



# Testing and Commissioning

Self-performed service to ensure the safe operation of your assets

It's the final stage of your project. Your asset has been designed and constructed, but before it's energized, you need to make sure everything was installed correctly - so equipment can run SAFELY, now and into the future.

Black & Veatch's self-performing testing and commissioning team has deep energy knowledge and can draw on BV's history and experience in the power industry to ensure reliability for our customers.

Our in-house technical resources have capabilities with the following:

- Testing and Commissioning of New Equipment and Systems in Greenfield Sites and Energized Sites
- Analyzing, Troubleshooting, and Evaluating In-Service Systems and Equipment
- Protective Relay Testing
- High Voltage Apparatus Testing
- Coordinate Outage and Energization Plans
- Commissioning Oversight and Supervision

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**BLACK & VEATCH**

# Service Offerings

## Relay Testing Services

- Microprocessor, Electromechanical, and Solid State
- End To End Testing
- Fault Simulations
- Protection System Evaluation
- IEC 61850 Compliant Testing
- NERC Compliance Testing

## Circuit Breaker & Switch Testing

- SF6 Circuit Breakers
- Oil Circuit Breakers
- Vacuum Circuit Breakers
- HV & MV Disconnect Switches
- Time Travel Testing
- Contact Resistance Testing
- Insulation Resistance Testing
- SF6 Moisture Analysis
- SF6 Evacuation and Filling

## Transformer Testing

- Power Factor and Bushing PF
- Turns Ratio
- Sweep Frequency Response
- Excitation
- Insulation Resistance
- Winding Resistance
- Oil Analysis and DGA

## Substation Equipment Testing

- Power Cable Testing
- Capacitor Testing
- Station Ground Grid Testing
- Station Battery Testing
- Thermographic Inspection
- UPS Acceptance Testing
- SCADA Checkout
- Potential Transformers
- Current Transformers
- Surge Arresters
- Station Service Transformers
- Automatic Transfer Switches

### Did You Know?

- Black & Veatch has been engaged in substation work since the 1940s and power system study work since the 1960s
- We perform system studies for integration
- Our project experience includes a wide variety of bus configurations and voltage levels

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