

” Industry players themselves will become the champions of change



Interview with **Barry Menzies**, Head of MIDEL Transformer Fluids at M&I Materials

Barry Menzies, Commercial Director and Head of MIDEL Transformer Fluids at UK-based M&I Materials Ltd, gives an overview of how the company works with manufacturers and end users to deliver cost savings, asset performance improvements and risk mitigation

What's the history behind M&I Materials and MIDEL?

People are sometimes surprised to learn how long we have been around. M&I Materials dates back to 1901 (The Mica Insulator Company), but it developed a prominent role in the transformer industry in 1979 when we patented MIDEL 7131 synthetic ester-based transformer dielectric fluid. This was prompted by the need to replace PCBs (polychlorinated biphenyls) which, at the time, were widely used in transformers, but then found to be toxic. MIDEL eN natural ester was introduced in 2005. A critical turning point for MIDEL occurred in 1993 when M&I Materials was founded as a result of a management buy-out from owner GEC Alstom, giving us the ability to focus on the transformer industry and develop the

expertise our customers have come to expect from us.

How did opportunities develop for MIDEL?

After the initial introduction of MIDEL into the transformer market, it quickly became apparent that more opportunities existed - we could see that the specific performance characteristics of MIDEL could influence the future design and deployment of transformers worldwide. Since then we have continued to focus on developing our knowledge of the chemistry of the fluids, their impact on transformer design and the application of MIDEL transformers to both support our customers and facilitate innovation.

Since the buy-out in 1993, the M&I team has been working closely with the leading

transformer manufacturers (OEMs) and utilities, commercial and industrial entities (end users) to further embed the use of MIDEL in the industry. The company has positioned itself in the market not only as a materials supplier, but also as a solution provider to transformer OEMs and end users. The 15-fold growth since 1993 is a clear vindication of the company's focus on addressing the needs of an evolving transformer industry.

MIDEL was initially recognised as a viable alternative to mineral oil in niche applications where fire safety or environmental impact presented substantial risks. Over time, we've built on this success to respond to end users' changing needs and we're seeing more widespread use in standard specifications.

The journey has taken us from small distribution units, indoor and underground sites, through wind, traction and transmission applications to the latest 400 kV-range transformers. The locations vary from high altitude to deep sea and extremes of both cold and heat. MIDEL enables transformer OEMs and service companies across the globe to increase their value proposition and competitive advantage.

” MIDEL offers more than the benefits of a fire-resistant fluid – there are also clear advantages to be gained from cost and risk reductions, deployment innovations, corporate social responsibility, and asset performance

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How does MIDELE influence the issue of cost reductions in the transformer industry?

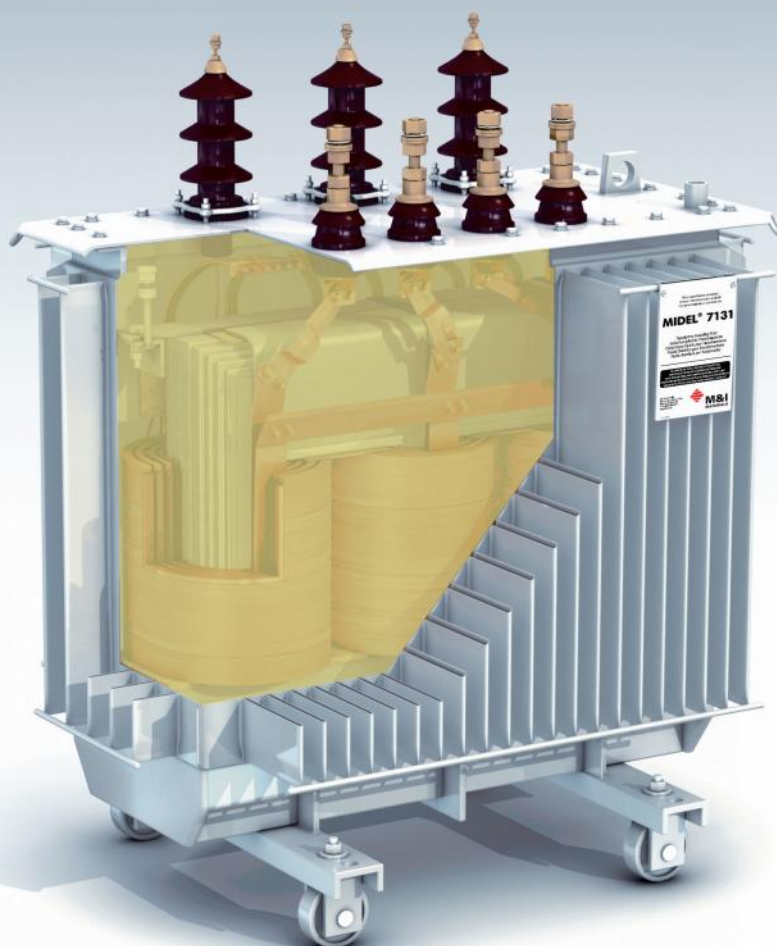
Cost is a very sensitive topic in the transformer market these days. As a result of higher raw materials costs, MIDELE bears a higher price point than mineral oil, and some companies are reluctant to use it for that reason. However, more companies now realise that taking the total project cost into consideration, MIDELE can offer financial savings regarding installation and ownership. For example, using MIDELE can reduce the required distances between the transformer and the surrounding buildings, thus minimising the substation footprint. For utility or industry customers who have to install transformers in urban areas where land is


expensive, reducing the land required will provide significant savings. In addition to this, MIDELE's fire safe properties can reduce or eliminate the need for additional fire suppression systems. Where mineral oil transformers can require bunding and containment to prevent leakage into the local drainage system, MIDELE, being biodegradable, can reduce the need for this extensive infrastructure, offering cost saving benefits.

What role does MIDELE play in risk reduction or mitigation?

There is an element of risk in all transformer deployments – higher or lower risk depending on the criticality of the transformer and its specific location. Risk mitigation is a core element of MIDELE's value; for example, an end user wanting to install a generator step up (GSU) transformer filled with mineral oil and equipped with fire suppression system in an area close to a power plant. However, a much lower risk factor was assessed (by an external risk assessor) for using an underground GSU transformer filled with MIDELE without any fire suppression system. The MIDELE transformer could then be placed close to the generator, with the additional

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” Using MIDE L, the transformer OEM is able to demonstrate flexibility and innovation in finding the right solution, so differentiating itself from the competition in what is a very competitive market

benefit of significantly reducing losses in bus bars between the generator and the transformer.

Over the years, MIDE L has delivered risk reduction where transformers are installed in residential areas, inside or close to buildings, hospitals, schools, protected environments and other sensitive locations. This is recognised by many insurance companies who regularly advise their clients to replace mineral oil with MIDE L.

What would be a good example of MIDE L innovation?

More and more frequently, customers need smaller transformers for different applications, for example in traction and wind turbines. Using MIDE L makes it possible to increase the transformer operating temperature and hence design and deliver a more compact unit, so the customer is able to satisfy the dimension requirements for the transformer in addition to delivering overall cost savings.

In a recent innovation, a customer specified MIDE L in order to operate transformers at higher temperatures, enabling them to recover and recycle the waste heat from the transformer to the surrounding buildings.

Another example is a large utility which discovered that by using MIDE L it can

overload their transformers during short periods of high demand for electricity, thus avoiding stressful and unwanted blackouts and improving the quality of power delivery to their customers.

How does MIDE L impact Corporate Social Responsibility (CSR) issues?

In terms of fire and environmental impact, safety is a critical focus for the industry; particularly regarding transformers placed in enclosed spaces and populated areas. We're now seeing the industry proactively address these concerns and go further, giving greater consideration to their overall sustainability credentials. The properties of MIDE L, such as fire safety, avoidance of environmental damage due to biodegradability and better use of resources due to asset life extension significantly help in addressing these requirements. A proportion of MIDE L's raw materials (100% in the case of our natural ester MIDE L eN), is sustainably sourced.

M&I Materials is committed to CSR. We are a zero waste-to-landfill company and, for MIDE L, offer an end-of-use retrieval service.

What's next for MIDE L?

We are seeing acceleration in the uptake of MIDE L synthetic and natural ester fluids in the marketplace. To help drive

this we're investing our efforts in working closely with OEMs and end users to support and develop their knowledge in specifying a cost effective, robust and proven alternative to traditional cast resin and mineral oil transformers. In taking this approach we believe that industry players themselves will become the champions of change. While mineral oil will continue to dominate in this industry, we see the adoption of MIDE L ester-based fluids as a natural progression based on long-term safety and cost issues. Some utilities have already decided to switch significant proportions of their fleets to MIDE L, increasing their economies of scale by dealing with just one proven transformer fluid.

All markets change, evolve and develop. These are exciting and challenging times for the transformer industry and we see MIDE L playing an integral role in its future.

Barry Menzies studied Chemical Engineering at the University of Bradford in the UK while being sponsored by BP International, and an MBA at Herriot Watt University in Edinburgh. The majority of his career has been in chemical manufacturing including engineering, manufacturing and commercial roles in Unilever, ICI and INEOS in both Europe and Asia-Pacific. Barry joined M&I Materials in 2011 as Commercial Director.

” Companies are demonstrating corporate social responsibility by using MIDE L and showing how they are preventing damage to equipment, the environment and people