

POWER SERVICES OVERVIEW



Today many companies are increasingly looking to outsource for answers to their toughest engineering problems. Trust Doble Power Services' consulting, testing and laboratory services for expert, unbiased diagnosis and assessment of critical assets.

Doble Power Services leverages the resources of Doble's library and team of more than 70 engineers with extensive experience in transformer, substation, rotating machinery and power systems engineering applications. When you hire Doble, you benefit from the shared experience of our entire engineering team to ensure the highest level of consulting services and knowledge-based solutions.

Services include:

- Expert consulting services
- On-line substation surveys
- Laboratory services
- Advanced & routine testing
- Partial discharge testing
- EMI DiagnosticsSM survey
- Condition assessment services
- Forensic analysis

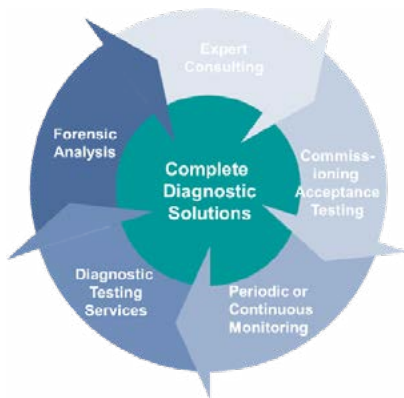
Products supported include:

- Transformers
- Generators, motors and rotating machinery

- Circuit breakers
- GIS, switchgear and cable
- Iso-phase bus

Typical benefits:

- Unbiased, expert opinion
- Recommends maintenance strategies based on assessment
- Enables limited maintenance budgets to be targeted toward critical and/or problematic units
- Provides metrics to evaluate maintenance program effectiveness or improvement initiatives



Why Doble Power Services?

Extensive Global Experience

Doble has more than 40 consulting engineers each with extensive experience in power systems engineering applications.

Independent Expert Opinion

Trust Doble's expert consulting & testing services for unbiased diagnosis and assessment of critical assets.

Doble Peer Review Process

When you hire Doble, you are hiring the shared experience of our entire engineering team. Each Doble field service report is reviewed by at least one other consulting engineer.

Doble KnowledgeBase

Provides valuable benchmark data for use in evaluating test results on your equipment.



Power Transformer Services

- Expert consulting services
 - Specification writing and review
 - Factory audits
 - Proposal evaluation
 - Design review
 - Independent test witnessing
- Forensic analysis
- Condition assessment services
 - Asset health review
 - On-site condition assessment
- Advanced and routine testing
 - Commissioning/acceptance testing
 - Partial discharge (UHF)
 - IR and RFI survey
 - Acoustic
 - Insulation condition (power factor, capacitance, insulation resistance)
 - Electrical/magnetic (winding resistance, excitation current)
 - Mechanical (SFRA, leakage reactance)



On-site condition assessment & consulting services

Power Cable Services

- On-line PD tests at MV & HV cables
 - DC insulation
 - AC power factor and capacitance
 - AC partial discharge
- Off-line PD tests MV power cables
 - Tan delta
 - Partial discharge and PD fault location
 - Recovery charge voltage

Network and Substation Services

- On-line partial discharge testing
 - RFI survey
 - Partial discharge (UHF)
- Surge arrester testing
- GIS commissioning & applied voltage testing
- GIS partial discharge survey
- Additional on-line tests
 - Infrared
 - Acoustic
 - SF6 leak detection
 - Moisture in oil



On-line substation partial discharge survey using Doble PDS100.

Laboratory Services

- Over 200 different tests offered on both liquid and solid insulation
 - Dissolved gas analysis
 - Oil quality
 - Water in oil
 - Aging/oxidation
 - Furanic compounds in oil
 - Corrosive sulfur
 - Degree of polymerization
 - Metals in oil
 - Polychlorinated Biphenyls (PCBs)
- High voltage laboratory
- Laboratory diagnostic seminars
- Doble Oil "Survey"
- Doble Domino® USS
- Doble LTC diagnostics (LTCare)
- Doble OCB diagnostics (DBA)



Doble provides complete laboratory analysis and engineering guidance.

Rotating Machinery Services

- On-line tests
 - On-line partial discharge testing on stator windings
 - EMI DiagnosticsSM survey
- Off-line generator tests
 - Visual inspection
 - DC insulation
 - AC power factor and capacitance
 - AC partial discharge
 - Air gap search coils
 - Rotor winding integrity (RSO)
 - AVR testing
 - ELCID and Ring Flux
- Motor tests
 - Visual inspection
 - Vibration monitoring
 - MCA test for induction motors
 - Off-line tan delta and partial discharge



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Specifications are subject to change without notice.
Doble is an ISO 9001:2008 Certified Company.
Doble is an ESCO Technologies Company.
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