



Energy Independence For Your Business

Our Process and Methodology

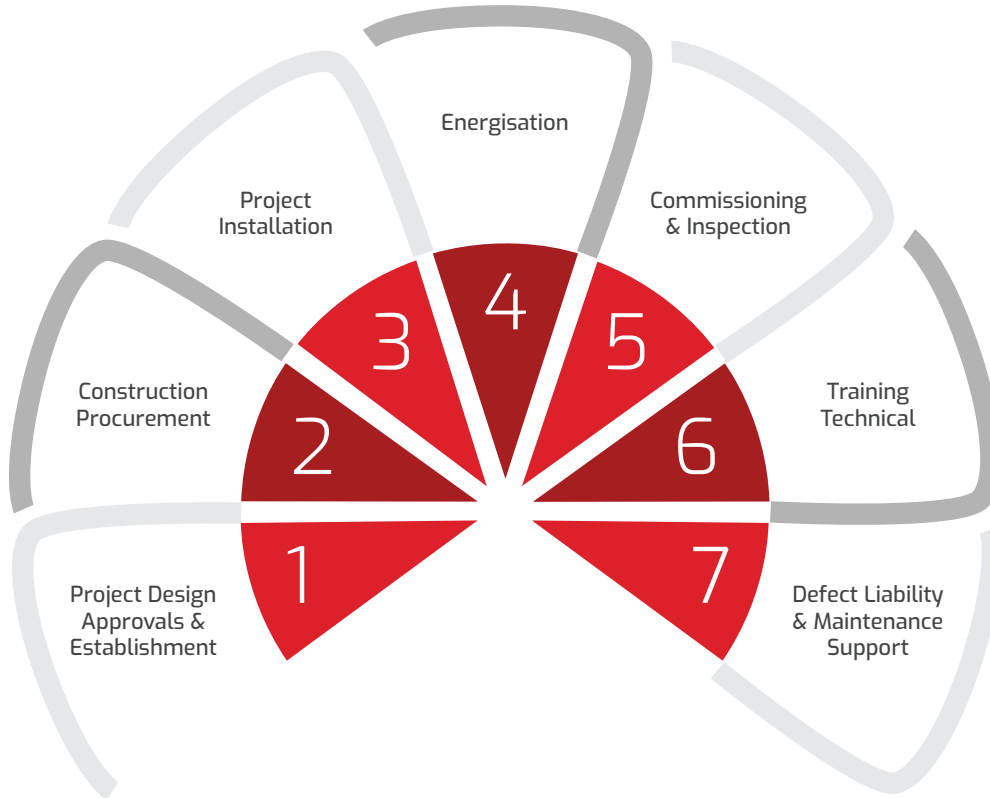


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Kuga Electrical has the proven technical experience and financial capability to provide the requisite equipment, materials, technical resources & supply chain facilities to deliver innovative Solar Solutions.

I. Project Design and Establishment Phase



Kuga Australia conducts desktop analysis based on aerial mapping; information provided from Tender documents duly identifying the core characteristics of the site:

- Required PV capacity.
- Site location, Structural drawings, electrical layout and roof power plans.
- Technical specification and suitability of selected technical products.
- Local Environmental factors and statutory requirements.

Design and Engineering solution:

- Detailed design after energy yield assessment - Kuga's CEC-accredited designers will review the Mechanical and Electrical design and location- Our preliminary design layout solution as per site factors, tender specifications, CEC guidelines, AS/NZS standards /best industry practices.
- Procurement- Initiate procurement process duly identifying the lead time of products- Panels, inverters, mounting, Electrical components & wiring as per the technical specification.
- Utility pre- approval application submitted to relevant DNSP for Grid connection.
- Structural Engineering Review- Review design after structural assessment to ensure that the facility is able to support the necessary loads from PV system.
- WHS documentation prepared & submitted- Prepare Risk assessment, submit Construction management Plan, OHS documents for client approval along with traffic management plans.
- SWMS & JSEA
- After receiving client approval and prior communication to the relevant stakeholders, the commencement of work takes place.
- Full Project Execution Plan (PEP) and stakeholder consultation.
- Confirmation for commencement-Site inductions.

II. Project Construction and Installation Phase



All electrical site work including the installation of solar PV panels and inverters shall be done by electricians licensed to ensure compliance with building regulations. All installations are performed by CEC accredited installers and are compliant with all relevant standards like of AS/NZS 3000, AS/NZS 5033, Ergon (DNSP)'s requirements, product manufacturer requirements and Tender requirements.

This phase consists of following steps:

On-site amenities-Traffic Management, appropriate signage against public access.

Site preparation for Rooftop

- Prepare agreed upon site for EWP to transport material.
- Install temporary Edge protection at the edges of the building.
- Prepare lay-down area, including timber bearers.
- Mark out temporary construction walkway (if required).

Material allocation

- Utilise access equipment to lift framing, modules and inverters to the roof.
- Transport all relevant equipment to the inverter rooms.

Installation of framing & panel placement

- Set out framing feet locations.
- Install & level rails to be flush mounted on the roof.
- Affix modules onto the framing system.

Inverter connection & electrical works

- Electrical connectivity of PV panels, string cabling mechanically protected & string termination.
- Supply, install and commission PV inverter station and SDB
- Connections to Secondary Network protection/relays, AC and DC switchgear.
- Connectivity of PV system to Main Switchboard (MSB) / PVDB.
- Monitoring System with Wi-Fi setup for web interface
- Mark out and install walkways (if required)
- QC testing /Power quality/injection testing/certified on completion.

- The secondary protection systems, lighting and surge protections are provided as per standards for Electrical Safety of systems.
- The Solar PV monitoring system with WIFI capability to export data for live monitoring will be integrated after testing of the system.
- SCADA communications /EG Backup control systems

III. Testing, Integration, Commissioning and Grid Synchronisation

Kuga will liaise with DNSP's for obtaining approval for grid Connection and commissioning of the solar PV system with grid protections and Prior Notifications of any disruption/ shutdown and normal operation of the facility is ensured.

Site Commissioning Process Summary: During Commissioning, QC inspection is carried to verify the installations as per the approved drawings/contract requirements duly following the M&V methodology.



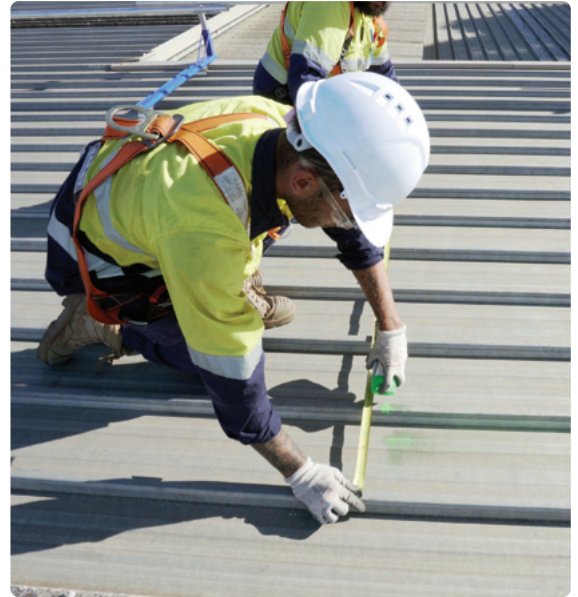
III. Acceptance, Training, Handover

Acceptance includes following steps:

- Attend if any rectification works as per requirement.
- Completion of site records and paperwork.

Training on-site: Following project completion and system energisation, Kuga Electrical will provide appropriate training to the nominated facility representative to cover system operation, monitoring, and maintenance requirements.

- Provide safety shutdown procedure documentation and training in the basic operations, maintenance, and troubleshooting of the system to on-site staff and maintenance staff



Handover documentations include:

- ✓ As built documentation submission.
- ✓ Component locations and serial numbers
- ✓ Complete O&M manual.
- ✓ Structural Engineering and Electrical Safety Reports
- ✓ Power Quality/Injecting Test Reports
- ✓ Safety shut down procedure operation manuals.
- ✓ Product datasheets and Workmanship Warranties
- ✓ Grid connection agreements
- ✓ Installation photos
- ✓ Copy of final testing and commissioning checklists and results



STC Rebate/LGC/VEEC Paperwork

STC Rebate/LGC paperwork can be administered as per Clean Energy Regulator (CER) requirements.

V. Defect Liability and System Performance Checks

We offer workmanship Installation warranty on full installation for 10 years. Also, as per Tender Conditions and System product and performance we maintain and monitor the performance.

Performance Monitoring

To monitor and manage the solar electricity production, our inverters have in built monitoring capabilities with data able to be uploaded via WLAN or LAN connection. Inverter's portal enables web based real time monitoring of the system. The customer is also given login details to monitor system performance and production levels.

This data can be easily integrated into a larger building management system (BMS) and can be downloaded into **.csv or excel format** for deeper analysis. Kuga Electrical' s in-house electricians provide after-installation service, advice and care to manage the system efficiency throughout.

- We have established direct warranty relationships with inverter and panel manufacturers.
- Our engineers will handle any post installation matters like yield enquiries, installation issues, monitoring queries and other warranty and maintenance matters.
- Our customised CRM systems and software infrastructure helps us in handling any customer issues.



Maintenance Services

Kuga Electrical will maintain the system during defect liability period and provides workmanship warranty for 10 years.

Kuga Electrical is able to provide an operation and maintenance service offering, facilitated by our in-house service team to ensure optimal operation of the solar power system.

O & M Plan

Kuga Electrical will provide an annual preventive and equipment maintenance service plan that includes inspections, monitoring/ reporting, system repair, spare parts handling, and warranty administration. The operation and Maintenance is offered separately if required.