



## Project Profile: Equipment Renovation

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### COMPANY

Louisville Gas & Electric Company  
Mill Creek Generating station  
Louisville, Kentucky

### PROJECT TITLE

Coal Stack/Reclaim System  
Electrical Renovation

### SERVICES PROVIDED

- Electrical Design
- Software Development
- Electrical Construction
- Construction Supervision

### HARDWARE

- Allen Bradley SLC 5/03 PLC
- Allen Bradley 1397 Digital DC Drives
- Allen Bradley 1791 Block I/O

### SOFTWARE

- RSLogix 500



### OBJECTIVES

- Replace the existing control system
- Replace the DC traction drive system
- Replace all external wiring and conduit
- Replace all lighting
- Replace the majority of the instruments and switches
- Restore the unit to remote automatic control

### PROJECT DESCRIPTION

The design and installation of a new electrical distribution system, drive systems, instrumentation and control system for the generation station's 20 year old coal pile stacker/reclaim system. The system is a self-propelled unit that distributes coal to a horizontal pile as an intermediate storage system between barge/train unloading and the boiler feed silos. The unit also reclaims the coal upon request.

The project was a complete rehabilitation of the electrical systems from the motor control center outward. All conduit, wire, cable tray, controls and lighting were stripped from the system. The project provided new DC drives for the unit's traction system and a PLC for overall control with distributed I/O. A new operator console was installed in the cab of the unit and many of the field switches and sensors were replaced. New lighting was also provided.

### TECHNICAL DETAILS

This project presented several installation challenges. First was to minimize the downtime for the system and the second was to provide wiring systems that would have to transverse several swivel points on the structure. One point had to deal with 180° of rotation. These swivel points required both power and control wiring to transverse the points. To minimize the wiring across these points remote I/O was utilized wherever possible. The existing traction drive system consisted of a motor/generator set that powered the four DC motors. This was replaced with four separate digital DC drives with a common digital speed reference, and digital feedback directly to/from the PLC.