



ANNEXURE - 1

SCOPE OF WORK FOR MAN POWER RATE CONTRACT (PART A)

The Scope of Work/facilities under this Contract broadly covers "Providing complete commissioning assistance for Ash Handling Plant & HCSD System for Unit no. 3 & 4 of OPGC II till COD.

Detailed scope of work:

Scope of work is as specified below & for providing complete Assistance in commissioning activities of AHP & HCSD System.

A) Bottom Ash System (Bottom Ash Hopper, Clinker Grinder and Eco System)

1. Bottom Ash Hopper

- a. Assistance in filling of Bottom ash hopper and seal trough.
- b. Assistance in attending leakages through hoppers, seal trough and clinker grinders during commissioning activities.
- c. Assistance in operation of Clinker grinder and feed gate.
- d. Assistance in opening discharge valves during commissioning activity.
- e. Assistance in feed gate opening checks, servicing as when needed or instructed by EIC during commissioning activities.
- f. Assistance in choke clearing in clinker grinder and jetting pump.
- g. Assistance in gland leakage attending work.
- h. Assistance in checking blade gap with casing.
- i. Assistance in doing alignment of motor, fluid coupling and gearbox of clinker grinder.
- j. Assistance in cleaning of ejector and cooling nozzle.
- k. Assistance in filling and checking oil level in fluid coupling, gearbox and air oil convertor tank.
- l. Assistance in operation of overflow drain sump pump and monitoring sump level.
- m. Assistance in choke clearing of flushing apparatus.
- n. Assistance in attending leakages through discharge line.
- o. Assistance in nozzle cleaning and servicing as and when required or instructed by EIC during commissioning activity.
- p. Insulation/refractory removal if required as per instructions of EIC.
- q. Assistance in Punch points preparation

2. Ash Slurry Pump Series

- a. Assistance in Operation of ash slurry pump during commissioning activities.
- b. Assistance in attending leakages in discharge line during commissioning activities.
- c. Assistance in manual scoop setting of fluid coupling.
- d. Assistance in filling and checking oil level in gearbox and fluid coupling.
- e. Assistance in oil cooler checks or servicing as when required or instructed by EIC during commissioning activities.

- f. Assistance in opening valves and selection of proper discharge series.
- g. Assistance in ash slurry sump level monitoring.
- h. Assistance in alignment of motor, fluid coupling, gearbox and pump.
- i. Assistance in choke clearing in pump.
- j. Assistance in bolt tightness checking of sleeve coupling and changing gasket and rubber ring etc, as instructed by EIC.
- k. Assistance in all gates operation checking and clearing ash slurry sump choke up during commissioning activities.
- l. Assistance in strainer cleaning and V-belt replacement.
- m. Assistance in changing discharge point during commissioning activities.
- n. Assistance in Punch points preparation

3. Dry Ash Evacuation System

- a. Assistance in Vacuum pump operation during commission activities.
- b. Assistance in monitoring proper vacuum setting for smooth ash evacuation during commissioning activity.
- c. Assistance in checking and attending leakages through Fluidising pads, conveying lines and bag filter during commissioning activities
- d. Assistance in operation of all KGV, dome valve, dump valve, relief valves.
- e. Assistance in inspection of bag filter and servicing as and when required or instructed by EIC.
- f. Assistance in air vessel chokes clearing during commissioning activity.
- g. Assistance in dome seal replacement and maintain required air pressure for smooth ash evacuation during commissioning activity.
- h. Assistance in ash unloading through telescopic spout.
- i. Assistance in Punch points preparation

4. Compressor & Blowers

- a. Assistance in monitoring and setting parameters for maintain proper air pressure in compressors and blowers during commissioning activity.
- b. Assistance in attending all cylinders and valves operation checking and limit setting during commissioning activities.
- c. Assistance in attending leakages in air line during commissioning activities.
- d. Assistance in cleaning air filter to maintain required DP.
- e. Assistance in filling and checking oil level in gearbox.
- f. Assistance in strainer cleaning.
- g. Assistance in alignment and tightness checking of coupling bolts.
- h. Assistance in Punch points preparation

5. HCSD System:

- a) Assistance in operating dome valve and assuring proper seal pressure.
- b) Assistance in attending leakages through bellow during commissioning activities.
- c) Assistance in screw feeder and attending defects observed as per instruction of EIC.
- d) Assistance in cleaning spray nozzle in ash conditioner and clearing ash choke up.

- e) Inspection of ART tank like blades bolt tightness inspection, gearbox oil seals inspection, scrap removal inside tank during commissioning activity.
- f) Assistance in cleaning Vertical suction strainer and attending leakages as and when required as per instruction of EIC.
- g) Assistance in filling and checking oil level in all gearboxes, GEHO pump.
- h) Assistance in opening GEHO pump diaphragm and NRV's along with its internals for inspection and servicing during commissioning activity.
- i) Assistance in attending leakages in discharge line.
- j) Assistance in checking ash slurry concentration at discharge point at ash dyke.
- k) Assistance in inspection of vent filters and bag replacement as and when required as per instruction of EIC.
- l) Assistance in parameters setting of GEHO pump during commissioning activity.
- m) Fabrication & erection of platform, ladder, stair case, hand rail, toe guard etc. as per requirement
- n) Any other work connected with the above job but not specifically mentioned in the scope of work & which is required for job completion shall be in the scope of contractor.
- o) Assistance in punch points preparation

6. Water Pumps, Drain Pumps, Sludge Pumps, Dosing Pump and Clarifier.

- a. Assistance in commissioning of water pumps installed inside ahp pump house – alignment/ attending gland leakages/ gland tightening/flange leakages/valve opening and line flushing.
- b. Assistance in commissioning of Drain pumps – attending flange leakages, attending impeller jamming /coupling bolt tightness/ alignment/valve opening & servicing/line leakages and flushing, etc.
- c. Assistance in commissioning of Sludge pumps – sludge sump ash chocking clearing/pump impeller freeness checking/ sump nozzle cleaning/ pump coupling bolt tightness/ alignment checking/attending line leakages.
- d. Assistance in commissioning of Dosing pumps and tank – cleaning tank/attending flange leakages/ free agitator movement/checking pump alignment / valve opening/coupling bolt tightness checking/line flushing.
- e. Assistance in commissioning of Clariflocculator system – inspection and checking movement of clarifier bridge traction drive/checking Flocculator freeness / V-Belt replacement/checking oil level in gearbox/flash mixer commissioning /attending line and flange leakages/valve opening/ Choke clearing of input and output line of clarifier as per instruction of EIC.
- f. Providing lighting arrangements wherever required as per instructions of EIC..
- g. Insulation removal wherever required as per instructions of EIC.
- h. Painting of area limited to the routine works.
- i. Fabrication & erection of platform, ladder, stair case, hand rail, toe guard etc. as per requirement.
- j. Any other work connected with the above job but not specifically mentioned in the scope of work & which is required for job completion shall be in the scope of contractor.

7. Misc. Works

- a. Assistance in Inspection /repair/load test of EOT cranes, electrically operated hoists, manual operating hoist etc.
- b. Any work related to compressed air system including instruments air system, service air system, mill reject compressor drier, receiver tanks and associated valves & piping.
- c. Punch points attending/Modification/ Fabrication of hand railings, platforms & approaches wherever required.
- d. Repairing, rectification, servicing and break down maintenance of all sump, water & slurry pumps
- e. Contractor shall provide assistance for commissioning activity of electrical and C&I department which involves mechanical related works like coupling & decoupling, alignments, removal & fixing of actuators, welding of impulse line etc.
- f. Housekeeping after every job shall be ensured by the contractor.
- g. Contractor has to make any special fixture or arrangement if requires to carry out any repair work.
- h. Contractor shall carry out necessary scaffolding erection/dismantling work and other temporary approach platform as per site requirement. Scaffolding material shall be in the scope of contractor.
- i. Shifting of all spares, material, tool & tackles from owners store to site shall be in contractor's scope.
- j. Shifting of all metal/non-metal scrap and used oil to scrap yard after completion of work shall be ensured by contractor. Tractor shall be in the scope of the contractor
- k. The Contractor has to provide full assistance to Owner for reverse engineering of equipment/components installed/ available at the Owner's plant, by identifying the components, taking dimensions etc. as per the direction of the Owner's EIC. The Contractor shall carry out the reverse engineering activity as per the directions of the Owner's EIC, whenever equipment is disassembled, for stand by equipment for all components/ equipment available at plant & plant stores.

Note: Scope of work as specified above is not exhaustive. Any other work required for successful commissioning of Ash Handling Plant & HCSD System but not specifically mentioned in the scope of work shall be in the scope of contractor.