POWER TRANSFORMERS
UP TO 400KV, 500MVA

crafted with pride

Energypac
ISO 9001 and 14001 Certified.

Energypac Engineering Ltd, Bangladesh is an ISO 9001:2008 and 14001:2004 certified power engineering company and the country leader in providing end-to-end power solutions for over three decades.

With years of expertise, state-of-the-art manufacturing technology and testing facilities, Energypac produces a wide range of power products for operation in power generation, transmission and distribution systems as well as in electro-intensive industries and commercial and residential complexes. Energypac's products are designed, manufactured and tested to the highest international standards and are reputed for their reliability, longevity and efficiency. They are well received not just locally but also in overseas markets.

All our power products have undergone rigorous full-acceptance testing prior to delivery and are type tested from CPRI, India and PEHLA, Germany.

Power Transformers up to 400kV and 500MVA.

Energypac offers an impressive portfolio of power transformers up to 400kV and 500MVA. Transformers are available in both off-the-shelf varieties, when time is of the essence, and bespoke designs, when you require a tailor-made solution. Energypac's power transformers are in successful operation in utilities and industries across Asia-Pacific, and have helped customers make the most of their power assets by allowing efficient use of electric power in a sustainable environmentally friendly way. We also offer a comprehensive service package for the entire lifetime of the transformer from erection, installation and commissioning, to repairs, remanufacturing and spare parts.

Tailor Made or Off-the-Shelf. All Inclusive Service Package.
The Energypac Advantage.

- robust design features, low life-cycle costs
- fantastic customer service from enquiry to energising
- reasonable local prices and creative financial solutions
- a long track record of transformers in trouble free operation
- the best in European suppliers and European manufacturing technology
- skilled production team, high quality production facilities, stringent quality control
- a complete portfolio of service solutions and excellent after-sales service package
Designed to Perfection.

The Most Advanced Solutions for High Voltage and Large Current Applications.

We take into account all the economical, environmental and safety factors that matter the most to you and offer you the best specifications to meet your needs. We combine the best practices of the most respected manufacturers with the newest findings and put our own spin on it using the most sophisticated design and analysis techniques to ensure optimised designs that are both reliable and robust and are befitting for the ever evolving needs of this industry.

Continuous innovation gives competitive edge.

Sophisticated Simulation and Analysis Tools for High Performing Designs.

Energypac's dedicated design team is equipped with all the latest FEA, FEM, BEM 2D and 3D numerical tools and softwares possessed by the world's most renowned manufacturers. This allows simulation and analysis of complex thermal, dielectric, impulse and short circuit models that can be hardly solved by regular analytical theories with the required accuracy.

Our advanced software toolkit lets us analyse every design aspect with the highest possible accuracy.
Any Eye for Detail.

Our specialist CAD team uses the latest CAD tools and custom software to design modern, elegant, compact and robust fabrication systems in meticulous detail. The fabrication is such that it can easily overcome constraints like substation layout clearances, termination system, transportation and seismic conditions of a given area.

Precise drafting and modelling down to the last detail.

Continual Design Improvements.

A regular cycle of rigorous checking and risk computing ensures we are continually improving our designs and eliminating potential problems. This stringent review process enables us to forecast the performance of our transformer in the face of the worst contingencies with great accuracy.

Designed to face the worst of real life eventualities.

Money Matters.

We care about the economics as much as the engineering, so that great quality doesn’t come at a steep price. Our advanced optimisation algorithm checks for fluctuating raw material prices and selects the best combination of materials from millions of variations to find the most cost effective solutions for you.

Our designs are optimised such that great quality comes at an affordable price.

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**Safe Design**

- Thermal Profile Check
- Dynamic STC Forces
- Seismic Analysis
- Static Electric Stress Check
- Transient Electric Stress Check
- Hotspot Identification

**Design Optimisation**

- Cost Minimisation
- TOC Minimisation
- Load Loss Minimisation
- Optimisation of Transformer Characteristics
- No-load Loss Minimisation
- Optimisation of Other Characteristics as necessary
Impeccable Workmanship.

Power Professionals.

We recognise transformers for the delicate machines they are and take every precaution to ensure they are treated with the utmost care. A dust and moisture proof (less than 4 microns) environment fitted with the newest advancements in production technology ensures that quality raw materials are handled with the care they deserve. Our products are manufactured using modern, automated and semi-automated European manufacturing machines and facilities. Our trained and experienced staff ensure that the highest quality criteria are maintained at all our facilities and we are dedicated to the highest level of service and quality at a competitive price. At Energypac, we create a safe and friendly workplace environment for our production workers, and in turn they manufacture our transformers with the utmost sincerity and care.

The best hands in the business.
Different voltages and ratings require unique windings, and our adept winder are able to do so with remarkable skill to produce the right one for your design. All windings including layer, helix, disc-layer, pair disc, continuous disc, partial interleaved disc, multi-start and interwound windings are possible and are done with electrolytic copper conductors (free of sulphur) with high proof stress (120 MPa minimum) in various shapes with rectangular DPC, bunched or twin bunched, CTC, epoxy bonded CTC, CTC with netting tape etc. as the design requires.

Always well wound.

For core building we use ultramodern, high-grade, grain oriented silicon steel strip cut with minimum possible burr (<30microns) provided with an inorganic insulation treatment. Silicon steel strips are stacked in a circle-section constructed with miter-joint. Yokes are jointed at an angle of 45° to utilise the magnetic flux directional characteristics of the steel strips with minimum overlap of five steps. Each core leg is fitted with tie plates which are of very high strength non-magnetic steel, with resin-impregnated glass tape wound around the outer circumference. Sturdy clamps applied to the front and rear of the upper and lower yokes are bound together with glass tape. The resin then undergoes heating for hardening to tighten the band so that the core is evenly clamped. The whole feature ensures a low loss, low noise core with a very rigid construction.

Only the best cores make the cut.
The Most Innovative Assembly Techniques.

Energypac has innovated a great dummy assembly technique where the windings are pre-assembled in a dummy core shaped frame before going to the final core coil assembly for precision error free assembly work. The whole assembly is rigidly supported by a common pressure ring of densified laminated wood at the top and bottom, for precise alignment while well profiled angled rings are placed between HV and LV windings to reduce voltage stress levels. The ends and tapping leads of all the windings are connected by special extra flexible, insulated copper cables, which are rigidly braced in position. After the final assembly of the core the whole winding system is pressed via hydraulic jack on a thick annular insulating plate set on the top thereof.

Our dummy assembly process ensures the utmost precision.

Dried to the Last Drop.

Energypac's innovative vapour phase drying (VPD) method involves spraying a special oil vapour on the assembly to utilise latent heat produced when the oil vapour condenses. Since heating is affected deep inside evenly and quickly, the assembly can be completely dried (<0.5% moisture content) without causing damage to the insulations. Upon completion of drying, the coil is clamped in a low-humidity room adjusted to 5% or below relative humidity to prevent any reabsorption of humidity. When a core-coil assembly has been installed in a tank, the tank is evacuated to a high vacuum state to remove reabsorbed humidity on the insulations surface and voids in impregnated insulation then degassed oil is filled under the high vacuum.

VPD ensures that the assembly can be dried to less that 0.5% moisture content.

The Sum of its Parts.

Energypac buys only from the best names around the world: ABB, ASTA, COMMEM, ENPAY, JFE, MR, MUSTANG, Nippon, NYNAS, PRONOL, SAMDONG, TRENCH, Weidmann, Ziel Abegg among others. Our strong supply chain team using our Oracle SAP ensures materials are smoothly flowing in so that production is non-stop and you can be assured timely delivery.

Selective vendor choice ensures we procure from the best.
Consistently High Quality.

Quality Control Checkpoints Every Step of the Way.

Only the best transformers that have survived the toughest tests are dispatched for delivery. This is ensured by a stringent straightforward control structure that introduces in-process testing and control points every step along the production process from the minute they enter our doors. Our quality is ensured over 7 levels, and each level has its own checkpoints.

Vendor Selection
Logistics Support
Raw Material Inspection
Manufacturing Process Control
Final Electrical and Mechanical Test
Final Inspection Before Dispatch
On-site Testing Before Energising

Raw Material Inspection Over Many Levels.

Only ISO certified vendors are carefully selected and deliveries are made by the most trusted transport providers to ensure raw materials reach our plant safely and without damage. Incoming raw materials are subjected to physical checking as well as comprehensive testing in the laboratory.

Our Quality Inspection Process allows us to identify the best suppliers that deliver time after time.

Manufacturing Process Control.

Our ISO 9001 certified quality system merely forms the foundation of our stringent quality control measures. Quality control is carried at each part of the manufacture process at each station. Each production procedure has its own dedicated quality engineer, and each workstation is provided with their required quality control documentation and all staff are well trained in quality control procedures. A job is only allowed to be moved along to the next station once it has approved by our quality engineers who oversee the process. Any component failing a quality test is immediately rejected and removed from the production line.

The QC department oversees the whole process and carries out inspections at strategic points.

Full Range of Standard Tests.

Each transformer is subjected to the full range of tests demanded by the IEC or ANSI, as well as other special tests that are carried out either on the customer’s request, or for internal quality monitoring purposes. We have in-house facilities for all tests except the short-circuit test which is carried out at external accredited laboratories such as CPRI, India. Customers are also encouraged to carry out their own personal inspections.

Customers are always welcome to carry out their own audits and inspections to assure themselves of the final quality.
World-Class Testing Facilities.

Prior to shipment, all transformers manufactured by Energypac are tested in accordance with the latest applicable standards according to customer specifications. We have world-class facilities for testing transformers in our very own ultra-modern testing laboratory accredited by the country’s highest authorities which is backed up by testing equipment from Brüel & Kjær, Fluke, Megger, Omicron, Tettex, Vanguard and Yokogawa and many more acclaimed manufacturers. All industry standard and optional tests (with the exception of short-circuit tests), can be performed in-house by skilled testing engineers using accurate and modern test equipment.

All types of routine tests specified by IEC, ANSI/IEEE, IS and BS are regularly carried out in house including: load loss test, no-load test, induced over-voltage test, HV AC test, lightning impulse test and switching impulse test.

In addition the following are also included in our in-process testing procedure: ratio resistance measurement, magnetising current insulation resistance insulation moisture content test measurement after drying.

The following tests can be carried out on special request: partial discharge test, dissolved gas analysis (DGA), sweep frequency response analysis (SFRA), zero sequence impedance measurement, tan delta measurement of windings and bushings, thermal profile imaging.
Service Solutions for the Long Haul.

We offer an all inclusive service package for transformer care that ensures trouble free operation in a variety of settings ranging from power generation, transmission and distribution systems to electro-intensive industrial applications. Our service team with over three decades of manufacturing and servicing expertise possesses the technical know-how to meet both your on and off site service needs. We provide a comprehensive service that covers the entire life-time of a transformer, from erection and commissioning to retrofitting and remanufacturing. Our service solutions provide for every contingency, and service proposals are always specifically tailored to each job. A detailed assessment is carried out by our highly competent team of electrical engineers equipped with the latest in technical tools to produce a bespoke service plan that is perfect for your individual needs. The result is a reliable, long-lasting solution that takes all financial, environmental and safety aspects into account.
Installation and Commissioning.

A complete packaged solution is available for installation and commissioning new, refurbished or repaired units. The package covering all aspects from logistics to testing includes: disassembly for transportation, packaging of sensitive accessories, secure transportation of unit, reassembly at site and on site centrifuged oil filling for transformers transported without oil.

Leave us to the logistics, so you can focus on operation.

On-site and Off-site Testing.

We are able to perform the full range of tests required by IEC 60076 and IEEE Std. C57.12.00 on all types and brands of transformers. In addition we are able to perform many routine and special tests on site.

On-site Repairs.

We are able to perform a variety of repair services on site ranging from refurbishment to replacement and on-site upgrading, without sacrificing the strict quality standards we believe in. Our compact state-of-the-art, on-site testing equipments ensure we are able to use the best diagnostic methods to quickly identify and localise a failure to troubleshoot your problem.

Field Service.

We provide tap changer rework, bushing replacement and 24/7. We are also able to carry out advanced diagnostics including Swep Frequency Response Analysis (SFRA) and Dissolved Gas Analysis (DGA). SFRA is a powerful method that analyses the mechanical health of core, windings and clamping structure. DGA can be used to analyse the level of contamination and the health of transformer insulating oil.

When time of the essence, or transportation is tricky, let us come to you instead.

Factory Remanufacturing/Repair.

Remanufacturing your equipment can be a cheaper, cost effective alternative to replacing your transformer. Energypac is able to fully restore, modernise and upgrade your old equipment to like new condition.

Spare Parts and Consumables.

We can supply original spare accessories and fittings for replacement as well as engineering solutions to find equivalent or redesigned parts to replace parts that are unavailable.

We can make your old transformers as good as new.
Made for a Variety of Applications.

We are able to provide:

Generator Transformer  Mining Transformer
Network Transformer  Isolation Transformer
Furnace Transformer  Buck-boost Transformer
Converter Transformer  Dual ratio Transformer
Earthing Transformer

As well as accompanying reactors.
The information contained in this booklet is necessarily general in nature. For further information regarding sales, service or any general queries contact us at the email addresses below:

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