

CASE STUDY



PROJECT: Hydropower transformers | Switzerland

ESTER TYPE: MIDEL 7131 synthetic ester

PURPOSE: Improve fire safety and reduce construction costs

[OVERVIEW]

Kraftwerke Oberhasli AG (KWO) is one of the leading hydropower companies in Switzerland. KWO has nine power plants, with 26 turbines and a total capacity of 1,125MW. These assets are spread over eight reservoirs on the Grimsel and Sustenpass areas. In total these plants produce around 7% of the electricity coming from Swiss hydroelectric power plants.

For a specific project KWO needed four 50MVA converter transformers along with a number of auxiliary distribution transformers for an underground installation. In the past these transformers had always been filled with mineral oil, which necessitated the installation of a complicated fire suppression system.



CASE STUDY



[SITUATION]

A meeting including personnel from KWO, the Utility BKW and the Swiss Institute for the Promotion of Safety and Security (SWISSI) was held to discuss fire safety requirements for the mineral oil converter transformers.

MIDEL 7131 was discussed and the MIDEL technical team met with the interested parties to discuss the benefits of using MIDEL 7131 in place of mineral oil for the transformers. The fire safety credentials of MIDEL impressed all those present so much that they decided to evaluate in depth whether the fire suppression could be removed if MIDEL 7131 was used in place of mineral oil.

The transformers for this project were already on order, so there was a need to change the fluid from mineral oil to MIDEL 7131. The MIDEL team worked in collaboration with KWO and the transformer manufacturer ABB to ensure that MIDEL 7131 was suitable for this particular application. In the meantime a comprehensive risk assessment was carried out by SWISSI, to demonstrate that MIDEL 7131 was of equal safety to the mineral oil and a fire suppression system combination.

[RESULT]

The conclusion of this study was that MIDEL 7131 was a viable, and in some cases superior, alternative to using mineral oil with fire suppression. Following the successful outcome of the interaction with ABB and the SWISSI report, KWO received and installed the MIDEL 7131 filled transformers, without any fire extinguishing system. This allowed them to save substantial costs in terms of capital installation, but also removed the ongoing expense of maintenance on the extinguishing system.

Based on this project a joint paper was written by MIDEL and KWO technical personnel and was presented at the Cigre 2012 Paris session. This collaborative approach is a hallmark of the MIDEL team's commitment to sharing expertise with their customers.

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

