

'Fit for purpose' distribution transformers for solar

Transformers designed to match solar applications



ABB offers pre-designed distribution transformers to meet leading inverter manufacturers' requirements resulting in significantly reduced lead times and extended transformer life.

An improved approach

With market constraints in mind, ABB has developed distribution transformers for the solar industry that pair with solar inverter sizes. These 'fit for purpose' transformers are designed to optimize the performance, reliability and return on investment of any solar installation. From residential rooftops to commercial and industrial applications and utility-grade power plants, ABB's solar-ready transformers decrease lead times and increase reliability in all environmental conditions.

Fit for purpose distribution transformers from ABB are specifically matched to solar applications and use a streamlined quotation and manufacturing processes to meet the aggressive time lines for your solar project. With numerous available options to choose from, ABB solutions save weeks that are typically required to design new units.

Energy efficient designs based on power and voltage ratings meet all current regulations and standards. Liquid-filled transformers can be manufactured and tested with mineral oil or ester fluids (natural or synthetic) based on your requirements.

Situation analysis/background:

Today's solar developers, contractors, and EPCs are facing long approval times for funding and shorter timeframes to execute projects.

Industry challenges:

- Longer approval time for funding
- Solar market operates at faster pace than standard industrial markets
- Contractors have less time to purchase materials for solar farms
- Pressure to reduce system/project costs

ABB's fit for purpose designs meet certain requirements that are different from standard distribution transformers. This helps customers save money and increase reliability by avoiding the over-sizing of their transformers to account for different operating factors used for renewables.

Pre-designed distribution transformers can help reduce overall operating costs and offset the continued cost pressure on solar generation, providing a faster solar farm implementation and a greater return on investment.



Benefits of ABB's fit for purpose transformers

- Fit for purpose operates with different parameters to account for a solar inverter's harmonic distortion. Solar applications use an inverter for changing the solar panel's output of DC current into AC current for use in the electrical grid. Inverters cause vibrations called harmonics that raise heat levels and lower the life expectancy of transformers. Fit for purpose solar-specific designs account for this, resulting in a more reliable unit.
- Fit for purpose incorporates margins for the DC voltage component which causes additional magnetization of the transformer's core. This component is generally not present in transformers used for non-renewable power. With this in mind, ABB designs withstand inrush current to prevent core saturation of magnetization in order to reduce harmonics that are harmful for transformers.
- Fit for purpose uses earth screens for suppressing interference voltage coming from the grid and the solar inverter. Switching events, like connecting and disconnecting the transformer from the grid, also create fast-acting voltage transients that would otherwise be transferred through the windings and could cause premature transformer failure.

Product features

- For liquid-filled transformers < 10 MVA
- Mineral oil or ester fluids (natural or synthetic)
- Designs with low loss/normal loss options
- HV: up to 40.5 kV, system voltage
- LV: up to 1.2 kV, system voltage
- ANSI and IEC standards

Questions for consideration:

- Do you have less time to plan your solar project?
- Are you experiencing performance issues with distribution transformers in solar applications?
- Are you under a time crunch to get your farms built and projects executed?
- Do you custom design the transformers for each project?
- What type of inverters are you using?
- How could you benefit from deliveries in significantly less time of traditional solutions?

For more information contact:
ABB Ltd.
 Affolternstrasse, 44
 P.O. Box 8131
 8050 Zurich Switzerland

new.abb.com/products/transformers/distribution

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