NON-POLLUTING TRANSFORMER FLUID

DOW-CORNING IS ASKING INDUSTRY HELP IN OBTAINING SILICONE CERTIFICATION

A clear silicone dielectric coolant liquid is being offered by Dow-Corning, Midland, Mich., for use in small and medium-sized power transformers as a safe alternate to the chemical askarel containing PCB, a substance that is now being widely condemned as dangerous when discharged into the environment.

Extensive data from a series of tests by both Dow and some transformer manufacturers indicate that silicone liquids provide a high degree of safety when used as a substitute for askarels in both indoor and outdoor transformers. It is with the indoor applications that the problem arises since these transformers cannot (according to electrical codes) be insulated with oil, an environmentally safe substance, but with a low flash point.

There is a problem however in that the silicone material does not have National Electrical Code or OSHA recognition, and it does not have third party certification by an organization such as Underwriters Laboratories.

Dow says that so far, three North American manufacturers are using the silicone dielectric fill in some of the transformers they ship on request. These are Westinghouse, RTE Corp., and Ferranti-Packard, Ltd., of Canada. In these cases, responsibility for proper clearance with insurance underwriters, government regulating agencies and local code authorities rests with the user or purchaser of the liquid in new or refilled transformers. The silicone fluid also costs about twice as much as askarel at present.

In the next few years, all existing askarel transformers at Dow Corning will be retrofitted to eliminate any chance of major PCB environmental contamination and to create a base for a service life data collection program. This test is hoped to include up to 1,000 transformers.

While not quite as resistant to ignition as askarels, and differing in certain other performance characteristics, the silicone fluid produced by Dow will not ignite before reaching a temperature of 750 F., but it is not classed as fire-resistant. If the heat source is removed or fluid temperature drops below 750 F., burning will stop and the fluid is therefore self-extinguishing. This is much better than oil but not as good as the askarels with PCBs' which are considered dangerous to fish and wild life and capable of causing sickness in humans.

Dow-Corning is presently asking both manufacturers and transformer users to participate in its testing program. Users would participate under an agreement with Dow and their local code authorities whereby transformers would be refilled with silicone fluid.

What effects have the pressures to reduce energy had on specification?

A New Jersey design firm says, "Transformer vendors are required to submit loss figures with their quote so that we can make an economic study based on client payout period. A 5% to 6% initial cost saving for a less efficient transformer can rapidly be offset by a more efficient one."

Another engineer wrote: "We require contractors to reimburse the owner for substitutions of equipment with higher operating costs."

Further comments noted specs for better power factor correction, emphasis on life cycle costing and demand limiters for industrial plants. Lower lighting levels, higher efficiency light sources and flexible switching of lighting were also mentioned.

MONS 032479