

## Maintenance Substations and Transmission Lines

**Enerven provides a complete suite of services to maintain energy infrastructure assets, such as substations and transmission lines for large-scale projects, including wind farms, solar farms, mining sites, defence and other private infrastructure owners.**

We have a comprehensive skill set in the maintenance of electrical assets and our experienced team can deliver a turnkey solution that meets your maintenance needs and extends the life of your assets.

Our extensive experience working with transmission network service providers such as ElectraNet, distribution network service providers such as SA Power Networks, water and power utilities such as SA Water, transport infrastructure providers and owners of mines and defence sites, such as BHP and Oz Minerals.

Enerven's team can deliver all disciplines involved in the maintenance of energy infrastructure assets, from high voltage maintenance and testing, facility maintenance, inspection services, live line work up to 275kV, transformer refurbishment, and oil sampling and analysis.

We invest heavily in the best equipment and professional development of our staff, which means we combine experience and history with innovation and technology to deliver solutions that address the evolving energy

requirements of our clients. With a strong supplier and partner network behind us, our highly skilled staff work collaboratively with you to fully understand your specific needs and vision and will tailor a solution to suit. Delivering the highest standard of work in a safe and efficient manner is our top priority, and we have an outstanding track record to prove it.

### Transformer Workshop Services

With the facilities, equipment and staff to perform specialised services in relation to High Voltage (HV) transformers, including assembly and maintenance, Enerven offers unique solutions from a local base. We draw on the strength of our long-term distribution, utility, and transmission experience, to ensure that works are completed inside allocated timeframes. With in-depth industry knowledge, our quality of service is hard to beat.

#### Transformer Workshop capabilities include:

- Assembly, refurbishment and maintenance of transformers
- On-load tap-changer (OLTC) maintenance, refurbishments and retrofits
- Retrofits working closely with the original equipment manufacturer
- Oil dehydration, de-gassing and deacidification
- Bushing replacements - Oil Impregnated Paper (OIP) or Resin Impregnated Paper (RIP)
- Buchholz relay testing refurbishment or replacement

- Testing and calibration of winding temperature indicators (WTI)
- Testing and calibration of oil temperature indicators (OTI)
- Paper sampling and analysis for the Degree of Polymerisation (DP)
- Oil sampling and analysis

### Substation Asset Management Services

Enerven are a specialist service provider with extensive experience and the latest technology. Our substation capability includes inspection services, routine and corrective maintenance, complete unit refurbishment, emergency replacement and commissioning.

#### Protection and secondary system maintenance:

- Primary and secondary injection of substation plant and equipment
- Line, power transformer, generator and motor protection
- Instrument transformer (current voltage transformer) testing
- Relay and transducer calibration
- Maintenance and electro-mechanical, electronic and digital relays
- Drawing audits, checks for AC and DC schematics and single line diagrams
- Fault finding and investigation for protection related problems
- Supervisory control and data acquisition (SCADA) systems
- Earth system testing, including; electrode resistance, soil resistivity, current injection and earth grid integrity



**Substation Asset Management Services continued...****Plant Maintenance Services:**

- Power transformers, including OLTCs
- Circuit breakers
- Instrument transformers
- Switchboards
- Earthing systems
- Compressors
- Generators
- DC batteries and systems
- Motors and cables
- Isolators/disconnectors
- SF6 analysis and reclamation
- Insulating oil sampling, analysis and providing recommendations
- Thermal imaging and partial discharge surveys
- Oil refurbishment and degassing

**Additional Substation Asset Management Services include:**

- 24/7 customer response
- Property and facility maintenance, including; fencing and building, vegetation management, air conditioning, fire systems, cleaning, and security
- High voltage switching services
- Maintenance planning and outage optimisation
- Asset management and program optimisation advisory services
- Engineering, design and commissioning services
- Supply chain management

**We work closely with you to create the right approach for your circumstances and requirements.**

**We develop tailored solutions that deliver exactly what you need.**

**High Voltage Test Services**

Enerven has the facilities to perform specialised test services for High Voltage (HV) assets. Our HV test and service department consists of multiple highly experienced teams. Staff utilise Doble®, Omicron, Megger and Phenix test equipment to ensure accuracy, and we can produce extensive reports that include all results and any related recommendations.

**We provide testing and result analysis of all HV assets, such as:**

- Dielectric dissipation factor (Dielectric Loss Angle)
- Leakage reactance test
- Excitation test
- DC winding resistance test
- OLTC dynamic resistance measurement
- Ratio test
- Sweep frequency response analysis
- DC insulation resistance test
- Bushing DLA and watts-loss test
- Partial discharge test (off-line)
- Very low frequency (VLF) testing
- AC voltage withstand test
- Insulation resistance
- Polarisation index
- Testing of elevated work platforms (EWP)
- Testing and assessment of HV Personal Protection Equipment (PPE)

**Technology available:**

- Doble® M4000
- Transformer analysing equipment: Omicron Testrano 600, including add-on tan delta unit capable of 12kV
- Dielectric response analyser: Omicron DIRANA
- Frequency response analysis Omicron Franeo 600
- Megger MIT1025 10kV insulation resistance tester
- Vokes oil filtration unit, processing

capacity of 6000L per hour for oil degassing and dehydration of transformer oil; we also have access to Alfa Laval oil filtration units, processing capacity of 4000L per hour and 500L per hour

**Outage Management**

Enerven has the expertise and capability for scheduling of all HV Network outages necessary for activities and our approach considers the following:

- Regular outage planning meetings
- Outage requests
- System Switching Requests (SSR)
- Switching (in-house switching operators)
- Temporary settings and protection memos
- Construction staging and outages (sequencing)
- Trip risk assessments
- Request to energise
- First call response during site works
- Outage recalls
- Emergency recall planning

Our staff has expert knowledge in South Australian Electricity Industry Switching Manual requirements and ElectraNet's Switching Manual requirements.

**Commissioning**

Enerven has in-house commissioning engineers for all installation, testing, site integration testing and commissioning of the primary plant and secondary systems. This includes metering, control, alarm and protection systems from the reference or initiation device to the desired operation of plant or control gear, including trip coils. The team are experts on the South Australian transmission network and have extensive understanding of ElectraNet's requirements and commissioning processes, which includes preparation of commissioning plans, Inspection Test Plans (ITPs), Factory Acceptance Testing (FAT), Site Acceptance Testing (SAT), Temporary Protection Riggs (TPRs), Temporary Protection Memos (TPMs), ElectraNet's settings database, and outage sequencing.

## Transmission Line Services

Our team's vast capabilities in maintaining transmission line infrastructure is second to none. We can develop a solution to maximise the life of your assets, ensuring they are reliable and safe.

### Our services include:

- Refurbishment and routine maintenance of transmission lines and structures
- Live HV transmission maintenance and construction
- Land access and easement negotiation
- Complex brownfield work in transmission line environments using a variety of live line techniques - thereby maintaining electricity supply
- Live stick and barehand resources and expertise up to and including 275kV transmission asset works
- Asset inspection and condition monitoring, including data collection and reporting
- Thermographic and acoustic non-destructive testing

## Remotely Piloted Aircraft (RPA) Inspection & Data Management

We develop complete solutions to facilitate asset management through the collection and analysis of data and gathering information via Remotely Piloted Aircraft (RPA) technology.

Using the latest technology our team captures visual and thermographic data for clients such as mining clients, wind farm operators, utility asset owners, and solar applications, capturing highly accurate data from assets even in difficult conditions, such as high-risk environments, extreme winds and high altitudes.

### Our RPA capabilities include:

- Asset inspection, data collection and interpretation, and reporting
- Still, thermographic and 3D mapping of assets
- Thermographic analysis
- Powerline stringing

Our team of highly skilled RPA operators are also fully trained electrical linesman, allowing us to inspect an asset, review the data and immediately address any technical issues or conduct repairs while on site.

Our proactive approach significantly increases the integrity of your assets, and results in cost savings to our clients, and higher productivity rates for the operator.

We continuously invest in new technology to improve our service offering, including RPAs with up to two cameras mounted above the aircraft, which enables the capture of both thermal and high resolution images. We are also investigating tethered RPAs, which receive a power supply via a carbon fibre extension cord rather than relying on battery life alone.

Our cameras in use are state-of-the-art with extremely high resolution and image quality. Our technicians are able to identify a 1mm thick burred thread on windmills from images taken 50m from the asset.

### Technical data:

Drones in use: DJI Matrice 210; Fitted one DJI Matrice 210 with post processed kinematic (PPK) technology, producing images with accuracy of GPS positioning within 20mm.





## Distribution Services

In addition to our work on substations and transmission networks our team also provides a range of services, especially tailored to meet maintenance requirements for distribution power networks.

### Our capabilities in this area include:

- Live low voltage (LV) maintenance, including cross arm changes
- HV and LV switching
- HV repairs (de-energised)
- Construction and maintenance of overhead and underground power lines
- Conductor repairs and replacement

We are bound by the same quality, safety and operating standards as SA Power Networks, and backed by a strong track record of outstanding service delivery. Our team includes highly skilled powerline workers with extensive trade experience working on distribution networks.

## Why Enerven?

Enerven is your partner for all infrastructure asset design, construction, and maintenance needs, from routine maintenance to emergency response, we are there for you when it matters most.

We have a team of over 500 people creating a scalable workforce to suit any assignment. Our in-house design, engineering and field personnel are on call 24/7 to respond to outages and restore supply quickly and safely. Further to this, we have depots across South Australia for rapid mobilisation when you need us most. We have the right skills and qualifications to get started straight away - no time is wasted.

Enerven is proactive, reliable, experienced and has a proven track record when it comes to quality, service delivery, safety and environmental sustainability.

Our extensive experience in the industry make us a reliable player in the market with a service offering that is hard to beat. Our knowledge of electrical assets is unrivalled and we have a 'common goal' to keep the lights on; with Enerven you are in safe hands.

## Proactive, Collaborative, Dependable

Our values are the DNA of our business. They embody what we stand for and focus firmly on our customers' needs to accomplish long term, sustainable improvements that are reliable, maximise profitability and minimise costs.

Further to this, everything we do is underpinned by an unrelenting focus on safety and wellbeing.

**We build our customers' vision. Our driving ambition is to connect you with tomorrow.**

## Who We Are

**Enerven provides construction and maintenance services to clients both within SA and nationally. We believe innovation and technology will continue to drive efficiencies, but no more so than the experience and knowledge of our people.**

## Contact Us

1 Station Place,  
Hindmarsh SA 5007

1300 334 523

[enquiries@enerven.com.au](mailto:enquiries@enerven.com.au)

[www.enerven.com.au](http://www.enerven.com.au)