

Motor Generator (MG) Set Control Cabinets

The Westinghouse Solution

Westinghouse has developed a new generation of rod control power supply cabinets for both Westinghouse and Combustion Engineering (CE) plant applications. The new system design continues to deliver reliable power using redundant cabinets, each controlling its own MG set. Also included in the new system is the ability to monitor key system parameters with a panel mounted Human to Machine Interface (HMI). This feature can lead to increased reliability, improved operation, and can assist in troubleshooting.

This new control cabinet design incorporates years of industry operating experience from the original Westinghouse system, includes similar robust features, and integrates improvements identified from the AP1000 system. This new platform was designed as a direct replacement to the legacy system and maintains the original plant interfaces, adds enhanced switching technology, provides additional data capture ability, and includes many advantages described below.

Control Cabinet Benefits

- Eliminates obsolescence and age-related failures
- Designed as a direct replacement, with the same Westinghouse cabinet footprint, and bolts right up to existing RTS equipment
- No sensitive mechanical relays
- Eliminated known SPVs (Single Point Vulnerabilities)
- Selective tripping ensuring only one MG set is tripped in the event of a failure, reducing downtime
- Auto-synchronization controls from either cabinet
- HMI includes digital indication of volts, amps, frequency, VARs, KW, exciter field current, run time
- VAR meter assists with balancing voltages using the panel mounted potentiometer while synchronized
- Each HMI offers redundancy since it is capable of displaying parameters from the opposite cabinet
- HMI displays up to 15 system events with time stamp
- Enhanced diagnostic system to aid in trouble shooting
- Test points on the exterior of the door to support taking independent voltage readings
- All data is available locally and across the datalink to the plant DCS (via MODBUS TCP/IP protocol)
- Electromagnetic compatibility (EMC) qualified
- The Westinghouse PWR 30" design is seismically qualified

Motor Generator Set Benefits

- Adequately sized – a single MG set can carry full load
- Generators are zig zag wye wound
- Contains stator and bearing temperature RTDs
- Contain vibration velometers at each bearing to allow for vibration monitoring
- Additional temperature and vibration monitoring can be trended to predict and potentially increase time between maintenance intervals

Customers may elect to replace the MG control cabinets with or without replacing the MG sets. New MG sets add monitoring features and benefits described above.



CE version of the MG control power cabinets installed

Westinghouse Experience

Westinghouse developed the original MG sets and control cabinets utilized in the existing Pressurized Water Reactor (PWR) operating fleet. In order to maintain system functionality, our next generation control cabinets are based on the original design but utilize modern, readily available components to improve reliability. These next-gen control cabinets are applicable to all Westinghouse PWR and CE-designed Pressurized Water Reactors (PWRs) and are being supplied to operating plants in both the US and EMEA regions.

Installation Flexibility

Customers may also elect to install this system stand alone or at the same time they choose to upgrade their Rod Control System from the original analog system with the new Westinghouse ARCH (Advanced Rod Control Hybrid) system. Aside from the MG sets providing power to the ARCH system, the only other interface is a fiber optic connection for remote monitoring capability.

Westinghouse technology is fundamental to nearly 50% of the world's nuclear reactors. Now, that same trusted expertise is delivering the services and parts to meet the needs of 100% of the nuclear plants across the globe.

Every year, Westinghouse supplies more than 100,000 nuclear parts and products - 24 hours a day, 7 days a week - to plants around the world dealing with planned replacements and emergent issues.



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