

Substation SCADA and Automation

MEGAVAR

PARTNERS IN POWER

About Megavar

Substation SCADA engineering is the design, configuration, testing and commissioning of the automation and communications systems that monitor and control a substation. Megavar delivers it as one scope with one team: the engineers who design the architecture, configure the RTUs and gateways and build the IEC 61850 model are the engineers who run the factory acceptance testing, site acceptance testing and point to point testing on site.

What We Do

SCADA and substation automation system (SAS) design, RTU, gateway and bay controller configuration, IEC 61850 station bus integration, interlocking and control logic, cybersecurity hardening, and FAT, SAT and point to point testing for substations and renewable connections.

Where We Work

From offices in Hobart, Launceston, Adelaide, Newcastle and Gladstone, delivering across Tasmania, South Australia, Victoria, New South Wales and Queensland.

Why It Matters

A SCADA system is finished when every point reads true in the control room. Ours are designed and proven by the same engineers, so the design is testable and the test finds nothing the designer did not expect.

Megavar at a Glance

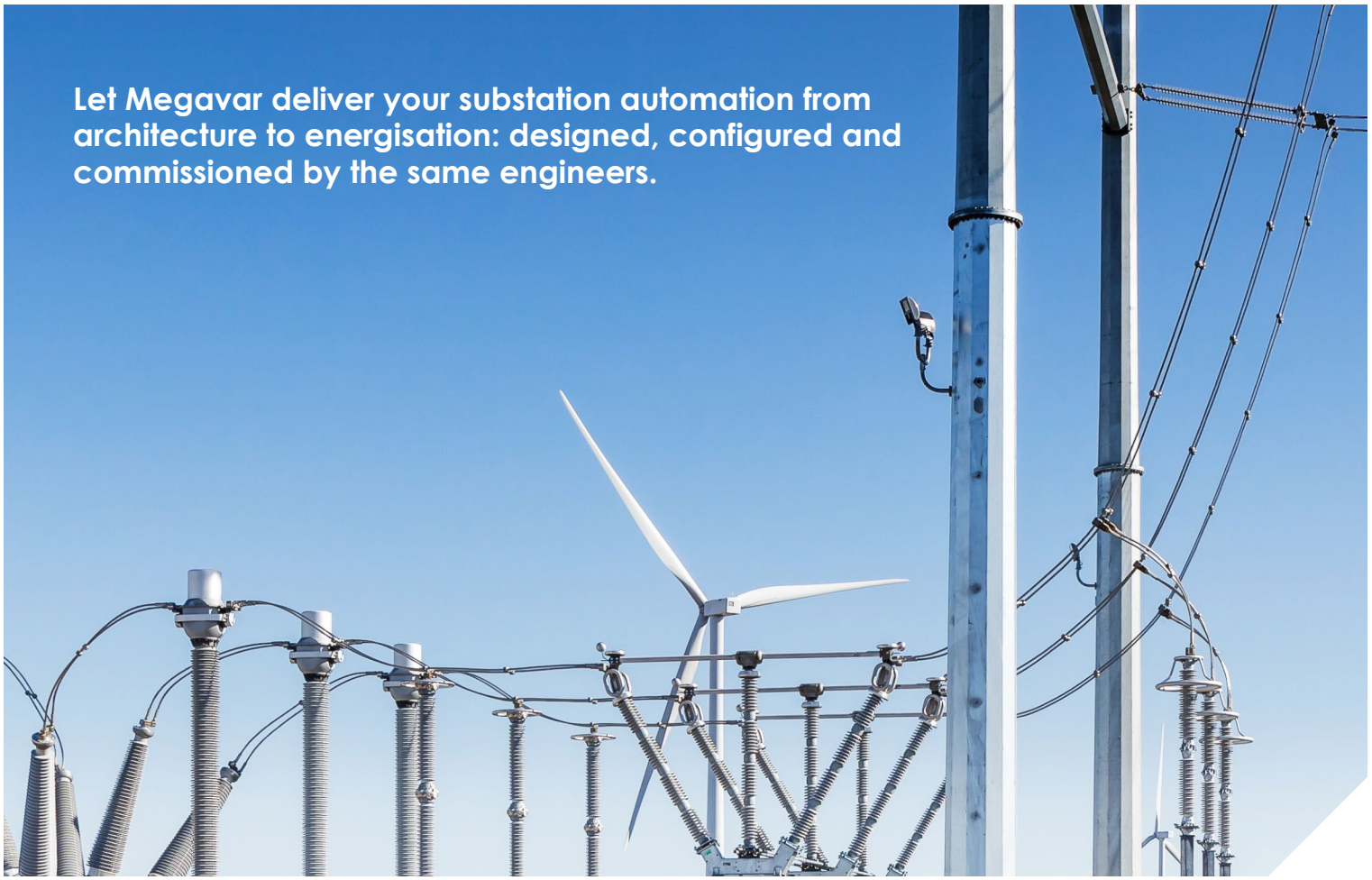
Established
2003. Australian owned and privately held.

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



SCADA Design and Configuration

System Architecture

Substation SCADA Architecture
Station, bay and process level SCADA architecture, with redundant RTU and gateway design, PRP/HSR network redundancy, GPS time synchronisation (SNTP and IEEE 1588 PTP), and integration architecture for multi-vendor environments.

Communications Networks
Fibre, serial and Ethernet network design with failover, including the substation Ethernet network.

Functional Specifications
Points lists and signal schedules, alarm philosophy and prioritisation, control philosophy and interlocking logic, and functional design specifications aligned to AEMO requirements.

HMI Design
HMI design and build on Citect, ClearSCADA, Zenon and IA SCADA.

RTU and Gateway Configuration

RTU Platforms
Configuration, database build and commissioning of SEL RTAC and Axion; GE D20, D200 and D25; Siemens Sicam PAS; and Eaton SMP gateways, including I/O mapping, tag processing, protocol and master station interface set-up, IEC 61131-3 logic, and firmware and configuration management.

Protocols
DNP3, IEC 60870-5-101 and 104, IEC 61850 MMS, Modbus TCP and RTU, and OPC-UA.

Protocol Gateways
Gateway configuration for legacy protocol conversion, serial to IP migration and RTU replacement.

Legacy Upgrades
Upgrade and migration of ageing SCADA systems, including IEC 61850 retrofits to existing substations.

IEC 61850 Engineering

SCL Engineering
SCD, ICD and CID file engineering and the substation data model.

GOOSE and MMS
GOOSE messaging design and configuration, MMS data model set-up and sampled values.

Multi-Vendor Integration
Integration of relays and IEDs from different manufacturers on one substation bus.

IEC 61850 Gateways
Gateway configuration for conversion between IEC 61850 and legacy protocols.

Cybersecurity

Assessment and Hardening
SCADA and OT cyber security assessment and hardening to AESCSF, IEC 62351 and IEC 62443.

Network Security
Network segmentation, firewall rule development, intrusion detection and role-based access control.

Operational Controls
Patch management and vulnerability assessment, with AESCSF alignment supporting Security of Critical Infrastructure Act obligations.

Testing, Integration and Commissioning

Factory Acceptance Testing

SCADA and RTU FAT
Factory acceptance testing of SCADA systems, RTUs, gateways and HMIs before despatch to site.

Protection and Control Panels
FAT of protection and control panels, witnessed or executed by Megavar engineers.

Test Records
FAT procedures, results and punch lists issued as one pack.

Standards Applied
IEC 61850, IEEE 1815 (DNP3), IEC 60870-5-104, IEC 62351 and IEC 62443.

Site Acceptance Testing

Point to Point Testing
Point to point testing of every analogue, status, alarm and control from field device to HMI.

End-to-End Verification
End-to-end verification of data flow from the substation to NSP and AEMO control rooms.

Failover and Redundancy
Failover, redundancy and performance validation of communications links and servers.

Energisation
SCADA sign-off as part of substation commissioning and energisation.

Integration

Renewable Connections
SCADA integration for wind, solar and battery storage connections, including control room interfaces.

Substation Commissioning
SCADA point to point verification delivered within Megavar's substation commissioning scope.

Legacy Interfacing
Interfaces between new and existing SCADA, RTUs and protection schemes.

Ongoing Support
Post-commissioning support, upgrades and maintenance.

Test Instruments and Tools

Relay Test Sets
Omicron CMC 356 and CMC 500 for GOOSE and sampled values injection and scheme proving.

Protocol Analysis
Protocol and network analysers for DNP3, IEC 60870-5-104 and IEC 61850 traffic verification.

Software
Bentley MicroStation and AutoCAD for drafting; DIgSILENT PowerFactory for studies.

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 substation SCADA and automation on megavar.com.au
Request a quote
1300 730 499 | service@megavar.com.au

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.

Why Megavar

Design and Testing in One Team
The engineer who built the points list is the engineer who proves it on site.

Vendor Agnostic
No RTU or HMI platform to sell, so the architecture is the one that suits the site.

Power Systems and IT in One Business
SCADA engineers who understand protection, primary plant and the digital substation.

Records That Survive Audit
Points lists, FAT and SAT results and configuration files, as one pack.

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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1300 730 499