

Step Up Transformer for Windfarm Applications





Prolec GE offers step up transformers specifically designed for Wind Power Generation applications. These transformers are optimized using duty cycle rating, and can be designed to be used outside the tower. Natural ester fluid (VG-100™) and amorphous metal core are environmentally-friendly options for this product. Also, optional safety features include external accessories, in order to mitigate the risk of Arc Flash

Product scope/ Standard features

- Rating up to 4,000 kVA (2-windings) and 3,400 kVA (3-windings)
 - 4,000 kVA
- High Voltage
 - Aluminum windings
 - Up to 34,500 V Delta or Wye Connected
 - BIL up to 200 kV
 - Tap changer: $\pm 2, 2.5\%$
 - Loop feed
 - Dead front
 - Bushing wells
- Low Voltage
 - Aluminum windings
 - Up to 1200 V Delta or Wye Connected
 - BIL up to 60 kV
 - Epoxy 2 piece-bushings with 4- holes base
- Frequency: 60 Hz
- 5-legged Core
- Electrostatic shield
- Temperature rise: 65°C

- Cooling class: ONAN
- Insulating fluid: Mineral oil
- Impedance: 5.75% ± 7.5%
- Altitude: 3,300 FASL
- Bay-O-Net expulsion fuses + partial-range current limiting fuses
- Mild steel tank & cabinet
- Powder paint system; Color: ANSI 70 or Green Munsell 7GY 3.29/1.5
- Liquid paint system; Color: ANSI 70 or Green Munsell 7GY 3.29/1.5
- Built to all applicable IEEE C57.12.34 (applies to designs outside of tower)
- Built to all applicable IEC 60076-14, IEEE PC57.154 TM/D5

Optional features

- High Voltage
 - Copper windings
 - Tap changer with 7 positions
 - Radial feed
 - Live front
 - Bushing wells + Inserts
 - Integral bushing
 - Porcelain bushing
- Low voltage
 - Copper windings
 - Epoxy, 2 pieces bushings, up to 12 holes blades
 - Epoxy, 1 piece bushings up to 12 holes blade
- Frequency: 50 Hz
- Temperature rise: 55°C, 55/65°
- Cooling class: KNAN
- Insulating fluid: Natural ester fluid (VG-100 or FR3)
- Impedance per customer request, 7.5%
- Altitude up to 14850 FASL
- Internal switch
- Bay-O-Net expulsion fuses+current limiting fuses
- Under-oil internal arresters
- Stainless Steel 409 tank & cabinet

- Stainless Steel 304 tank & cabinet
- Infrared window
- Powder paint system & liquid finish color per customer request
- Duty cycle rating
- Seismic designs IBC Certified

Value features

Concept	Description	Value point
Step Up	Increased margin for transformer over excitation	Prevent core saturation, partial discharges, and gassing
Electronic protection		Provide a pathway to ground for any residual resonance
Network Protection	* Electrostatic Shield	Prevent capacitive coupling between the grid and capacitive banks of the inverter
Tertiary winding	Third winding to feed the induction rotor generator	Reducing the number of components to be installed
Duty Cycle Rating	Load calculation based on specific location characteristics	Optimized size and cost

Standards and certifications available



Pad-Mounted transformers recognized as best in class in reliability and DGA measurements in wind industry

Prolec GE has the largest fleet of padmounted transformers installed in wind farm projects in the US market.

Dissolved Gas Analysis (DGA) is an industry accepted method to detect faults at an early stage and to evaluate the transformer health. DGA Guidelines in IEEE are based on data from large Power Transformers, but can still be a helpful tool to evaluate distribution transformers with proper considerations

Prolec GE is recognized by customers in the Wind Industry as having the best performance in DGA measurements

This performance is achieved by the following special features:

- Insulation strength of the windings, one BIL level above nominal
- Increased over-excitation capability to absorb voltage fluctuations
- Superior core grounding practice with inside core ground straps to prevent generation of partial discharge and core over-heating
- Optimization of thermal performance based on actual wind loading cycle and ambient temperature conditions
- Special production test beyond routine test requirements
- Use of accessories rated for wind loading cycle duty



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