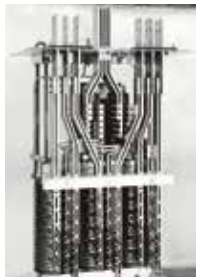
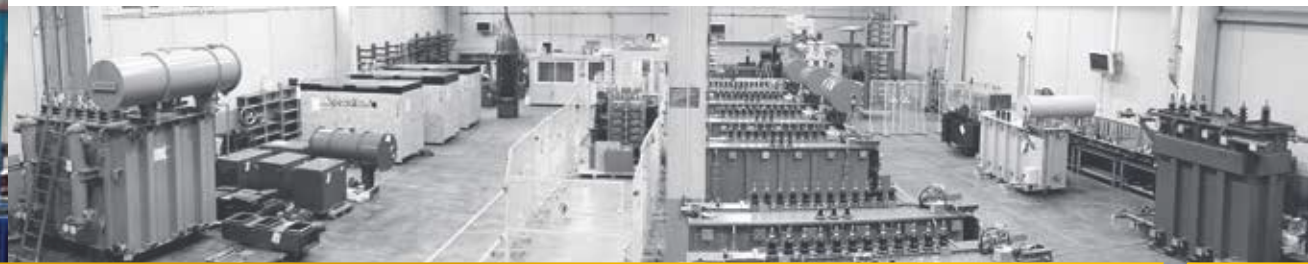




Specialtrasfo®

Passion Transforming Energy





>> ABOUT US

Our firm has its roots in an historical Milan-based transformer company, founded in 1946 by the Pivi brothers. Since Pivi S.r.l. began its activity has always dealt with the engineering and manufacturing of custom-designed power transformers.

Throughout the decades we have gathered experience in all special applications of power transformers, becoming, in both dry-type and liquid-filled transformers, an internationally recognized premium supplier to all major customers.

In the mid eighties (1985) the firm name became Specialtrasfo and continued developing products, making the original business grow both organically and by acquisitions of niche-specialized transformer manufacturers.

Specialtrasfo has always been a family-owned business, carried forward by CEO Francesco Pagano since the year 2000.

As part of our culture we are committed to continuously improving the range and quality of our products, investing in human resources, technology, engineering and infrastructures.

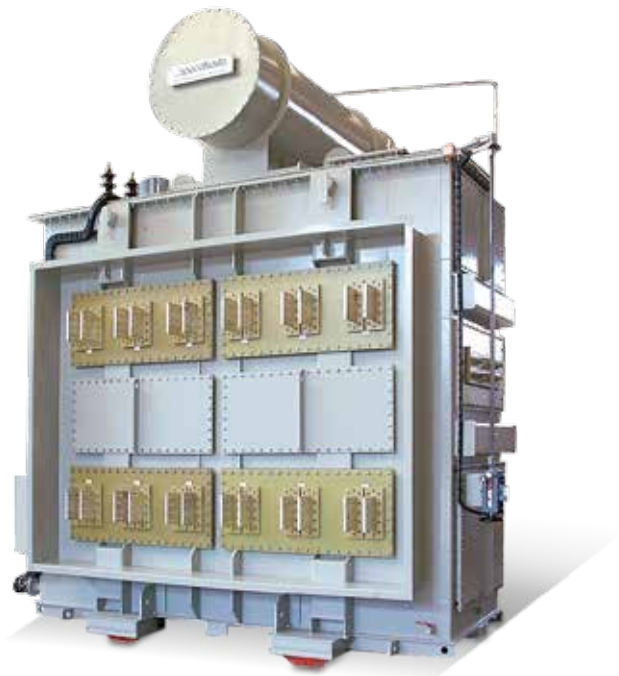
Management team: F. D'Orazio, F. Pagano, S. Guizzardi, A. Roda.



11000 MVA
TOTAL INSTALLED
CAPACITY

SERVING CLIENTS
IN MORE THAN

68
countries



Milan workshop in the early Sixties.



In 2011 we completed our facility renewal and expansion, substantially increasing our yearly production capacity to more than 1500 MVA. We now have three state-of-the-art workshops for a total covered surface of above 5500 square meters dedicated to offices, winding construction, core & coils assembly and overall finishing and testing.

In the last decade Specialtrasfo has focused mainly on custom-designed high quality liquid-filled transformers, especially but not limited to those dedicated to rectifier circuits with 11000 MVA total installed capacity, serving customers in more than 68 countries around the globe in the most extreme environmental conditions.

1500 MVA
OUR YEARLY
PRODUCTION CAPACITY



“ Without continual growth and progress, such words as improvement, achievement and success have no meaning. ”

Benjamin Franklin

EFFICIENCY custom design
quality
RELIABILITY
competence

**CONTINUOUS
IMPROVEMENT**

safety first **PASSION** PEOPLE AND ENVIRONMENT



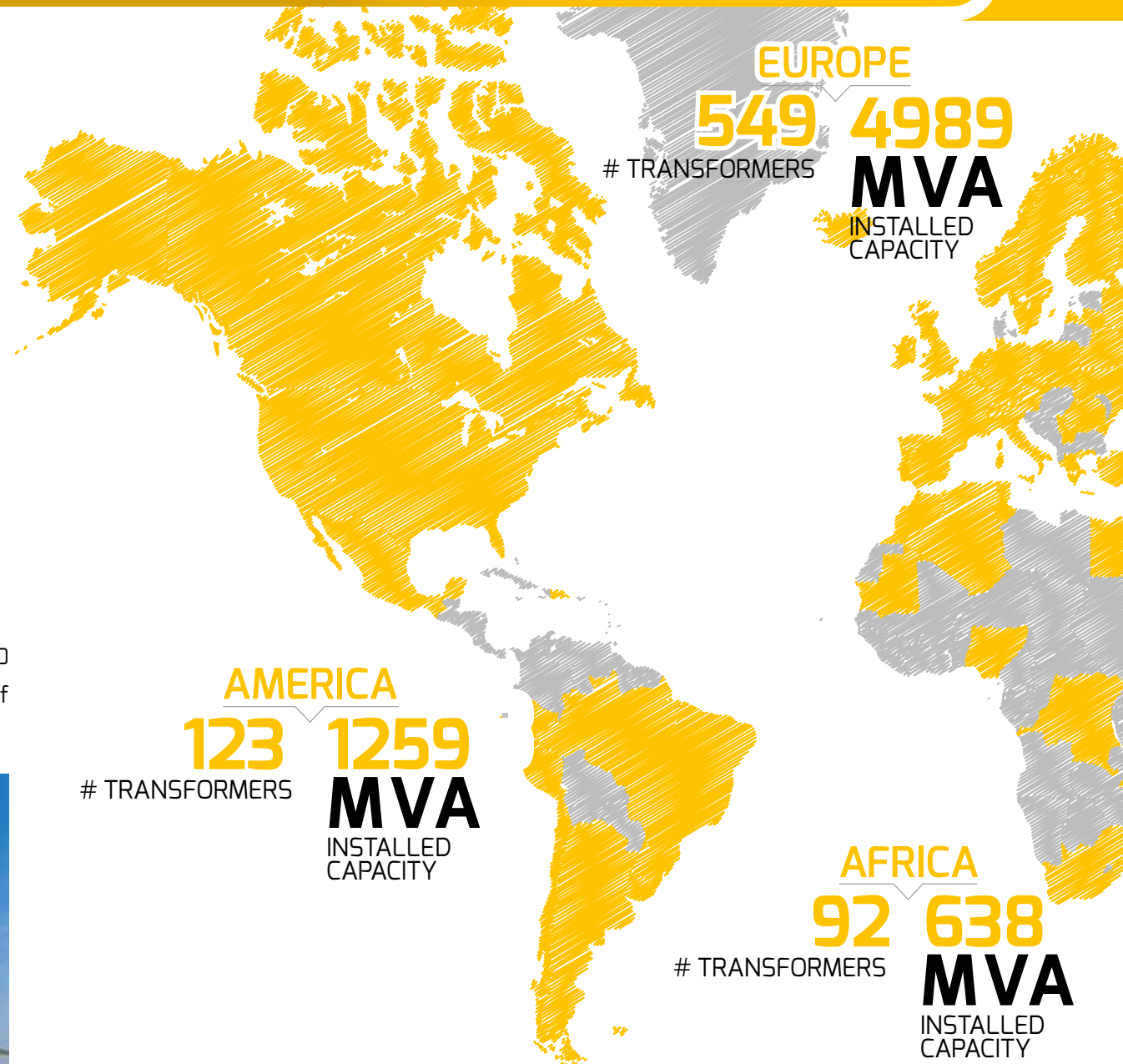
>> WORLD WIDE PRESENCE

EXPORTS
MORE THAN
95%

MORE
THAN **68**
COUNTRIES

Tailor made in Italy, global reach.

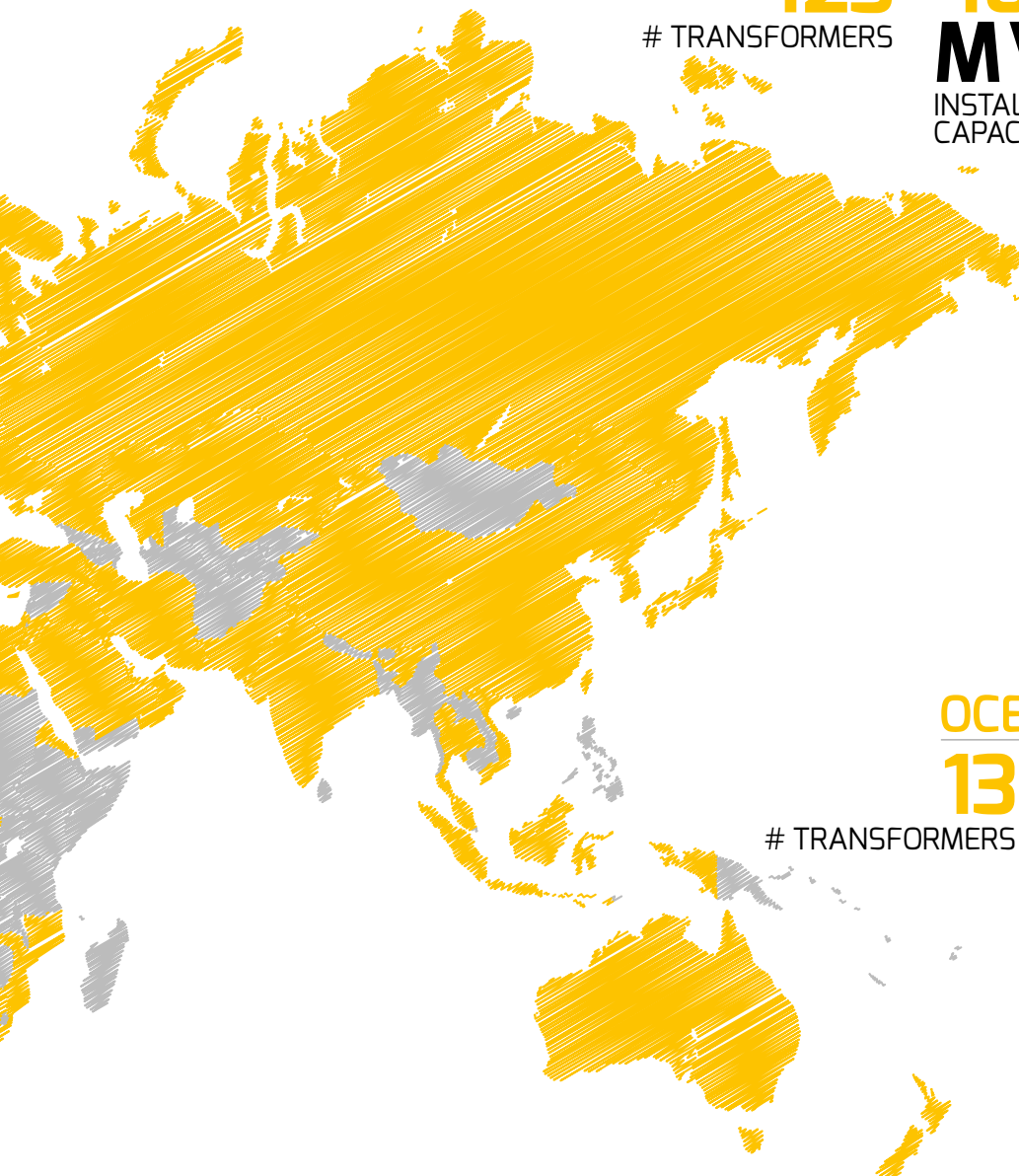
Since the year 2000 Specialtrasfo has manufactured more than 1000 Transformers, to a total installed capacity on the five continents of over 11000 MVA... and counting!



EUROPE
549 # TRANSFORMERS
4989 MVA
INSTALLED CAPACITY

AMERICA
123 # TRANSFORMERS
1259 MVA
INSTALLED CAPACITY

AFRICA
92 # TRANSFORMERS
638 MVA
INSTALLED CAPACITY



ASIA

423 4013

TRANSFORMERS

MVA

INSTALLED
CAPACITY

OCEANIA

13 163

TRANSFORMERS

MVA

INSTALLED
CAPACITY





Rectifier Transformers

Transformers for AC/DC High Current Rectifier applications

- >> DC Voltage up to 1000 V.
- >> DC Current up to 145 kA.
- >> AC Primary Voltage up to 145 kV.
- >> Various configurations available in a single unit: single bridge, double bridge, double star with IPT, two double stars with IPTs.
- >> Multi-pulse topologies available: from 12-pulse to 72-pulse unit.
- >> Regulating autotransformer available in the same tank to allow on-load coarse voltage regulation.
- >> Saturable reactors available in the same tank to allow on-load fine voltage regulation.

In conjunction with thyristor or diode rectifiers, these transformers form the link between the AC and the DC systems of the industrial plant.

Their development and construction requires extensive experience as well as deep theoretical knowledge.

UP TO **145**
kA DC CURRENT



Combined Tests

Our facilities are equipped to test all transformer-rectifier combined systems within our production range.

- >> Equipped to test transformer + rectifier combined systems with all type of cooling: ONAN - ONAF - OFWF - OFAF.
- >> 15 MVA supply power for the test.

ALL TYPE OF
COOLING SYSTEMS

Case History

- >> Total injected losses: 800kW.
- >> Secondary DC Current: 145 kA.
- >> OFWF cooling.
- >> 3 MVA supplied power.





Converter Transformers

Transformers for MV Drives and Converter applications

- >> Capacity up to 110 MVA.
- >> AC primary voltage up to 145 kV.
- >> Frequencies up to 400 Hz.
- >> Multi-pulse topologies available: up to 36-pulse in a single unit.
- >> Multi-level converter transformer up to 18 secondaries (Perfect Harmony)
- >> Electrostatic shield between primary and secondary windings.
- >> Off-Circuit Tap-Changers available.

Designed to meet all types of environmental conditions:

- >> extreme temperatures, from -50°C to $+55^{\circ}\text{C}$;
- >> altitude, over 4000 m asl;
- >> corrosive atmospheres;
- >> seismic zones;
- >> hazardous areas;
- >> marine application for propulsion and distribution.

All cooling system types available, by means of mineral or less-flammable fluids, air or water external cooling mediums, natural or forced circulation.

We manufacture converter transformers for Variable Speed Drives and for Static VAR Compensation systems in the medium voltage range. The most common typology is the three-winding arrangement with delta and wye secondary connections to obtain 12-pulse reaction.



UP TO
110
MVA AC CAPACITY

Power Transformers

Power Transformers and Earthing Transformers

- >> Capacity up to 110 MVA.
- >> AC primary voltage up to 145 kV.
- >> Frequencies 50 Hz and 60 Hz.

Power and distribution transformers

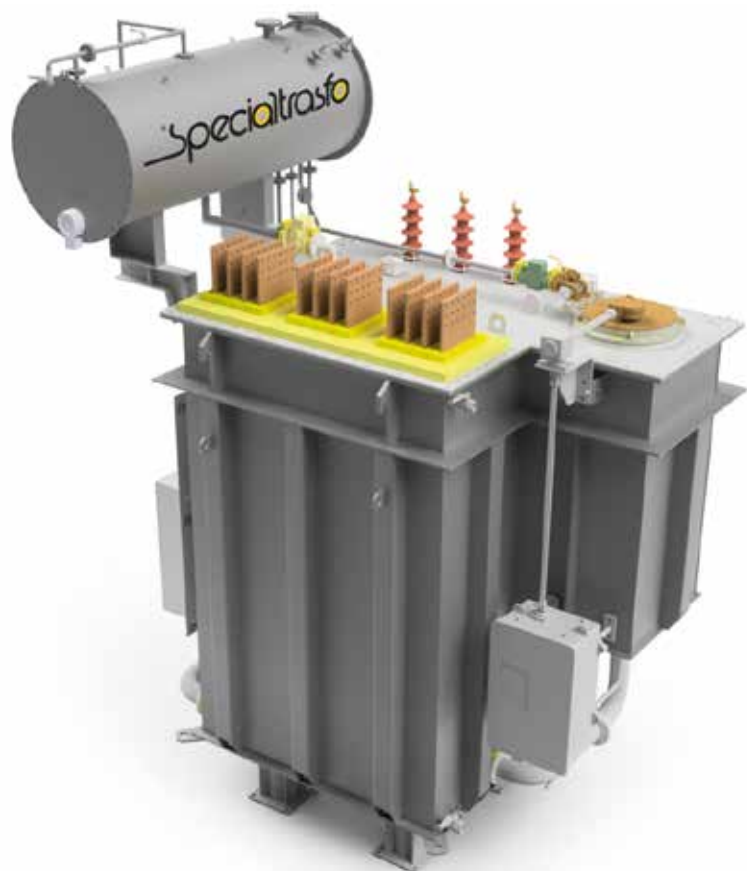
We manufacture distribution and power transformers up to 110 MVA, 145 kV. They can be equipped with off-circuit and on-load tap-changers.

Earthing transformers

We engineer and manufacture three phases Zig-Zag Autotransformers, with windings in wye configuration to be connected to the earth either directly or through Neutral Earthing Resistor (NER).

- >> Frequency: 50 Hz or 60 Hz.
- >> AC Primary Voltage up to 145 kV.





Furnace Transformers

Furnace Transformers for LF and EAF application

- >> Capacity up to 150 MVA.
- >> Secondary Current up to 100 kA.
- >> AC primary voltage up to 145 kV.
- >> Different configurations available in a single unit:
 - with one core solution
 - with booster solution
 - single phase of three phases solution
- >> Voltage Regulation available in the same tank with On-load tap-changer (American or European type).
- >> Connection type:
 - close Delta or Open Phase
 - copper bus bar or pipes with water cooling



Series Reactors

Series reactors are installed on the electrical furnace EAFs to improve arc stability, power factor and EAF efficiency. Available with:

- >> ONAN, ONAF, OFWF cooling system
- >> OLTC, DETC tap changer

Electric Arc Furnace (EAF) and Ladle Furnace Transformer (LF) are used in AC and DC technology for high current application in the steel plant to feed smelting process. The heavy duty and furnace operation conditions (arc) require transformers to be custom designed and built.

The regulation of the secondary high-current on the load is achieved by means of "On Load Tap Changer" OLTC or "De Energized Tap Changer" DETC.

Testing Equipment, High Voltage Regulating Transformers and HV Testing Transformers

Transformers for Testing purposes

- >> Short-circuit testing transformers with current up to 300 kA.
- >> HV single-phase high-voltage insulation-testing transformers with secondary voltage up to 750 kV.
- >> LV voltage-regulating transformers with capacity up to 800 kVA; to extend their rating, versatility and application, we also manufacture regulating units which combine fixed-ratio transformers with regulating transformers.
- >> Fixed and adjustable Reactors.

Testing Equipment

- >> Engineered and manufactured for all kinds of research laboratories and routine testing laboratories in industrial applications.

UP TO
1200
V

CONTINUOUS BRUSH
TYPE REGULATION



UP TO
750
kV

CAPACITY





>> A PASSION FOR INNOVATION AND QUALITY

Specialtrasfo's rigorous quality control policy covers every design and production stage, from the inspection of incoming materials and the checking of individual components to final performance testing and after-sales service.

The company's goal is to provide its customers with the best quality products and services available on the market through continuous development of the individual skills of our human resources, improvement of design engineering and technology of our products and continuous investments in all our three production facilities.

We are ISO 9001:2008 and ISO 14001:2004 certified and we continuously invest in our internal quality control system. Our products are designed, manufactured and tested according IEC and IEEE/ANSI standards.

WE ARE
ISO 9001:2008
CERTIFIED

WE ARE
ISO 14001:2004
CERTIFIED





Besides, when requested our transformers are subject to strict external control by independent certification bodies and are compliant to:



ABS



ATEX



BV



CE



CSA



DNV



GOST



LLOYD'S REGISTER



RINA



UL



IECEX





>> SERVICE & ASSISTANCE

Support and assistance on transformers of any brand

All kind of maintenance, revamping and service activities.

Specialtrasfo has it's own instruments and equipment ready to be dispatched worldwide:

- >> Dedicated containers equipped with repairs tools and instruments.
- >> Oil pump and oil treatment machines.
- >> Portable tool box for transformer installation.

Specialtrasfo has a Service Department composed by:

- >> Dedicated Service and After Sale Manager.
- >> Services engineers ready to travel worldwide within 24 hours.
- >> Team of commissioning engineers.
- >> Team of technical engineers for on site investigation and troubleshooting.
- >> Working team for on site maintenance or installation.

Specialtrasfo, in addition to the internal service team, has selected local partners in order to reach its customers in shorter time.



WITHIN
24 H
TRAVEL WORLDWIDE **READY TO**

Approach to Standard Maintenance

Specialtrasfo can quickly intervene in case of standard maintenance, diagnostics and all activities involving action on accessible transformer components and fittings i.e.:

- >> Cooling system, piping and gaskets.
- >> Oil-treatment.
- >> Marshalling box and auxiliary cables.
- >> Accessories.
- >> Protection relays.
- >> Painting and other auxiliaries, etc.

All these activities can also be conducted by selected local service partner, under strict supervision of Specialtrasfo® service engineers and technical department in Italy.

Approach to Major Repairs

In the case of major repairs, Specialtrasfo evaluate with the client, the best way to proceed considering all possible options:

- >> Move the transformer to our workshop in Italy.
- >> Move the transformer to local partner's workshops.
- >> Operate directly at customer site.



“ All transformers most delicate parts inspected, re-engineered and repaired only by Specialtrasfo's engineers. ”

>> OUR FACILITIES AND CAPABILITIES



Trezzano Rosa - Headquarters

HEADQUARTERS

Final assembly & testing: 2300 covered square meters + 1 sheltered storage area:

- >> no. 2 completely new separate test facilities allow us to perform all the tests foreseen by IEC or IEEE standards;
- >> no. 2 meeting rooms and no. 1 meeting room dedicated to the FAT;
- >> no. 6 different cranes;
- >> no. 1 oven for dry treatment;
- >> 2500 m² external area for the storage of incoming material and transformers ready to be delivered;
- >> no.1 finished product warehouse 1000 m² area.

WINDING CONSTRUCTION

Dedicated workshop with 8 coil-winding machines.

Windings for high current application with transposed cable technology:

- >> disc type windings;
- >> layer windings;
- >> helical windings;
- >> foil windings.



Ornago - Winding construction

TRANSFORMER ASSEMBLY

Dedicated workshop with highly qualified personnel with:

- >> 1400 m² covered area;
- >> no. 3 cranes with maximum load of 30 ton/each;
- >> no. 2 large oven for dry treatment;
- >> no. 1 machine for vacuum treatment;
- >> no. 1 large pit for tanking the active part of large transformers;
- >> no. 1 oil treatment machine and vacuum machine;
- >> Feasibility to handle transformers up to 200 tons with mobile cranes.



Ornago - Transformer Assembly

EXTREME ENVIRONMENTAL CONDITIONS

FROM -50°C TO +55°C

UP TO 4400 m ASL

OFFSHORE (oil rigs)

HAZARDOUS and SEISMIC AREAS



Specialtrasfo

www.specialtrasfo.com

Specialtrasfo S.p.A.

HEADQUARTERS

Via Firenze, 10
20060 Trezzano Rosa (MI)
ITALY

www.specialtrasfo.com