TECO

together, we empower the Future

TECO Power Transformers

RANGE FROM 25 kVA TO 150 MVA 161kV

Contents

Powering the World Sustainably and Reliably with TECO's Industrial Solutions.

GLOBAL EXPERTISE WITH LOCAL SUPPORT

Operating in over 40 countries across all five continents.

VAST STOCK AVAILABILITY

Large stock range for motors and variable speed drives across regions.

LOCAL IN-HOUSE WORKSHOP

Full range of mechanical and electrical modifications ensuring adherence to TECO's stringent QA standards.

TECO is a global leader specialising in the manufacturing and distribution of industrial Electric Motors, Variable Speed Drives, and Renewable Energy Solutions.

Our extensive product range includes high-quality Low & Medium Voltage Motors, with capacities from fractional kW up to 22,000 kW, supporting voltages up to 14,200 volts. TECO also offers energy-efficient Variable Speed Drives, robust automation equipment and a growing line of renewable and green energy products including transformers from 25 kVA to 150 MVA 161kV class.

TECO's commitment to green energy and carbon reduction extends outside our own operations to our expanding product range. By developing solutions such as Battery Energy Storage Systems (BESS), Hydrogen technology, and advanced power train technologies, TECO's vision of achieving zero carbon emissions by 2050. This strategic initiative strengthens our capacity to meet evolving energy needs, deliver sustainability-focused products, and support Australia's transition to cleaner energy sources.

Power Transformers built for Energy Solutions

3-Phase 30 MVA

- High Capacity: Delivers up to 30 MVA, ensuring powerful performance for industrial applications.
- Voltage Flexibility: Operates at 150/22 kV, ideal for step-down voltage requirements.
- Durability: Built for reliability in high-stress environments with high mechanical strength.
- Low Noise: Engineered for quieter operation with noise levels below 67 dBA.
- Thermal Efficiency: Features an advanced cooling system to maintain optimal temperature under load.

3-Phase 60 MVA AIS

- Enhanced Power Output: Offers 60 MVA capacity, supporting larger-scale industrial operations.
- Advanced Insulation: for safety and longevity, meeting Meeting IEC 60076-1.
- Efficiency Cooling: Incorporates an ONAN/ONAF cooling system to maintain efficiency, preventing overheating and delivering extra power when needed.
- High Reliability: Built to withstand high short-circuit forces, ensuring long-term operational stability.
- Energy Efficiency: Designed with low losses to minimise energy consumption.

3-Phase 60 MVA GIS

- Compact Design: Gas-insulated setup ideal for space-constrained industrial sites.
- Robust Capacity: 60 MVA rating accommodates extensive industrial demands.
- Low Partial Discharge: Engineered to keep partial discharge levels minimal for prolonged lifetime.
- Weather-Resistant: Suitable for harsh environments, providing reliable performance across conditions.
- High Safety Standards: Compliant with stringent industry standards, ensuring safe operation.

8,000 kVA

- Compact design tailored for industrial power needs with high efficiency.
- Net-wrapped ontinuously transposed conductors (CTC) for effective cooling and space economy.
- Advanced vacuum pressure technology for enhanced insulation.
- Low loss and high strength core material for energy efficiency.
- TECO uses Vapor Phase Drying (VPD) process for high insulation integrity.

12,000 kVA

- Uses continuously transposed conductors (CTC) for superior thermal dissipation.
- Grain-oriented electric steel core for low iron losses.
- Step-lap joint method applied for smooth magnetic flux path.
- Reduced noise output, meeting stringent industrial and mining noise standards.
- Oil immersion cooling for consistent and reliable operation.

120,000 kVA (150 kV)

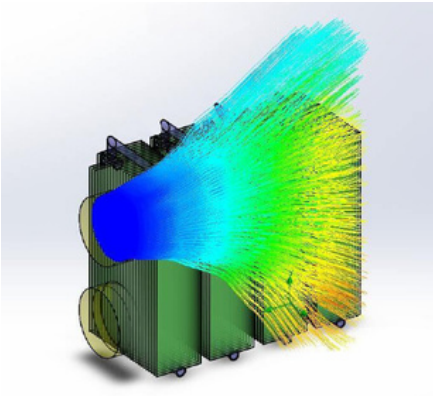
- High-capacity transformer suited for large-scale industrial applications.
- Incorporates zero sequence impedance measurement for accuracy.
- Rigorously tested for temperature rise and frequency response.
- Class F insulation rated at 155°C with fabricated steel construction for long - lasting durability.
- Equipped with control equipment for seamless operation.

Design and Standard

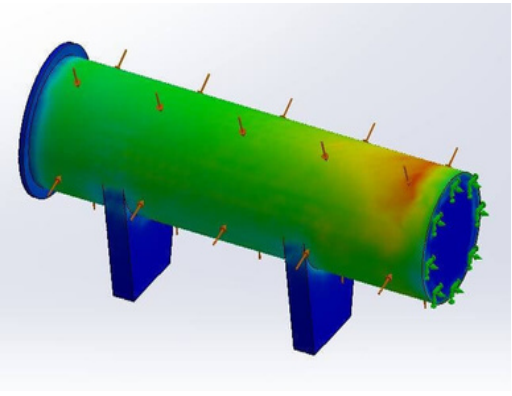
Engineered for Optimal Performance in Challenging Conditions

TECO power transformers are designed with advanced engineering techniques, ensuring exceptional performance under demanding conditions. Using sophisticated simulation tools, TECO achieves industry-leading reliability and durability.

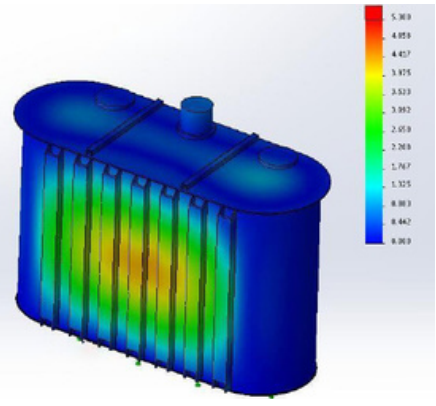
- **High Mechanical Strength**
  - Engineered for durability, TECO transformers handle high-load and stress conditions, ensuring reliable, long-term operation.
- **High Short-Circuit Withstand Capability**
  - Designed to resist sudden surges and electrical faults, providing enhanced protection and reducing risk in high-demand settings.
- **Low Partial Discharge**
  - Low discharge levels ensure high insulation quality, extending the transformer's lifespan and lowering maintenance needs.
- **Low Noise Level**
  - Quiet operation is ideal for installations near sensitive areas, enhancing site suitability for populated or industrial zones.
- **Low Loss**
  - Optimised for minimal energy loss, TECO transformers reduce operational costs, boosting overall energy efficiency.
- **Low Temperature Rise**
  - Controls temperature increase under load, enabling safe, continuous operation even in high-temperature environments.
- **No Leakage**
  - Leak-proof design prevents coolant loss, minimising environmental impact and maintenance requirements.



Temperature simulation of radiators and fans using Computational Fluid Dynamics (CFD)



Study of von Mises stress using Finite Element Analysis (FEA)



Stress and deformation analysis at vacuum pressure

Advanced Core & Winding Technology

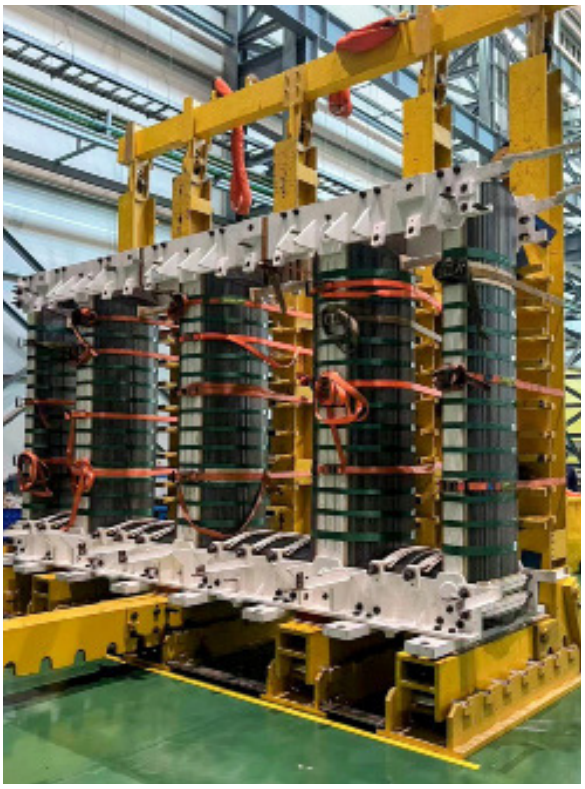
TECO Power Transformers utilise continuously transposed conductors (CTC) for both primary and secondary windings. This conductor design delivers high mechanical strength and exceptional short-circuit withstand capability, making these transformers resilient against electrical stress. This translates to increased durability and reduced risk of costly repairs or downtime in high-demand environments.

Material Selection for Optimal Performance

Depending on the specific application and customer requirements, the transformer windings can be constructed from either copper or aluminium. Copper is typically chosen for applications demanding higher electrical conductivity and superior thermal performance, while aluminium offers a cost-effective and lightweight alternative without compromising reliability. This material flexibility allows TECO to optimise transformer designs for efficiency, performance, and budget constraints.

Net-Wrapped CTCs

TECO transformers incorporate net-wrapped CTCs, which significantly improve heat dissipation and allow for compact transformer sizing. Efficient heat management extends the lifespan of the transformer and ensures consistent performance, even under heavy operational loads, providing a cost-effective solution for customers through reduced energy and cooling requirements.

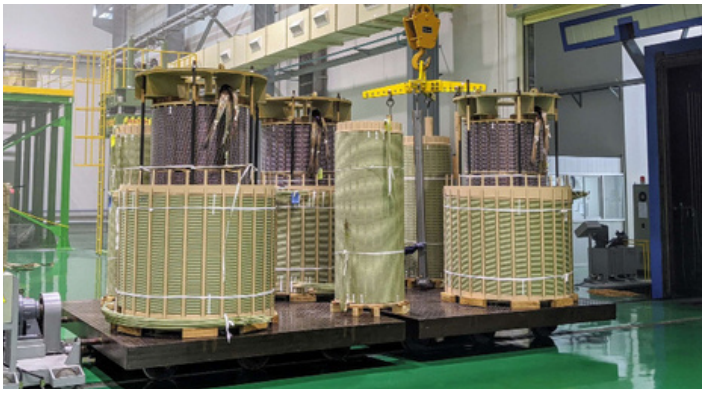


Grain-Oriented Electric Steel (GOES)

TECO uses grain-oriented electric steel (GOES) sheets up to grade 0.75, stacked with a step-lap joint method. This construction method creates a smooth magnetic flux path, resulting in minimal iron loss and low excitation current. This means optimised energy use, reduced power losses, and lower operational costs over the transformer's lifetime.

Exceptional Core Properties

The precise design of TECO's stacked core contributes to high mechanical strength and minimal energy loss, withstanding rigorous operational demands. The primary advantage of this transformer is its ability to meet stringent performance standards while delivering reliable, high-efficiency performance with minimal environmental impact and low energy loss.



Assembly and Drying Process

Meticulous Assembly for Peak Transformer Performance and Longevity

TECO assembly process follows stringent standards, incorporating advanced drying and vacuum techniques to maximise insulation quality and operational lifespan.

Vacuum Processing: Before oil injection, each transformer tank undergoes vacuuming to remove contaminants and ensure the active parts are optimally protected.
Vapor Phase Drying (VPD): A specialised VPD technology removes moisture from insulation materials, enhancing the transformer's dielectric strength, crucial for worldwide high-humidity regions, including Australia.
Dust-Free Assembly Environment: Assembly occurs in a temperature and humidity controlled environment, minimising the risk of contaminants and ensuring product quality.
Low Partial Discharge: Achieves partial discharge levels in the pico-Coulomb range, essential for longevity and reliability in high-demand applications.
Safe and Environmentally-Friendly Practices: TECO's assembly process adheres to strict environmental and safety standards, supporting sustainable and safe operations.

Comprehensive Testing Protocols

State-of-the-Art Testing for Compliance and Reliability

TECO power transformers undergo thorough testing to meet international standards, ensuring durability and efficiency.

Our facilities are equipped to test electrical products up to 161 kV, ensuring all transformers are thoroughly tested.

Comprehensive Test Suite:

- High Mechanical Strength: Ensures durability and resilience in demanding industrial environments.
- No-Load Loss and No-Load Current Measurement: Verifies efficiency by assessing energy loss and current under no-load conditions.
- Lightning Impulse Test: Confirms the transformer's ability to withstand high-voltage surges.
- Line Terminal AC Withstand Test: Tests resilience under AC voltage stress, ensuring operational safety.
- Induced Voltage Test with Partial Discharge Measurement: Checks insulation integrity to prevent breakdowns.
- Temperature Rise Test: Monitors thermal performance to ensure safe operating temperatures.
- Functional Test on Control Equipment and Accessories: Verifies the functionality of control systems for reliable operation.
- Zero Sequence Impedance Measurement: Ensures proper impedance balance for stable transformer operation.
- Frequency Response Analysis (SFRA): Assesses winding alignment and core stability, identifying any potential structural shifts.

These meticulous testing processes guarantee that TECO transformers deliver outstanding performance, even in the harshest industrial and mining settings, securing them as a trusted solution in the Australian energy landscape.

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R ated Power	Voltage	Connection	No-Load Loss	No-Load Current	Loaded Loss	Impedance	Noise		Partial Discharge	Temperature Rise	
(kVA)	(kV)		(kW)	(%)	(kW)	(%)			(pC)	(K)	
100000	150/66/10	YNyn0+d	40	0,2	210	12,5	ONAN* ONAF*	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68
60000	150/66/10	YNyn0+d	30	0,2	130	12,5	ONAN ONAF	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68
60000	150/22/10	YNyn0+d	28	0,2	115	12,5	ONAN ONAF	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68
60000 (GIS*)	150/22/10	YNyn0+d	28	0,2	115	12,5	ONAN ONAF	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68
30000	150/22/10	YNyn0+d	18	0,2	67	12,5	ONAN ONAF	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68
30000	66/22	YNyn0+d	18	0,2	67	12,5	ONAN ONAF	≤ 67dB (0.3m) ≤ 71dB (2.0m)	70	Oil Winding Hottest	≤ 50 ≤ 55 ≤ 68

* Legend:
GIS = Gas Insulated Substation
ONAN = Oil Natural Air Natural
ONAF = Oil Natural Air Forced

POWER TRANSFORMERS

PRODUCT CATALOGUE 2025

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