CASE STUDY

[MIDEL®]
SAFETY INSIDE

MIDEL reduces risk profile for Rio Tinto
Mine of the Future concept calls for ester fluid

In Western Australia, mining company Rio Tinto is constructing what will be the most technologically advanced iron ore mine in its portfolio. Along with a new 220kV transmission line and 39 transformers rated at 33 kV, the site will also need 166km of railway, an airport, a camp and road access to support its operation. Koodaideri forms a flagship part of Rio Tinto's 'Mine of the Future' programme, utilising the latest in mining technology. The significant levels of electrification on-site demand a new approach to transformer risk management - resulting in the specification of MIDEL 7131 synthetic ester transformer fluid.

Providing power to mining operations presents some unique challenges:
- remote locations can be difficult to reach, adding costs in transportation and maintenance runs.
- space at mining sites is often at a premium (a particular problem as transformers traditionally must be installed at a minimum distance from neighboring buildings and need to be blast and fire proof).
- usually, transformers have been filled with potentially flammable mineral oil as an insulator. But should that mineral oil ignite, the resulting transformer fire will be notoriously unforgiving, causing massive damage in a short space of time and disrupting vital power supplies.
- fire suppression equipment (and/or civil works) to mitigate the risk (in mines, tons and tons of poured concrete) can run into the millions of dollars and add a significant amount of space to the installation footprint.

These challenges were overcome by Rio Tinto adopting the proven technology of ester transformer fluids over mineral oil.

"Why wouldn't you specify MIDEL? It completely de-risked the project and saved over $3 million in concrete."

- Mark Brown, Worley Parsons (EPC on project)

Engineers working on the Koodaideri project specified the use of MIDEL 7131 – a synthetic ester transformer fluid which is fire safe up to 316˚C; a vast improvement on mineral oil's fire point of 170 ˚C. Consequently, the mine's transformers don't require fire walls and allow for simplified bunding. As an added bonus, MIDEL 7131 is environmentally friendly, as it is readily biodegradable. These benefits apply to installations whether above or below ground.

In addition to saving millions of dollars, this simple innovation has set a new standard in the way power is supplied in mining projects. Rio Tinto Iron Ore is now actively deploying MIDEL 7131 at other sites.

This success story for Rio Tinto has been quickly recognised - last year the mining giant earned a Safety and Health Resources Sector Award nomination from the Government of Western Australia for the implementation of on-line partial discharge (PD) screening and condition monitoring on a fleet of more than 1,000 switchgear panels. This initiative has significantly improved substation safety culture and asset reliability across 25 mining sites.