



THE BEST  
TECHNOLOGY  
FOR  
ELECTRICAL  
APPLICATIONS

**FDUEG**

Special and dry type transformers, reactors and engineering



## ITALIAN INNOVATION AND EXPERIENCE

Our products are the expression of the best technologies and of our experience. We design and manufacture transformers and reactors bringing innovations in all medium and low voltage applications.



## PRODUCTS AND SOLUTIONS FOR ALL YOUR NEEDS

Thanks to our **highly qualified staff** continuously trained on new production techniques we guarantee high levels of competitiveness and efficiency both for special products and for mass production.

In particular we stand out among our main competitors in the search for effective solutions in the following areas: **Power electronics, Oil & Gas and Offshore, Renewable energies, Naval**

Most of our success is due to the **close working relationship** we establish with our **customers** and **business partners**, always putting their needs first.

One of the company's strengths is in fact the **customization of the products** according to the requirements and needs of customers, wherever they are in the world.

The strong **customer orientation**, the **continuous staff training** and investment in **research and development** make us an extremely competent and reliable partner.





### LEADERSHIP

Every effort is aimed at achieving ambitious goals in every area in which we cooperate and is aimed at improving our performance to become a reference system and model for anyone.



### EFFICIENCY

every single action is aimed to achieve well-defined results in line with our goals.



### CUSTOMER SATISFACTION AND ORIENTATION

Our business is based on listening and understanding customers in order to fully meet their needs, ensuring a product perfect in line with their requirements.

## WE BELIEVE

We believe in people; they are the most important value of FdueG.

We continually invest in training to achieve excellence in every professional field.



# IN PEOPLE

Every day is a new challenge, we do not stop in front of the complexity of the required solutions.

Challenges fascinate us and we push people to give their best in every situation in order to improve FdueG.



## INNOVATION

We always offer our customers innovative products, making them an integral part of these innovations.



## QUALITY

This is the improvement of all our activities in order to satisfy the whole community that turns around the company (customers, staff, suppliers).



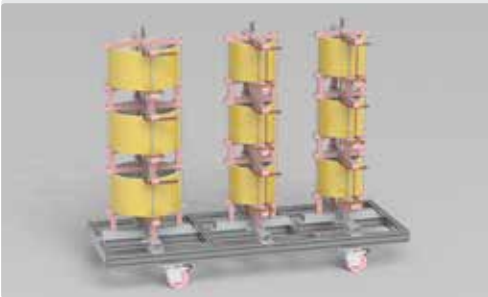
## TEAM WORK

We value and promote collaboration and teamwork, involving employees in achieving goals.



### NEUTRAL EARTHING REACTORS

They connect the neutral of a system with the earth to **limit current in case of fault** between phase and earth. Correctly designed for the plant they reduce or reset currents and consequent losses, protecting the other components of the system and the staff.



### TEST LAB AND SPECIAL REACTORS

They are designed according to the customers' needs for applications such as **testing of switches** or **capacitors**, **current limiting**, **power factor correction** or **creation of artificial loads** to reproduce the service conditions of the equipment during the test.

They usually have different combinations of connection or large regulation to suit the various needs of testing; they can provide intermittent cycles with high current or specific operation details.



### REACTORS FOR POWER ELECTRONICS

They are often coupled to rectifiers and inverters and they can be used for the **filtering** of noises coming from the power line and for the reduction of voltage spikes and interferences due to the electronic switching.

In case of high power and in systems with **converters** connected in parallel, **interbridge** reactors balance and level out the behaviour of electric components.

**Smoothing** reactors are used in DC systems and they reduce harmonic currents, transient overcurrents (ripple) and losses and improve the system performance and the protection of components.

## REACTORS

We gained a great experience in design and manufacture of **reactors** with **magnetic core** or **in the air** for industry, outdoor applications and special loading conditions.



### CURRENT LIMITING REACTORS

They limit the maximum current circulating inside the plant to levels compatible with the available systems of control and interruption and they allow to find low-cost solutions for design or for the expansion of the plants.

For the **motor starting** they can operate intermittently, limiting the inrush current during the start.

For **limiting the maximum fault current** in case of short circuit inside of an electric network they can operate continuously with a great mechanical resistance.



### REACTORS FOR AC NETWORKS

They can be connected **in shunt** on networks for the compensation of the capacitive currents and for the voltage stabilization or for the balancing of the dynamic loads in industrial installations, if equipped with regulation. If appropriately dimensioned, they allow the **damping** of the inrush currents present during the handling of condenser batteries and they reduce short circuit current in case of fault. During normal operation they reduce electric stress on insulating materials, preventing the condenser connections from being damaged.





### TEST LAB AND SPECIAL TRANSFORMERS

Specializing in the production of special products and transformers suitable for industrial test lab it means to face a variety of problems and specific requests.

All products must ensure **precision, safety and reliability**, but also meet **variable operating conditions**.

Transformers with variable frequency operation, the multiplicity of outlets of operation, high currents, short circuits withstand are only some of the typical characteristics of these products.



### TRANSFORMERS FOR RENEWABLE ENERGIES

The production of "**green**" energy requires products that are designed paying particular attention to efficiency and performance.

The transformers for solar, wind and hydroelectric plants and numerous other alternative energy sources have in common the reduced load losses and the use of materials that ensure maximum reliability, with the aim to **minimize system's losses and maximize productivity**.





# TRANSFORMERS

The high expertise in design and production of **dry type transformers** allow us to study and produce transformers in single model, in small or medium series, which fully meet customers' demands.

Each transformer is designed according to the requirements of the specification and installation with **power up to 16 MVA and insulation classes up to 52 kV.**



## TRANSFORMERS FOR POWER ELECTRONICS

They are designed with particular attention to the electrical key parameters of the electronic components.

They are often realized with **integrated reactor** and they ensure short circuit voltages and vacuum currents centered for the **optimization** of the conversion system.

We also provide customized solutions for **rectifiers up to 96 pulses** and for the conversion in medium frequency, always ensuring high reliability and efficiency.



## TRANSFORMERS FOR INDUSTRIAL APPLICATIONS

These products are intended for various industrial applications, but have in common the guarantee of high efficiency and reliability at a competitive cost.

These transformers are designed to **solve the problems of industrial systems** ranging from the most common needs, such as the power of the engines, up to the most complicated one, such as load switching in medium voltage.



## TRANSFORMERS FOR NAVAL INDUSTRY AND OFFSHORE

The design of these transformers is for **operation under extremely critical environmental conditions**, both for temperatures and for high humidity level. The high power and the need for maximum reliability require controlled production processes, in order to obtain **safe and efficient products.**

We provide protection and cooling systems that can ensure the efficient operation of the transformers even in emergency conditions.

# APPLICATIONS



## POWER AND INDUSTRIAL SYSTEMS

Design and manufacture of customized transformers and reactors for any type of electrical power supply and industrial plants

UPS AND CONVERTERS

RECHARGE SYSTEMS FOR BATTERIES

MOTOR STARTING

AUTOMATION AND FILTER

## TEST LAB RESEARCH INSTITUTES

Design and manufacture of transformers and reactors for test labs and special applications in research institutes

INSULATION, POWER FACTOR AND CURRENT LIMITING SYSTEMS

TEST SYSTEMS OF ROTATING MATERIALS

SWITCH TEST LAB

MOTOR/PUMP TEST LAB

ARTIFICIAL LOADS

## ELECTRICITY PLANTS

Design of transformers for traditional and innovative electricity plants, as well as high performance and reliability systems

COGENERATION SYSTEMS

TRADITIONAL/THERMOELECTRICAL SYSTEMS

TRIGENERATION SYSTEMS

MT DISTRIBUTION



## NAVAL APPLICATIONS OFFSHORE

Design and manufacture of transformers and reactors suitable for naval applications and offshore drilling plants

CONVERTERS

POWER FACTOR SYSTEMS

FEEDING SYSTEMS



## RENEWABLE ENERGIES

Manufacture of transformers for high performance and reliability systems for solar, wind and water plants

CONVERSION SYSTEMS

LOW- VOLTAGE CONNECTION SYSTEMS

MEDIUM-VOLTAGE CONNECTION SYSTEMS



## RAILWAY APPLICATIONS

Manufacture of transformers and reactors for the railway sector according to specifications.

CONVERTER

AUXILIARY POWER

INDUCTIVE CONNECTORS

EMERGENCY POWER SUPPLY AND MOTIVE POWER



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