

Environmentally sustainable and fire-resistant insulated transformers with Midel®7131



Fit for the future

In any power supply network, the transformers play a strategic nodal role. They are often located where environmental protection and fire prevention are of crucial significance. Siemens now makes it possible to fill transformers with the synthetic ester Midel®7131 (instead of mineral oil).

Places of use

In ecologically sensitive surroundings, particular regulations apply. Units filled with Midel®7131 are suitable for installation:

- Near rivers and lakes
- Near drinking and groundwater reserves
- In places where stringent fire safety regulations apply
- At high altitudes (above 3000 meters). Reasons: environmental sensitivity and difficulty with soil disposal

What is Midel®7131?

Midel®7131 is a transformer insulating liquid on a synthetic ester base.

It has been successfully used for more than 30 years as an alternative not only to conventional liquid coolants such as mineral or silicone oil, but also to cast resin insulation. Siemens uses this synthetic ester in power, distribution and traction transformers alike. Units containing Midel®7131 are also produced for industrial applications.

Advantages of MIDEI®7131

- Environmentally benign (biodegradable)
- Higher firepoint in comparison to mineral oil
- Good thermal characteristics: Low thermal expansion coefficient, thermal conductivity comparable with mineral oil
- Can be mixed with mineral oil
- Excellent dielectric properties: high disruptive strength, low dependence of dielectric characteristics on moisture content
- High oxidation stability
- Strongly hygroscopic, can absorb large quantities of moisture while retaining its insulating properties
- Cellulose insulation impregnated with Midel®7131 ages far less than with mineral oil
- Materials customarily used in transformer construction are compatible with Midel®7131
- Better heat transfer than silicone
- Ideally combinable with Nomex insulation, resulting in less volume and better cooling at high temperatures
- Lower viscosity than silicone
- Quicker environmental approval procedure due to biodegradability

To be borne in mind:

- Higher viscosity in comparison with mineral oil
- Complex filling and impregnating process
- Higher price than for mineral oil

Transforming future trends into innovations.
Siemens **Transformers**.

References: Midel transformers

Transformers with Midel®7131 as an alternative to mineral oil or cast resin are proving their worth worldwide.

Siemens possesses a wide range of global project know-how, covering power, distribution, traction and industrial transformers.

Maybe we can illustrate your project here soon?



Innovation for the Netherlands

This 10 MVA/20 kV ONAN-cooled transformer unit from our manufacturing plant in Linz is filled with Midel®7131. Located in a power station in the Netherlands, it also features aluminum windings.



Quality from Siemens for Finland

Numerous distribution transformers produced in our Weiz plant for the Finnish market are pole-mounted and filled with Midel®7131, so as not to endanger the groundwater.



Windparks

Distribution transformers for on and offshore windparks are noted for their extremely slimline design. The Nomex-insulated unit illustrated here is filled with Midel®7131.



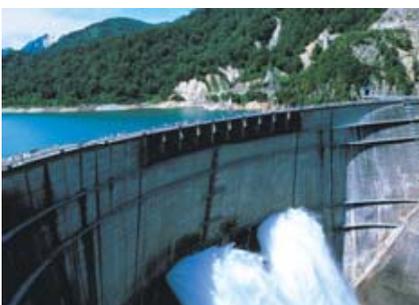
Underground in Sweden

An environmentally compatible solution for underground use in Sweden. Owing to weight restrictions, this 135 MVA/220 kV transformer had to be transported empty of liquid and then filled on site.



High-speed energy

This 5.66 MVA/25 kV traction transformer for the RENFE series S103 is Nomex-insulated and filled with Midel®7131. The high-speed train can cover the distance from Madrid to Barcelona in 2 hours and 30 minutes.



Transformers for a hydropower plant (planned)

Our production plant in Linz has received an order for two Midel®7131-filled transformers for a hydropower plant in Sweden. The two 100 MVA/220kV units will be constructed in 2009.



Midel® and Nomex prolong the life of a transformer

In addition to its ecological benefits, Midel®7131 is also compatible with other high-grade materials. Our manufacturing plant in Sabugo uses this liquid insulant in combination with Nomex (See illustration).

Siemens Transformers Austria
GmbH & Co. KG
Elingasse 3
8160 Weiz
Austria

Tel.: +43 51707-71382
E-Mail:
christian.wiery@siemens.com
www.siemens.com/transformers