



High-Voltage Resonant Hipot Testing



 **MEGAVAR**

PARTNERS IN
POWER

About Megavar

Resonant hipot testing is an on-site AC withstand test of installed high voltage insulation, using a variable-frequency resonant test set tuned to the capacitance of the cable, GIS or transformer under test. Megavar owns and operates two variable-frequency resonant test sets, rated 300 kV and 500 kV, for AC withstand (Hipot) testing of cables, switchgear, transformers and reactors on site. Founded in 2003 and Australian owned, we work from five offices and deliver across five states. We do not manufacture plant and we do not build substations, so our results carry no commercial interest in the outcome.

What We Do

AC withstand testing to 500 kV with partial discharge measurement, planned, run and reported by our own commissioning engineers.

Where We Work

From offices in Hobart, Launceston, Adelaide, Newcastle and Gladstone, delivering across Tasmania, South Australia, Victoria, New South Wales and Queensland. The test sets travel to site as container freight.

Why It Matters

A withstand test is the last proof of insulation before energisation, and it finds the installation defects a factory test cannot. It needs the right voltage, from a source matched to the load.

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 prove your insulation before energisation, on resonant test sets we own and operate.

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.

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

Owned 300 kV and 500 kV resonant test sets, an Omicron MPD 600 partial discharge system and an owned Omicron fleet calibrated to NATA-traceable standards.

Next Step

[Read more about resonant hipot testing on](#)

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.

Sets We Own and Operate

Both resonant sets are ours, run by our own commissioning engineers.

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.

Other Megavar Capability Statements

One is available for every Megavar service line. 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



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