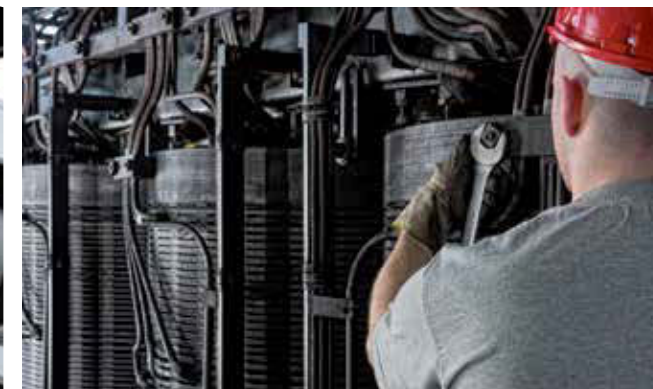


TAMINI
ENERGY TRANSFORMERS

Service

Quality, Installation and Assistance

With an average of approximately 200 transformers assembled and activated each year, a team of experienced and qualified specialists and a complete service portfolio, Tamini guarantees its customers high-quality technical assistance in each phase of the transformer's life.



The main strengths of our Service are:

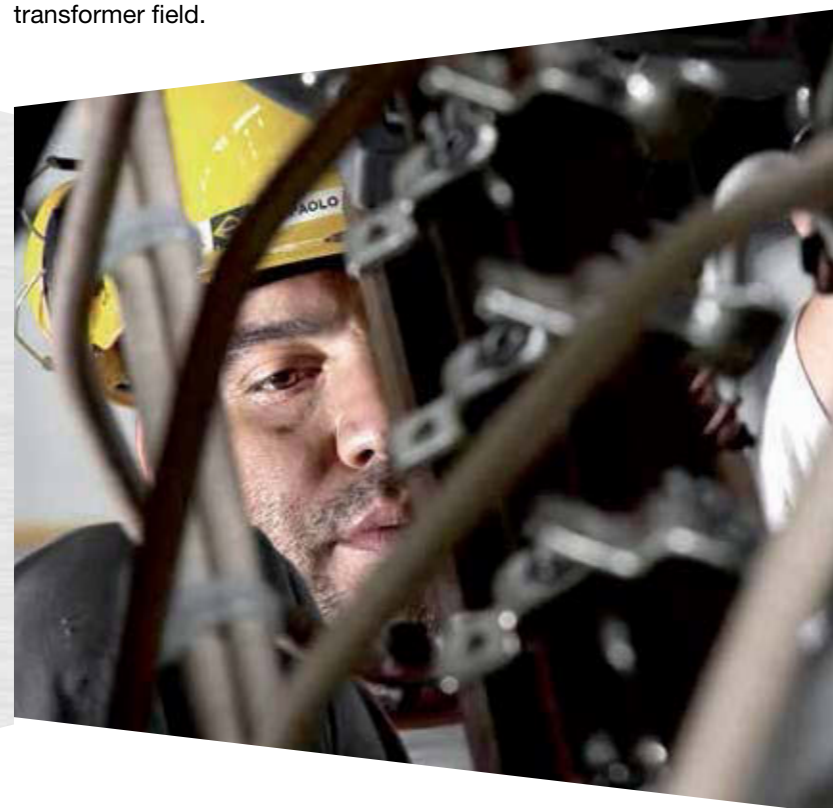
- 100 years of experience in the construction, maintenance and repair of industrial and special power transformers;
- Dedicated service resources can tap into a pool of experienced personnel from different production plants to offer enhanced flexibility;
- Fast, flexible repairs backed up by 6 production plants that can be chosen according to the type of transformer and the equipment and personnel available;
- Dedicated service packages can be provided to meet specific Customer needs;
- Servicing performed worldwide;
- Transporting transformers and equipment all over the world, including customs clearance.

After Sales

After Sales Assistance

The after-sales service includes all maintenance, diagnostic, investigation and monitoring activities on transformers, in order to guarantee the needed reliability and malfunctioning predictive remedy actions to avoid unplanned outages to the customer's production cycles.

Tamini Service has dedicated means and resources to promptly react in case of troubles to support our Customers. Dedicated service resources can tap into a pool of experienced personnel from different production plants to offer enhanced flexibility taking advantage of 100 years of experience in the transformer field.



The capabilities of providing all the transformer spare parts, including the adaption materials for the installation of new available components, complete the after sales assistance service offered by Tamini.

Tamini guarantees its customers high-quality technical assistance and training in each phase of the transformer's life.

Installation & Commissioning

A team of experienced and qualified specialists guarantees the full support to deliver, assemble and install both network and industrial products with high-quality and on-time to the Customer's plants.

The capabilities to deliver transformers and equipment all over the world, including customs clearance and the complete chain of support service providers for tools and equipment's availability, make the Tamini's service as the best in class for transformers installation & commissioning.



Repair and Upgrading

The specialized experience in on-site and in-house preventive, routine and advance maintenance of any transformer together with the continuous commitment to technological innovation, makes the Repair and Upgrading services the Tamini's points of excellence.

Revamping or powering means working on the active parts and reviewing machine engineering without modifying the existing structure or those parts that do not require to be changed.



The process of upgrading increases remarkably the performances of transformers being used and it is carried out not only on damaged machines but also on working ones, which, because of changes to the production processes, are eventually no longer suitable.

These services are offered on both own products and third party's ones and ensure correct results through a strict final testing carried out at Tamini Lab.

Repair and Maintenance

Emergency Services (24 Hours/7 Days)

The emergency services include the activities and materials needed to react the fastest to Customer's critical requests.

Tamini exclusive emergency service, backed by the most advanced diagnostic investigation techniques for the detection of faults or malfunctioning, allows solving any problems with installed transformers and restoring in very short time normal working conditions. Furthermore a large stock of reconditioned transformers ready for use can be made available to customers on flexible rental or purchase conditions.



Workshop 24/7

The availability of a workshop entirely dedicated to Service, with a team of skilled technicians, assure the reduction of intervention time to restore the functionality of any Customer's transformers.

Housed in a covered area of 4.000 sqm in the hinterland of Brescia – Rodengo Saiano – the factory is designed for repairing, upgrading and the routine or extraordinary maintenance of any type of transformers, even produced by other manufacturers.



Activities carried out in the Workshop 24/7:

- 4.000 m2 entirely dedicated to Service;
- Active part drying system;
- Disassembly, assembly and rewinding area;
- Oil treatment and vacuum filling area;
- Check and testing room;
- Laboratory for the execution of chemical-physical and gas chromatographic oil analyses (DGA);
- Skilled technical staff.

A partnership for the USA market

Tamini supplies services in the US in partnership with OTC Services Inc. (Louisville, Ohio), a company committed to the remanufacturing of transformers for both industrial and utility clients.

OTC supports Tamini in the assembling, installation and commissioning of new transformers and provides, as well, the availability of the repairshop, to resolve any service required on Tamini transformers.



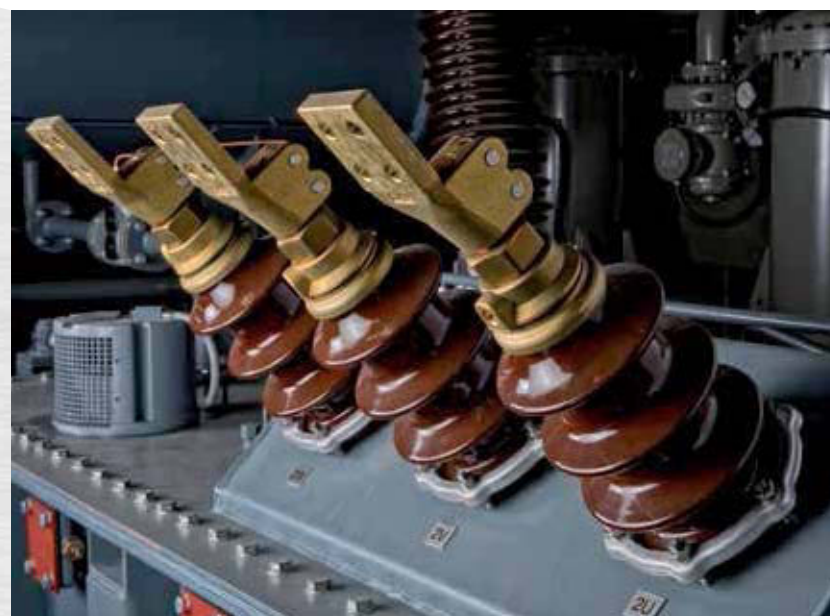
Spare Parts

Bushings

The bushings can be either of the oil/air type or oil/oil, in case of connections to cables in oil filled terminal boxes, or also oil/SF6 for connection to SF6 filled bus-bar ducts. HV bushings are usually of the condenser type with oil impregnated or with resin impregnated paper.

Cooling System

The transformers can be designed for any applicable cooling system following the requirements of the end user. The most used cooling systems for power transformers are ONAN and ONAF. These systems are achieved by radiator banks, mounted on the sides of the transformer tank, or in separate banks, with or without cooling fans.



The cooling can also be OFAF (or ODAF) and OFWF (or ODWF) with coolers assembled on the transformer tank or in a separate bank.

The industrial transformers are mostly provided with an OFWF cooling system.

Different positioning of the coolers, including horizontal installation, can be adopted to satisfy specific requirements for easier connection to the external water piping system. The coolers are normally composed by a single-walled or, on request, a double-walled system. The design of the coolers is such that any possible risk of water leakage into oil is absolutely avoided.

The coolers can be equipped with many accessories line: water and oil flow indicators with alarm contact, water and oil thermometers, water and oil drain taps or other special ones, on request. When water is not available, the cooling is generally OFAF.

Tap-Changers Components

The transformers can be equipped either with on-load or no-load tap changer fitted on the HV side.

The Tap-Changers can be equipped with many accessories:

- Oil surge protection relays type RS 2001;
- Pressure relief devices with trip contact;
- Remote position indicator;
- Automatic voltage regulator type TAPCON®;
- Oil filter units.

Ancillaries

The industrial transformers are equipped with the following fittings and accessories:

- Two air silica gel breathers for the two conservator sections;
- Two oil level indicators with electric contacts for the two conservator sections;
- Buchholz relay with alarm and trip contacts;
- Oil drain, filling and filtering valves;
- Oil thermometer complete with alarm and trip contacts and, on request, a device for remote temperature monitoring;
- Current transformers as per customers requirements;
- Over-pressure protection;
- Oil sample valve.

