CASE STUDY
IMPROVING RELIABILITY

S&C ELECTRIC COMPANY
Excellence Through Innovation

Preventive Maintenance Reduces Operating Costs

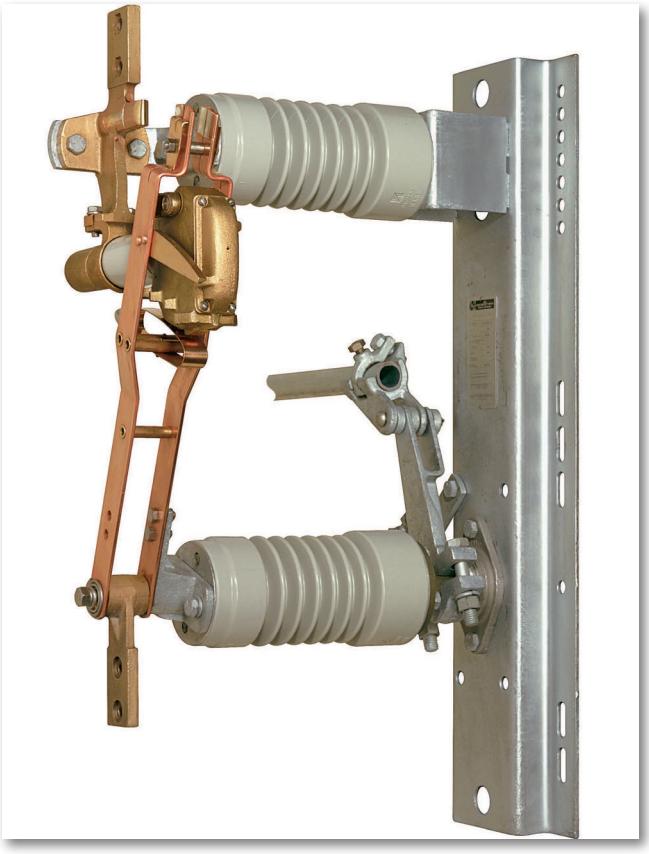
S&C Featured Solution: S&C's Power Systems Solutions Division

Location: Canada

Customer Challenge

A major chemical company was interested in achieving decreased operating costs and increased reliability of its 2400-volt distribution system through the regular performance of preventive maintenance on its switching and protection equipment. S&C's Power Systems Solutions Division was called upon to discuss how resources could most effectively be used to achieve the desired results.

In some instances, high load density required continuous currents of up to 1000 A per phase. This requirement had been met by paralleling three power fuses per phase. However, the severely corrosive environment sometimes resulted in one of the paralleled fuses having a relatively high resistance path. Thus, the current would not divide evenly between the paralleled fuses. With one fuse not carrying its share of the load, the remaining two would tend to overheat.



Interrupter switches also exhibited similar problems due to overheating of the interrupters.

S&C Solution

Power Systems Solutions was asked to evaluate the present installation and preventive maintenance practices for the medium-voltage switches and fuses, and to make procedural recommendations to achieve increased system reliability and decreased operating costs.

Results

After discussions with the operating personnel and site visits to view several installations, it was determined that improper final adjustment during installation and the use of inappropriate lubricants were contributing factors leading to the operating problems with the equipment.

Proper final adjustment of the interrupter switches is essential to prevent overheating and, consequently, the potential of jamming of the interrupter during switch-opening operations. This scenario was discussed with the customer. As a result, an installation training area was built and a Field Service Specialist was deployed to train the operating personnel on the proper installation and final adjustment of these switches.

In addition, the use of inappropriate and/or excessive amounts of lubricants can result in a dirt build-up on the contact surfaces. This build-up may cause damage to the contact surfaces due to the abrasive compounds included in some lubricants. The use of lubricants intended for permanent contact joints, such as bolted bus-bar joints, can result in excessive contact wear and damage to contact plating when used on sliding contacts, such as those on interrupter switches and fuses. Additionally, silicone- based lubricants can sometimes oxidize to form insulating or abrasive compounds on the contact surfaces.

Selection of appropriate lubricants for any particular application is an art as well as a science. Knowledge of the lubricant's performance under various field and laboratory test conditions is essential. Conflicting performance requirements must often be balanced to choose the lubricant having best overall performance.

The final report also included instructions for the refurbishing of equipment that had been removed from service, recommendations for preventive maintenance, inspection procedures, and recommendations for lubricants to be used on the installed equipment. The report also recommended the use of infrared detecting equipment to survey the installed equipment as well as guidelines for interpreting the results of the infrared surveys.