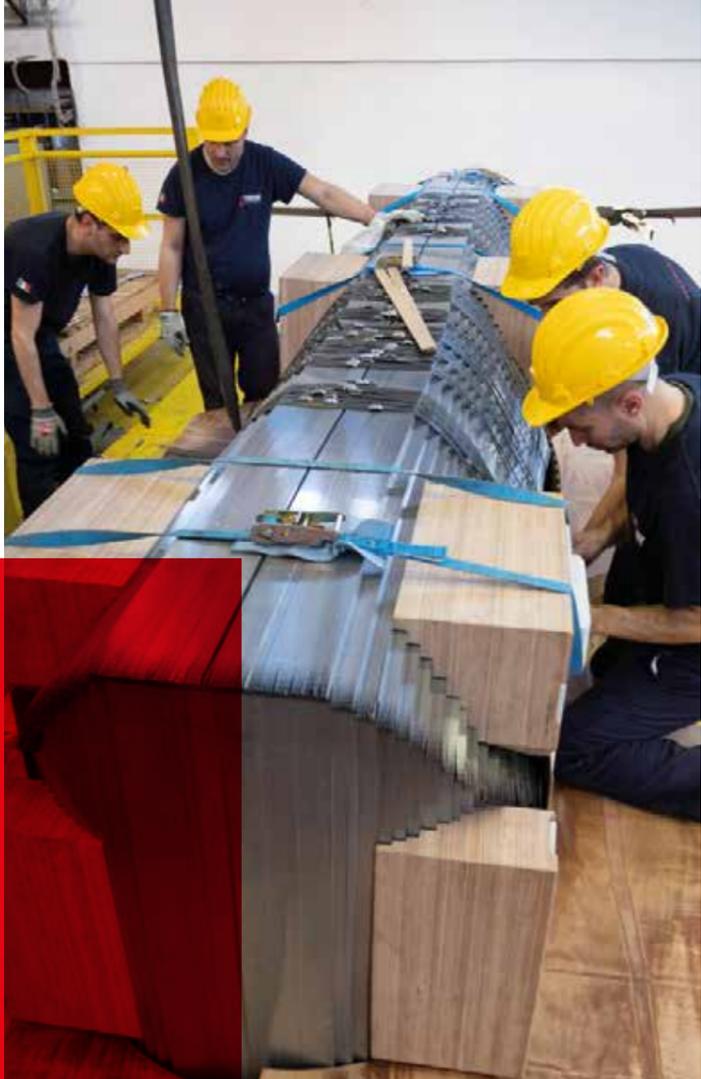
The commitment is constantly tuned to adopt programs to reduce consumption of energy and raw materials, to contain pollution and generally minimize adverse environmental impacts of each activity, each time evaluating the economic viability of the use the best technologies available.

To ensure this also in the future **ELETTROMECCANICA TIRONI** undertakes to exercise adequate control over the production and technical activities and on organizational solutions in place to achieve the objectives. A commitment that the company also requires from its suppliers and partners.

### Grown respecting the environment

In order to take a more active part in this process of sustainability **ELETTROMECCANICA TIRONI** has a constantly open and constructive relationships with government bodies and the communities in which **ELETTROMECCANICA TIRONI** works.

This philosophy of supporting the environment is also one of the reasons of being active funders of a new company involved in the design and installation of electricity generation from renewable sources.



## Corporate welfare

WORKERS CAN CHOOSE  
AMONG SEVERAL OPTIONS:

SUPPORT PROGRAMME  
FOR MATERNITY OR PATERNITY LEAVE

THE SOCIAL AND HEALTH SERVICE

TRAINING PROJECTS OR FREE TIME



**ELETTROMECCANICA TIRONI** has implemented a structured program in 2009 in support of its employees. A set of measures capable of reconciling the pace of life and working time of its staff, to support purchasing power and contribute to its overall welfare: CORPORATE WELFARE in two words.

With this initiative we want to give an important signal to convey a message of trust and responsibility. The project "WELFARE ETM" offers employees a common set of benefits and then becomes, according to the needs of each individual, something more specific.

Every employee, including his family, will have a partial reimbursement of expenses incurred by him or his family each month.

The welfare plan is based on a process already well established which **ELETTROMECCANICA TIRONI** has developed for its employees, agreements with laboratories, doctors' surgeries, opticians and the so-called "shopping basket", ie the possibility to go to a market with a voucher to spend on food or other goods.





**TIRONI**

power transformers

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