



Drive & Rectifier Transformers

VIRGINIA TRANSFORMER CORP

www.vatransformer.com

TRANSFORMER FEATURES

Available in Dry Type, Liquid Filled or UNICLAD® construction

Range – Dry Type up to 15 MVA, 35 kV voltage class
Liquid Filled up to 100 MVA, 230 kV voltage class
UNICLAD® up to 15 MVA, 35 kV voltage class

Service – Indoor or Outdoor

Basic Impulse Level (BIL) – Per ANSI standard

Impedance – ANSI standard

Coils – Aluminum or copper conductor, circular construction, continuous or helical disc, or barrel (layer) wound

Cooling Fluid (Liquid Filled) – Type II mineral oil

Fluid Preservation System (Liquid Filled) – Sealed tank

Cooling Radiators (Liquid Filled) – Plate type

Gauges and Accessories (Liquid Filled) –

- Liquid temperature indicator
- Liquid level gauge
- Vacuum pressure gauge
- Drain valves
- Filter press connections (top and bottom)
- Automatic pressure relief device
- Control wiring in flexible conduit
- Other accessories available

Paint – ANSI 61 enamel on sandblasted (Liquid Filled) or phosphatized (Dry Type, UNICLAD®) surfaces, other colors available

Nameplate – Stainless steel, engraved

Bushings (Liquid Filled) – Cover or side mounted

Other (Liquid Filled) – Welded top cover, 19-in manhole covers, provisions on base for skidding, transformer lifting lugs, stainless steel ground pads

DRIVE & RECTIFIER BENEFITS

- Increased thermal margin for longer life
- Magnetically balanced winding designs
- Surge shields evenly distribute voltage surges
- Superior core construction handles high heat
- Lower insulation stresses better withstand surges
- Multiple vacuum pressure impregnation provides corona-free operation and increased strength
- Higher BIL ratings handle switching surges in Pulse Width-Modulation
- Lower current density for high radial short circuit strength



OPTIONAL FEATURES

- Reconnectable windings
- Non-standard impedance
- Epoxy paint in your choice of color
- Demountable radiators with isolation valves
- Galvanized radiators
- Terminal throats and chambers
- Sloping roof
- Multi-stage fan cooling for increased MVA
- Other gauges and accessories
- Shock indicator
- Customer-specific controls and relays
- Electronic temperature monitor
- Doors for easy maintenance access
- Fluid Preservation System – Inert gas (nitrogen) or conservator
- Circuits – 6 pulse, 12 pulse, 18 pulse, 24 pulse, 36 pulse

ADDITIONAL FEATURES AVAILABLE

- Rigid galvanized conduit wiring
- Provisions for parallel operation
- Potential transformer for voltage signal
- Loss evaluated designs

RECTIFIER – DUTY TRANSFORMERS

Size – Up to 17,000 kVA
Current – Up to 10,000 Amps
Voltage – Up to 35 kV
Circuits – Up to 16 Pulse



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TEMPERATURE RISE OF CONVERTER TRANSFORMERS

(Measured by Resistance)

Transformer Duty Class	Long Time Rating	Maximum rms Duty Cycle (per unit)	Liquid Filled	Dry Type	UNICLAD®
T1	==	1.00	65	150	115
T2	125%, 2 hours	1.00	65	140	115
T3	125%, 2 hours	1.08	60	130	105
T4	125%, 2 hours	1.18	55	120	95

TYPICAL APPLICATIONS

- Steel rolling mills
- Oil and gas pumps
- Mining crushers
- Rapid transit
- Utility fans
- Industrial compressors
- Process lines
- Pulp and paper mills
- Cogeneration plants
- Cement plants
- Electrolytic depositions

DRIVE & RECTIFIER SPECIFICATION DATA

	Dry Type	Liquid Filled	UNICLAD®
KVA*	500 - 10,000	500 - 20,000	500 - 10,000
Primary Voltage	2.4 to 35 kV	2.4 to 69 kV	2.4 to 35 kV
Secondary Voltage	Up to 5 kV	Up to 15 kV	Up to 5 kV
BIL	Up to 150 kV	Up to 300 kV	Up to 150 kV
Frequency	25 Hz to 60 Hz	25 Hz to 60 Hz	25 Hz to 60 Hz
Impedance	4% to 18%**	4% to 18%**	4% to 18%**
Winding Material	copper or aluminum	copper or aluminum	copper or aluminum
Insulation System	220°C	120°C	220°C
Minimum Winding Temperature Rise	65°C	45°C	65°C
Ambient Temperature	-40°C up to 55°C	-40°C up to 55°C	-40°C up to 55°C
Elevation	up to 14,000 ft.	up to 14,000 ft.	up to 14,000 ft.

PRODUCTION TESTS

Routine in-house tests per ANSI C57.12.91 include:

- Ratio
- Polarity
- Phase Relation
- No-Load Loss
- Excitation Current
- Impedance
- Load Loss
- Applied Voltage
- Induced Potential
- Resistance

Witness testing is offered and arranged according to your schedule

*Secondary KVA may be higher than primary KVA

**Based on primary KVA

Data is for estimating purposes only and should never be used for construction. Contact factory for actual dimensions, weights and oil volume.

AVAILABLE CIRCUITS

- Delta-zigzag six phase double way
- Delta-delta and wye 12 phase double way
- Two Three-Phase bridges delta-wye secondaries in series
- Delta double wye six phase with IPT
- Delta-delta six phase double way
- Wye-delta six phase double way
- Cycloconverter – delta-delta; delta-zigzag
- Delta-zigzag and wye-zigzag 18 phase double way
- Wye-phase shifted multiple delta; 24-36 phase double way
- Many more...

PRODUCT RANGE

- Dry Type 15 MVA, 35 kV
- Uniclاد® (encapsulated coils) – 15 MVA, 35 kV
- Liquid Filled – 300 MVA, 230 kV
- LTC Transformers – 300 MVA, 230 kV
- Voltage Regulators – 3-phase, 46 kV
- Drive Isolation – 50 MVA, 138 kV
- Traction Duty – 50 MVA, 138 kV
- Air Core Reactor – 15 kV

SELECTED CUSTOMERS

- Alcoa
- PPG Industries
- Powell Electric
- Eaton Corp.
- Impulse NC, Inc.
- Long Island Railroad
- Consolidated Papers
- Georgia Pacific
- New York City Transit Authority
- GE Plastics
- Unocal Oil & Gas
- Reynolds Metals Co.
- Occidental Chemical Corporation

*Application Note: Vacuum circuit breakers switching is known to produce voltage resonance. Use appropriate caution in circuit design. (See IEEE Draft #C57.142)

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