

## R&M of Boiler auxiliaries and related Boiler works for Unit-I of Ramagundam STPS STAGE-1 (3X200MW)

### **SALIENT TECHNICAL FEATURES**

Ramagundam stage-1 steam generators are natural circulation, dry bottom, front wall fired, balanced draft & convective reheat type with direct fired pulverized coal and baffle bypass damper in convection path as primary mode of reheater (RH) temperature control.

The steam generators were designed for Indian coals with heating value of 4300 kcal/kg which over the time has deteriorated and now hovers around 3500 kcal/kg. The boiler now operates with high exit temperature along with higher air leakage values.

NTPC intends to undertake necessary works on the Unit-1 of stage- I steam generators & auxiliaries to correct and improve its performance essentially by replacement of complete air-pre heater, retrofitting of certain items [coal burners and low pressure economizer (LPE)], performance improvement related boiler works along with certain replacements viz. safety valves, spray station valves, spray header & all manhole doors of pass-II etc. and including supply of spares.

It is also intended under the package scope that the boiler cater to steam parameter requirements of uprated turbine (210 MW) which is being undertaken as a separate package.

The scope of the package has been developed to cater to these above requirements.

**Thermal performance test (TPT)** on all the three units is envisaged to map the boiler performance while **thermal modelling** is to be used for boiler performance prediction.

**Related boiler works** to improve and sustain the performance improvement include air & gas tightness test, cold air velocity test (CAVT), boiler roof and economizer hopper refractory replacement, duct refurbishment, insulation replacement and replacement of boiler 2<sup>nd</sup> pass skin casing etc.

**Air- pre heater (APH)** performance improvement shall be achieved by proven methodology, inter alia, towards the objective of achieving the specified minimum total flue gas temperature reduction at the exit of the steam generator by way of replacement of air-preheaters and regulation of rotational speed to optimum etc. Performance correction through improvement in air flow is expected. Accordingly, minimization of boiler leakages is one key focus. Further, to augment heat pickup in the APH, installation of **Low-pressure economizer (LPE)** in the flue gas duct after APH is included.

**Coal burners' replacement** is included for the specified requirement of coal and NO<sub>x</sub> values.

Motor replacement and variable frequency drive installation for ID fans is also to be carried out.

The above works will require performance diagnostics for which certain design and performance data for existing equipment is already provided. However, the bidders are also required to visit Ramagundam site, interact with personnel, collect data etc. and carry out their own review & analysis to accurately directionalize their interventions for achieving the boiler performance objectives.

The package performance is envisaged to be evaluated based on reduction in boiler exit temperature (both by APH & LPE) achieved by the bidders for which a range is specified.

Other than above guarantees, certain mandatory and demonstration guarantees are also included while BMCR capacity demonstration is included as part of trial operation.

Necessary & related works & supplies, as specified in technical specifications, for civil, control & instrumentation, electrical and quality control etc. are also included in the package scope.