CASE STUDY

[MIDEL®]
SAFETY INSIDE

PROJECT: **Urban substation transformer | India**

ESTER TYPE: MIDEL 7131 synthetic ester

PURPOSE: Ensure asset safety in a densely populated area

[OVERVIEW]

Adani Electricity Mumbai Ltd (AEML) - part of the diversified Adani Group - is an integrated power utility, active in Generation, Transmission and Distribution vertical markets in Mumbai's power network.

Its Transmission Division operates eight 220kV Extra High Voltage (EHV) substations with an aggregate transformation capacity of 3,250MVA and approximately 572 ckt. kms of 220kV lines. Five out of these eight EHV substations use new technology and are vertically designed, compact Gas Insulated Switchgear (GIS) based EHV substations.

In Mumbai, faced with the costliest land in India, AEML opted to integrate a new transformer into an existing substation. The 125MVA/220kV transformer was manufactured and commissioned in March 2021 by Siemens Mumbai, India.

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[SITUATION]

AEML and Siemens India worked closely with the MIDEL technical team to address the issues of putting a new transformer in a densely populated area with minimal land available. The transformer was required to pass factory acceptance testing, but also (as a long-term investment) be able to extend the asset lifetime greater than an equivalent mineral oil transformer.

AEML specified synthetic ester for its new transformer. The prime reasons for MIDEL's selection were: fire safety (>300°C fire point), net calorific value (30.8MJ/Kg), higher oxidation stability, environmental protection, and MIDEL 7131's proven operational record in large power transformers across the globe - key factors in such a heavily populated location.

[RESULT]

AEML is now the first operator in India to use a synthetic organic ester fluid in a 220kV transformer. Beyond the all-important fire safety advantage (particularly significant for those utilities faced with high population locations), opting for a synthetic organic ester fluid over mineral oil has other benefits:

- because MIDEL 7131 is much more moisture tolerant than mineral oil, it will also keep the transformer in better condition for longer, by reducing the impact that water ingress has on the solid insulation – particularly important for a hot, humid climate such as Mumbai
- there is less operational risk with MIDEL 7131 because of its high oxidation stability, which has been reported as an issue in-service in the challenging Indian sub-continent climate

AEML has identified ester fluids as a cornerstone technology, helping them address critical challenges facing their transmission network such as ageing infrastructure, expensive land, population growth, sustainability and safety.

"The installation of this synthetic organic ester-filled transformer underlines AEML's commitment to a greener future for Mumbai. Using MIDEL 7131 enabled us to deliver enhanced fire safety and environmental protection."

Mr Mahesh Ambardekar
Senior Vice-President, Adani Electricity Mumbai Limited

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

SUSTAINABLE DEVELOPMENT GOALS

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

11 SUSTAINABLE CITIES AND COMMUNITIES