

# Relay Services



**ABB**

# Turnkey Upgrades of Relay Systems

The need to retrofit relays in existing substations and power plants is becoming increasingly important due to the reliability threat posed by aging systems, and the need to reduce operating costs. ABB is uniquely positioned to provide expert solutions to our clients, as we have direct access to design engineering at our manufacturing facilities.

ABB will customize our offering to meet your unique requirements.

## TURNKEY

- Negotiation
- Power System Simulation
- Design
- Project Management
- Documentation
- Hardware/Software
- Installation
- Commissioning
- Training

## UPGRADE

- Retrofit
- Automation

## RELAY SYSTEMS

- Generation
- Transformer
- Transmission
- Distribution



## Negotiation



Our Relay Service Engineering Group assists with negotiations and development of the bid proposal.

## Design Engineering



Engineering finalizes design details and oversees the project from award through completion.

## Documentation



Design drafters, experienced in AutoCAD and Micro Station, develop the drawing package.

### CAD Systems

- Autocad release 2002
- Micro station J

### Electric File Format Capabilities

- .DWG (AutoCad)
- .DGN (MicroStation)
- .DXF (Drawing Exchange Format)
- .TIFF & CIT (Raster)

### Electronic File Exchange

- Files via disk/ZIP disk
- Files via E-mail
- Files via Bulletin Board
- Hard copies

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# On-site/Retrofits

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Line Protection



Generator Protection

Existing panels can be modified and retrofitted at the customer's site.

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Pre-assembled and site-modified panels are installed at the customers site by qualified ABB Relay Service personnel.



# Relay Commissioning



Relays are tested at the customer site:

- Settings Installed
- Computerized Acceptance Test
- Test Reports
  - Hard Copies
  - Electronic files

# System Commissioning



The installed relay system is fully tested:

- System Functional Test
- Trip Checks
- In-Service Tests
- As Installed Drawings

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# Power System Simulation Services



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Some of our clients also require ABB to assist in modeling their power system, particularly at higher voltages. For example, on a recent 500kV relay upgrade on two lines, ABB provided a western client with a complete simulation of their 500kV system. The system was reduced to 12 buses and nine lines with detailed modeling of mutual coupling and capacitor banks. 30,000 COMTRADE files were generated for internal and external faults, current reversal and power swing blocking. In addition to verifying proper operation of relay schemes and determining steady-state and fault currents, ABB's real-time and non real-time simulators can be used to compare relay schemes and determine root causes for failures and mis-operations.

Ask your local representative for our latest Simulation Services CD describing case studies and detailing capabilities.

# Technical Training



Hands-on training available on site or at the factory

One or multiple-day technician training can be provided on specific relays as well as on the entire system. Applications, settings, acceptance tests, maintenance and test equipment Setups are typically covered. Our field technicians and engineers average over 10 years experience with protective relays, communications monitoring, and control equipment.

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**You can rely on ABB...**  
*for all your project needs*



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