

Design Concepts for PV Transformers

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Today liquid-filled and dry type transformers are used for GSUs in photovoltaic and wind parks and also for reactors. Which insulation system should be recommended under which circumstances?

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Collector transformers for field-scale PV generation are typically installed in or adjacent to packaged substations. Whilst these provide some protection from the natural environment, the need for ventilation means that transformers installed inside are exposed to extremes of temperature and humidity and also to fine contamination. They are not a favourable installation environment for liquid-immersed or especially dry-type transformers.



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Liquid-immersed design concepts (oil or natural ester in environmentally sensitive areas) are more suitable for use as collector transformers for PV generation owing to greater inherent resistance to extremes of temperature and humidity and also to fine contamination. Liquid-immersed design concepts also lend themselves to optimisation of rated power, as liquid-immersed transformers have a slower response to changes in load.

Dry-type design concepts may be useful for some applications where the transformer can be installed in a well-controlled indoor environment, e.g. large-scale roof-top PV generation projects.