

# CASE STUDY

**[MIDEL®]**  
SAFETY INSIDE

**PROJECT:** International airport transformers | UK  
**ESTER TYPE:** MIDEL 7131 synthetic ester  
**PURPOSE:** Replace cast resin assets with fire safe alternatives

## [ OVERVIEW ]

Heathrow Airport is one of the world's busiest civil aviation hubs, serving over 80 million customers every year. The safe and reliable supply of electricity is naturally a number one priority for a facility of Heathrow's size. To help deliver the safe delivery of electricity throughout the airport, a fleet of distribution transformers are used, which provide power for critical services.

Originally all these transformers were cast-resin type; over time, these transformers presented the airport's engineers with some problems particularly related to dust, which prompted them to explore available alternative transformer types.

Of real interest was the MIDEL range of natural and synthetic ester fluids which offered a proven, biodegradable alternative to conventional transformer oils and thus a viable alternative to cast-resin transformers – all delivered with MIDEL's in-depth technical knowledge and applications expertise.

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## [ SITUATION ]

The key issue was airborne contamination, in the form of fabric dust. The cast-resin transformers were located close to the baggage handling area, and since the luggage was regularly moved on and off the conveyors, a large amount of fabric dust was released into the air. This, combined with general dust from the movement of many staff and passengers, led to a residue build up on the surface of the transformers. This was further complicated by the cast-resin design; the airflow over the coils and the static fields around them actually attracted dust.

The build up of dust on the transformer could potentially cause overheating and electrical issues, therefore they had to be regularly cleaned. Initially, the operator tried to reduce the maintenance burden by installing filters on the transformers so that the dust would be trapped, but these quickly clogged up and needed regular maintenance to keep the air flow high.

Deciding that cast-resin transformers were not a suitable option, it was discovered that fluid-filled transformers would not be affected in the same way by dust build up. Mineral oil could not be used as a transformer fluid due to its potential flammability. The final choice was to deploy transformers filled with MIDEL 7131 synthetic ester fluid - a fire safe, biodegradable fluid used in transformers worldwide.

## [ RESULT ]

Transformers filled with MIDEL 7131 fluid provided a robust, proven replacement because they are housed in sealed tanks and not exposed to dust build up; neither do they have external static fields to attract fibres from the air.

The MIDEL solution has been so successful that during the Terminal 5 expansion, MIDEL filled transformers were again used to help protect the airport and its passenger community.

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

