

## Enhancing O&M efficiency

### – a case study of 3x660 MW supercritical power plant at Talwandi Sabo

The 3x660 MW supercritical Talwandi Sabo power plant was set up by Vedanta and the commercial operation of the units was achieved in the period from 2014 to 2016. STEAG Energy Services India took over the entire O&M services from December 1, 2017. Till then, desk operations were being performed by Vedanta staff and maintenance and field operations by various sub-contractors.

Apart from all operations and maintenance including heavy overhauls, the comprehensive O&M included end-to-end responsibility for facility management, horticulture, coal wagon unloading, railway yard movement and security services, which were all linked with a scorecard-based evaluation and stringent KPI's. It was the first of its kind in India.

The first and the foremost challenge faced during the initial phase was streamlining of the plant operations for BTG, AHP and CHP areas with deployment of right persons at the right place along with parallel implementation of Vedanta's management standards related to IMS, VSAP and AO. Maintenance schedules linked with SAP for day-to-day operations for all equipment was also a key point to be addressed and timely performance was linked with a monthly scorecard having direct impact in terms of liquated damages or bonus on the monthly O&M fees.

A comprehensive road-map was chalked out after gap analysis to identify the constraints preventing the optimum functioning of the plant and a time-bound action plan was put in place to remove such constraints including deployment of resources and experts from other sites and the support from our Engineering office and Training Center at Noida. A core team was formed for handling the IMS, VSAP and AO related

modules and comprehensive awareness was imparted for the same. Module champions at the level of departmental heads were assigned to drive the HSE modules and 11 other modules under the umbrella of safety to imbibe the safety culture and ensure safety standards. Similarly, the AO cell was formed to drive the core modules. A major exercise was done to review the equipment mapping, PM frequency and task-list scheduling as per OEM guidelines and industry best practices. Condition-based monitoring was streamlined at the site covering vibration analysis for rotating equipment units, wear debris analysis, motor signature analysis, thermography and DGA for power transformers. Health assessment of the TG was monitored through orbit analysis and annual plans were dovetailed with the business plan while adhering at all times to the OEM recommendation. A comprehensive maintenance approach through long-term and short-term planning combined with the predictive and preventive maintenance was modeled to improve equipment availability, and hence, the station availability. During this period, SAP was upgraded to SAP HANA in February 2019. Modifications were taken up on priority, based on key lessons, by the team including commissioning of critical auto loops helped in sustaining the operations. Logic was developed for measurement of metal temperature excursion and a fleet monitoring system was developed for predictive maintenance actions and optimization of controls on process parameters. Metal temperature excursion got reduced by almost 80%, thus minimizing tube leakages and improving station availability.

Annual overhaul for all the three units was completed during this period with the shortest record outage of 17 days for Unit #1. Appreciable gains were achieved in performance post-overhauling for

TDBFP, HP heaters, mills, PA fan, ID fan, NDCT, ESP, to mention a few.

The above actions yielded results with positive impacts on the maintenance performance index availability / MTTR / MTBF / PMBD ratio. As a result all performance parameters such as availability, heat rate, specific oil consumption and APC were dramatically improved.

Vedanta acknowledged the contribution of STEAG by making the following mention in its annual report for the financial year 2019-20 and 2020-21.

#### TSPL annual report 2019-20

"Our O&M business partner, M/s. STEAG Energy Services (India) Pvt. Ltd. continues to deliver good performance with its best-in class industry practices and is fully committed to partner with us in improving the performance further."

"The financial year 2019-20 turned out to be a robust year in terms of performance for TSPL. With continuation of single O&M contract through M/s. STEAG Energy Services (India) Pvt. Ltd., a wholly owned subsidiary of STEAG Energy Services GmbH, a German power station services company, well known for its operations and maintenance practices for large power stations, TSPL has managed to achieve many feats in the core areas. A robust governance mechanism is in place to continuously assess asset health condition and to ensure improvement of quality of deliveries in terms of production, health, safety & environment."

#### TSPL annual report 2020-21

"Our O&M business partner, M/s. STEAG Energy Services (India) Pvt Ltd., delivered good performance with its best-in-class industry practices"