ALTENIA | Terna Energy Solutions

ENERGY THAT WORKS.

Innovation and experience for advanced energy solutions

THE GROUP

Altenia offers cutting-edge, tailored solutions for every phase of the life cycle of high and medium-voltage infrastructures, and is the benchmark for companies and operators investing in the energy sector.

Altenia is part of the Terna Energy Solutions Group, a company within the Terna Group which, through the 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, 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 within the Terna Energy Solutions Group are:

BRUGG CABLES
Well connected.

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

TAMINI
ENERGY TRANSFORMERS

Design, manufacture, installation and maintenance of transformers for industrial and power applications for over 100 years.

Terna Energy Solutions
MORE VALUE, TOGETHER.

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

ABOUT

From design to maintenance, from operation to regeneration, we ensure targeted interventions to optimise plant performance, safety and efficiency.

Thanks to the expertise of our subsidiaries — Half Bridge Automation and STE Energy — and to our integrated approach, we respond promptly to market needs, contributing to operational continuity and maximising the yield from energy assets.

High voltage
EPC, O&M, Revamping of HV/MV infrastructure

Storage systems
EPC services for utility-scale storage facilities

Photovoltaics
EPC, O&M, Revamping of photovoltaic systems

Hydroelectricity
construction of turnkey hydroelectric plants

OUR ISO CERTIFICATIONS

Choosing Altenia means partnering with a company that operates in full compliance with internationally recognised standards. The ISO 9001, ISO 14001 and ISO 45001 certifications issued by Bureau Veritas confirm the excellence of our processes and our ongoing commitment to quality, sustainability and safety.

These certifications are not an end point, but a daily commitment. We guarantee reliable services and efficient processes as well as a responsible approach to the environment, and we promote a safe and responsible working environment. This is how we create tangible value for our customers and build long-lasting partnerships based on trust, professionalism and shared responsibility.

CERTIFIED
ISO 9001

CERTIFIED
ISO 14001

CERTIFIED
ISO 45001

SERVICES FOR END-TO-END MANAGEMENT OF ELECTRICAL INFRASTRUCTURE

Thanks to our integrated portfolio of services, we provide our customers with an all-round approach to the design, construction and maintenance of electrical infrastructures and photovoltaic systems.

Our experience, combined with the nationwide presence of our integrated network of field technicians, is a guarantee of competence, r esponsibility and reliability.

HIGH VOLTAGE

>150
HV plants and projects completed

>600
HV O&M interventions every year

STORAGE SYSTEMS

4
plants installed and operated

PHOTOVOLTAIC

>1 GWp
of installed capacity

>1.5 GWp
managed power

HYDROELECTRIC POWER

>1 GWp
of installed capacity

>150
projects in 30 countries

HIGH VOLTAGE

EPC

We design and manufacture electrical transmission infrastructures for industrial customers, data centres, distributors and energy producers, ensuring efficient solutions that meet the highest quality standards.

Our experience covers a wide range of infrastructures, including electrical substations, overhead and cable connections, ensuring certain lead times and compliance with applicable regulations.

From engineering to construction and commissioning, our integrated approach allows us to optimise costs and performances, offering customers safe, reliable turnkey systems.

Our services

Definitive connection

- Feasibility study, business plan definition and design
- Plant construction (civil works and electrical assembly) and testing
- Equipment supply and installation
- Protection, Command and Control System: installation and management of systems capable of interacting with Terna's Control Centre

Provisional connection

- Rapid Installation Connection Solution: "mobile" HV station with rapid installation
- AIS (Air-Insulated Switchgear) system: complete supply of connection technology

Care, responsibility towards the customer, rapid intervention **and respect for the** environment guide everything Altenia does.

REVAMPING

We renovate existing electricity transmission infrastructures, improving their efficiency, security and operational continuity.

Through an in-depth analysis of the condition of the systems, we assist customers in identifying the most effective interventions to restore performances or integrate advanced technologies.

Our goal is to extend the life cycle of assets, reduce operating costs and maximise system productivity, ensuring a sustainable return on investment over time.

Our services

- Upgrade of full-service user substation
- Re-engineering of the Protection, Command and Control System
- Replacement of the components required for plant operation
- Regulatory adaptations and improvements in terms of ESG and sustainability

Reliability, innovation and rapid intervention, together with the company's wide **range of services and** technical expertise, make **us the best choice for your** energy assets.

OPERATION & MAINTENANCE

We provide comprehensive O&M services, ensuring the management, maintenance and continuous monitoring of assets to optimise their reliability and performances.

Through preventive and predictive maintenance strategies, timely interventions and advanced remote-monitoring systems, we reduce the risks of plant downtime and maximise operational availability.

Our data-driven approach enables us to optimise plant efficiency, improving profitability while ensuring compliance with security and sustainability standards.

Our services

Ordinary maintenance

- Technical inspections with and without out-of-service
- Availability and emergency response
- Remote Network Management

Extraordinary maintenance

- Replacement of individual components
- Occasional interventions and complete overhauls

Altenia is the perfect partner for entrepreneurs and administrators **looking for advanced** and sustainable energy solutions.

PHOTOVOLTAICS

EPC

Altenia develops medium- and large-scale photovoltaic plants, offering integrated Engineering, Procurement & Construction services. We operate under full-service contracts, guaranteeing reliability, high execution quality and nationwide operational coverage.

We support projects from the very early Procurement stages, guaranteeing the timely supply of components selected from the best technological solutions available on the market.

The design produced by qualified technicians covers the entire life cycle of the plant: from preliminary concepts to as-built drawings, for efficient, precise construction which meets the highest standards.

Our services

- Management of administrative paperwork with the leading grid distributors and local customs offices
- Full testing and inspections to guarantee plant performances
- Production of optimised design solutions and selected components
- Site management entrusted to dedicated project managers

Altenia transforms complex photovoltaic **projects into efficient, safe plants which will stand the test of time.**

REPOWERING & REVAMPING

Technological evolution and changing operational requirements make it essential to upgrade existing photovoltaic installations

Through its Revamping and Repowering services, Altenia optimises plant performances, increases energy production and extends plant life, ensuring full regulatory compliance and high standards of efficiency and reliability.

Our services

- Replacement of inverters with higher-performing and more efficient models
- Updating of switchboards and protection systems for greater safety and compliance with applicable regulations
- Optimisation of plant layout to improve shading management and maximise energy yield
- Advanced monitoring for real-time performance control and failure prevention
- Replacement of photovoltaic modules with latest-generation panels, which are more efficient and offer higher production capacity
- Adaptation of inverters to support the new power installed
- Updating of management and control systems to optimise production and reduce losses

The relentless pursuit **of technological** innovation makes Altenia a pioneering company that ensures **efficient and modern** solutions.

OPERATION & MAINTENANCE

Altenia offers comprehensive monitoring and maintenance services for every type of photovoltaic system whether installed on the ground or the rooftop, including through multi-year contracts.

Thanks to a nationwide presence of field technicians co-ordinated by dedicated field managers and service managers, we guarantee reliability, prompt intervention and excellent performance 365 days a year, throughout the entire life of the plant.

Our services

- Continuous remote supervision through dedicated software, for full telemonitoring of all key plant parameters

- Advanced performance analyses, comparing energy production, solar irradiation and clusters of similar plants, aimed at optimising overall system performance

- In-depth technical diagnostics, including thermographic analysis of photovoltaic modules, DC and AC switchboards and transformers, also performed using drones, as well as electroluminescence testing on photovoltaic modules

- Scheduled and corrective maintenance, including module cleaning, vegetation management and pest control, management of component warranties and insurance coverage, as well as the resolution of minor faults and repair activities

- Integrated security systems, from design to installation of anti-theft and intrusion prevention solutions: CCTV systems, microwave perimeter detection, thermal and video analytics systems, and seismic-technology anti-theft cables for modules and power cables

- Supply and installation of the Central Plant Controller (CPC)

We ensure maximum **energy efficiency and plant safety, allowing our customers to focus fully on their core** business.

Extra Works Services

Thanks to the department of Extra Works, Altenia assists the customers in the search for solutions for correction and improvement, to guarantee and optimise the yield from photovoltaic plants.

Our services

- Replacement and revamping of modules, cables, string boxes, inverters, parallel switchboards, MV switchboards, transformers, batteries and conditioners, and monitoring systems
- System restoration following force majeure events (fire, theft, hail, lightning)
- Tracker system optimisation and anti-intrusion system restoration
- Plant dismantling and/or reassembly
- Replacement of sheathing and module attachments, with partial or total replacement of damaged structures
- Adaptation to applicable regulations with issue of declaration of conformity
- Movement of channels for cables and/or switchboards
- Deconditioning of inverter cabins, cleaning of sumps or pipes
- Backfilling of wells against theft

The Extra Works department is on hand to intervene quickly to restore the functionality of photovoltaic plants. We minimise damage and prevent future disruptions, while ensuring continuity and maximum efficiency.

over
1,200
interventions
completed
in 2025

HALF BRIDGE AUTOMATION

Power Continuity and Digital Energy: smart solutions for renewable energy

Half Bridge Automation (HBA) is the Altenia subsidiary that offers advanced services dedicated to energy continuity and to the control and management of production from photovoltaic plants.

With a team consisting of engineers, specialised technicians and industry experts, HBA is the market leader in power electronics.

Thanks to continuously evolving technological and logistical expertise, and to partnerships with recognised technology providers, HBA delivers state-of-the-art solutions tailored to the specific needs of each customer.

Our services

- **Regeneration/repair of photovoltaic inverters**
  We regenerate and repair all types of photovoltaic inverters from the leading brands on the market, including those which are no longer in production

- **Laboratory and on-site repair work throughout Italy**
  We carry out the process of diagnosing-regenerating / repairing-testing inverters in a laboratory equipped with the most up-to-date equipment in the sector, spread over thirteen independent production lines. Our technicians travel all over Italy, 365 days a year, for direct intervention on the component, regardless of the plant's location

- **Rental of small, medium and large inverters (up to 1 MWp)**
  We offer rentals and swaps of photovoltaic inverters of all sizes, designed to guarantee the operational continuity of photovoltaic plants. Our Power Boxes — 1 MWp mobile cabin inverters — allow large plants to continue producing energy even in the event of irreversible damage to the centralised inverter

- **Tracker implant regeneration (HBA-SUN)**
  HBA-SUN is an electromechanical regeneration service that can be adapted to any type of tracker and customised based on technical and logistical needs, allowing obsolete and/or unproductive plants to be restored to full functionality in just 40 days

- **Indirect connection (HBA-X)**
  In accordance with the Criteria for connection to Terna's control system, as defined in Annex A.13, we have developed an advanced, certified and fully operational solution that enables compliant and secure indirect communication between High-Voltage [HV] connected plants and the Grid Manager

- **Production of the Central Plant Controller (MV) and Power Plant Controller (HV)**
  We design and produce devices to adapt plants for regulatory compliance, in order to make them suitable under the provisions of the Italian Regulatory Authority for Energy, Networks and the Environment (ARERA)

In 2025, HBA regenerated and repaired 100 MWp and worked around 7,000 hours on site, achieving **a success rate of 95% on first interventions.**

STE energy

Renewable energy and electricity infrastructure

STE Energy is the Altenia subsidiary with distinctive and specialised expertise in high-voltage systems, energy storage, and hydroelectric and solar power.

STE Energy is an EPC contractor with a track record of +600 plants representing 2 GW of installed capacity worldwide. It is a dynamic company, with a development strategy based on technological and geographical diversification and a strong commitment to innovation.

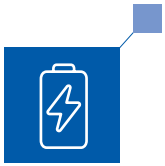
Our services

- **EPC and O&M**
  We act as an EPC contractor, following every stage of the project from design and procurement to construction and commissioning. We also provide Operation & Maintenance services with 24/7 remote assistance, real-time monitoring and complete plant management and maintenance.

- **Digital solutions and services**
  We carry out grid studies, power system analyses and specialised tests on high and medium-voltage electricity systems, as well as developing digital automation and protection systems suited to customers' needs.

- **E-guardian platform**
  In the digital field, we provide a proprietary, multi-technology software that integrates monitoring and analysis capabilities, transforming big data into smart data and thus facilitating the complete digitisation of all types of renewable asset.

With 30 years of experience and more than 600 projects carried out in 30 countries around the world, STE Energy is now an internationally recognised player in the **production of high-voltage infrastructure, solar and** hydroelectric power plants and battery energy storage systems (BESS).



ENERGY STORAGE SYSTEMS

We provide design, procurement and installation for Battery Energy Storage Systems (BESS) tailored to our customers' needs, offering advanced solutions for intelligent energy management.

Our systems allow the electricity produced to be stored and released when needed, ensuring grid stability while maximising operational efficiency in compliance with European targets in terms of the management of energy produced.

Our services

- **Project design**
  We prepare all the documentation necessary for plant construction, from preliminary drafts to the as-built drawings

- **Procurement and logistics**
  We manage all aspects related to the procurement of the materials needed for plant construction and the logistics of the activities

- **Site management**
  Through dedicated project managers, we take care of all phases of on-site activities

- **Tests and trials**
  We ensure the proper functioning of the system by carrying out all the necessary checks

ENERGY ADVISORY

We design tailor-made solutions to achieve energy efficiency.

We help companies to identify specific areas for improvement in order to optimise the production chain and service delivery.

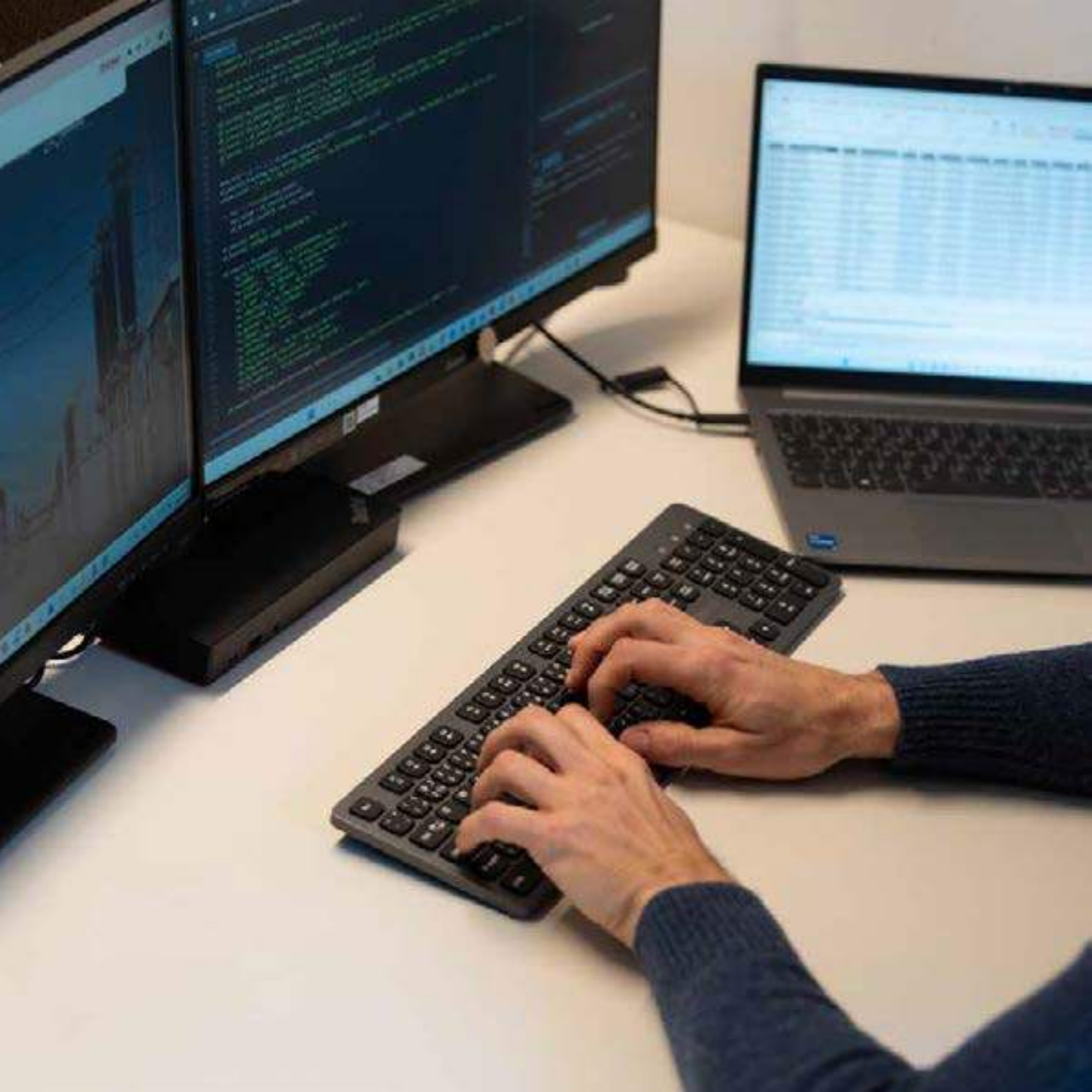
We support our customers in increasing their competitiveness, achieving the best balance between production and consumption and transforming outdated production systems into state-of-the-art systems that harmonise savings and revenue.

Our services

- **Energy Diagnosis**
  We perform in-depth energy audits using energy simulation models in order to optimise production and management processes for individual departments or entire companies

- **Monitoring plans and diagnostics software**
  We process energy data in real time and provide predictive action plans thanks to our use of complex mathematical and statistical algorithms

- **Energy Performance Contract Interventions (EnPC)**
  We guide our customers in identifying integrated energy efficiency improvement measures, accompanying them in their design and implementation



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