

Substations & Transmission Lines

Enerven provides a complete suite of services from the construction, management to maintenance of 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 extensive experience in working with transmission network service providers such as ElectraNet, distribution network service providers such as SA Power Networks, water and power utilities, transport infrastructure providers and owners of mines and defence sites.

Enerven's team can deliver all disciplines involved in major energy infrastructure projects, from design planning, engineering, procurement, construction through to commissioning, operation and maintenance of substations and transmission line networks.

Our experience in the market place, combined with the expertise and industry knowledge of our team, makes Enerven's offering second to none - which is why industry leaders such as Oz Minerals, AGL and BHP Billiton trust Enerven with their energy infrastructure assets.

We invest heavily in the best equipment and the professional development of our staff, which means we combine experience and history with innovation and technology to deliver solutions that address the evolving energy distribution requirements of the community. 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. We focus on building long-term relationships with our clients, we're committed to working with you for the lifecycle of your project and beyond.

Our Capabilities

- Construction, refurbishment and routine maintenance of transmission structures of all voltages
- Greenfield substation and transmission line construction (including working for or interfacing with transmission network service providers)
- Live transmission construction and maintenance (high and low voltage)
- Land access and easement negotiation
- In-house primary plant, secondary systems and telecommunications design and engineering
- Complex brownfield work in live substation and 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 monitoring, including data collection and reporting
- Maintenance of all assets including transmission lines, substations and telecommunications
- High voltage testing and commissioning



Energy Infrastructure

Our Services

Our team's vast capabilities allow us to provide you with a complete turnkey solution, or we can manage and coordinate individual stages of the project, depending on your needs and resources.

Our service offering includes:

- End-to-end project delivery
- Full consultation, assessment and advisory
- Specification and procurement of plant
- Commissioning
- Project management
- System operation and maintenance
- Asset inspection and management
- Data collection, analysis and reporting of asset performance
- Stakeholder engagement services
- Product research and evaluation
- Construction of tower structures, lattice towers, mono poles, wood poles and stobie poles
- Safety, quality and environmental management

Outage Management

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

- Regular outage planning meeting
- 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 & protection system from the reference device 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, ITPs, FAT, SAT, TPRs, TPMs, ElectraNet's settings database, and outage sequencing.

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.



Maintenance

Enerven maintains the South Australian transmission network, including high voltage assets and general infrastructure facilities.

Services delivered to ElectraNet include:

- High voltage asset maintenance (substations and transmission lines)
- Facility maintenance (including fencing and buildings)
- High voltage testing on assets to for condition assessment
- Thermographic imaging
- Power, Voltage and Current Transformer condition assessment and monitoring
- Substation condition assessment and monitoring
- Oil sampling and analysis
- Construction and maintenance of circuit breakers, isolators, disconnectors
- Inspection services
- Planning and professional services
- Live line work up to 275kv

Our highly skilled staff, their high-end technical skills and extensive experience working with high-voltage assets are what sets us apart, and the reasons why ElectraNet chose to partner with us.

We understand the lifecycle of the assets, we understand the market our clients operate in, and we know how important it is to maintain continuous power supply to individual assets to avoid costly downtime.

Our one-stop-shop service offering means ElectraNet knows that its assets are in safe hands, and we have built a strong, long-term relationship with the team built on trust, our service quality and dependable track record.

Transformer Workshop Services

With the facilities, equipment, and staff to perform specialised services in relation to 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
- OLTC (on-load tap-changer) maintenance, refurbishments and retrofits
- Retrofits working closely with the original equipment manufacturer
- Oil dehydration, de-gassing and de-acidification
- Bushing replacements – OIP (Oil Impregnated Paper) or RIP (Resin Impregnated Paper)
- Buchholz Relay Testing refurbishment or replacement
- Testing and calibration of winding temperature indications (WTI)
- Testing and calibration of oil temperature indicators (OTI)
- Paper sampling and analysis for the Degree of Polymerisation (DP)
- Oil sampling and analysis

High Voltage Test Services

Enerven has the facilities to perform specialised test services for high voltage 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 high voltage assets, such as:

- Dielectric Dissipation Factor (Dielectric Loss Angle)
- Leakage Reactance Test
- Excitation Test
- DC Winding Resistance Test
- OLTC (on-load tap-changer) Dynamic Resistance Measurement
- Ratio Test
- Sweep Frequency Response Analysis
- DC Insulation Resistance Test
- Bushing DLA and watts-loss test
- Partial Discharge Test (Off-line)
- VLF Testing
- AC Voltage Withstand Test
- Insulation resistance
- Polarisation Index
- Testing of Elevated Work Platforms (EWP)
- Testing and assessment of high voltage 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 de-gassing 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

Asset & Data Management Inspection/Drone

We develop complete solutions to facilitate asset management through the collection and analysis of data, gathering information via drone technology.

Using the latest technology our team captures visual and thermographic data for clients such as mining clients, wind farm operators and 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 capabilities include:

- Asset inspection, data collection and interpretation, reporting
- Still, thermographic and 3D mapping of assets
- Thermographic analysis
- Powerline stringing
- Maintenance and repairs of infrastructure assets up to 275kW

Our team consists of highly skilled drone operators and fully trained linesmen, allowing us to inspect an asset, review the data and immediately address any technical issues or conduct repairs while still onsite.

Our proactive approach significantly increases the integrity of the asset, and results in cost savings and higher productivity rates for the operator.

We continuously invest in new technology to improve our service offering, including adding drones that can mount cameras above the drone, or carry two cameras at once, for improved coverage. We're also interested in tethered drones, receiving power through a carbon fibre extension cord rather than relying on battery life alone.

The cameras in use are state-of-the-art with extremely high resolution and image quality – our technicians can see a 1mm thick burred thread on windmills on images taken 50m from the asset.

Technical data:

Drones in use: Microdrone MD400; DJI Matrice 210; Fitted one DJI Matrice 210 with PPK (post processed kinematic) 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 maintenance, including cross arm changes
- High voltage and low voltage switching
- High voltage 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 standard 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.

Enerven is your partner for all energy infrastructure projects, from conceptualisation and design through to operation and maintenance.

Why Enerven?

We develop solutions with customers and communities to enable them to choose, create and adapt how they connect with, make, store and use energy, on their terms. Enerven began as a division of SA Power Networks¹ and, over fifteen years, has grown into a market leader.

Building on the 100-year foundation, Enerven is a proven expert in the development of major infrastructure, energy and telecommunications solutions.

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, at Enerven, 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, an SA Power Networks Company, provides a range of construction and maintenance services, including fibre installation, to clients both within SA and nationally. We believe innovations and technology will continue to drive efficiencies, but no more so than the experience, knowledge and capabilities of our people.

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