

## ANNUAL BOILER INSPECTION

The purpose of a Boiler Inspection is to:

- Use planned outage time effectively to ensure that unit availability, safe operation and equipment life is maintained.
- Reduce forced outages due to maintenance failures.
- Effectively plan outage-required preventative maintenance activities and periodic replacement of normal wear parts.

The boiler inspection identifies and evaluates problem areas (current and potential). This allows the service engineer to recommend repairs and solutions. The problem areas have varying levels of priority.

A typical boiler inspection will deal with the following component areas:

- Waterside
- Fireside
- Boiler Externals
- Fuel Firing Equipment
- Air/Flue Gas Systems

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Incorporated: Trade Register, maintained by the Regional Court in Brno, section C, insert 89638

Company ID: 04390474  
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- Auxiliary Equipment
- Controls (if necessary)

During an outage, every portion of the unit is thoroughly inspected. The inspection is divided into three general categories:

- The pre-outage walkdown, in which the entire unit and its subsystems are inspected under operating condition.
- The internal inspection of the unit after shutdown and its subsystems
- The post-outage start-up inspection in which all the equipment is checked as it is returned to service.

Inspection activities include visual observations, comparisons, measurements and non-destructive examination techniques. Accurate record keeping of findings as well as careful labeling of items in the field will make it easier to communicate punch list items and write the final report. Photographs are another method to capture and express details.

## SCOPE OF SERVICES

NEE propose the following scope of engineering and consultancy services to assist with performance and operational improvements. The scope of works includes visual inspection of the boiler including boiler operation evaluation.

Specialists will execute the visual inspection. Boiler will be inspected and following services shall be provided by the NEE:

- Visual inspection of boiler
- Evaluation of boilers operation during standard operation mode
- Boiler thermal and operating performance assessment
- Report from visual inspection and evaluation of boiler operation

For the works execution following notes shall be considered:

- Boiler shall be out of operation, cooled and cleaned in the areas which are accessible and which will be inspected.
- During operation operational boiler data will be captured for the boiler operation evaluation.
- Boiler operational data will be checked and evaluated in the Supplier's office
- After completion of the inspection and evaluation of the boiler operation will be prepared Report with description of further necessary steps and separate prices of each step. Report will consist list of necessary tests for separate items, type of the recommended tests, recommended places for samples taking, number of samples, areas of inspection, further recommendation concerning other boiler parts (air heaters or fans), if necessary, and first rough evaluation of boiler operation parameters.

## REQUIRED INPUT DATA

Following documentation shall be assured and supplied by the IP to the Supplier to enable start of the works:

- Boilers design parameters including heating surfaces design wall thicknesses and material grades
- Number of operational hours
- Reports from previous boilers inspections or life assessments provided, if any
- Trouble shutting reports from previous period
- Description of current operational problems
- Lists of pressure parts components which were replaced from boiler commissioning
- Boiler operational parameters for different boiler loads (will be collected and handed over during boiler inspection)
- Temperature conditions (i.e. temperatures of surfaces in stabilised condition and rates of temperature changes with start-up and shut-down), (will be collected and handed over during boiler inspection)
- Complete boiler drawings including Operational manual in English language (will be collected and handed over during boiler inspection)
- Appropriate accommodation on site during boiler inspection
- Auxiliary works
  - Opening all man doors and hatches
  - Lockable barriers
  - Scaffolding for provisional access to SH
  - Safety supervision as needed
  - Lighting as needed
  - Provision of fans for cooling / exhaust purpose
  - Power supply
  - Cleaning of all boiler heating surfaces including furnace and convention pass in the areas where the thickness will be measured

- Staff
  - Fitter + helper + scaffolder team during visual inspection, if necessary
- Site facilities
  - Air conditioned lockable room (office type) with 2 working tables, 2 chairs and coat racks for necessary office works of the inspectors and changing clothes, telephone, internet, refrigerator, lighting, wall socket 220V/50Hz, (also provided access to sanitary facilities like wash room and toilet);
  - Provided fast medical assistance in case of an injury.

Lack of the above specified documentation would mean an obstruction to the Supplier with immediate effect on the time schedule, costs and ability to perform inspection and boiler operation evaluation and final report elaboration.

## TIME SCHEDULE

Two Supplier's specialists are expected to be on site.

Visual inspection on the site	2-4 days / boiler
Boiler operational data collection and further technical information capture	2-3 days / boiler
Boiler data check and operation evaluation at NEE home office	4 weeks / boiler
Final report	4 weeks / boiler

Start of the site inspection has to be agreed by both sites minimum 3 weeks prior site activities and it is subject to receiving of boiler drawings and initial boiler operation data minimum 10 days prior Supplier's specialists departure to the site.

The time schedule is very approximate and might be optimised in a later stage according to the project specific conditions and real boiler status and readiness.



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