

CASE STUDY



PROJECT: Underground substation | Milwaukee, USA

ESTER TYPE: MIDEL eN 1215 natural ester (soybean)

PURPOSE: Fire safety to protect Milwaukee urban substation

[OVERVIEW]

Milwaukee, Wisconsin, with a heritage dating back to the 1840s, is a city well known for its traditions of manufacturing and innovation. And like many other US cities, it is undergoing a revitalization of its densely populated, historic urban space, coupled with a realization of the limitations of its ageing electricity infrastructure.

A substation project, directed by WEC Energy Group, was aimed at strengthening Milwaukee's downtown power grid, minimizing land use and preserving the profile of the historic buildings in the locale (the well-known 3rd Ward district - a location listed on the National Register of Historic Places and considered a historic warehouse district).

That's how two transformers rated at 65MVA/138kV, weighing 160,000 lb each, came to be installed four feet (1.2 meters) below street level beneath a seven-story mixed-use development.



CASE STUDY

[SITUATION]

Clearly, the whole substation plan required heightened levels of engineering innovation in order to make it viable and successfully mitigate risk. That's when MIDEL eN 1215 came into the equation.

MIDEL eN 1215 is a natural ester transformer insulating fluid. The transformer manufacturer selected the fluid for its particular strengths:

- Fire safe with a K class rating (=>300°C fire point)
- Fully/readily biodegradable
- High degree of moisture tolerance (protecting the transformer solid insulation and thereby extending its lifetime)

Historically, substations such as Milwaukee's Juneautown substation might be expected to use mineral oil as the transformer insulating fluid. However, where the substation is close to a community's offices, shops, people and waterways, high flash point natural ester fluid can be used to meet safety measures not normally seen in traditional substation design.

[RESULT]

The project demanded engineering innovation, and MIDEL eN 1215 was able to deliver. The substation was brought into service in December 2020 - another use of MIDEL in an urban substation that will help provide safer, greener and more reliable electricity for energy consumers far into the future.

MIDEL eN 1215, made in the USA, is part of the wider range of MIDEL natural and synthetic ester transformer fluids. It is made from soybean crops, thus reinforcing its environmental credentials and suitability for a project aimed at demonstrating sustainability in urban infrastructure.



“Leading-edge projects like Juneautown are how we show our commitment to world-class reliability — using natural ester transformer insulating fluid technology was one of the ways we were able to deliver innovation and excellence.”

Paul Gogan, Director of Electric Distribution Asset Management
WEC Energy Group

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

