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Maximize the Service Life of your Transformers

INTRODUCTION

Every year The Hartford Steam Boiler Inspection and Insurance Co. (HSB) investigates numerous transformer failures. The primary reasons for these failures are electrical disturbances (line faults, switching surges etc), poor preventive maintenance programs or improper electrical loading.

To help you achieve reliable and maximum uninterrupted service life of your transformer we are offering the following comments and recommendations.

INSTALLATION & OPERATION

The transformer must be protected with surge arrestors that are consistent with the transformer's short circuit characteristics (See IEEE std C57.12.00)
The installation and operation of your transformer should be checked to ensure that you are keeping the electrical loading of the unit within the design capability. (See IEEE std C57.91)
The transformer must be compatible with the location in which it is installed (e.g., air cooled unit in a dry clean environment). The transformer installation should be free from external hazards such as trees and weeds that could cause potential shorting of the unit. (See IEEE std C57.93 (Liguid-filled) or C57.94 (Dry-Type))

OIL TESTING

One key area of preventive maintenance for liquid filled transformers should be annual sampling of the unit's insulation medium.

A sample of the fluid should be taken for *screen testing* and *gas-in-oil analysis.* These tests will indicate if internal problems with the unit exist and what if any corrective action should be taken.
(See IEEE std C57.104 and C57.106)

CONNECTIONS

On all transformers, the bushings and insulators must be kept clean and in good repair, with broken porcelain and brittle gaskets replaced as needed.

All electrical connections must be tight because loose or high resistance connections can cause short circuits or single phasing which will cause winding damage.

COOLING

Whether the unit is air or liquid cooled, it is important that adequate, unrestricted outside air is allowed to circulate freely. Dust and dirt must be removed from cooling vents and windings on all air cooled units.

The radiators and cooling fins on liquid filled units should be leak-free and clean.

SAFETY

When service is performed on a transformer, it is important to note that all electrical safety precautions are followed. Energized transformers can and do represent significant shock hazards.

All personnel working on your unit must be properly trained and qualified. Refer to NFPA 70e and OSHA guidelines for help.

COST

The cost of unscheduled and unwanted breakdowns of your transformer can be more than you might expect.

Even when equipment breakdown insurance is available, the deductible alone may still account for a considerable out-of-pocket expense.

Having insurance may be of little comfort when your transformer is down and you are left in the dark.

In addition, if you have tenants or are trying to run a business, you don't need the added headaches of irate customers because your system is down from minor maintenance oversights.

HSB HELP

HSB can help you evaluate your needs and provide expert assistance through our strategic alliance with TEGG Corporation, an international service provider in the electrical industry.

Please give us a call! We are ready to assist you in taking care of your transformer needs.

Our advice is intended to complement the equipment manufacturers' recommendations - not replace them. If you have doubts about any particular procedure, contact your equipment service representative.