TK CHEMICAL COMPLEX LIMITED

Blowdown in boiler at high TDS levels only to reduce the number of blowdowns

SUMMARY OF THE OPTION

TK Chemical Complex Ltd is a privately owned, medium size paper mill located in Chor Khyderpur near Chittagong and produces office paper for the Bangladeshi market. Each day three blowdowns of the boiler were undertaken, but at total dissolved solids (TDS) levels that were well below the maximum level of 3000 TDS. To reduce energy wastage due to the boiler having to reheat make-up water after each blowdown, the number of blowdowns was reduced to two per day. Investment costs were none, actual savings were US$ 800 per year and the payback period was immediate. Fuel oil savings were 6,000 liters and greenhouse gas emissions were reduced by 16 tons CO2.

KEY WORDS

Pulp & Paper, Bangladesh, Boilers & thermic fluid heaters, Blow down, total dissolved solids, TDS

OBSERVATIONS

Before the GERIAP project, boiler blowdown was undertaken three times a day (at the beginning of each shift) when total dissolved solids (TDS) were approximately 1100 – 1200 ppm. The system is such that any boiler can run with TDS levels of up to 3000. During each blowdown, a large quantity of hot water is lost and sent away to recover heat. Because the boiler must now heat an equivalent amount of make-up water, consequently fuel oil is wasted.

OPTIONS

Tests were undertaken to see if two (instead of three) blowdowns per day were sufficient. As part of these tests, the TDS levels were recorded, which should not exceed the permissible level of 3000 TDS. The Team has reduced the number of blowdowns to two per day maintaining TDS levels at 2000 – 2200. Further modifications of the boiler operation were recommended that required some investment, but this option was not implemented because a new plant will be constructed and therefore the company is putting off further investments. A second reason is at a technical knowledge and skills level. Plant officials are concerned that a higher dissolved solids concentration in the boiler close to 3000 ppm will result in more scale formation inside the boiler, and in overheating and failure of the tube.

RESULTS

Below are the results of the reduction of the number of blowdowns to two per day, and the potential results if further recommended boiler changes would be implemented.

Financial Benefits:

- Investment: none (small investment for full implementation)

- Annual operating costs: none
- Annual cost savings: US$ 800 (potential: US$ 3448)
- Payback period: immediate

Environmental Benefits:

- Annual fuel oil savings: 6 kiloliters (potential: 25 kiloliters)
- Annual GHG emission reductions: 16 tons CO2 (potential: 67 tCO2)

FOR MORE INFORMATION

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