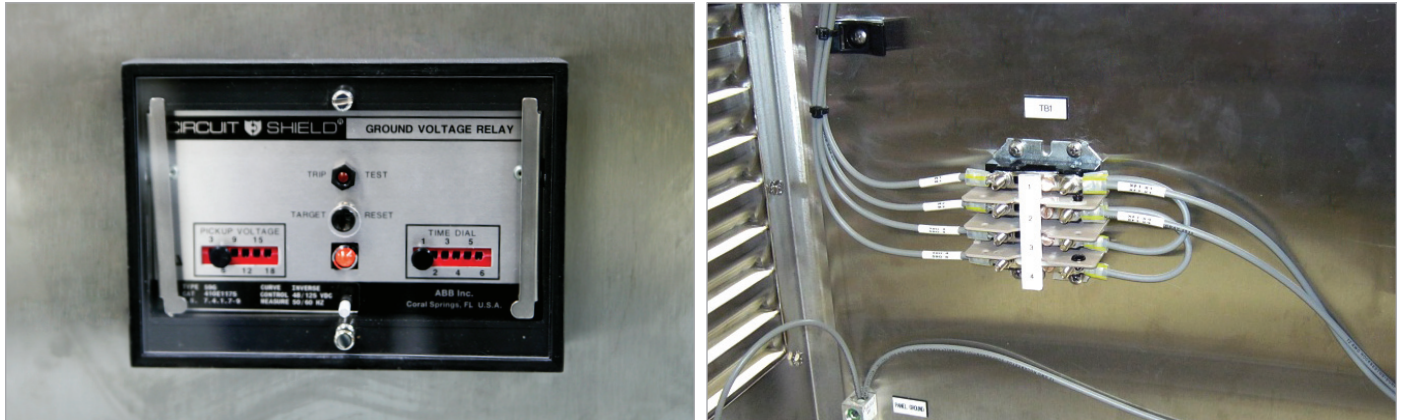


# High Resistance Grounding Panel

600 VAC Power Distribution System

**CURTISS -  
WRIGHT**

Nuclear Power Products and Services



## About

Curtiss-Wright Nuclear developed a replacement High Resistance Grounding Panel to reduce the probability of damage and failure of equipment during an accident response. The new design uses advanced technology for reliable performance.

## FACTS

600 VAC High Resistance Grounding System

## CHALLENGE

Improve current footprint design and qualify for safety-related applications

## SOLUTION

Custom design, fabrication, and EQ services

## BENEFITS

Safety-qualified for reliability during accident scenarios

## Background

The 600 VAC Power Distribution System was originally designed as a solid grounded wye-connected system. The distribution system's load center derives its power from an internal transformer. The transformer supplies power to twelve Motor Control Centers (MCCs).

The equipment's safety function was to reduce phase-to-ground currents on equipment circuits when powered from the load center. Reducing the short circuit current decreases the probability of damage to the equipment, which increases the probability that the system would perform its safety-related function during an accident.

The pressurizer heaters connect as a High Resistance Grounding System to minimize any ground fault current. A dedicated grounding system with an isolation-grounding transformer for each of the MCCs, was designed as a complete 600 VAC Power Distribution System.

## Challenge

Working from the original design document, Curtiss-Wright had to redesign the panel and choose components that would meet or exceed all original specifications while remaining in the established footprint. Additional goals included simplifying the electrical connections in the panel and providing better reliability. The specifications, based on engineering calculations, required a specific overvoltage relay for the high ground current alarm function.

Another engineering requirement was to reduce the short-circuit current, therefore increasing the system's capability to perform its safety-related function during an accident response.

The High Resistance Grounding Panel would have to meet the existing function, IEEE Class 1 and QA Condition 1 requirements and be qualified as safety-related.

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## Solution

Curtiss-Wright drafted designs, selected the balance of required internal components, and manufactured the High Resistance Grounding Panel. During all phases of the job, the project management team worked closely with the customer to ensure timely completion.

During the qualification process, the panel showed an excessive heat rise that exceeded the customer requirement. Curtiss-Wright's in-house engineering team modified the design by adding an additional air intake at the top of the panel. With environmental conditions met, the system was then qualified as nuclear safety-related.

## Benefits

Curtiss-Wright's approach provides the customer with a complete engineered solution that addresses electrical, physical, fit, and coordination issues. Customers receive improved equipment operation, reliability, and simplified maintenance.

## Summary

Curtiss-Wright's experienced multi-disciplined engineering team (electrical, mechanical, and seismic) provide customers with specialized solutions through reverse engineering, troubleshooting, manufacturing, and testing. Curtiss-Wright is committed to meeting customer requirements; flexibility during the production phase resulted in an upgraded High Resistance Grounding Panel that will provide years of reliable service. With experience in identifying and overcoming obsolescence challenges applicable to all OEM's, Curtiss-Wright's innovation and solution development brings value to customers.

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