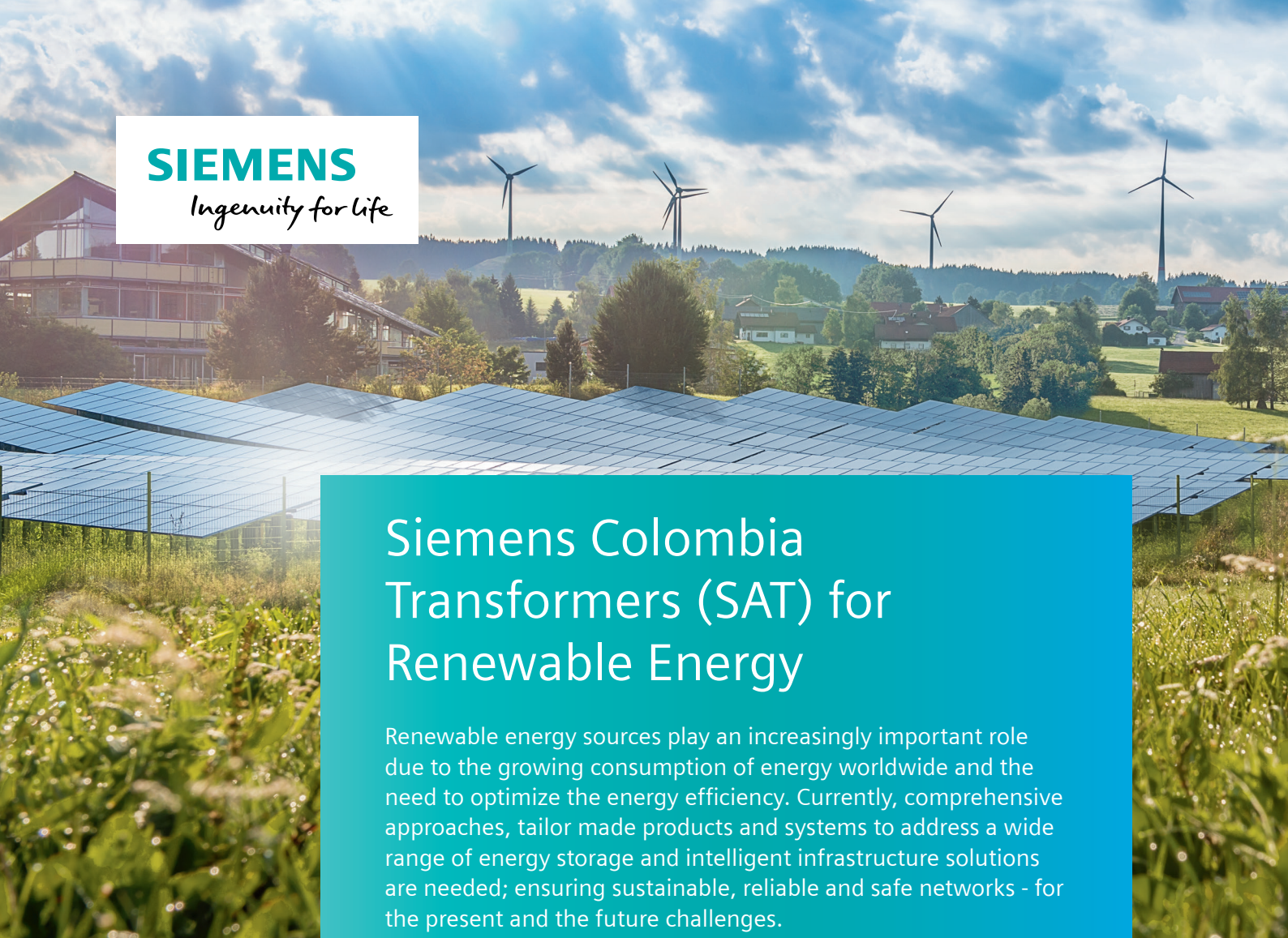




SIEMENS

Ingenuity for life



Siemens Colombia Transformers (SAT) for Renewable Energy

Renewable energy sources play an increasingly important role due to the growing consumption of energy worldwide and the need to optimize the energy efficiency. Currently, comprehensive approaches, tailor made products and systems to address a wide range of energy storage and intelligent infrastructure solutions are needed; ensuring sustainable, reliable and safe networks - for the present and the future challenges.

www.transformadores.siemens.com

The fluctuating and intermittent nature of the electricity supply of distributed generating sources set greater challenges for power grids and significantly affects the stability of medium and low voltage networks; making the equipment subject to special operating conditions, high efficiencies, non-continuous and intermittent load cycles, overexcitation, transient phenomena, components DC and harmonics, aggressive dimensional and environmental conditions, among others.

Siemens offers innovative solutions and extensive experience through a full range of transformers for your Wind, Photovoltaic Power generation or Battery Storage needs.

Advantages

- Years of experience in the design and manufacture of liquid immersed transformers for conventional and renewable energy application.
- Local R&D staff with the support of Global Research and Development team and tools in Head Quarter in Germany .
- Products with the best quality, innovating in each of our products, materials and processes that make us the perfect partner for your solution.
- Customized design allowing an optimized solution for each project .
- Reliable and durable operating equipment according to the system's life span.
- Transformer's remote monitoring option via GSM, enables you to track each of your transformers (Sensformer Concept)
- Extensive network of Sales, Logistics and Service allows the most remote generation sites to be served.
- Due to Siemens group broad product and services portfolio , the option of supplying a Skid Inverter (Centralized Inverter or String) Transformer and Ring Main Unit (RMU).

Key Technical Features

- Design and manufacture according to IEEE C57.12.00, IEEE C57.12.34, IEC/IEEE 60076-16, CSA and others.
- Designed with mineral oil, natural or synthetic esters.
- Accessories with digital and analog outputs for connection to SCADA systems (optional).
- Transformers manufactured to withstand severe environmental conditions such as extreme temperatures or marine environments according to ISO 12944 (optional).
- Transformers designed and manufactured under UL Certificate (optional)

Step-Up or Step-Down Transformer

- Solution up to 10 MVA, 36kV.
- High efficiency designs, meeting standards such as DOE Part 431, Ecodesign European Regulation 548/2014, CSA, in addition to others.
- Dead or Live front bushings
- Design of Step-Up, Step-down or bi-directional flow.
- Low levels of partial discharges.
- Possibility to connect up to 2 Turbines to one transformer for wind application or up to 2 Inverters/ Group of Inverters to the same transformer for photovoltaic applications (Double Secondary Winding).



- If required, proper equipment fuse coordination for the protection of the equipment (Pad-Mounted). Loop or radial feed according to the project configuration.
- Electrostatic shield (optional) between BT/MT windings
- Special cabinets or terminal chambers for accessories location (LV fuses, temperature gauges, etc)

Collector Transformer:

- Capacity up to 100MVA 230kV manufactured in our factory in Tenjo, Colombia. Larger power transformers to be provided by Siemens' network of factories worldwide.
- On-load tap changers (LTC) and De-energized tap changers (DETC).
- Cooling; (ONAN, ONAF, OFAF, OFWF, KNAN, KNAF, ODAF, ODWF)
- Available connectins for HV and MT: Oil-Air, Oil-SF6, Oil-Oil and Plugs, etc.
- Basic Insulation level (BIL) up to 1050 kV.
- Transformers with complete monitoring, control and communication systems, with standardized communication protocols according to international standards. (Optional)
- Supply of explosion protection systems (optional)
- Seismicity level according to international standards. (IEEE, IEC, ICONTEC and ETG (Endesa Chile))

Wind and Solar portfolio



This flyer contains only general descriptions that in the case of a specific application may not exactly coincide with the described, or have been modified as a result of updates to the design of the products.

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