

CASE STUDY

[MIDEL®]
SAFETY INSIDE

PROJECT: Retrofilling power transformers | Germany

ESTER TYPE: MIDEL 7131 synthetic ester

PURPOSE: Improve environmental protection in zoned water areas

[OVERVIEW]

Vattenfall is a large utility company operating across northern Europe, including Germany and the Netherlands. Part of its operation is providing the electrical distribution network for Berlin, where MIDEL 7131 has been used extensively.

Berlin presents very specific challenges for transformer installations since much of the city is zoned as water protection areas. Berlin contains more bridges than Venice, about 120 miles of canals and rivers and is popular with visitors and residents for pleasure boating. The canals that crisscross the German capital eventually link up to the country's major rivers: the Rhine, Elbe, Danube and Main.

In these areas it is necessary to take special precautions with regard to spillages of hazardous materials including mineral oil.



CASE STUDY



[SITUATION]

Starting in 1992 a pilot project was carried out to assess the viability of retrofilling the existing mineral oil transformers with MIDEL 7131 to greatly reduce the potential environmental impact.

To ensure only the lowest levels of mineral oil remained in the transformer a thorough method was used where the windings were removed and rinsed with MIDEL 7131 before being baked in an oven overnight. The windings were then returned to the transformer tank and the units were filled with MIDEL 7131.

[RESULT]

The result was that the mineral oil content after retrofill was far less than 3%, the stipulated limit for environmental acceptance in Germany. The transformers which were retrofilled were of the free breathing type and were monitored over a 13 year period after the initial retrofill.

The long term testing of the fluid from the transformers showed that the breakdown voltage has been maintained and the moisture content had leveled out over time, despite being open to the environment and able to absorb unlimited amounts of water. This excellent performance prompted Vattenfall to carry out 350 retrofills and also order new transformers filled with MIDEL synthetic ester fluid. Today there are around 2500 synthetic ester transformers on the network.

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The use of MIDEL ester fluids in this project supports the following UN Sustainable Development Goals:

