



High-Voltage Engineering Services



 **MEGAVAR**

PARTNERS IN
POWER

About Megavar

High voltage engineering covers the substation design, high voltage testing, commissioning and maintenance of substation and connection assets above 1 kV. Megavar is an Australian high-voltage engineering business. We design, test, commission and maintain the substation and connection assets that transmission and distribution networks, renewable generators and heavy industry rely on. Founded in 2003 and Australian owned, we work from five offices and deliver across five states. This statement covers every Megavar service line; each section is also available as a standalone capability statement.

What We Do

High-voltage system design, testing, commissioning and maintenance, resonant hipot testing, BESS commissioning, arc flash and power system studies, earthing, distribution design and drafting, and test equipment hire.

Where We Work

From offices in Hobart, Launceston, Adelaide, Newcastle and Gladstone, delivering across Tasmania, South Australia, Victoria, New South Wales and Queensland. Crews mobilise from within the region.

Why It Matters

Design, testing and commissioning in one business means the engineers who draw the scheme are the engineers who prove it on site, and the records are built to survive audit years later.

Megavar at a Glance

Established

2003. Australian owned and privately held.

People

57 engineers, technicians and support staff.

Offices

Hobart, Launceston, Adelaide, Newcastle and Gladstone.

Coverage

Tasmania, South Australia, Victoria, New South Wales and Queensland.

ABN

88 104 344 765



Let Megavar be your trusted partner in high-voltage design, testing, commissioning and maintenance, from concept to energisation and beyond.

High-Voltage Testing, Commissioning and Maintenance

High-Voltage Testing

Primary Plant Site Acceptance

Circuit breakers, instrument transformers, power transformers, disconnectors, surge arresters and cable sealing ends.

Cable Testing

VLF withstand and partial discharge measurement.

Primary Injection

Bus balance and differential stability proving.

Earth Grid Performance Testing

Off-frequency injection to ENA EG-1, assessed against ENA EG-0.

Transmission Line Impedance

Positive and zero sequence measurement for protection settings.

Substation Commissioning

Commissioning Management

Commissioning quality management plans, inspection and test plans, hold points and outage interface.

Protection and Control

FAT and SAT of line, transformer, bus zone, capacitor bank, load shedding and metering schemes, including settings QA on modifications.

SCADA and Automation

Signal list review, point simulation, HMI configuration and end-to-end proving to the control centre.

DC and AC Distribution

Battery, charger and DC distribution; LV AC supply and inverters.

Energisation Support

Interlocking and point-on-wave proving, staged energisation and defect close-out.

Substation Maintenance

Routine Inspection and Testing

Scheduled testing that finds deterioration early.

Preventative Maintenance

Diagnostics used to predict and prevent failure.

Corrective Maintenance

Fault diagnosis and repair.

Emergency Fault Response

Rapid attendance to minimise downtime.

Design Capability

Primary Design

Arrangement, single line diagrams, layouts and plant schedules.

Secondary and Protection Design

Protection, control and metering schemes, panel design and settings.

SCADA Design

Architecture, signal lists and control system integration.

Distribution, Civil and Structural

Distribution design and drafting; foundations, structures and earthworks.

Substation Commissioning Management

Commissioning Planning

Commissioning Strategy

Sequence, staging and outage programme agreed with the network operator, OEM and principal contractor before mobilisation.

Quality Management Plan

Commissioning quality management plan, procedures and test sheets aligned to the client's completions system.

Inspection and Test Plans

ITPs with hold and witness points for every primary, secondary and SCADA element.

Interface Register

Network operator, OEM, EPC and owner's engineer interfaces tracked from design review to handover.

Readiness Reviews

Pre-commissioning readiness checks so outages are not taken on a site that is not ready.

Delivery and Control

Daily Coordination

Crew allocation, permits, switching and access managed against the programme.

Hold Point Release

Witness and hold points released on evidence, with the record made at the time.

Defect Management

Punch lists and defect registers owned, tracked and closed before energisation.

Change Control

Settings, drawings and configuration changes controlled and recorded through commissioning.

Reporting

Daily and weekly progress, look-ahead and risk reporting to the client.

Energisation and Handover

Energisation Plan

Staged energisation and on-load checks agreed with the network operator.

Operational Readiness

Operating procedures, labelling, spares and training confirmed before handover.

Records Pack

Results, calculations, sign-offs, as-commissioned settings and defect registers as one pack.

Close-Out

Outstanding items, warranties and handover to operations and maintenance.

Delivered With Our Own Team

Primary Plant Testing

Site acceptance testing of circuit breakers, transformers, instrument transformers and switchgear.

Protection, Control and SCADA

FAT and SAT, settings QA, point-to-point and end-to-end proving to the control centre.

Earth Grid and Cables

Earth grid performance testing, cable withstand and partial discharge measurement.

One Accountable Party

Commissioning management is offered where the commissioning scope sits with Megavar, so the manager and the crew answer to the same plan.

Applied Voltage Withstand Testing

What We Test

HV and EHV Cable Systems

HV cable testing after installation: AC withstand of extruded cable circuits with their joints and terminations, phase by phase.

Gas-Insulated Switchgear

On-site dielectric withstand after assembly, sectioned to suit the capacitance of each test section.

Power Transformers and Shunt Reactors

Applied voltage withstand of each winding to earth, after transport, repair or relocation.

Instrument Transformers and Disconnectors

CTs, CVTs, VTs and disconnectors, withstand tested with partial discharge monitoring.

Single-Phase Induced Testing

A secondary service on power transformers, one phase at a time with partial discharge measurement. Suitability is confirmed case by case. Where a three-phase induced test is specified, we say so at enquiry.

How We Test

Variable-Frequency Series Resonance

The reactor is tuned to the capacitance of the test object by varying frequency, so the supply carries only the circuit losses.

Limited Fault Energy

If insulation fails, the circuit detunes and the voltage collapses, limiting the energy delivered into the defect.

Partial Discharge Testing

Omicron MPD measurement to IEC 60270 during the withstand, with a specialist partner on transmission-class campaigns. Achieved sensitivity is reported with every result.

Insulation Resistance Before and After

Measured either side of every withstand, each phase to the others and earth.

Stepped Voltage Profiles

Voltage steps and timed holds set from the project specification.

Standards Applied

IEC 60060-3

High-voltage test techniques: definitions and requirements for on-site testing.

IEC 60840 and IEC 62067

Extruded cable systems above 30 kV and up to 500 kV, including tests after installation.

IEC 62271-203

Gas-insulated metal-enclosed switchgear above 52 kV, including dielectric tests on site.

IEC 60076-3

Power transformer dielectric tests, including the applied voltage test.

IEC 60270

Partial discharge measurement.

What You Receive

Configuration Check at Enquiry

Load capacitance, resonant frequency and current checked against the set, so the test is known to be achievable before we quote.

Inspection and Test Plan

Test circuit, voltage profile, hold points and exclusion zones agreed before mobilisation.

Test Report

Voltage, frequency, current and duration for every phase, with partial discharge and insulation resistance results.

Acceptance Criteria

Test levels, durations and pass criteria are taken from the asset owner's specification.

Our Resonant Test Sets

300 kV Resonant Set

Output

Up to 300 kV single phase. Variable frequency, 25 to 300 Hz in series and 30 to 300 Hz in parallel.

Reactor Configurations

Two 150 kV modules. In series, 300 kV at 5 A. Single, 150 kV at 5 A. In parallel, 150 kV at 10 A.

Load Capacitance

Up to 150 nF at 216 kV in series and up to 400 nF at 132 kV in parallel. For example, 1.3 km of 400 mm² 220 kV cable or 3.1 km of 240 mm² 110 kV cable.

Duty

Rated 1 hour on and 5 hours off.

Best Suited To

Cable circuits and other high-capacitance loads.

500 kV Resonant Set

Output

Up to 500 kV single phase at 1.5 MVA. Full voltage from 60 to 300 Hz, reduced voltage down to 45 Hz.

Reactor Configurations

Two 250 kV modules. In series, 500 kV at 3 A. Single, 250 kV at 3 A. In parallel, 250 kV at 6 A.

Load Capacitance

0.6 to 15.9 nF at 500 kV, 1.3 to 31.8 nF at 250 kV on one module and 2.5 to 63.7 nF at 250 kV in parallel, including the voltage divider. Up to 113 nF at 187.5 kV.

Duty

Rated 30 minutes on and 6 hours off at full output. Longer holds are planned against load.

Best Suited To

GIS, transformers, reactors and switchyard plant, and short lengths of EHV cable.

Source Partial Discharge

Below 10 pC at rated voltage.

Getting the Set to Site

Modular Reactors

Not trailer-mounted. Each module is lifted into place, so the set reaches positions a trailer cannot.

Container Freight

Travels as standard container freight, with no oversize permits or escorts.

Operated by Megavar

Supplied with our own commissioning engineers, as a full test service or as operated hire into your test programme.

What We Need on Site

Test Supply

400/415 V three phase at each test position, from mains or generator. 300 kV set: 100 kVA. 500 kV set: 150 kVA minimum, 200 kVA preferred.

Lifting

Crane or telehandler with operator to unload, erect, reposition and reload the set.

Apparatus Ready to Test

Mechanically complete, clean, dry and isolated, with primary connections removed where the test requires.

Load Data

Cable length and size, or section capacitance, so the configuration is confirmed before mobilisation.

Fair Weather

Outdoor testing proceeds in fair weather only.

BESS Commissioning

Pre-Commissioning Review

Design Review

Single line diagrams, protection schematics, SCADA architecture, BMS configuration and thermal design checked against the connection agreement and Generator Performance Standards.

FAT Data Review

PCS inverter, transformer, switchgear and battery module factory acceptance records reviewed for deviations before site installation.

Commissioning Plans and ITPs

Commissioning plans, inspection and test plans and hold point schedules aligned with NSP and AEMO requirements.

Standards Applied

National Electricity Rules, AEMO connection procedures, NSP standards, AS 2067, IEC 61850 and DNP3.

Component Testing

HV Switchgear

Primary injection, contact resistance, insulation resistance, SF6 checks and functional operation with the CPC 100, CIBANO 500 and DLRO.

Transformers

Turns ratio, winding resistance, tan delta, SFRA, dissolved gas analysis and vector group with TESTRANO 600 and FRANEO 800.

Protection Relays

Secondary injection with the CMC 356 and CMC 500: settings, trip times and scheme logic for overcurrent, earth fault, differential, distance and anti-islanding protection.

CTs, Earthing and DC

CT ratio, polarity, burden and magnetisation curves; earth grid resistance, step and touch potentials; battery chargers, DC distribution and UPS.

System Integration Testing

BESS SCADA

End-to-end point-to-point verification of DNP3, IEC 61850 and Modbus, alarm propagation and remote control between the EMS, site SCADA and the NSP and AEMO control rooms.

BMS and PCS Integration

BMS communication with PCS and SCADA; state of charge reporting, cell balancing, thermal alerts and emergency shutdown sequences.

Performance Testing

Charge and discharge cycling, ramp rate, reactive capability, frequency response and grid-forming to grid-following mode switching.

Fire Systems

Enclosure fire detection and suppression functional tests, integrated with BMS shutdown and SCADA annunciation.

Grid Compliance and Energisation

Hold Point Testing

AEMO R1 and R2 hold point tests for active power control, reactive capability, voltage control, frequency response and fault ride-through, with the procedures and documentation the NSP and AEMO require.

Energisation

On-site engineering for HV and transformer energisation and the first charge and discharge cycles.

Performance Verification

Post-energisation monitoring and tuning of contracted capacity, round-trip efficiency and response time.

BESS Maintenance and Testing

Switchgear and Protection

Circuit Breakers

Timing, contact resistance, insulation resistance and operation count; gas pressure, moisture and SO₂ checks on SF₆ switchgear.

Protection Relay Testing

Settings, trip times and scheme logic verified with the CMC 356, including intertripping, breaker failure, busbar and differential schemes, and a settings audit against the approved schedule.

Instrument Transformers

Ratio, polarity and burden testing with the CT Analyser.

Arc Flash Protection

Light sensor and trip time testing where arc flash detection relays are installed.

Transformers and Oil

Electrical Testing

Turns ratio, winding resistance, insulation resistance, tan delta, SFRA and excitation current.

Oil Analysis

Dissolved gas analysis, BDV, moisture, acidity, IFT and furans, interpreted by Duval Triangle and Key Gas methods to AS 1767 and IEC 60422.

Tap Changers and Cooling

Dynamic resistance, transition timing, motor current and compartment oil sampling; fan and pump operation and cooling control logic.

SCADA, Earthing and Auxiliaries

SCADA and Communications

Control, status, analogue and alarm points verified between site SCADA, the EMS and the NSP and AEMO control rooms, with redundancy and failover tests.

Earthing

Earth resistance, step and touch potentials and bonding continuity with the AEMC 6471 and Red Phase injection set.

DC and Fire Systems

Battery charger, DC distribution, changeover and UPS verification; fire detection functional tests and enclosure cooling checks.

Condition Monitoring and Reporting

Trending

DGA, insulation, contact resistance and relay drift tracked across campaigns to catch developing faults before an outage.

Thermal Imaging

FLIR E75 surveys of switchgear, connections and transformers under load.

Digital Records

Field data captured on tablets, giving owners searchable maintenance records and asset condition histories.

Maintenance Cycle

Annual HV plant maintenance as standard, with first-year DGA baselines and relay testing to NSP requirements.

Primary Design

Substation Arrangement

General Arrangements

Substation general arrangements, sections and details to AS 2067, with bills of quantities and materials.

Switch and Control Rooms

Switch room and control room arrangements for the substation environment.

Oil Bunding and Blast Walls

To AS 2067, AS 1140, AS 3735, AS 3600 and AS 3700.

Busbars

Tubular and strung busbar design for short circuit and load level, sag, tension and expansion.

Structures and Foundations

Plant Support Structures

Structures and foundations for weight, short circuit, seismic, wind, snow and ice loading.

Standards Applied

AS 3865, AS 1170, AS 4100, AS 4680, AS 2312, AS 4312 and AS 3995.

Lightning Protection

Layout development in SES Shield (CDEGS) to AS 1768 and IEEE 998.

Lighting

Lighting design and fitting specification.

Cables and Plant

HV Cable Sizing

To IEC 60287, AS 1429, AS 1125, AS 1931, IEC 60986 and IEC 60502.

LV System Design

Low voltage system design to AS 3000, with cable sizing to AS 3008.

Plant Specifications

To AS 62271, AS 60076, AS 60214, AS 60044, AS 60137 and IEC 61462.

Insulation Coordination

To AS 1824 and IEC 60071.

Modelling and Assessment

Earth Grid Design

MALT, MALZ and HIFREQ in CDEGS to AS 2067, ENA EG-0 and EG-1, AS 3835, AS 4853 and IEEE 80.

EMF Modelling

HIFREQ in CDEGS, assessed against NHMRC guidelines and site-specific requirements.

Power System Studies

Fault level, load flow, protection coordination and arc flash studies across all voltage levels.

Secondary, Protection and SCADA Design

Specifications and Studies

Client Specifications

Scope of works, design standards and manuals, and functional design specifications.

Protection Coordination

Grading studies, setting philosophy and calculation reports.

Relay Settings

Development of relay setting files.

Fault Investigations

Post-event analysis and remediation design.

Protection and Control Design

Concept Design

Single line diagrams, communications architectures, control building layouts, relay selection and control philosophy.

Detailed Design

Panel layouts, schematics, wiring diagrams, and cable and termination schedules.

Interfacing

Interfaces with new and existing plant and equipment.

As-Built and Manuals

As-built updates from redline markups, and protection and control operating manuals.

SCADA and Communications

Substation SCADA

Complete design and integration, including substation Ethernet network design.

IEC 61850

System configuration, GOOSE and MMS design, and multi-vendor relay integration.

HMI Platforms

Citect, ClearSCADA and IA SCADA.

RTUs

GE D20, D200 and D25; Foxboro C50 and SCD5200; Siemens Sicam PAS; SEL RTAC and Axion.

Software

Drafting

Bentley MicroStation and AutoCAD.

Power Systems

DlgSILENT PowerFactory, ETAP and PTW.

Earthing and EMF

CDEGS, including MALT, MALZ, HIFREQ and SES Shield.

Arc Flash Study and Hazard Analysis

Study Method

Data Collection

Single line diagrams, equipment ratings, protection relay settings and utility fault levels, gathered on site where records are incomplete.

Power System Model

Network modelled in ETAP or PowerFactory, with short-circuit and fault level study across three-phase, single-line-to-ground, line-to-line and double-line-to-ground faults.

Protection Review

Protection coordination review of clearing times, because arcing time drives incident energy.

Incident Energy Calculation

Incident energy in cal/cm² and arc flash boundary at each item of switchgear to IEEE 1584-2018.

Deliverables

Arc Flash PPE

Arc-rated PPE category assigned for every assessed location, selected to IEC 61482.

Arc Flash Labels

Warning label schedule with incident energy, arc flash boundary, working distance and PPE for each location.

Audit-Ready Report

Findings, model assumptions, results tables and practical mitigation recommendations in one report.

Standards Applied

IEEE 1584, ENA NENS 09, AS/NZS 4836, IEC 61482 and NFPA 70E, supporting the WHS duty to manage electrical risk.

Mitigation

Faster Fault Clearing

Optimised protection settings and grading, the most effective lever on incident energy.

Maintenance-Mode Settings

Reduced-energy settings for work periods, with the switching and reset logic to match.

Equipment Options

Current-limiting devices, remote racking and remote operation, and arc-resistant switchgear.

Implemented, Not Just Recommended

Megavar configures, tests and commissions the protection changes it recommends.

When a Study Is Required

New Installations

New substations, switchboards and connections before energised work is authorised.

Network Changes

Modifications that change fault levels, generation contribution or protection settings.

Periodic Review

Review at least every five years, and after any arc flash incident.

Load Flow and Short Circuit

Load Flow

Steady-state voltages, currents and power flows under normal and contingency conditions, verifying equipment ratings, voltage limits and capacity for growth or generation to NER and NSP planning standards.

Short Circuit

Prospective fault currents for switchgear and protection ratings, including synchronous, inverter-based, motor and network contributions, to IEC 60909 and AS/NZS 3851.

Inverter-Based Resources

Solar, wind and BESS modelled with their own fault contribution characteristics.

Protection Coordination

Protection Coordination Study

Time-current coordination curves for relays, fuses and reclosers, so the device nearest the fault trips first.

Relay Settings

Settings for overcurrent, earth fault, distance, differential and special schemes, delivered as setting files and calculation reports.

Fault Investigations

Post-event analysis of relay records and remediation design.

Harmonics and Grid Connection

Harmonic Analysis

Non-linear load and inverter impacts modelled, with distortion at the point of connection checked against AS/NZS 61000.3.6 and filter design where required.

Grid Connection Studies

Studies supporting NEM generator connections, Generator Performance Standards and NSP requirements.

Typical Programme

A focused protection study for one substation in two to four weeks; a full load flow, short circuit and coordination study for a new connection in six to ten weeks.

Earthing and Software

Earth Potential Rise

EPR, step and touch voltage analysis, earth grid optimisation and transfer potential to ENA EG-0 and AS 2067.

Software

ETAP, DlgSILENT PowerFactory, SKM Power Tools and CAPE, working in the client's existing model or building one from SLDs and equipment data.

Earthing Modelling

MALT, MALZ and HIFREQ in CDEGS for grid design and EMF assessment.

Earthing Performance Testing

What We Measure

Earth Grid Voltage Rise

Traverses on multiple routes establish the grid rise with respect to remote earth.

Fault Current Distribution

The split on earth wires and cable screens gives the grid current the grid must dissipate.

System and Grid Impedance

Both derived from the traverses and the current split, benchmarked against the historical record.

Step, Touch and Mesh Voltages

Measured on contactable metalwork, with mesh voltages mapped across the yard.

Continuity

Every bond from plant, structures, fences and gates, reported in mΩ.

How the Limits Are Derived

Fault and Contact Scenarios

Every voltage level able to cause an EPR, and each ENA EG-0 contact scenario.

Fault Rate and Duration

Taken from EG-0 and the network protection data, so limits reflect exposure.

Surface Layer and Footwear

Crushed rock resistivity and footwear per EG-0, which often decide compliance.

Risk-Based Assessment

A negligible-risk threshold per contact scenario, not one fixed voltage.

Telecommunications and Pipelines

EPR assessed against the AS/NZS 3835.1 and 4853 thresholds.

Test Method

Injection to ENA EG-1

Off-frequency injection at nominally 58 Hz, scaled by the test-to-fault current ratio.

Remote Electrode Siting

A temporary electrode sited electrically remote, typically one to two kilometres out.

Injection Lead and Return

A temporary lead, or an out-of-service line or cable screen where terrain prevents a run.

Working on a Live Site

Normally done in service. Where a return path cannot be measured live, the report says so.

Instrumentation

High-Current Injection Sets

Red Phase and Mitton sets, with a Transline set for line and feeder circuits.

Earth Resistance Testers

AEMC instruments for electrode resistance and Wenner resistivity traverses.

Continuity Measurement

Low-resistance measurement of bonds and connections, in mΩ.

Calibration and Ownership

Owned rather than hired, calibrated to NATA-traceable standards.

Earthing Design, Modelling and Reporting

Soil Modelling and Grid Design

Wenner Resistivity Traverses

Multiple traverses at spacings out to 32 m or beyond, on the ground the grid occupies.

Multi-Layer Soil Model

Field data inverted in CDEGS to a two or three layer model, with the fit reported.

Earth Grid Design

Geometry, conductor routing, electrodes and surface layer, set against soil and fault data.

High-Resistivity Ground

Deep electrodes, ground enhancement and grid extension where conventional design fails.

Conductor Sizing and Rating

Thermal Sizing

Minimum size from fault current and duration, by the ENA EG-1 method.

Temperature Limits

250°C bare with brazed joints, 160°C PVC insulated, 40°C ambient.

Clearing Time

A conservative 2 s per EG-1 unless the protection study says otherwise.

Mechanical Minimum

70 mm² cable or 25 × 3 mm copper strap, above the AS 2067 minimum.

Verification

Installed sizes checked on site against the calculation.

Reporting

Measured Against Calculated

Every measurement tabulated against its limit, with a photo of the test point.

Figures, Not Assertions

Traverse routes, mesh voltage plots, soil fits and voltage contours shown.

Independent Review

Author, reviewer and approver are separate named engineers.

Retest Intervals

AS 2067 nominates 10 to 15 years performance, 1 to 3 years inspection.

Standards Applied

AS 2067

Substations and installations above 1 kV a.c.

ENA EG-0, DOC 025

Power System Earthing Guide. The risk framework for limits.

ENA EG-1, DOC 045

Substation Earthing Guide. Injection and conductor sizing.

IEEE Std 80 and Std 81

Grounding safety; resistivity and impedance measurement.

AS/NZS 3835.1 and 4853

EPR for telecommunications and metallic pipelines.

Distribution Design and Drafting

Underground Distribution

Cable System Planning

Underground cable system planning and route layout.

Trench and Conduit Design

Detailed trench and conduit design.

Cable Sizing

Sizing and specification to IEC 60287 and AS/NZS 1429.

Earthing and Protection

Earthing and protection system design for operational safety.

Compliance

Regulatory and environmental compliance documentation.

Overhead Distribution

Line Audits and Assessments

Audits and condition assessment of existing powerlines.

Detailed Line Design

Conductor selection, sag and tension calculation.

Construction Drawings

Powerline elevations and detailed construction drawings.

Work Plans

Work plans and schedules for upgrades and new installations.

Standards Applied

AS/NZS 7000, AS 3995 and utility-specific requirements.

Electrical and 3D Drafting

Schematics and Wiring

High-precision electrical schematics and wiring diagrams.

Panel Documentation

Panel layouts and termination schedules.

As-Built Drawings

As-built drawings incorporating field modifications.

3D Drafting

Three-dimensional drafting and visualisation for spatial analysis.

Software and Quality

Drafting Platforms

Bentley MicroStation and AutoCAD.

Calculation Tools

IEC 60287 cable sizing; CDEGS for earthing assessment.

Quality Management

Drawings issued under a certified ISO 9001 system with named reviewers.

Protection, Primary and Switchgear Testing

Protection Relay Testing

Omicron CMC 356

Universal relay test set for distance, differential, overcurrent and end-to-end testing, with Test Universe.

Omicron CMC 500

Compact multi-phase relay test set for high-current and multi-breaker schemes.

Megger Sverker 760

Single-phase relay tester for secondary injection on distribution protection.

Synchronisation and Interfaces

CMGPS 588 GPS synchronisation unit, CMLIB REF6xx interface adapter and Schneider VAP6 VIP relay tester.

Primary Injection and Micro-Ohm

Omicron CPC 100

Multi-function primary test set for CT and VT ratio, winding resistance, impedance and contact resistance.

Omicron CPX 200 and HVX10

Multi-function test set and 10 kV high voltage source for primary and dielectric testing.

Megger DLRO Range

DLRO 600A, DLRO 100EB and DLRO 10A micro-ohmmeters, and the MOM3 300 A handheld unit.

Earth Current Injection

Red Phase 1.5 kVA earth current injection set for grid impedance and current distribution tests.

Circuit Breaker Testing

Omicron CIBANO 500

All-in-one circuit breaker test system: timing, travel, coil current, contact resistance and dynamic resistance.

Megger TM1600

Configurable circuit breaker timing analyser for MV and HV breakers.

Interface Tools

Schneider LV485500 service interface tool and NOJA Power OSM-27 recloser test box.

Current and Voltage Transformer Testing

Omicron CT Analyser

Ratio, polarity, excitation, burden and accuracy class verification, with the CTSB2 switch box for multi-tap CTs.

VT Testing

CPC 100 and CPX 200 with CP TD1 for VT ratio, polarity and tan delta.

Capacitance Measurement

Hitachi Energy CB-2000 capacitance meter for CVTs and bushings.

Transformer, Cable, HV and Condition Testing

Transformer Testing

Omicron TESTRANO 600

Three-phase transformer test system for ratio, winding resistance, short circuit impedance and tap changer checks.

Sweep Frequency Response

FRANEO 800 and FRAnalyzer for winding deformation and core movement.

Dielectric Response

Dirana dielectric response analyser for moisture in oil-paper insulation.

Tan Delta and Insulation Resistance

CP TD1 with CR 500 compensation reactor, and Megger MIT 5 kV and 10 kV insulation resistance testers.

Cable Testing

VLF Testing

HVA 60 kV VLF cable test set and HVA 28 kV VLF set with integrated tan delta for MV cable withstand and condition tests.

Cable Tan Delta and PD

CP TD1 with CP CU1 coupling unit, and MPD 600 with MCC 210 coupling capacitor for partial discharge on cables and accessories.

Pfisterer CONNEX

Size 2 and Size 3 HV test plugs and Size 0 and Size 1 grounding and current testing connectors for testing through CONNEX terminations.

High-Voltage Hipot and Partial Discharge

Hipot Tester Hire

Phenix 6CP50 50 kV and BK130 130 kV DC hipot test sets.

Resonant Test Sets

SUTE 300 kV and Phenix 500 kV AC resonant test sets for GIS, cable and transformer withstand tests.

Partial Discharge

Omicron MPD 600 system for IEC 60270 measurement, and EA Technology UltraTEV Plus2 online PD surveyor for switchgear.

Earth, Battery and Condition

Earth Testing

AEMC 6471 ground resistance tester, Red Phase 4025E frequency selective multimeter and 4022C continuity tester, and Mitton TVM1100 tuned voltmeter.

Battery Testing

Megger Torkel 930 discharge test set with TXL870 extra load bank, and Hioki BT3554-50 battery tester.

Thermal Imaging Camera Hire

FLIR E75 infrared camera for switchgear, connection and transformer surveys.

Credentials and Commitment

Accreditations and Licences

Certified Management Systems

ISO 9001, ISO 14001 and ISO 45001, certified since 2015.

Certified Scope

Planning, design and delivery of high voltage electrical and engineering projects, including project management, engineering consultancy and equipment rental.

Electrical Contractor Licences

Held in every Australian state: NSW 284109C, VIC 21203, QLD 73595, SA PGE 267537, WA EC010840 and TAS 947267.

Insurance

Professional indemnity \$10 million, public and products liability \$20 million, cyber liability \$1 million.

Test Instrumentation

An owned Omicron and Megger fleet including CMC 356 and CMC 500 relay test sets, CPC 100 primary test set, CIBANO 500 circuit breaker analyser, TESTRANO 600 and FRANEO 800 transformer test systems, MPD 600 partial discharge system and MIT and DLRO testers, calibrated to NATA-traceable standards.

Next Step

[Read more about high voltage engineering services on megavar.com.au](https://megavar.com.au)

[Request a quote](#)

1300 730 499 | service@megavar.com.au



Why Megavar

Design and Testing in One Business

The people testing the system understand how it was designed.

Independent

No plant to defend and no construction programme to protect.

Our Own Test Fleet

The instruments on site are ours, calibrated to NATA-traceable standards.

Records That Survive Audit

Results, calculations, sign-offs and defect registers, as one pack.

Clients and Sectors

Networks

Transgrid, ElectraNet, TasNetworks, Essential Energy, Evoenergy, Powercor, AusNet, Western Power, Zinfra and Jemena.

Principal Contractors

Downer, Ventia, RJE, Enerven, CPP, ACLE, RBD and Worley.

Renewable Generators and OEMs

Acciona, Vestas and Goldwind.

Industry

Alcoa Portland.

Sectors

Network augmentation, wind, solar and battery storage connections, and heavy industry.

Standalone Capability Statements

Each service section in this pack is also available as its own capability statement. Ask your Megavar contact or email service@megavar.com.au.

Our Principles

Integrity

When Megavar does it, you know it has been done right.

Responsiveness

When clients need us most, we will be there every time.

Teamwork

Only together can we achieve great outcomes.

Accountability

We hold each other to high standards, and fix what we get wrong.

Safety

Looking out for each other gets us home safe.

Speak to our team today

megavar.com.au



service@megavar.com.au

1300 730 499