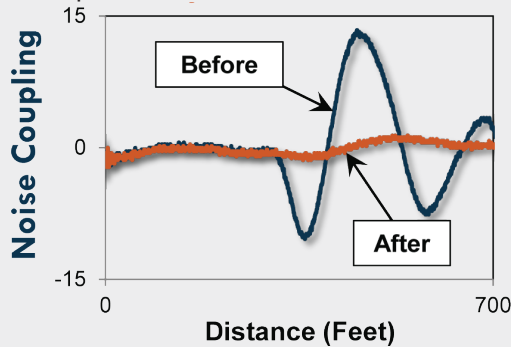


SRM/IRM Cable Testing and EMI Troubleshooting

Electrical noise in Neutron Monitoring Systems (NMS) can cause SCRAMs and add days to maintenance outages for troubleshooting. AMS has developed an NMS testing program for Source Range Monitors and Intermediate Range Monitors (SRMs and IRMs) to locate problems in cables, connectors, and neutron detectors using AMS' Cable Characterization System (CHAR).

This testing can be performed from the control room with the plant operating or while shutdown. The CHAR System has been used in nearly all U.S. nuclear power plants over the last 25 years and in many worldwide. NMS testing often includes Electromagnetic Interference/Radio Frequency Interference (EMI/ RFI) troubleshooting. These additional EMI/RFI measurements and expertise can identify and solve problems beyond conventional cable test techniques.



Diagnostic Test Data Showing Location of IRM Noise Coupling

Automated LPRM Testing to Reduce Metal Whisker Growth

Current-Voltage (IV) measurements are performed on Local Power Range Monitors (LPRMs) to prevent or eliminate LPRM metal whisker growth that can cause indication spiking or disable LPRM detectors. Two CHAR systems combined with two multiplexers during outage testing allows for connection of up to 80 LPRMs at one time. Each IV curve test includes time domain reflectometry (TDR) to differentiate between a bad connector or a metal whisker inside an LPRM detector, which can help restore degraded detectors to service. Periodic LPRM testing keeps more detectors operational and helps prevent premature detector replacement.

Featured Benefits

- Reduction of lost generation from SRM/IRM-related issues
- Establish baseline data for future troubleshooting to significantly reduce the time required to resolve future NI problems
- Automation of LPRM "IV Testing" to reduce test time by up to 80%
- Reduction in costs associated with operational issues resulting from detector spiking and unexpected failures



Figure 1. CHAR System with Automated Multiplexing capabilities

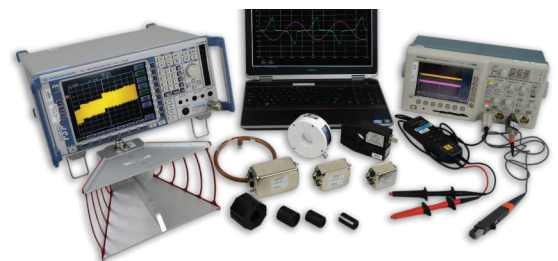


Figure 2. EMI/RFI Test Equipment