Transforming superior technology into reliable quality.

GEAFOL converter transformers for your drive

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GEAFOL Static Converter Transformers –
In Use Worldwide
The advantages of GEAFOL:

Wherever space is limited and there are high demands when it comes to safety and awareness of environmental aspects, the use of GEAFOL static converter transformers offers many advantages for planning and installation. That's because flexible, environmentally friendly GEAFOL technology allows transformer installation directly at the consumer load center.
Highly efficient cooling system for the “Grand Princess”:
Eight GEAFOL converter transformers supply the diesel-
electric propulsion system of the “Grand Princess” with
an output of 9150 kVA each.

For the use in the Priobskoye oil field in Western Siberia:
7.5-MVA static converter transformers in double-tier design,
35 ± 2 x 2.5%/2 x 2.2 kV. Designed for ambient temperatures
down to – 55ºC. Transformer certification conforms to the
Ghost standard. They were set up on a platform supported
by a pile foundation.

Static converter facilities with appropriate valves
are required to transform and control electric energy
for drives. Static converter transformers provide
the link to the supply network.

These special transformers are particularly suitable
for applications such as heavy-duty drives for steel
mills, oil rigs, off-shore installations and conveyance
facilities, and for the variety of uses for drives in
industry. These transformers are also ideal for the
power supply of DC-powered light rail systems –
e.g., underground trains and trams as well as the
Transrapid.

The circuit of the static converter transformer is
adapted to that of the static converter. Its windings
are designed to cope with the stress and the current
curves generated during the operation of the static
converter. The static converter transformer is subject
in particular to the following influences specific to
the drive and the static converter.

Heavier dynamic and thermal stress
due to the rapid changes in load.
Unlike the design of standard distribution transformers,
the design of static converter transformer must allow
for frequent start-up loads.

The advantages of GEAFOL® technology:
Vacuum casting of windings and the prepreg system for
LV ensure reliable absorption of radial and contraction
forces. The LV strip winding reduces axial short-circuit
forces to a minimum. The high shortcircuit withstand
capability thus achieved makes the transformer insuscep-
tible to the stress caused by frequent drive peak loads.
Another positive factor is the great heat capacity and
thus the high overload capability of this type of transformer.
GEAFOL – For Highest Load Capability

A higher thermal load on the windings due to harmonic content in the load current.
The static converter imposes a harmonics-ridden current curve form on the transformer. The distorted stray field gives rise to higher eddy current losses (stray losses). The radial height of the conductor particularly affects the stray losses, which may be up to the fourth power.

The advantages of GEAFOL technology:
Low radial conductor heights (foil thickness) give rise to extremely low stray losses.

Thermal overloading of the core and the clamped parts caused by disturbance in the static converter. Asymmetric pulses in the static converter generate a DC current component in the load current of the transformer. The resulting changes in flow behavior are an additional strain on the core, structural parts and windings.

The advantages of GEAFOL technology:
Harmful overheating of the core and clamping parts is detected by monitoring the temperature of the tie bolt (connecting top and bottom clamps) at the core circuit.

GEAFOL – Suitable for your Drive

GEAFOL transformers of the static converter type for drives are available for power ratings up to 40 MVA and voltages up to \( U_n = 36 \text{ kV} \). Adapted to the circuit of the static converter, these special transformers are made primarily with Dy5 circuit, or Dy5Dd0 for two-tier design. Required phase shifts are also possible with GEAFOL technology by installing shift-tip windings. Three-tier GEAFOL transformers are preferably used in modern direct converter installations. Rated power can be raised by up to 50% by installing a radial-flow fan.