

Upgrading and Replacing Coolers at a Generating Plant

The coal fired generation plant has a 128MVA transformer rated to operate with a top oil temperature of 65°C. The coolers on the transformer had corroded and were leaking oil. The drip pan was continuously filling up and the oil level in the transformer would quickly drop to make the transformer non-operational. Due to the age and extent of the corrosion, the coolers were beyond the scope of repair and had to be replaced.

Based on the electrical rating of the transformer, the heat dissipation was calculated and verified with the design operating conditions of the coolers. However, an exact replacement was not available for the decades old coolers and equivalent coolers had to be used to meet the required capacity. The cooling capacity specified by the utility and the manufacturer were at different operating conditions. Trantech's thermal cooling model was used to ensure the design specification of the manufacturer and that the new coolers would match the requirements of the operating conditions at the utility. Thus the first step was completed and the thermal capacity was proved to be adequate.

The geometric design of the new coolers was similar to the existing coolers but the inherent differences in improved manufacturing over the past several years required a mounting redesign. The mounting hardware was properly designed and modified to ensure the new coolers would be drop in replacements for the existing coolers. After several discussions with the utility and a site visit, the new coolers were built and shipped to the generation plant. The four new coolers, complete with Trantech pumps and oil flow indicators, were swapped out for the old ones in about two days in the constrained work space available around the transformer. After installation of the Trantech coolers, the drip pans were removed and the transformer put back in service.



Before



After