Carbonated Brick Plant (2 Lakh per Day Capacity) at NTPC Ramagundam

A. Project Information

A.1. General:

1. Netra (R&D Wing of NTPC Ltd) is engaged in the development, deployment and demonstration of various carbon capture & utilization (CCU) technologies. Upon actualization, these technologies would not only help to mitigate CO2 emission in the atmosphere, but would also potentially convert CO2 into useful hydrocarbons, fuel, chemicals, building material etc.
2. In this project, NTPC intends to capture CO2 from waste flue gas of coal fired power plant and use it with Fly ash to produce 'Carbonated Brick' (C-Brick).
3. This package shall be installed at NTPC Ramagundam, Telangana. World Geodetic System (EWHGS-84) coordinates of the project site is Lattitude: 18.755N and Longitude: 79.477E. The nearest major railway station and airport is at Ramagundam, and Hyderabad respectively located at a distance of approximately 8 KM and 260 kms respectively from the project site.

A.2. Project Outline:

1. This 'C-Brick' Plant comprises of following blocks:
    i. CO2 Capture, Compression and Storage Block,
    ii. C-Brick Manufacturing Block,
2. The 'CO2 Capture, Compression, and Storage Block' and the 'C-Brick Manufacturing Block' will be established on distinct land parcels, designated as Area-A and Area-B respectively, as depicted in the Plot Plan. Despite their interconnected nature, where captured CO2 from Area-A will be supplied to the 'C-Brick Manufacturing Block' in Area-B, their geographical separation requires each block to operate autonomously. Therefore, each block is planned to include its own Control Room, PLC, and Electrical MCC etc. The approximate distance between Area-A and Area-B is 1 KM.
3. Comprehensive O&M for a period of 1 year from the date of commissioning.
4. Provide all raw material (viz lime etc) required for plant commissioning and O&M. NTPC shall provide Raw material (viz Fly Ash) and Utilities (viz electricity, water, steam etc) at designated terminal points free of cost. Arrangement for handling of raw material from NTPC's terminal point to the site shall be in the scope of bidder.

A.3. Scope of Work:

1. Bidder's scope shall include Design, Engineering, Procurement, Fabrication,

Packing, Forwarding, Supply, Transportation and handling, Custom duty (and any other duties), Freight, Insurance, Loading & Unloading, Storage, Construction, Erection, Commissioning, Testing, PG Test, Training and O&M of this plant - in line with the specifications provided in this document. All supporting items required for successful commissioning and operation of this project shall be provided by the bidder.

2. Bidder shall carry out, civil, mechanical, electrical, and C&I erection - including interconnection with existing system and conduct of all quality test (Field/Lab).
3. The project shall be executed through a dedicated, well qualified and experienced team. The bidder shall also implement proper MIS for effective monitoring & management of the project.
4. Bidder shall submit all engineering drawing and documents including (i) Drawings pertaining to civil, mechanical, electrical and C&I etc, (ii) All calculations for civil & structural analysis, mechanical, electrical and C&I system, (iii) Datasheets, (iv) Manufacturing & Field Quality Plan and its compliance, Calibration & Test certificates (v) List of BOQ/BBU, Startup & Commissioning spares & consumables. All documents provided by the bidder, depending on its category indicated in the MDL (master drawing / document list), shall be approved by NTPC.
5. The Bidder shall obtain approval of manufacturer/ sub vendors for all equipment required in the package from NTPC.
6. In addition to the codes and standards specifically mentioned in the relevant technical specifications for the equipment / plant / system, all equipment parts, systems and works covered under this specification shall comply with all currently applicable statutory regulations and safety codes of the Republic of India.
7. All utilities shall be tapped from the terminal point(s) mentioned in this document / identified by NTPC. It shall be the responsibility of bidder to correctly design the 'interfacing system' and provide for all required material and service towards the aforesaid purpose.
8. As required and with express approval of NTPC, dismantling / demolition of existing structure at site earmarked as Area-A (CO_2 Capture, Compression, and Storage Block) and Area-B (C-Brick Manufacturing Block) alongside area clearance, transport and handing over of dismantled material to NTPC (within plant premises), site levelling and grading, cleaning of vegetation (including statutory clearance, if required) shall be in the scope of bidder.
9. Bidder shall provide new pipe rack for this project. However, with appropriate design, bidder can consider common rack for 'Flue Gas Duct', 'Steam Pipe' and 'Water Pipes' (DM, SW, Fire Water etc). Wherever existing pipe rack is used, it shall be the responsibility of bidder to adequately strengthen it and provide supporting analysis / calculations based on 'on site condition'.
10. 3D Miniature Moving Model of the C-Brick Plant (including both C-Brick & CO_2

Capture Plant) of 8 ft X 4ft X 2.5 ft size approximately. The different items/objects as depicted in Process Flow Diagram should be adequately spread out and clearly identified in the 3D Model. Maximum details have to be provided in the Model as possible according to scale as per the Layout Drawing including a) CO2 DCC, Absorber, Stripper, Flyash & Lime Silo's, Autoclave, Hydraulic Press, Working Conveyor's and Crushing Section etc. b) Detailed process flow with LED lighting, c) Roads and Landscapes, d) LED circuit system which shows the flows and animation in pipelines and conveyors, e) Covering complete Plant Structure of Plant Layout. The 3D model should be mounted on the Wooden (Kail) base and on castor wheels and their should be provision for safe handling of model. 3D Model should be enclosed by Transparent Glass Covering from all sides including top. This 3D Miniature Moving Model shall be delivered by the bidder at Netra or any location suggested by Netra with 3 months of award of this contract.

11. Before submitting bid, the bidder is advised to inspect and examine the site and its surroundings and should satisfy himself the quantities and nature of work, materials necessary for completion of the work and their availability, means of access to site and enable himself to prepare bid and see site conditions of operation at his own cost. No consequent extra claims on any misunderstanding or otherwise shall be allowed by the NTPC.
12. First fill of all item (including process fluid, consumable etc), up to the maximum level in respective storage tanks / vessel and subsequent topping till the successful completion of commissioning of the plant.
13. The guarantee / warranty of all equipment shall be provided to NTPC as per manufacturer provisions or as per contract, whichever is more.
14. Performance Guarantee tests shall be conducted after completion of initial continuous trial operation. Bidder shall supply calibrated instruments, T&P, manpower, and all necessary requirements including raw materials for conducting PG Test etc.
15. The bidder shall be responsible for insurance of the facilities until the handing over of the facilities to the owner. Bidder shall also be responsible for insurance of his personnel working at the Site, equipment, and materials.
16. Bidder shall arrange for the 'labor permit' till the completion of the project.
17. Separate Safety officer and personal protective equipment for all working personnel, as per the requirement of NTPC, shall be finalized prior to the commencement of field work.
18. Compliance of all statutory regulations shall be in the scope of bidder. 'Consent to Establish', 'Consent to Operate', Forrest Clearance, EIA, QRA etc (as required) shall also be obtained by the bidder. However, all necessary documents required for obtaining the clearance shall be provided by NTPC.
19. Training (Minimum 14 days) for control room & field operation of plant.