

PDO, Petroleum Development of Oman

Silicone rubber insulators in air insulated substations



Customer need

Oman is located on the southern tip of the Arabian Peninsula. With high temperatures, sandstorms, fog and salty ocean winds, the arid desert climate is less than ideal for high voltage equipment.

PDO, Petroleum Development of Oman, is the largest producer of oil and gas in the country. They have their own power generation system with substations mostly located in the desert area. PDO had huge problems with sand getting stuck on porcelain insulators, causing failure of the equipment and flashovers in the substations. PDO had to wash the porcelain insulators twice a year to clean them from sand, a job both time-consuming and costly.



Facts

Customer	PDO, Petroleum Development of Oman
Country	Oman
Scope of supply	ABB high voltage equipment with composite insulators with silicone rubber sheds including; circuit breakers, instrument transformers and surge arresters.

ABB solution

To achieve a more reliable grid, PDO looked into using other material than porcelain in the insulators. They contacted Sultan Qaboos University to research different materials such as porcelain and silicone rubber. Their research showed that insulators made of silicone rubber was superior compared to other materials.

One of the great advantages with silicon rubber is its great hydrophobic properties. This means that the water will form water drops instead of a water film. This ability is kept even in very polluted environments which makes silicone rubber insulator superior in desert areas.

ABB came up with a standard specification for the outdoor equipment such as circuit breakers and instrument transformer using silicone rubber. This solved the problem PDO had with flashovers.

By using silicone rubber insulators PDO no longer have to wash the insulators, which reduces the time needed for maintenance. PDO is now using silicone rubber insulators as a standard product with more than 85% of installations in the network.

Composite insulator benefits

- Increased safety for personnel and equipment
- Superior pollution performance due to hydrophobic surface condition
- Excellent seismic performance
- Superior insulation performance
- Flashover resistant
- Excellent performance and reliability can be assured for the lifetime of the equipment.
- Less maintenance
- Low weight

A complete program with full support

ABB provides complete resources in electrical high voltage technology, and stands for innovative new approaches with the focus on efficient and environmentally friendly power transmission.

Our comprehensive product line, which besides disconnecting circuit breakers also includes conventional circuit breakers, surge arresters, instrument transformers and power capacitors, makes us a comprehensive supplier of both individual high voltage apparatuses and complete turnkey installations.



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