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A Mini Ratna Company

TENDER DOCUMENT

FOR
DESIGN, SUPPLY, ERECTION, COMMISSIONING
AND TESTING
OF
GRID CONNECTED 1.02MWp SOLAR POWER PLANT
HAVING FIVE YEARS O&M
FOR
CENTRAL COALFIELDS LIMITED, RANCHI

AT

BARKASAYAL AREA, CENTRAL HOSPITAL, RAMGARH AND CENTRAL WORKSHOP, BARKAKANA

VOLUME – II

[TECHNICAL]

JANUARY, 2023

Central Mine Planning and Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)
Gondwana Place, Kanke Road,
Ranchi - 834031 (Jharkhand)

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PROJECT SUMMARISED DATA

Sl. No.	Particulars	Description
A) Roof Top Solar Power Plant- 930kWp (Mono Crystalline)		
1.	Barka-Sayal Area ((5 nos. of Building)	378 kWp
2.	Ramgarh Area (4 nos. of Building)	394 kWp
3.	Barkakana CWS (2 nos. of Building)	88 kWp
B) Solar Power Plant- 160kWp Mono Crystalline (Ground Mounted)		
1.	Mine Rescue Station, Ramgarh	160kWp
C) General for Both Locations		
1.	Aggregate Plant Capacity (Nominal/system Power (DC)	1020kWp (Min)
2.	PV Module (Min.)	535 Wp, Mono Crystalline
3.	Plant Life	25 Years
4.	Comprehensive Operation and Maintenance of Plant	5 Years
5.	Power Feeding Point	Local Distribution Switchboard of the respective building

CHAPTER-I

INTRODUCTION

1.1 GENERAL

Central Coal Limited (CCL) has a number of projects which are spread in the state of Jharkhand. Geological Coal Reserves in CCL command area are up to 300m & above depth. For administrative purpose there are seven operating coalfields in the command area of CCL. The company operates around 62 coal projects which include underground and opencast mine. Out of 62 operative mines around 40 mines are opencast mine and remaining UG mines. Additionally, 7 coal washeries, (5 Coking Coal and 2 Non-Coking Coal washeries) are running under administrative control of CCL.

To supply power to various projects and other power consuming centers of the project, a number of substations have been installed. Most of these substations receive power from DVC. Total contract demand of CCL is around 152MVA.

1.2 Grid connected solar power plant

A solar photovoltaic (PV) system is a renewable energy power generation technology that uses photovoltaic modules to generate electricity directly from solar radiation, using a phenomenon called the photovoltaic effect. The electricity generated can be stored, used directly, or fed back into grid. Solar PV is a reliable and clean source of electricity that can suit a wide range of power generation applications for residential, industrial, agricultural, etc. consumers. Some common applications include solar generation for captive consumption, power sale and savings in electricity costs.

A grid-connected solar power plant refers to a solar PV system that is connected to the local distribution grid. It is a form of distributed power generation. This system includes different components that are selected depending on the system type, site location and application. Generally, components of this system comprise PV modules, mounting structures, inverter, transformers and miscellaneous items like meters, junction box, cables, etc.

A grid-connected solar PV system has following main features:

- Electricity generation during daytime
- Low maintenance requirement
- Simple installation
- Easy scalability
- Robustness
- Low investment compared to stand alone system with battery backup.

1.3 Roof Top Solar Power Plant

Roof top solar installation along with its operation & maintenance (O&M) as mentioned at various locations in the tender document shall be as per MNRE Latest guideline and circular **No.: 318/38/2018-GCRT dated 18/08/2021** and subsequent amendment/changes time to time**.**

Grid tied SPV system shall be without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

1.4 Location and Connectivity

1.4.1 The following buildings have been identified for installation of Rooftop Solar Power Plant in the command area of CCL. The aggregate rooftop solar installation capacity for eleven locations (as mentioned below) is 0.86MWp.

i. P.O. office, Urimari OCP, Barkasayal Area
ii. P.O. office, Birsa OCP, Barkasayal Area
iii. D.A.V School, Urimari, Barkasayal Area
iv. Executive Hostel, Urimari, Barkasayal Area
v. AKC Hospital, Bhurkunda, Barkasayal Area
vi. Executive Hostel, CWS, Barkakana
vii. Regional Store, CWS, Barkakana
viii. MRS Office building, MRS, CCL
ix. Water Treatment Plant, MRS, CCL
x. Old Building, Central Hospital, Naisarai, Ramgarh
xi. Surgical Block, Central Hospital, Naisarai, Ramgarh

1.4.2 The sites identified for installation of ground mounted solar power plant is given below:

i. Behind Community Hall, Mine Rescue Station (MRS), Ramgarh
ii. Back-side of the guest house, MRS Ramgarh
iii. Near Switch room, MRS, Ramgarh

As mentioned above, ground mounted solar installation capacity for all the three locations is 0.16MWp. The total installed capacity for solar power installation (rooftop and ground mounted) will be 1.02 MWp.

The proposed sites for commissioning of solar power plant are almost shadow free. However, in some locations, if tree trimming required, it shall be in the Bidder's Scope. Tree cutting/trimming permission, if required, shall be in the scope of CCL.