



**TAMINI
SERVICE**



TAMINI
ENERGY TRANSFORMERS



**Terna Energy
Solutions**
MORE VALUE, TOGETHER.



THE GROUP

Tamini designs, produces and installs transformers for power and industrial applications, designed to meet the specific needs of the customers, that we support throughout the whole product life cycle with personalised after-sales services.

Tamini is part of the Terna Energy Solutions Group, a company within the Terna Group, which, through specific and diversified skills of its member companies, offers 360° support that covers the entire life cycle of projects, including the supply of strategic components for the energy transition, such as cables and electrical transformers.

Thanks to the existing synergies between the various Group companies, TES is the partner of excellence in the energy and digital transition of its customers in Italy.

The other companies in the Terna Energy Solutions Group are:



Design, manufacture, installation, and maintenance of cables, accessories, and systems solutions for energy suppliers, TSOs and industrial applications.



Advanced solutions and comprehensive support, tailored to each phase of the life cycle of high and medium voltage infrastructure, photovoltaic systems and storage systems.



High Voltage



Storage



Photovoltaics



Energy Efficiency



Terna Energy Solutions

MORE VALUE, TOGETHER.

The Group also provides connectivity services to the market, supporting customers in building customised project solutions.



SERVICE

Unique solutions, developed on customer needs.

Unique in Quality

Our transformers are the result of a unique mix: the artisan excellence of Made in Italy combined with the best available technology.

Unique in Technology

We have unique research and development methodologies to ensure the highest standards of products and services for our customers.

Unique in Customization

We meet the specific needs of each client through our ability to customize each solution, backed by more than a century of experience in the industry.

Unique in Design

Our experienced and qualified team designs unique products, thanks to the incomparable know-how gained worldwide.

SERVICE

Tamini guarantees its customers high-quality technical assistance in each phase of the transformer's life, thanks to a complete service portfolio and a team of experienced and qualified specialists.





QUALITY, ENVIRONMENT AND SAFETY INTEGRATED SYSTEMS

Integrated Systems are carried out and certified according to ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO-37001-2016 Standards. Quality Controls are performed at every step: engineering, manufacturing cycles, procurement, testing and on-site installation.

All Tamini's factories have their own testing facilities suitable for the routine, type and special tests in accordance with IEC or IEEE (ANSI) and other worldwide recognized Standards (ASA, CSA, BSS, SEV etc.).
Tamini definitely complies with the most updated International Legislation for Safety and Environmental protection.



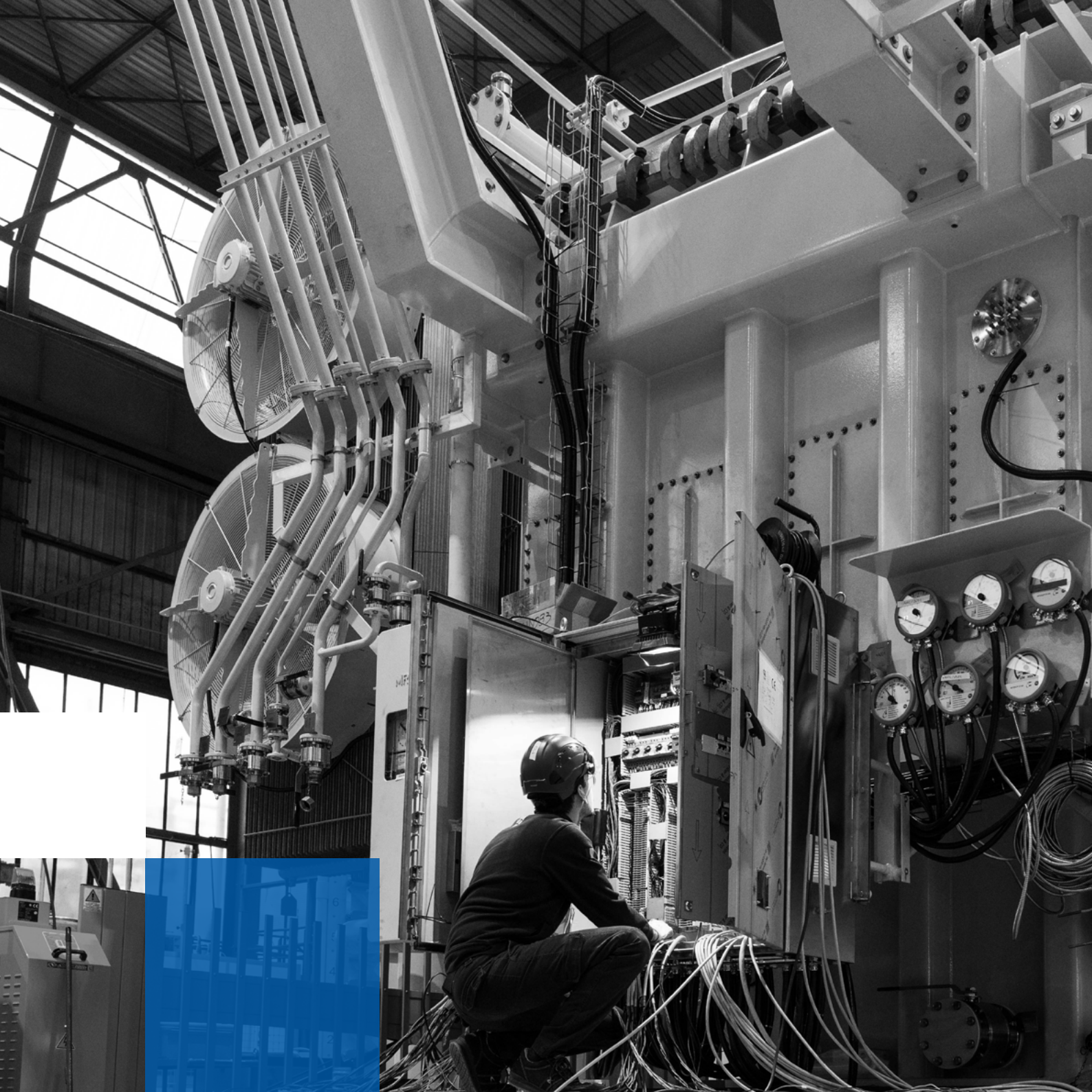
Tamini's organization is dedicated to performing activities in compliance with the highest standards of quality, environmental protection, health and safety.

Integrating ESG principles, recognised certifications and responsible innovation is an integral part of how Tamini designs and produces transformers every day.

The company is qualified by independent international platforms:

- **Ecovadis** – Global ESG rating
- **Synesgy / Cribis** – Assessment of corporate sustainability
- **Open-es** – Environmental, social and governance performance
- **Achilles** – Qualification of suppliers for regulated markets







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:

- More than 100 years of experience in the construction, maintenance and repair of industrial and power transformers;
- Dedicated service resources can tap into a pool of experienced personnel from different production plants to offer enhanced flexibility;
- Flexible repairs backed up by 5 production plants (one of them dedicated to service activities only) 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.

TECHNICAL ASSISTANCE

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 and Commissioning

A team of experienced and qualified specialists guarantees the full support to deliver, assembly 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 and 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.

Emergency Services (24 Hours/7 Days)

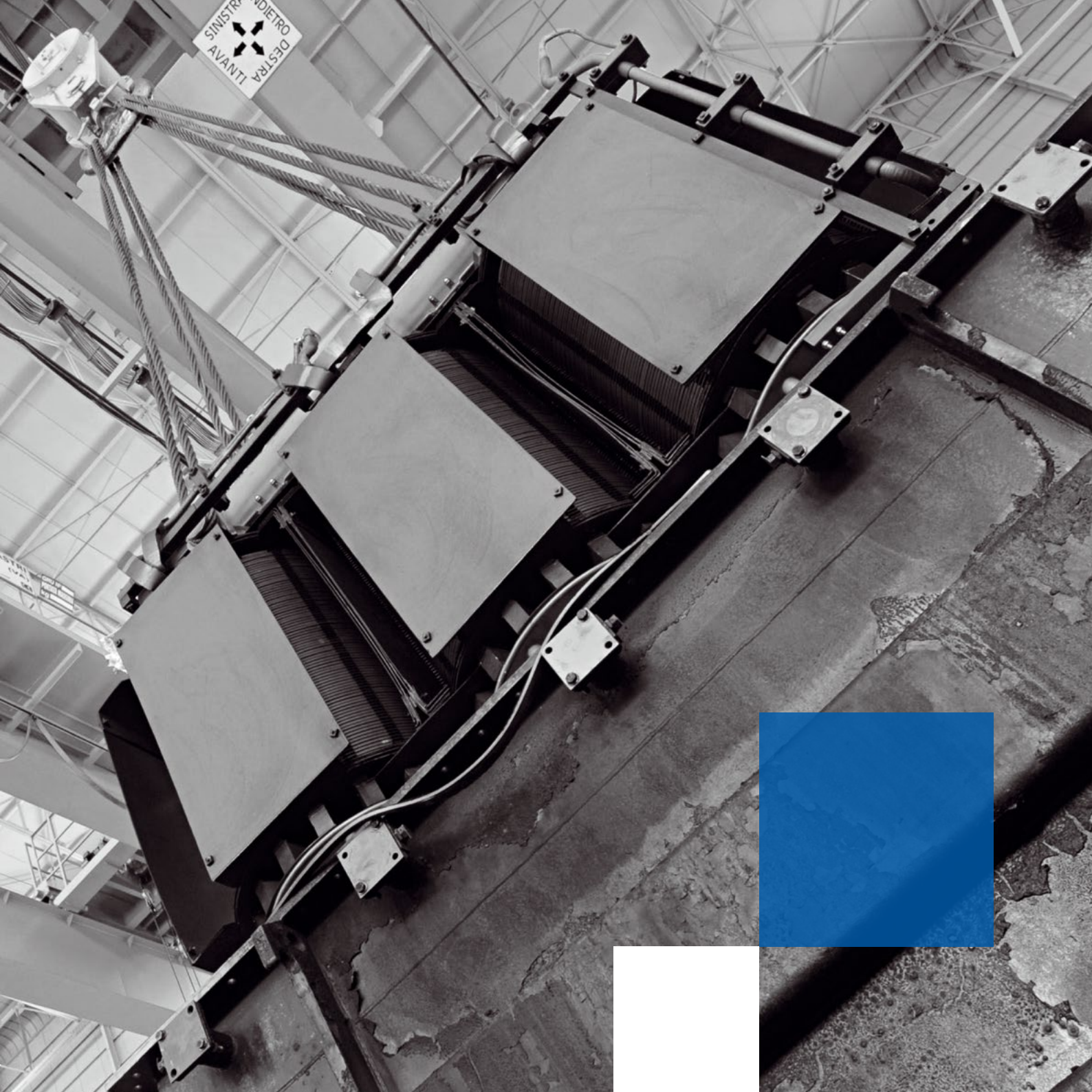
The emergency services include the activities and materials needed to react the fastest to customer's critical requests.

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.

RENTAL & SALE

The availability of used and reconditioned transformers, access to information on a large installed fleet and the ability to apply specific engineering solutions complete Tamini's range of services.

By giving a second life to used transformers, Tamini contributes as well to improve the environmental impact of its activities.



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

A network of partnerships for the global markets

Tamini has established a network of certified partners to support in the assembling, installation and commissioning of new transformers and to provide the availability of qualified repair shops for testing and resolving service issues on Tamini transformers.

We are present with our service partners in:

- U.S. and Canada
- Bulgaria
- Egypt
- India
- Mexico
- Spain
- Belgium
- Algeria
- South Africa





SPARE PARTS

Tamini is supporting its customers supplying all kind of 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.

SPARE PARTS

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;
- Pressure relief devices with trip contact;
- Remote position indicator;
- Automatic voltage regulator;
- Oil filter units;
- Etc.

Ancillaries

Transformers are equipped with several fittings and accessories:

- Air silica gel breathers for the conservator sections;
- Oil level indicators with electric contacts for the 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;
- Over-pressure protection;
- Oil sample valve;
- Etc.







Tamini Trasformatori S.r.l.

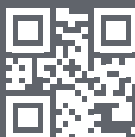
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