



LESEDI
ENERGY ENGINEERING

**PROJECT
EXPERIENCE**



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1. EXECUTIVE SUMMARY

With over **30 years of experience**, Lesedi is uniquely positioned in South Africa as an Engineering, Procurement and Construction (EPC) company that combines nuclear-grade quality, safety and engineering discipline with a growing renewable energy portfolio.

Its execution of the City of Cape Town Atlantis PV Plant – a first-of-its-kind metro-owned project – alongside decades of large-scale power project delivery,

demonstrates the technical, logistical, and financial capability to successfully build, integrate, and maintain large-scale renewable energy projects.

Lesedi provides turnkey project delivery from feasibility and design, through procurement and construction, to commissioning and long-term operations and maintenance. Our track record spans nuclear, thermal, renewable and industrial sectors, with successful execution of contracts exceeding R2 billion in value.



2. INTRODUCTION

Established in South Africa, Lesedi is a leading Engineering, Procurement, and Construction (EPC) company with over 30 years of experience. We specialize in executing major projects across the **Nuclear, Oil and Gas, Power, and Industrial Infrastructure sectors**. Our extensive experience in the South African Power Industry has made us a leader in delivering turnkey engineering projects.

What sets Lesedi apart is our strong foundation of engineering and project management expertise, which differentiates us from other large EPC firms that originated from civil construction. Our in-house team of registered South African Professional Engineers allows us to handle all engineering, design, and local approvals internally. We are also well-versed in the South African codes, standards, and statutory requirements essential for project success.

THIS ALLOWS:

- In-house design & compliance to SANS, NRS, IEC, and NEMA standards.
- Optimisation of designs for cost-effectiveness and operability.
- Rapid resolution of engineering issues without reliance on external consultants.
- This structure is rare among South African EPCs.

OTHER KEY STRENGTHS:

- **Exceptional Safety and Quality:** Our extensive involvement in the nuclear sector has instilled a robust focus on health, safety, quality, and environmental standards, resulting in an exemplary safety record. We are fully accredited with internationally recognized codes and standards, ensuring projects are delivered on time and within budget.
- **Comprehensive In-House Capabilities:** We provide a complete range of services to support our engineering, design, and project teams, including Procurement, Finance, HR, SHEQ (Safety, Health, Environment, and Quality), Risk, Quality Assurance, Quality Control, Operations, and Maintenance.
- **Technology-Agnostic Solutions:** As a technology-agnostic company, we focus on providing our clients with the best value for their projects, without being tied to specific technologies.
- **Local Expertise and Community Engagement:** Our deep understanding of the local context allows us to effectively navigate and empower the communities we work in, ensuring the successful execution of our clients' projects.

Lesedi's name is synonymous with excellence in turnkey EPC projects within the South African Power Industry. Our in-house design capability and a "can-do" culture enable us to successfully execute even the most complex projects.

3. CITY OF CAPE TOWN ATLANTIS PV PROJECT

Lesedi is the **lead EPC Contractor** responsible for the complete design, engineering, procurement, construction, testing, commissioning, and initial operation & maintenance of a 7.7 MWp ground-mounted photovoltaic facility within the City of Cape Town's Atlantis municipal boundary. The works will be delivered to stringent municipal, national, and international standards, integrating seamlessly with the client's existing 33 kV network.

THE SCOPE INCLUDES:

Regulatory and Compliance:

- Securing all applicable regulatory permits and licenses, including NERSA, SSEG approval, and environmental compliance under the National Environmental Management Act (NEMA).
- Execution in full compliance with SANS, NRS 097, and IEC 62446 standards.

Engineering and Design:

- Grid connection and integration studies.
- Detailed engineering of PV arrays, DC/AC conversion systems, and plant SCADA integration.
- Complete design of the onsite switching station for 33 kV interconnection to Dassenberg Substation Wesfleur, Atlantis.
- BESS (Battery Energy Storage System) readiness and provision for future capacity expansion to 10 MWac with minimal civil or electrical rework.

Procurement and Logistics:

- International and local procurement of Tier-1 PV modules, string inverters, step-up transformers, switchgear, protection relays, and control systems.
- Management of containerised shipments, customs clearance, and quality inspections at manufacturing sites.

Local to site Community involvement and Integration:

- Local community supplier evaluation
- Local community supplier development
- Local community skills development

Civil and Structural Works:

- Site clearance, earthworks, grading, and drainage design.
- Road construction, perimeter fencing, and security systems installation. Structural mounting systems for PV panels designed for local wind and seismic conditions.

Electrical and Grid Integration:

- DC cabling, combiner boxes, inverters, transformers, and MV/HV interconnection.
- Design, installation, and commissioning of the 33 kV grid connection infrastructure (subject to final scope confirmation with client).
- Full grid code compliance assessment, power quality testing, and compensation equipment provisioning as required.

Testing and Commissioning:

- Cold and hot commissioning of PV plant and grid interconnection systems.
- Performance ratio validation, insulation resistance testing, and protection relay verification.
- Operation, Maintenance and Handover
- 18-month O&M period with skills transfer and training for the client's operations staff.
- Defects liability period of 24 months from practical completion.
- Preparation of a decommissioning plan, inclusive of salvage value calculations.

Utility-Scale Classification

- Grid-connected 33 kV high-voltage infrastructure.
- Capacity of 7 MWac, with future expansion capability to 10 MWac.
- Land footprint supporting multi-MW generation and export directly into the municipal distribution network.
- Integration into the City of Cape Town's energy security strategy, reducing reliance on Eskom supply.



NEWS COVERAGE HIGHLIGHTS

Construction begins on SA's first City-run solar PV plant in Atlantis

Announced the sod-turning ceremony for the R200 million project, with Mayor Geordin Hill-Lewis and Energy Mayco member Xanthea Limberg. First utility-scale, metro-owned renewable project in South Africa. Construction expected to take about a year, with first power late 2025. Tender for a 5 MW / 8 MWh BESS issued.

Link: <https://www.atlantispv.co.za/news/construction-begins-on-sas-first-city-run-solar-pv-plant-in-atlantis/>

Cape Town's R200m Atlantis solar plant takes shape

Construction progress reached one-sixth completion, with 2,400 of 12,800 panels installed. Co-located 8 MW BESS planned. Aligns with municipal goals for energy security and carbon reduction.

Link: <https://www.itweb.co.za/article/cape-towns-r200m-atlantis-solar-plant-takes-shape/8OKdWMDXaN1MbznQ>

Cape Town's Atlantis solar plant: A groundbreaking step towards renewable energy

Hybrid system including BESS will enhance grid stability, meet 35% energy demand by 2030, and advance net-zero building goals.

Link: <https://iol.co.za/news/energy/2025-06-06-cape-towns-atlantis-solar-plant-a-groundbreaking-step-towards-renewable-energy/>



4. UNIPACKFRUIT - SOLAR PV ROOF PANEL INSTALLATICITY OF CAPE TOWN ATLANTIS PV PROJECT

Lesedi executed a **580 kWp (DC) rooftop solar PV system** installed at Unipackfruit's facilities in Ashton, Western Cape. The project is delivered under a Lump Sum Turnkey (LSTK) EPC contract, with Lesedi responsible for design, procurement, installation, and commissioning, as well as support for permitting and compliance with municipal regulations.

Regulatory and Permitting:

- Assistance with municipal permitting registration and connection applications.
- Statutory approvals support and applications.
- Grid connection facilitation and compliance studies.

Design and Engineering:

- Complete PV system design including rooftop layout using aluminium mounting systems (AXE or similar).
- Structural roof assessments for additional load capacity.
- Integration design with diesel engine controllers for parallel operation during load shedding.
- Detailed Single Line Diagrams (SLD), datasheets, manuals, and engineering documentation.

Procurement and Equipment Supply:

- 1,025 x 565 Wp Tier 1 JA Solar high-efficiency poly-silicon modules.
- DC combiner boxes.
- x Huawei SUN2000-100KTL grid-tied inverters.
- Smartlogger3000A01 EU Solar Smart Monitor.
- Anti-islanding, earthing, overload protection, surge protection, and bypass panels.
- Connection points for fall arrest systems.
- 25 additional PV modules for spares.



Installation and Construction:

- Rooftop PV structure installation.
- DC and AC cabling works.
- Inverter installation near PV arrays.
- Parallel operation setup with existing diesel generators.
- Net metering or export capability integration.

Testing, Commissioning & Handover:

- Cold and hot commissioning of the solar PV system.
- Grid compliance testing.
- Quality of supply assessment.
- Handover of engineering documentation and manuals.

Operation and Maintenance:

- O&M service contract
- Monitoring via inverter software and Smartlogger.
- Fuel saving optimization during load shedding via diesel generator integration.

Utility-Scale Classification:

While primarily a rooftop commercial installation, the project integrates advanced grid-tied and export capabilities, enabling participation in **municipal energy offset schemes**. The system's capacity, grid compliance, and unique operational complexity make it a strategic renewable energy investment with measurable carbon footprint reduction benefits.

Performance:

- Expected annual yield: Approx. 903 MWh.
- Carbon footprint reduction aligned with Section 12B tax incentives.





5. NEWINBOSCH ENERGY- GRID-TIED POWER SUPPLY FOR NEWINBOSCH

Lesedi is appointed to **design, procure, construct, install, test, commission**, and **remedy defects** for a grid-tied power supply system (PSS) serving the Newinbosch Neighbourhood Estate in Stellenbosch. The bespoke PSS integrates solar PV, battery energy storage (BESS), diesel generation, metering, and ancillary systems, operating as an independent power utility to supply electricity to the estate via its internal distribution network. This relatively The initial project is 5MW in capacity and will grow as the Estate expands, hence the current design allows scaling and the Grid connection capacities are designed for > 5MW.

THE SCOPE INCLUDES:

Design and Engineering

- Complete detailed design of PV generation system, BESS, diesel generation, metering, and ancillary equipment.
- Integration of energy management systems, grid impact studies, and compliance with NERSA, Codes, and SANS standards.
- Design in accordance with Employer's Requirements for multi-phase delivery across four stages aligned with estate construction.

Procurement and Logistics

- Supply of PV panels, inverters, transformers, BESS units, switchgear, and control systems from approved vendors.
- Coordination with Employer Supplied Plant where applicable, with handling, installation, and integration into the PSS.

Construction and Installation

- Site preparation, civil works, equipment foundations, cabling, and mechanical assembly.
- Installation of PV arrays, BESS systems, diesel generators, metering equipment, and electrical interconnections.
- Compliance with health, safety, and environmental standards, including the Employer's ESMS.

Testing and Commissioning

- Cold and hot commissioning of all systems.
- Functional, performance ratio, availability, and capacity tests for PV and BESS as per Employer's test procedures.
- Grid compliance verification and connection to the 11 kV three-phase AC network.

Operations and Maintenance

- Defects monitoring and remediation.
- O&M contract for long-term operations.

Handover and Documentation

- Delivery of as-built drawings, operation and maintenance manuals, warranties, spare parts, and training for Employer's personnel.
- Final performance certification following successful completion of all obligations.

NEWS COVERAGE HIGHLIGHTS

Construction begins on SA's first City-run solar PV plant in Atlantis

Link: RELEASE: New residential energy micro-grid for Stellenbosch development - SAPVIA

Link: <https://newinbosch.co.za/energy-info/>



6. ARCELOR MITTAL SOUTH AFRICA 200MW FEASIBILITY STUDY

This project is for the **professional services** relating to **development activities** required for wind projects at AMSA's Saldanha site and solar PV project at AMSA's site at Vanderbijlpark, South Africa.

7. OPERATION AND MAINTENANCE OF NGODWANA ENERGY

The **Ngodwana Energy plant** is a 25MW biomass facility located at the Sappi Ngodwana pulp mill. It's a key project under South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), generating clean, renewable energy for the national grid.

Lesedi, in a joint venture with ACTOM, has a five-year operation and maintenance contract for the Ngodwana Energy biomass power plant.

THE SCOPE INCLUDES:

The joint venture is responsible for the operation and maintenance of the entire plant, which includes the boiler, turbine, and balance of plant. The Joint Venture has also been involved in modifications to ensure that the plant fulfils its design potential.

Recruitment and Training:

- The JV is also responsible for recruiting and training a team of approximately 40 electrical and mechanical artisans and other staff to perform the operation and maintenance work

8. OTHER EXPERIENCES IN THE POWER SECTOR

Lesedi's execution of **large-scale power projects** demonstrates the capability to deliver complex, high-voltage, multi-discipline works:

- **Medupi Power Station** - Low Pressure Services -EPC (water, compressed air, fuel systems).
- **Matla Power Station** - ESP Refurbishments - EPC (emissions control).
- **Kriel High Frequency Power Supplies** - EPC (84 units installed).
- **OCGT Balance of Plant** - Ankerlig Peaking Station (multi-hundred-MW plants with full HV integration).
- **OCGT Balance of Plant** - Gourikwa Peaking Station (multi-hundred-MW plants with full HV integration).
- **Ankerlig Koeberg Second Supply** - EPC 105MW capacity with full HV integration

9. OTHER INITIATIVES THE SOLAR POWER SECTOR

Lesedi's has collaborated with a **large Chinese Equipment manufacturer** and **supplier TBEA (China)**. TBEA has vast experience in the renewable energy sector and will provide support on this project.

Link: <https://www.tbea.com/tbea/en/index.html>



10. CONCLUSION

Lesedi offers a **low-risk, technically robust, and financially credible EPC partner** for large-scale renewable energy developments. Our combined experience in nuclear-grade safety and large power-system integration positions Lesedi to deliver bankable projects that support South Africa's energy transition.



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