TEK
TRANSFORMATÖR

Reliable Power
Limitless Energy!

CATALOGUE

www.tektransformator.com

CONTENTS

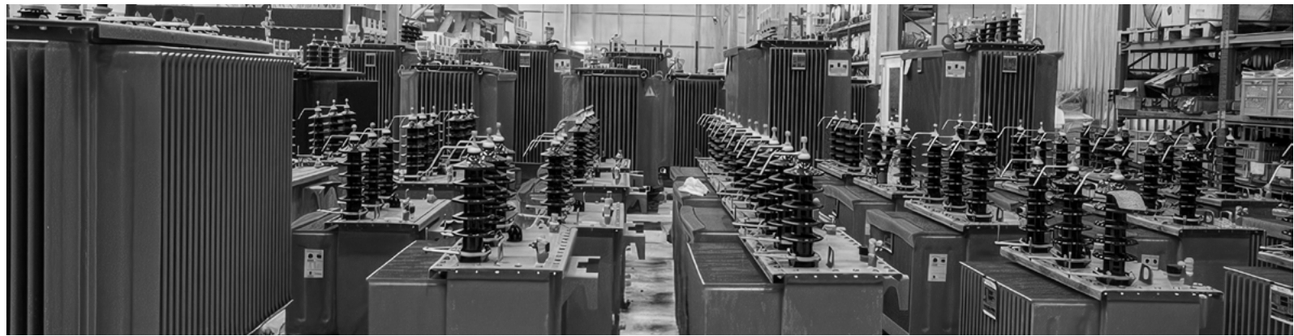
About TEK Transformatör

With over 30 years of experience and deep-rooted expertise, TEK Transformatör is a trusted manufacturer and global supplier of high-quality transformers. Operating from a production facility covering 24,800 m², supported by more than 150 skilled professionals, TEK contributes to the national economy while adding economic, social and environmental value through continuous technological investments and R&D initiatives.

In the many years we have been active in the transformer business, TEK Transformatör has manufactured over 50,000 transformers, providing electricity to approximately 14.2 million families around the world (based on the average capacity of a 630 kVA transformer).

All transformers manufactured by us are designed and produced in accordance with international standards and customized to meet client-specific requirements, adhering strictly to our philosophy of quality and performance.

Our medium power transformers, with capacities up to 31,5 MVA, are widely deployed in power grids throughout Europe, the Balkans and Africa. Their reliability, longevity, availability and value for money have made them a preferred choice in various grid applications and energy infrastructure projects.



Milestones

1982 — Factory was established.

1997 — Factory became a company.

2005 — The first export in middle - East took place.

2015 — Another new factory was established.

2016 — The firt export in Africa took place.

2018 — The first export in Europe took place.

2020 — Transformer tank production unit.

2024 — The total production area reached 24,800 m^2.

Milestones

Our Quality Policy

At TEK Transformatör, our mission is to continuously improve our management systems and, with the active participation of all our employees and our growing national and international collaborations, deliver high-quality products and services that are reliable, innovative, environmentally friendly, and attentive to occupational health and safety—while prioritizing the satisfaction of our customers, employees, and suppliers.

In this regard, we commit to:

Efficient Resource Use and Environmental Protection:
Using our resources effectively and efficiently, minimizing waste, adopting a zero-waste philosophy, implementing environmentally friendly production methods, and raising environmental awareness among all employees.

Employee Health and Occupational Safety:
Acting with a "zero accident" principle; ensuring safe working environments, identifying risks through regular assessments, taking necessary precautions, and embedding a strong safety culture into our corporate values through continuous training and awareness initiatives.

Continuous Improvement and Effective Management Systems:
Monitoring the effectiveness of our management systems at every stage of our operations, implementing regular improvement activities, and strengthening internal communication and training efforts to increase employee contribution.

Following Technological and Scientific Advancements:
Closely following national and international developments, integrating modern technologies and advanced engineering methods into our business processes to enhance product and service quality, efficiency, and reliability.

Strengthening Customer and Supplier Relations:
Collecting continuous feedback to understand the expectations and needs of our customers and suppliers, and developing collaboration processes to ensure mutual satisfaction and achieve common goals.

Training and Awareness:
Providing continuous training to our employees on environmental awareness, occupational safety, quality management, and productivity; creating awareness through internal communication channels and supporting knowledge sharing within the organization.

Treating Quality as a Sustainable Commitment:
Recognizing that quality is not a goal but a continuous journey, and adopting it as a core principle in all our business processes. We commit to fulfilling this promise every day.

Research & Development (R&D)

At TEK Transformatör, research and development is central to our engineering strategy, enabling us to deliver technologically advanced, high-performance transformer solutions for evolving grid demands. Our R&D division collaborates with academic institutions, R&D councils, and industry experts to integrate emerging technologies into transformer design – including diffrent core materials, multi-winding hybrid transformers, and smart monitoring systems compatible with SCADA and IoT platforms. We develop customized solutions for grid instability, harmonic distortion, and fluctuating renewable energy inputs by utilizing high-frequency electromagnetic simulations, electrothermal FEA analysis, and loss minimization algorithms. Our design validation process includes multi-domain simulations, prototyping, and full test verification for both standard and non-standard products. TEK Transformatör also participates in government-funded innovation projects and supports patented design development in insulation coordination, loss optimization, and thermal management. This allows us to offer application-specific transformers that comply with the latest grid codes, efficiency directives, and harsh environmental requirements across global markets.

Our R&D department, led by experienced engineers, works closely with clients to design and develop transformer solutions aligned with current and emerging market needs. We offer:

- Innovation in transformer materials and design
- Optimization of energy efficiency and space utilization
- Integration of smart monitoring systems

We collaborate with TÜBİTAK and KOSGEB in R&D projects aimed at improving transformer production methods, including in-house machinery development and process automation.

TEK Transformatör Test Laboratory

TEK Transformatör operates a fully equipped, TÜRKAK-accredited testing laboratory designed to verify the compliance of transformers—essential components in power transmission and distribution systems—with national and international standards. Accredited according to ISO/IEC 17025, our laboratory performs electrical, mechanical, and thermal tests in line with TS EN, IEC, and IEEE standards.

Equipped with state-of-the-art testing equipment and staffed by a team of experienced engineers, the laboratory offers a wide range of testing services including routine tests, type tests, and customized performance tests tailored to client requirements. These tests are primarily conducted on oil-immersed distribution transformers up to 36 kV and power transformers up to 31,5 MVA, and include key parameters such as:

- Short-circuit impedance
- Insulation resistance
- No-load and load losses
- Temperature rise

In addition to in-house testing, TEK Transformatör's products have successfully passed type tests and performance verifications at KEMA Laboratories (Netherlands) and Boğaziçi University (Türkiye), proving compliance with global quality standards.

With a strong commitment to quality, reliability, and impartiality, our testing laboratory provides dependable technical data to manufacturers, utility companies, and regulatory authorities, thereby playing a crucial role in product safety and energy efficiency across the energy sector.

Manufacturing Standards

All transformers manufactured by TEK Transformatör are designed, produced, and tested in full compliance with internationally recognized standards, including IEEE, ANSI, IEC, and applicable ISO 9001, ISO 14001, ISO 45001 quality and management systems. Our engineering and production processes meet the rigorous requirements of customers across Europe, the United States, Colombia, Africa, and the Middle East, with compliance to DOE efficiency regulations, RETIE standards for Colombia, and optional UL/CSA requirements where applicable. Surface protection systems are applied according to ISO 12944 and ANSI C57.12.28/C57.12.29, ensuring long-term corrosion resistance under C3 to C5 environmental conditions. Our design and manufacturing processes are fully capable of operating within an Engineered-to-Order (ETO) framework, enabling customized solutions based on specific client requirements."

About Our Production

Advanced machinery and digital process control are integral to maintaining high precision, repeatability, and product reliability across all stages of transformer manufacturing. Core cutting is performed using automated step-lap shearing machines to ensure dimensional accuracy and magnetic alignment. Coil winding is carried out on CNC-controlled winding machines, capable of producing circular, rectangular, and helical windings with precise tension and layering control. All conductors are insulated and formed using programmable shaping tools to ensure geometric uniformity and mechanical strength.

Tank fabrication is done using laser cutting systems, robotic welding units, and precision bending machines, allowing for tight tolerances and minimal distortion. Surface treatment and paint application are performed in climate-controlled booths. Vacuum drying and oil-filling operations are fully automated and monitored for temperature, vacuum level, and moisture content to ensure insulation integrity and long-term dielectric strength. Production quality is further supported by in-line testing stations, barcode-based traceability, and an integrated ERP system for real-time tracking of production data, material flow, and quality checkpoints.

The core assembly consists of high-grade, cold-rolled, grain-oriented silicon steel sheets with step-lap mitred joints to reduce core losses and noise. The coils are wound with electrolytic-grade copper or aluminum conductors, insulated with thermally upgraded materials (Class A, F, or H as required), and securely braced to withstand axial and radial short-circuit forces. Core and coil units are dried under vacuum and impregnated before being securely mounted inside the tank.

The transformer tank is fabricated from heavy-gauge, mild or stainless steel plates using CNC-controlled machinery to ensure dimensional accuracy and leak-proof welding.

Global Presence and Certifications

CERTIFICATES

CERTIFICADO RETIE

Underwriters Laboratories

The Processes are On Going

KEMA Labs

TÜRKAK

TSE

CE

ISO 9001:2015

ISO 9001:2015
Quality Management System

Our quality management approach is shaped by principles of customer satisfaction, continuous improvement, and process orientation. The ISO 9001 certificate confirms that our products and services meet international quality standards.

ISO 14001:2015

ISO 14001:2015
Environmental Management System

In pursuit of a sustainable future, we control our environmental impacts, use natural resources efficiently, and fully comply with legal obligations. The ISO 14001 certificate is proof of our environmentally conscious production philosophy.

ISO 27001:2022

ISO/IEC 27001:2022
Information Security Management System

We implement an information security management system to ensure the confidentiality, integrity, and availability of information, as well as to safeguard the security of our business processes. The ISO 27001 certificate verifies that our digital infrastructure complies with international security standards.

ISO 45001:2018

ISO 45001:2018
Occupational Health and Safety Management System

The health and safety of our employees is a top priority. Through systematic approaches to accident prevention and risk-based assessment practices, we fully implement the ISO 45001 standard.

ISO 17025

ISO/IEC 17025
Quality Policy

ISO/IEC 17025 is an international quality standard that defines the competence requirements for testing and calibration laboratories. The standard is designed to ensure that laboratories operate with technical accuracy, reliability, impartiality, and a robust quality management system, providing globally recognized credibility.

ISO 26000

ISO/IEC 26000
Social Responsibility Management System

Implementation of a Social Responsibility Management System to ensure ethical business practices, compliance with human rights, environmental sustainability, fair labor practices, community involvement, and stakeholder engagement in all corporate activities, including transformer manufacturing and associated operations.

ISO 37001

ISO/IEC 37001
Anti-Bribery Management System

Implementation and maintenance of an anti-bribery management system to prevent, detect and respond to bribery risks in the fields of transformer manufacturing, foreign trade, logistics, accounting, finance, and other corporate operations.

Power Grid Step-Down Distribution Transformers

Step-down distribution transformers are the backbone of medium-voltage power distribution systems, converting subtransmission-level voltages (up to 36 kV) to low-voltage levels suitable for end-user consumption. These three-phase, oil-immersed transformers are designed for installation in utility substations, industrial plants, and commercial complexes, and are manufactured according to IEC, or fully customized engineer-to-order (ETO) specifications. TEK Transformatör offers transformers in power ratings from 25 kVA to 3150 kVA, optimized for high efficiency, low partial discharge levels, and long service life under fluctuating load conditions.

Constructed with precision-wound copper or aluminum windings, step-lap laminated cores, and hermetically sealed or conservator-type tanks, our distribution transformers can be tailored with ONAN, ONAF, KNAN or OFAF cooling, off-circuit or on-load tap changers, and advanced protection accessories. Each unit is designed to meet stringent utility and industrial standards for dielectric strength, temperature rise, and mechanical short-circuit withstand, ensuring robust performance in diverse grid environments.

Technical Design Specifications

Product General Details

Power	25–3150 kVA
Primary Voltage	400-36,000 V
Secondary Voltage	208Y/400 to 36,000 V
General	• Three/Mono Phase • 50 or 60 Hz
Oil Type	Mineral Oil or Natural Oil
Impedance Voltage	According to IEC (2.5%-10%)

Environmental & Thermal Design Conditions

Standard Ambient Temperature Range	-25 °C to +50 °C
Extended Ambient Temperature Range (Optional)	-45 °C to +55 °C
Altitude	
Standard maximum altitude: ≤ 1000 meters (3280 feet) above sea level	
For altitudes > 1000 meters: Thermal derating will be applied (Derating factor: approx. 0.55% to 1,2% per 100 m)	
Insulation Class	
Class A (105 °C)	Standard oil-paper insulation (mineral oil + cellulose paper)
Class F (155 °C)	Thermally upgraded paper or synthetic insulation; used in special applications or where higher temperature rise is acceptable
Class H (180 °C)	High-temperature-resistant materials (Nomex + silicone or ester fluids); used in compact or high-load designs

Construction

- High-grade CRGO (Cold-Rolled Grain-Oriented) silicon steel cores with step-lap mitred joints for reduced no-load losses and low noise
- Optional amorphous metal core for ultra-low core losses (on request)
- Electrolytic copper or EC-grade aluminum windings with precision layer or disc winding configurations
- Windings insulated with thermally upgraded paper or high-temperature synthetic insulation (Class A, F, or H)
- Vacuum drying and impregnation under controlled conditions to remove moisture and enhance insulation life
- Reinforced bracing and clamping systems to withstand axial and radial short-circuit forces
- Core-coil assembly securely mounted with shock-absorbing supports to minimize mechanical stress during transport
- Fabricated from hot-rolled or cold-rolled mild steel or stainless steel, cut and bent using CNC precision equipment
- All welding performed according to EN ISO 3834 or AWS D1.1 standards, leak-tested and dye-checked
- **Tank Types:** Hermetically sealed, conservator type, or pressure-relief design
- External accessories include lifting lugs, valves, earthing pads, finwalls or radiator panels, and optional boxes
- Radiator surfaces sized to meet thermal performance at rated cooling class (ONAN/ ONAF)
- High mechanical rigidity for safe operation under seismic or transport stress

Painting and Coating:

- Surfaces prepared via grit blasting, phosphating and shot blasting for optimal adhesion

Multi-Layer Paint System: Zinc-rich epoxy primer, Polyurethane or polyester-based top coat

Coating Thickness: 105 - 240 µm (total DFT), suitable for C3, C4, or C5 environments per ISO 12944

Color Options: Custom RAL or Munsell colors available

Protection & Safety Features

- Integrated temperature indicators or bimetal thermostats
- Optional temperature sensors for real-time monitoring (Smart transformers)
- Pressure Relief Devices
- Liquid level indicators with float mechanisms
- Optional oil sampling valves
- Welded grounding pads and terminals for HV/LV compartments and tank
- Cable boxes on top or side of tank
- High mechanical strength design to withstand short-circuit forces
- Optional arc-resistant construction and compartment insulation
- IoT-enabled safety alarms for temperature, overcurrent, surge events

Step Up Transformers

- **Wind Turbine Transformers**
- **Solar Power Plant (SPP) Transformers**

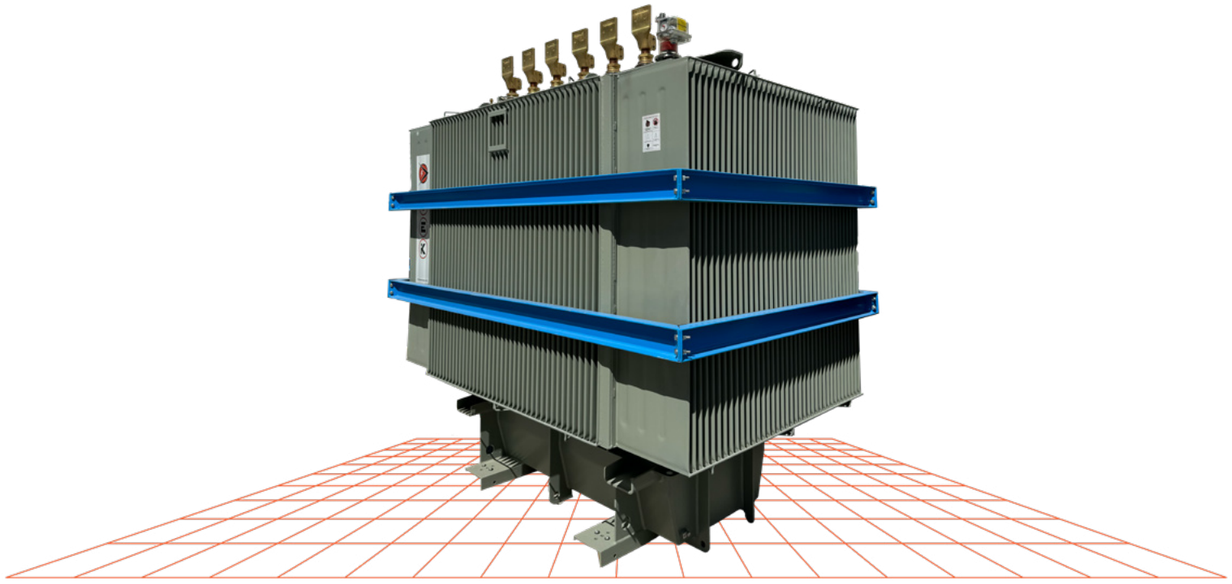
Step-up transformers for renewable energy applications are specially designed to raise the low-voltage output of power conversion equipment such as wind turbine generators or photovoltaic inverters to medium-voltage levels (typically up to 36 kV) for grid interconnection. These transformers must withstand frequent load cycling, harmonic distortion, and environmental stress, while maintaining high efficiency and thermal stability.

Wind Turbine Transformers

- Tower base or pad-mounted configurations
- Designed for continuous load variations due to wind fluctuations
- High mechanical strength to withstand vibration, tilt, and acceleration forces
- Available as oil-immersed or dry-type (if nacelle-mounted)
- Typically rated from 100 kVA to 10 MVA, with primary voltages of 690 V to 1.1 kV and secondary voltages up to 36 kV
- Optimized for compact footprint, low noise, and thermal endurance
- Complies with IEC 60076, IEC 60034, and wind industry specifications

Solar Power Plant (SPP) Transformers

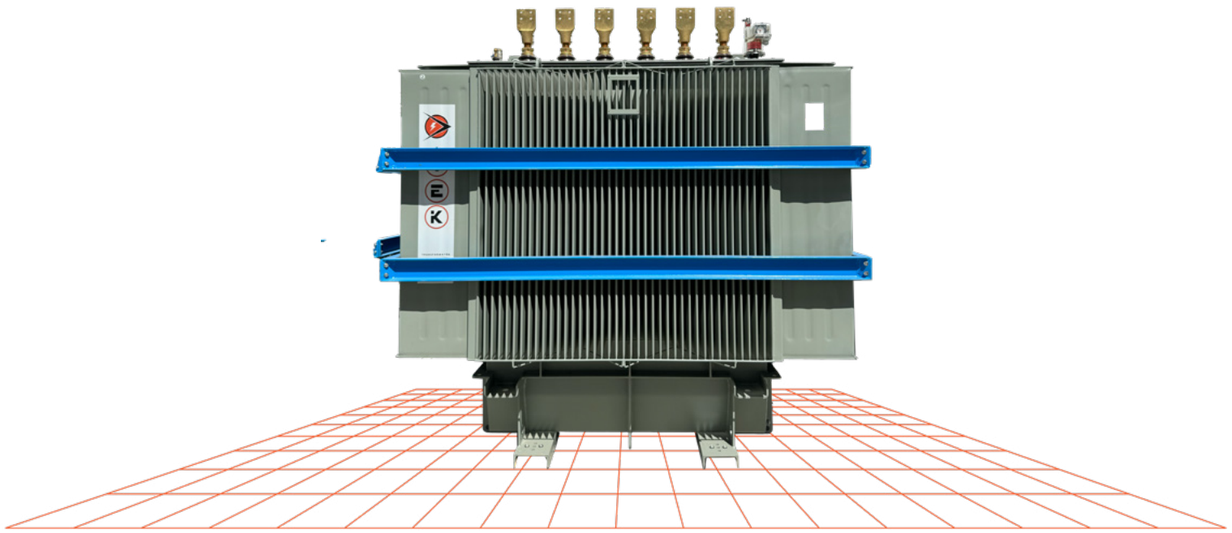
- Used to step up inverter output voltage to MV level for feeder or grid connection
- Must handle high-frequency harmonics and cyclic loading due to irradiance variations and MPPT switching
- Designed for outdoor installations with ONAN/ONAF/KNAN cooling
- Rated from 250 kVA to 10 MVA, can be designed with double secondary or customer needs based configurations
- Equipped with electrostatic shielding to mitigate inverter-induced harmonics
- Compatible with natural ester fluids (FR3) for eco-friendly solar installations
- Compliance with IEEE C57, IEC 60076, and local interconnection codes (RETIE, UL 1741-SA, etc.)
- Split winding for central or string inverter systems



Optional Design Conditions:

- K-factor optimized design available to prevent overheating due to harmonic currents
- Windings and core sized with increased thermal margin for non-sinusoidal load current
- Optional low-capacitance winding arrangements to reduce resonance with switching frequencies
- Finwalls or Radiator design customized based on project site ambient conditions
- Optional fan control units (thermostatic or digital) for optimized cooling at varying load levels

BESS Transformers



BESS transformers are designed to interface Battery Energy Storage Systems with the medium-voltage utility grid. These transformers operate in bidirectional mode, handling both charging and discharging cycles from the Power Conversion System (PCS), and must withstand frequent switching, fast transient harmonics, and nonlinear loads.

TEK Transformatör designs BESS transformers with low impedance, high thermal endurance, and harmonic-robust winding construction, ensuring stable operation across all modes.
Units are available from 250 kVA to 5000 kVA, with customized voltage ratios and can be equipped with electrostatic shields, K-rated windings, and smart monitoring systems for grid-tied or islanded BESS configurations.

Design Options:

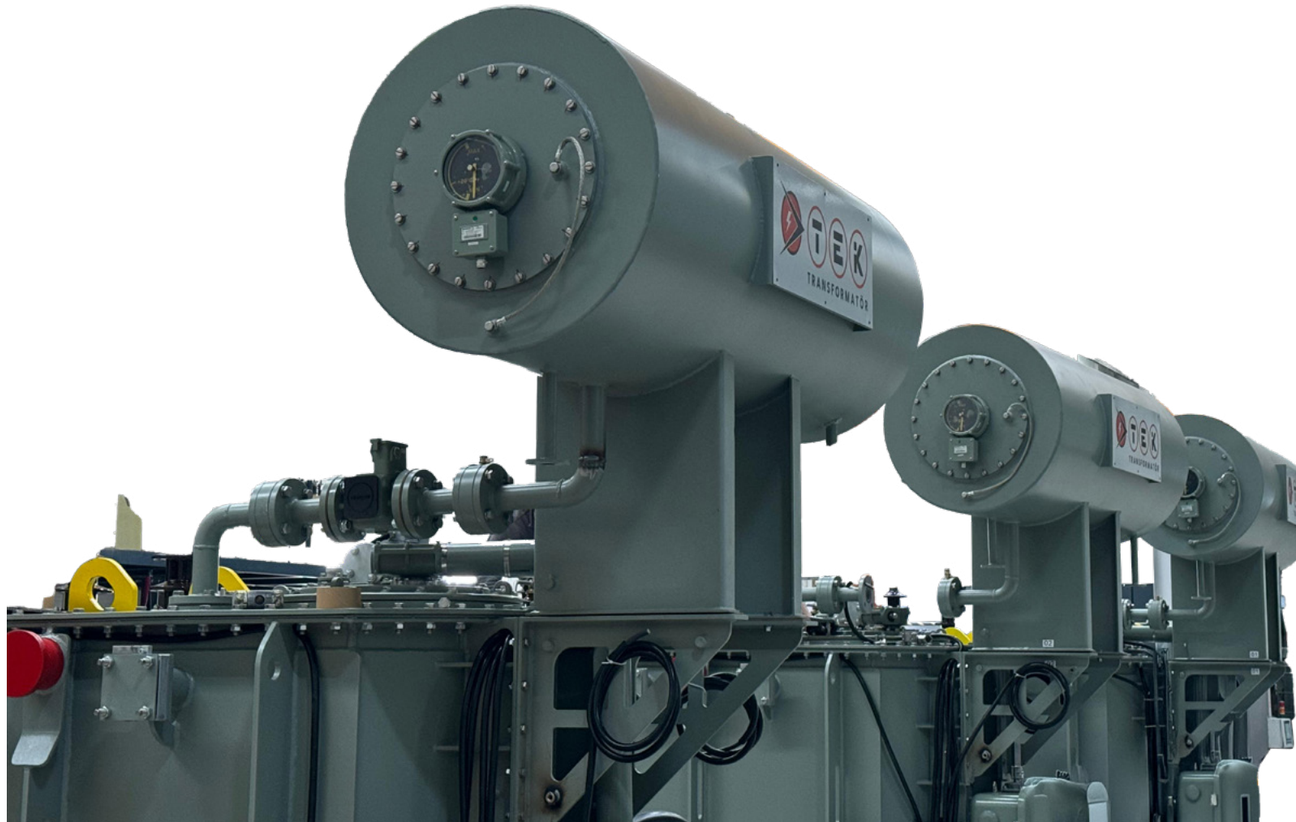
- Designed for both step-up and isolation configurations
- Suitable for central PCS, string inverters, or modular BESS skids
- Hermetically sealed or conservator-type tank options
- Compatible with air-insulated or gas-insulated switchgear integration
- Built to withstand repetitive switching surges, transient overvoltages, and fast ramping
- Engineered for nonlinear current profiles from PCS and inverter switching
- Optional K-factor rated windings
- ONAN, ONAF or KNAN cooling systems tailored to frequent load cycling
- High thermal reserve for overloads during grid charging/discharging peaks

Medium Power Transformers

Medium power transformers are oil-immersed three-phase units designed to operate in continuous-duty, high-demand environments, such as primary substations, industrial power systems, renewable energy plants, and critical infrastructure. These transformers feature reinforced insulation, advanced cooling systems, and customized vector groups for complex network configurations.

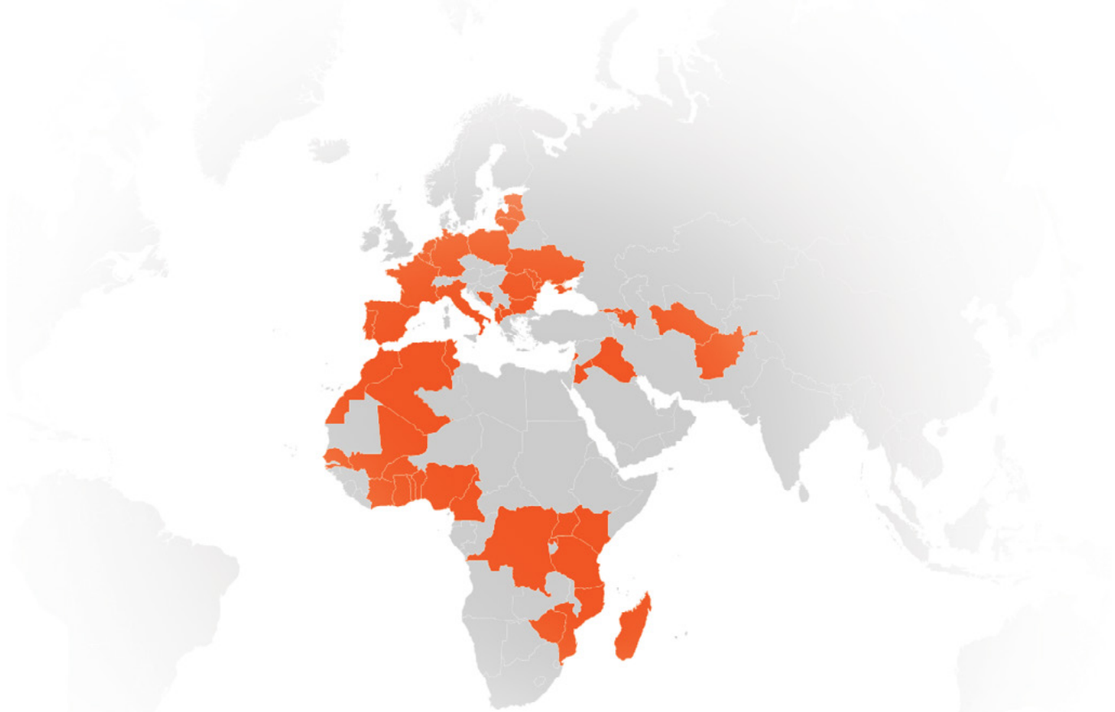
Technical Features

- **Power Ratings:** Up to 31,5 MVA
- **Voltage Levels:** Up to 36 kV, HV/LV customized per project
- **Cooling:** ONAN / ONAF / OFAF / KNAN
- **Insulation Class:** Class F or H, optional thermally upgraded paper
- **Tank Type:** Hermetically sealed or conservator with magnetic oil level gauge and Buchholz relay
- **Top Changer:** Off-load or on-load tap changer (OLTC) for voltage regulation
- **Windings:** Copper or aluminum, with layer or disc construction
- **Core:** Low-loss CRGO or amorphous core (optional)
- Available with electrostatic shielding, special vector groups, or dual secondary windings



Global Export Presence

We proudly export over 90% of our production to more than 40 countries across Europe, Africa, the Middle East and Asia.



Key Markets:

Europe:
Germany, France, Netherlands, Spain, Italy, Belgium, Estonia, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Bulgaria, Albania, Kosovo, Bosnia and Herzegovina, Ukraine, North Macedonia, Moldova

Africa:
Morocco, Algeria, Tunisia, Senegal, Ghana, Ivory Coast, Burkina Faso, Benin, Mali, Nigeria, Kenya, Cameroon, Uganda, Rwanda, Mozambique, Togo, Tanzania, Republic of the Congo, Madagascar, Zimbabwe

Middle East & Asia:
Iraq, Lebanon, Jordan, Afghanistan, Azerbaijan, Georgia, Turkmenistan

References

TEDAŞ

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Republic of Iraq
MINISTRY OF ELECTRICITY
وزارة الكهرباء

SOMELEC

ien Instytut Energetyki

SONABEL

SPIE

الشركة السودانية لتوزيع الكهرباء المحدودة
SEDC
Sudanese Electricity Distribution Co. Ltd

senelec
L'energie de tous les possibles

TEK
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