



INTEGRAL
POWER



TESTING
& COMMISSIONING

TESTING AND COMMISSIONING

Testing & Commissioning by far, are the most complex and crucial pieces in the high voltage power puzzle that bind the design intent to the functional substation. Integral Power offers an extensive range of acceptance tests, functional verification and commissioning activities that are tailored to the needs of modern power infrastructure.

Our comprehensive testing and commissioning regime gives asset owners a 360-degree failure mode coverage while ensuring that installations are 'fit for purpose', built to design specifications and safe to energize.

Integral Power's meticulously drafted client-specific commissioning plans, check sheets and test reports help substations transition through to energization in a safe, logical & step-by-step manner.

Our testing solutions cater for the entire lifecycle of your electrical power assets, including:

- Factory Acceptance
- Pre-commissioning
- Commissioning & Handover
- Operations & Maintenance

Our high voltage testing capability provides customers a 360 degree failure mode coverage across their entire electrical asset portfolio including:

- High Voltage Switchboards
- HV Switchyards & Transformer yards
- Switchgear (CBs, Isolators & Switches)
- Power & Instrumentation Transformers
- Protection Relays & Metering Systems
- Earthing Systems including NERs & NETs
- HV Power Cable & Busbar systems
- DC Battery Banks and UPS Systems
- Pad-mount HV Installations
- SCADA and DCS Systems



HV TESTING CAPABILITY

Integral Power offers a comprehensive and complete range of commissioning and maintenance tests for your power infrastructure. Despite this, we tailor the most effective and value adding commissioning solution for you, based on your specific needs & requirements. Our HV testing capability includes:

Power Transformers:

- Turns Ratio (TTR)
- Excitation Current
- Insulating Oil Tests
- Winding Resistance
- Insulation Resistance
- Insulation Power Factor
- Zero Sequence Impedance
- Ancillary Protection Testing
- Frequency Response (SFRA)

Instrument Transformers:

- Polarity Test
- Ratio measurement
- Winding Resistance
- CT Excitation Curve
- Insulation Resistance
- Burden measurements
- Ratio Error measurement
- 3-Phase Primary Injection
- CT Knee Point Measurements

Circuit Breakers:

- Timing Analysis
- Minimum Pick-up
- Breaker Trip Tests
- Contact Resistance
- Insulation Resistance
- Motion/Contact Travel
- Insulation Power Factor
- Online Partial Discharge
- Protection Relay Testing

Switchboards & Switchgear:

- Ductor Testing
- Operational Testing
- Insulation resistance
- Online Partial Discharge
- Detailed Visual Inspection
- Functional Testing of Interlocks
- Busbar High Voltage AC Withstand

Power Cables:

- Sheath Withstand
- Online Partial Discharge
- Offline Partial Discharge
- High Voltage Withstand (VLF)
- Tan Delta / Dissipation Factor

Earthing Systems:

- Earth Grid Continuity
- Earth Resistance (4-Pole)
- Touch Potentials Measurements
- Equipotential Bonding Inspection
- Differential Resistance (Grid-Earth)
- Earth Potential Rise Measurement

In addition to the above, We also offer a range of other testing and commissioning solutions targeted at industrial HV motors and substation DC/AC backup power systems. Contact us to learn more.

RESOURCES

We deploy qualified, trained and experienced personnel across all our projects. Our test engineers have a proven track record of successfully testing, commissioning, operating & maintaining electrical systems, powering infrastructure of key national significance.

In order to effectively & promptly meet the needs of our customers, we have access to a comprehensive range of in-house test equipment, fully fitted test vans & service vehicles. Our high voltage test sets includes:

Primary Injection Test Sets:

- Omicron CPC 100
- SMC Raptor

Frequency Response Analysers:

- Doble M5400 (SFRA)
- Omicron FRANEO 800

Secondary Injection Test Sets:

- Omicron CMC 356
- Megger SVERKER 760

Power Transformer Test Sets:

- Omicron CPC100 (2kA Combo)
- Megger TTR 310E

Circuit Breaker Analysers:

- Omicron CIBANO 500
- Megger EGIL

CT & VT Analysers:

- Omicron CT Analyser
- Megger MVCT

High Voltage Generators:

- Omicron CP 12 (12kV 50Hz)
- HVA 28TD (VLF Tan Delta)
- HVA 60VLF (60kV VLF)
- HVA TD 60 (60kV Tan Delta)

High Voltage Insulation Testers:

- Omicron CP 12 (12kV 50Hz)
- HVA 28TD (VLF Tan Delta)
- HVA 90VLF (90kV VLF)
- HVA TD 90 (90kV Tan Delta)

Earth Testers:

- Fluke 1625 (4-Pole)
- Megger DET 4TCR2

Partial Discharge Testers:

- EA Technologies UltraTEV+
- HVA PD60 (60kV Offline PD tester)

Our in-house plant and equipment facilitates us to undertake testing & commissioning of fairly complex power systems. We also have established relationships with P&E hire companies who have supported up with larger plant & equipment for major projects.

DATA COLLECTION & REPORTING

Integral Power uses a robust field force automation (FFA) that enables our test engineers to efficiently collect field test data in mobile handheld field devices. This has helped us eliminate the need for manual data handling, increasing the efficiency of our reporting while streamlining our business processes. The end result is a more cost effective testing & commissions service for our clients.

All FFA devices are connected to a proprietary cloud based application software that extracts all the field data, performs comparison against AS/NZS, IEEE, IEC and NETA standards and seamlessly generates draft test reports for our engineers to review & finalise.

Our field force software application contains prebuilt inspection & test plans (ITPs) and HV test templates for all HV asset classes. This technology ensures that our test documentation is always consistent, compliant and readily available to our customers.

Our FFA system is an integrated part of our larger automated work management system that integrates other Integral Power business functions including;

Leads Management & Quotes

Planning & Scheduling

Work Order Dispatching

Field Data Collection (FFA)

Reporting & Close Out

Billing & Invoicing

Work Order Tracking

Resource Tracking

Our structured & proven approach to testing & commissioning helps us stay ahead of the game while raising the bar for our competitors.

TEST DATA
COLLECTION

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