



Solid-dielectric switchgear

helps increase safety
and reliability

 elastimold™



- Learn how catastrophic failure of oil-filled switchgear prompted a Midwest municipal utility to seek a safer, more reliable solution.

Case study

Help increase safety and reliability of pad-mounted installations

A Midwest municipal utility improves the safety and reliability of its distribution system while also reducing maintenance by replacing oil-insulated switchgear with Elastimold™ solid-dielectric switchgear.

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01 Failed oil-filled equipment with ruptured tank

Background

A Midwest municipal utility was using oil-filled pad-mount switchgear with both switching and overcurrent protection to serve critical loads throughout its distribution system.

On a particularly cold winter day, one of the oil-filled units experienced a catastrophic failure, requiring site clean-up and installation of replacement switchgear. Because of concerns that moisture penetrating the cabinet might have contributed to the failure and a recent recommendation to conduct more frequent maintenance, the utility sought an alternative solution.



Catastrophic unit failure on a cold winter day

After reviewing the various switchgear available on the market, the utility company determined that the ideal solution would be one that did not use oil or SF₆ gas as an insulating medium, could be retrofitted onto their existing pads and would be safer to use and operate.



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02 Elastimold™ 15 kV, double-sided, 6-way switchgear as received

03 Customer's design for spare unit: Left load way has single-phase trip capability

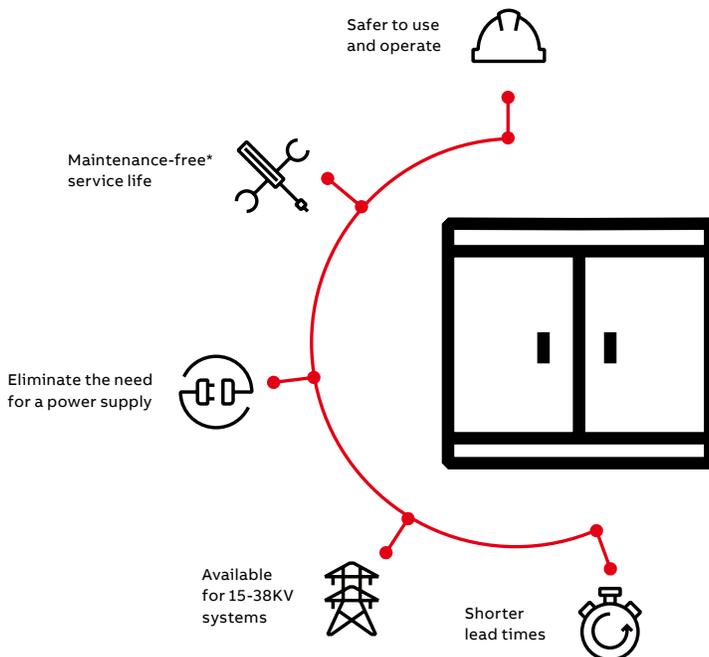
Solution

Based on these solution needs, the utility selected Elastimold™ solid-dielectric switchgear. ABB's Elastimold engineers confirmed that the footprint was compatible with the existing pads. Because of the Elastimold switchgear's modular design consisting of molded vacuum switch (MVS) and molded vacuum interrupter (MVI) units, the engineers recommended a bus-on-top configuration that provided a clear area to accommodate the customer's existing conduit. This recommendation eliminated the need to build custom switchgear, resulting in shorter lead times.

The units selected include up to six ways and use Elastimold self-powered controls, which require no power supply.

The specific site included three source switches (MVS3) and three load ways (MVI3) — all with 600-amp interfaces. Overcurrent protection was provided by an internal control, which is embedded within the current transformer (CT) assembly. Programming of the settings was easily accomplished with the PC interface at the CT ports. The utility also wanted to have spare units on hand, both for new services and emergency needs. This was accomplished by designing a spare that is a 5-way with two source switches (MVS3) and three load ways with a total of nine single-phase MVIs. The unused sixth way is for a future position. Protection is provided by an Elastimold model 80 external control. An advantage of using single-phase MVIs is that the control affords the choice of gang, three-phase or single-phase tripping.

* Elastimold solid-dielectric switchgear is considered maintenance-free because it contains no oil or gas to monitor or maintain.



Configurations include vault, pad-mount and riser applications

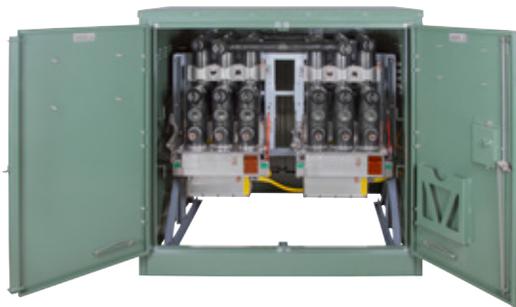


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05 Elastimold™ solid-dielectric switchgear installed on customer's existing pad

Results

To date, several of the previous oil-insulated switchgear units have been retrofitted with the Elastimold™ solid-dielectric switchgear solution. The field-proven design of ethylene propylene diene monomer (EPDM) rubber insulation and vacuum system provides a reliable, dead-front solution designed to provide years of maintenance-free service life.*



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Conclusion

Versatile, modular Elastimold switchgear building blocks allow utilities to configure standard and custom designs that help improve the safety and reliability of distribution systems. Elastimold switchgear is available for 15–38 kV systems, with a variety of fault interrupting capabilities. Configurations are available for vault, pad-mount and riser applications. Visit <https://electrification.us.abb.com/products/medium-voltage-utility-solutions/solid-dielectric-switchgear> to learn more, or contact your ABB sales representative or agent.

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Elastimold™ solid-dielectric switchgear is designed, assembled and tested in Hackettstown, NJ.