

# CASE STUDY



**PROJECT:** Raby Castle | County Durham, UK  
**ESTER TYPE:** MIDEL 7131 synthetic ester  
**PURPOSE:** Fire safety without intrusive, costly building works

## [ OVERVIEW ]

Raby Castle is a medieval structure located in County Durham in the UK. It was built by the 3rd Baron Neville de Raby between 1367 and 1390. Since 1626 it has been the home of the Vane family who have carried out extensive restoration and renovation works.

The castle, situated in 200 acres of parkland, is open to the public and attracts thousands of visitors annually; the site is famous for its expansive artwork collection on public display.

In 2020, the regional Distribution Network Operator (DNO), sent Integrated Utility Services - a High Voltage Contractor - to inspect the castle's electricity infrastructure. The HV company recommended that the on-site substation's switchgear be replaced, and further noted that the existing fire suppression system no longer provided the necessary level of protection.



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## [ SITUATION ]

A MIDEL Service Partner, Grosvenor Oil, was called in with a view to performing a retrofill on the transformer, an embedded 200kVA Parsons Peebles unit manufactured in 1953. The reasons for exploring a retrofill option were:

- Reducing expensive maintenance costs
- Removing the legacy fire suppression system
- Increasing fire safety in a heritage landmark

These benefits were made possible because the recommended insulating fluid - MIDEL 7131 - is a K class insulating fluid with a high fire point (316°C), offering unrivaled fire safety and environmental protection credentials.

## [ RESULT ]

Retrofilling is the process of draining mineral oil from a transformer and replacing it with another fluid, in this case MIDEL 7131. The process is proven and effective (the first MIDEL retrofill was performed in the 1970s for British Steel). At Raby Castle, the retrofilling was completed in just one day.

The use of MIDEL ester fluids also means improved moisture tolerance compared with that of mineral oil, which keeps the transformer's insulating paper in a better condition for longer, thus helping to extend asset life. Being fully biodegradable, MIDEL 7131 also complements Raby Castle's high standards of environmental stewardship.

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**“As part of our project with the DNO, we usually perform retrofills in hi-rise apartment buildings. Working on such an iconic site such as Raby Castle reinforces the MIDEL difference in its ability to provide transformer fire safety without needing intrusive, costly building works.”**

**Gavin Allen,**  
Managing Director, Grosvenor Oil Services (MIDEL Service Partner)

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

