



ELECTRICAL SYSTEM PLANNING

DESIGNED TO HELP YOUR COMMUNITY SUCCEED

“Enhancing economic development through infrastructure”

Why choose **SPECTRUM** for ...

Relay Replacement

For generations, electric power system protection has been accomplished with the use of relays—electromechanical, solid-state, and microprocessor-based. Spectrum Engineering understands the inherent strengths and weaknesses of each. We also understand that relays, like other devices, have life cycles.

Today, electromechanical and solid-state relays are being phased out - their strengths overshadowed by those of microprocessor-based relays. This is having a significant impact on the utilities operated by municipal governments, universities, as well as industries.

Spectrum Engineering has a long history of expertise regarding relay replacement projects of any size

or complexity. We know how to tackle every aspect of relay replacement flawlessly from tracing wires to commissioning an entirely new relay system. Moreover, we can replace relays in your existing doors or provide a package that includes new doors manufactured to the specifications of your originals.

Every relay replacement project we undertake—large or small, simple or complex—is supervised by a licensed Professional Engineer. Spectrum Engineering clients appreciate our thorough understanding of power system protection relays from all major suppliers.

Our full range of relay replacement capabilities includes:

- Relay system testing and inspection
- System wiring tracing and drawing development
- Panel cutout or door replacement drawing development
- Complete relay system development
- Relay setting and coordination
- Relay installation and wiring
- Conducting final checkouts
- Relay system training



Contact Rod Sibery | Phone: 260-627-8888 | RSibery@SpectrumEng.com

5524 North County Line Road | Auburn, IN 46706 | www.SpectrumEng.com

Customer Name	Caterpillar Large Engine Facility LAFAYETTE, IN	
	<u>CLIENT REFERENCE</u> Chester A. Banks, Jr., Engineering Manager 765.448.5376 Banks_Chester_A@cat.com	
Customer Type	Industry	
Contract Start/Finish	2011	
Project Size	\$104K	
Scope	<ul style="list-style-type: none"> • Revise wiring diagrams, layout drawings, and schematic diagrams, as needed • Furnish, install and wire new SEL relays • Calculate settings and program new relays • Perform tests and commission circuits for service • Provided training services 	
Role	<ul style="list-style-type: none"> • Lead Professional Engineer 	
Project Stage	Complete	

Spectrum Engineering provided professional engineering services to replace and upgrade existing protective relays and controls related to the endurance testing at Caterpillar's large engine plant in Lafayette, IN as requested by Duke Energy.

Spectrum upgraded and refurbished the existing meter-relay and control panel by replacing the existing devices and wiring with new wiring and equipment and performed preventive maintenance on each circuit breaker, including the following services:

- Verified inter-cubicle wiring and developed revised wiring diagrams, as required;
- Revised existing cubicle and panel layout drawings to reflect the proposed equipment arrangement;
- Revised AC and DC schematic diagrams;
- Developed new panel schematics and wiring diagrams;
- Revised cubicle, panel and interconnection wiring diagrams;
- Furnished, installed and wired new SEL relays, AVO FMS test switches, terminal blocks, fuse blocks and SEL-3530 with communication protocol cards, as required;
- Wired and tagged cubicle and panel devices and interconnections to correspond with revised schematics and wiring diagrams;
- Calculated selectively coordinated settings for the new microprocessor-based relays;
- Used the settings to program the new SEL relays;
- Performed protection, metering and control acceptance tests;
- Commissioned circuits for service;
- Provided on-the-job training for operating personnel; and
- Provided "For Record" deliverables to document the project.



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