

DESIGN CONSULTANT – *ENGINEERING*

RESPONSIBLE FOR DETAILED DESIGN & DEVELOPMENT OF PROJECT, PROVIDING QA/QC, AND ON-SITE PROJECT MANAGEMENT (POST-SALES)

1 ELIGIBILITY TERMS FOR THE DESIGN CONSULTANT:

- List of experienced team
- Strong technical experience and capability
- List of related/similar project execution to be shared:
 - 10-15MW design package to be submitted/one drive link can be provided in case of soft copy for evaluation
 - All the project will be scored based on TORS shared below
- List of different instruments for identification of risks and mitigation strategy
 - Drone imagery
 - PV 300
 - Thermal imagery
- Strong understanding of EPC and O&M contracts
- Understanding on accurate bill of material and costing and how to avoid cost over runs and competitive price to make winning cases.
- All design software licenses to be available in house
- Strong understanding of technical standards

2 CONTRACT WITH SERVICE PROVIDER

2.1 CONTRACT PERIOD TIME

- One Year from the date of contract signing

2.2 PROJECT DELIVERY TIME

50kW-250kW	10 Days
>250kW	10 – 15 Days

2.3 PAYMENT TERMS

- Fixed Per watt Basis for all capacity of projects
- 30 days after submission and approval of design package

3 TORS FOR: DESIGN CONSULTANT – POST-SALES:

3.1 SCOPE OF WORK:

When the project is awarded, following detailed design & engineering, procurement support, project management and testing & commissioning services shall be provided:

SERVICES	DELIVERABLES
SCOPE OF WORKS RFP (INSTALLATION)	• RFP Development for Solar PV Balance of system for Procurement
	• Electrical Scope of Works for Electrical installation Vendor
	• Structural Scope of works for structural installation vendor
	• Civil Scope of works for civil contractor
BASIC DESIGN DETAILS	• General Site Notes
	• Project Scope
	• System Description
	• Location Map
	• Project Directory
	• Applicable Codes and Standards
ARCHITECTURAL DESIGN	• General Abbreviations
	• Overall Site Plan using LIDAR.
	• Array Layout Plan
	• Site Vegetation Plan
	• Site Accessibility Plan
STRUCTURAL DESIGN	• Shading Plan
	• Roof load bearing analysis (NDT)
	• Structural and foundation plan
	• Structure section details
	• Structure integration plan with roofs
	• Seismic consideration in design
ELECTRICAL DESIGN	• Wind speed simulation report
	• Electrical Site Notes
	• Installation Notes
	• Site Safety Plan
	• Stringing Plan
	• DC SLD
	• AC SLD
	• Electrical Site Plan
	• Electrical Specifications
	• Cable Size Calculations DC/AC
	• Earth Pit Design
	• DAS SLD
	• Electrical Details Termination
	• Electrical Details Inverter Placement
	• Electrical Schedules
	• Placards
	• Datasheets
	• Electrical Application and Safety Notes

CIVIL DESIGN	• Weather Station Details
	• Stringing Sheet
	• Grid Interconnection Study
	• Soil erosion and sedimentation control plan
	• Site Fencing Plan (If Applicable)
	• Site Drainage Plan (If Applicable)
	• Inverter RCC Room design (If Applicable)
	• Vegetation Plan (If Applicable)
	• Geotechnical Study / Soil Analysis / Pile Pull out tests*
	• Topography Survey*
ELECTRICAL WORKS	• Low voltage installation (DC cabling, LV panel, AC cable laying, Termination and Commissioning)
PROJECT MANAGEMENT SERVICES	• Cost optimizations too improve margin while maintaining quality in the BOQ. Our entire consultation charges are recuperated by our client, after the saving we propose in the bill of material
	• Installation supervision for quality control. Best installation practices. Involves vendor quality management and scope coverage on site
	• Gantt chart and project progress review meetings.
	• Stakeholder Management against EPC contract
TESTING & COMMISSIONING REPORT	• Performance Ratio Test Report, Post Installation Audit and Inspection. Asset Performance Enhancement Activities and Tweaks. Specialized tools and equipment are used which is in EPC scope
	• IV Curve Tracing to determine string health and fill factor
	• Thermal Imaging via drones to identify broken modules and hotspots.
	• Thermal Imaging of LV panels
	• Solar PV plant efficiency test
	• Insulation resistance tests - Meggering on DC side.
	• Earthing pit resistance tests
	• Inverter efficiency tests. Solar PV plant tests
	• EL Testing on site for damaged modules
	• DC side grounding continuity check and leakage current checks
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	• Structure nut/bolts torqueing tests
	• Structure, LV panel and cable tray galvanization checks using elcometer
	• EPI and PPI Tests
SOLAR - GAS/DIESEL INTEGRATION STUDY	• Shall be part of scope for C&I projects where required

**O&M PLAN &
TRAINING**

- Asset Management Training
 - Project Specific O&M Plan
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- *Geotechnical study, Topography Study, and ***Solar - gas/diesel integration study*** shall be part of scope for all the C&I projects and shall be inclusive in project cost.

3.2 PRICE TO BE QUOTED AND LOCKED FOR FUTURE INVOICING:

1. Roof load-bearing - NDT
2. Geotechnical study cost for ground mounted projects
3. Topography Study cost for ground mounted projects