



The GEAFOLE Basic – compact power, convincing data

Answers for energy.

SIEMENS



Maximum efficiency in use and economic production: the new GEAFFOL Basic.

The GEAFFOL Basic – a true GEAFFOL and more

Tailored design

Let's be clear right from the start: the GEAFFOL Basic represents an evolution, not a revolution. It's based on more than 40 years of proven GEAFFOL technology and quality, but it offers numerous innovations that have allowed us to provide it with several very special characteristics. Its design takes several requirements for special applications into account which we wouldn't have dared to dream of when the original GEAFFOL was being developed. As a result, for example, the GEAFFOL Basic distribution transformer with a maximum rated power of 3.15 MVA is almost ten percent lighter than a comparable model from the proven GEAFFOL series. And this "slimming down" also positively affects the dimensions.

Universal use

The highest safety requirements must be met whenever distribution transformers are operated in the direct vicinity of humans. GEAFFOL Basic distribution transformers are the perfect solution in this case, because their proven GEAFFOL design is coupled with proven operational reliability and a long service life. What's more, they've got the seal of approval because all GEAFFOL basic distribution transformers meet the specifications of VDE 0532/IEC 60076-11/DIN EN 60076-11. They meet the highest requirements for safe installation in residential and work environments with Climatic Class C2, Environmental Class E2 (standard model meets E1; E2 is available as an option at an additional cost) and Fire Classification F1.

Optimum compromise

Keeping the distance between the distribution transformer and consumer as short as possible also considerably reduces both the complexity of the electrical network and losses in the transmission and distribution of energy. Frequently, however, there is often a shortage of space in the vicinity of the consumer. The GEAFFOL Basic distribution transformer represents an optimum compromise between performance, safety and small dimensions. In addition, the high degree of standardization ensures the best possible cost-benefit ratio. Thanks to their compact shape and comprehensive safety certification, GEAFFOL Basic distribution transformers can be used in almost every environment.



A new design for your success –
the reliable, space-saving GEAFOLE Basic

1 Three-limb core

Made of grain-oriented, low-loss electric sheet steel that is insulated on both sides

2 Low-voltage winding

Made of aluminum strip; turns are permanently bonded with insulating sheet

3 High-voltage winding

Made of individual aluminum coils using foil technology and vacuum casting

4 Low-voltage connectors (facing up)

5 Lifting eyes

Integrated into the upper core frame for simple transport

6 Delta connection tubes with HV terminals

7 Clamping frame and truck

Convertible rollers for longitudinal and transverse travel (rollers optional)

8 Insulation made of an epoxy resin/ quartz powder mixture

Makes the transformer extensively maintenance-free, moisture-proof and suitable for the tropics, fire-resistant and self-extinguishing

9 High-voltage taps $\pm 2 \times 2.5 \%$

(on the high-voltage connector side) to adapt to the respective network conditions; reconnectable off load

Temperature monitoring

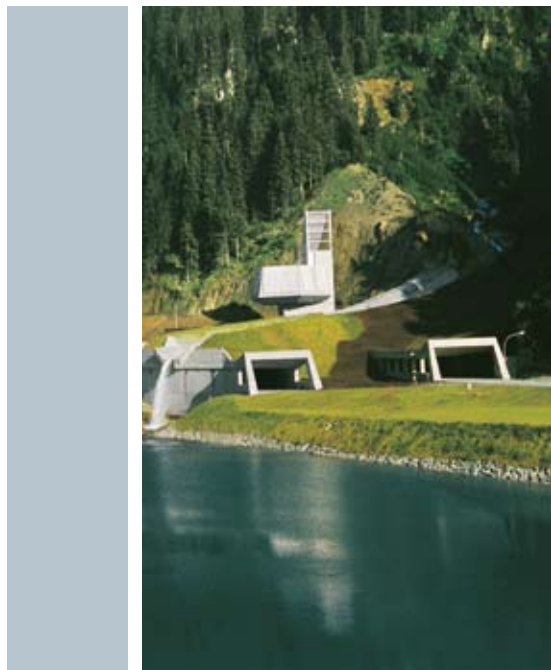
With PTC thermistor detector in limb V of the low-voltage winding (in all three phases upon request)

Painting of steel parts

High-build coating, RAL 5015: two-component coating upon request (for particularly aggressive environments)

Structure made of individual components

For example, windings can be individually assembled and replaced on site



Regardless of the application, a low weight, small dimensions and high operational reliability with the lowest possible maintenance make the GEAFOLE Basic the first choice.

One concept, many applications

Thanks to its technical characteristics, the GEAFOLE Basic is well suited to a variety of applications. And you don't have to take the limitations of classic transformer technology into account when planning. Use in a load center allows optimum network designs to be realized – with corresponding advantages in terms of cost and efficiency. In addition, the GEAFOLE Basic makes it possible to dispense with special safety precautions, such as coolant collecting troughs. And with its small dimensions, the GEAFOLE Basic permits more power to be installed in the same space.

Built-in safety

The coils of the high-voltage winding of the GEAFOLE Basic are manufactured from aluminum foil. This foil winding combines simple winding techniques with high electrical safety, as its insulation is subject to less electrical stress than other types of windings. While in the case of a conventional round-wire winding, the turn-to-turn voltages amount to double the voltage between layers, in the case of a foil winding no more than the simple turn-to-turn voltage occurs, because in this case every layer is comprised of a turn. This results in great power frequency voltage strength and impulse strength. In addition, the epoxy-resin vacuum casting of the high-voltage windings is performed at a high temperature, which avoids hazardous entrapped gas and allows for a high level of freedom from partial discharges up to twice the rated voltage. A high level of process expertise guarantees excellent product quality, which is reflected, among other things, by an excellent MTBF Index.

Reliable design

The conductive material for the low-voltage strip winding is also made of aluminum, with the width of the aluminum strip corresponding to the length of the coil bands in order to considerably reduce the axial short-circuit forces in the transformer. It's these characteristics that make the design of the GEAFOLE Basic possible. The conductive and insulating materials are bonded to each other by heat treatment and form a compact unit that also reliably handles radial forces.



Overview of features and advantages

The GEAFOLE Basic distribution transformer:

- Innovative clean design
- Power range up to 3.15 MVA and voltages up to 36 kV (medium voltage) or 450 V (low voltage)
- Up to approx. 10 % lower weight
- Up to approx. 30 % increase in power possible through forced-air cooling
- Proven GEAFOLE technology and quality
- Optimum compromise between size and power
- Certified in accordance with VDE 0532/IEC 60076-11/DIN EN 60076-11
- Climatic Class C2, Environmental Class E1* and Fire Classification F1
- Maintenance-free windings embedded in moisture-proof, fire-resistant and self-extinguishing insulating material that is suitable for the tropics
- High electrical safety thanks to foil winding
- Freedom from partial discharges up to twice the rated voltage
- Standardized accessories

* E2 available as an option at an additional cost

Further development of proven technology

With approx. 100,000 transformers in use worldwide, essential parts of the GEAFOLE technology have already proven themselves over the long term. These include the strip winding and foil winding made from aluminum, which we adopted without change for the new GEAFOLE Basic in order to ensure reliability and a long service life. In return, the mechanical design and high-voltage windings underwent a re-design in order to make them lighter and smaller as a truly clean solution. As a result, it was possible to considerably improve heat dissipation. With fewer horizontal surfaces, less dust is deposited, which leads to a further reduction in the already minimal time and effort needed for maintenance and also increases operational reliability.

Everything that's needed for the future

The GEAFOLE Basic is also setting new standards when it comes to being prepared for the future. Even though the end of its service life is still a long way off, the GEAFOLE Basic already has the perfect answer to the question of recycling. All metal parts as well as the cast resin can be recycled in an environmentally friendly way.

GEAFOLE Basic – the intelligent further development of an excellent technology.

Published by and copyright © 2009:
Siemens AG
Energy Sector
Freyeslebenstrasse 1
91058 Erlangen, Germany

Transformatorenwerk Kirchheim
Power Transmission Division
Transformers
Hegelstrasse 20
73230 Kirchheim/Teck, Germany
Phone: +49 (0) 7021 508-0
Fax: +49 (0) 7021 508-495

For more information, please contact
our Customer Support Center.
Phone: +49 180/524 70 00
Fax: +49 180/524 24 71
(Charges depending on provider)
E-mail: support.energy@siemens.com

Power Transmission Division
Order No. E50001-G640-A143-X-4A00
Printed in Germany
Dispo 19201, c4bs No. 7481
TH 101-090812 470885 SB 10092.0

Printed on elementary chlorine-free bleached paper.

All rights reserved.
Trademarks mentioned in this document
are the property of Siemens AG, its affiliates,
or their respective owners.

Subject to change without prior notice.
The information in this document contains general
descriptions of the technical options available, which
may not apply in all cases. The required technical
options should therefore be specified in the contract.