

A TRANS-RUPTER II® TRANSFORMER PROTECTOR 'SUBS' FOR A MOBILE SUBSTATION

CASE STUDY IMPROVING RELIABILITY



Customer Challenge

CPFL Paulista—a subsidiary of CPFL Energia, one of the largest electric utilities in Brazil—uses circuit breakers to protect the transformers in its 90 distribution substations. The bus arrangement in the substations doesn't allow the use of local bypass or transfer-tie schemes. So when a breaker needs maintenance or repair, the utility has two choices: either transfer protection of the load to an upstream substation or bypass the substation with the utility's one and only mobile substation.

Transferring protection to an upstream substation is not desirable because it opens up more of the system to damage from fault currents.

But bringing in the mobile substation presents a variety of problems. It requires special shipping permits and, in some areas, an escort car. With 90 substations requiring periodic maintenance, fast response can't be assured. Further, commissioning the mobile substation requires that the load be dropped during the changeover. And, importantly, using the mobile substation for routine maintenance means that it isn't available for emergencies.

S&C Solution

Procuring additional mobile substations was not feasible...they're much too expensive. The maintenance engineering division of CPFL Paulista contacted S&C Electric Company for a viable solution.

At first, S&C's protection experts considered Type SMD-1A Power Fuses, mounted on a mobile base. But after further analysis, S&C recommended the Trans-Rupter II Transformer Protector, which provides a number of important advantages. It works with the existing protective relays at a distribution substation, thus avoiding

S&C FEATURED

SOLUTION:

**Trans-Rupter II
Transformer Protector**

LOCATION:

Brazil

the need to properly coordinate power fuses. It also offers a higher 31.5-kA fault-interrupting rating. An inexpensive mobile-base Trans-Rupter II Transformer Protector was subsequently developed, featuring “quick-connect” conduit for easy assembly and disassembly. CPFL Paulista supplied a disconnect switch for use in series with the Trans-Rupter II Transformer Protector.

FIGURE 1. A Trans-Rupter II Transformer Protector with a disconnect on a mobile base.



Results

The new, “mobile Trans-Rupter II Transformer Protector” significantly reduces the cost of taking a circuit breaker offline for maintenance or repair. No outage is required ... just rerouting of connections from the protective relays. And no special licensing is required for the truck and no escort car is needed, also providing significant cost savings.

The mobile Trans-Rupter II Transformer Protector allows CPFL Paulista to reserve its mobile substation for emergency situations.

CPFL Paulista is now considering specifying the Trans-Rupter II Transformer Protector for new substations and as a replacement for some of its aging circuit breakers.

FIGURE 2. A Trans-Rupter II Transformer Protector with a mobile unit as a protective bypass for a circuit breaker during maintenance.

