



## TK CHEMICAL COMPLEX LIMITED

### Installation of a De-superheater at Boiler to Feed Steam to the Paper machine at Lower Temperatures

#### 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. The plant is using superheated steam ( $250^{\circ}\text{C}$ ) instead of saturated steam ( $150\text{-}160^{\circ}\text{C}$ ) as required for paper-making. Two existing desuperheating stations could be installed to reduced the steam temperature to  $160^{\circ}\text{C}$ . Partial implementation of this option resulted in 2 kiloliters fuel oil savings and equivalent GHG emission reductions of 5 tons  $\text{CO}_2$ . In addition, condensate recovery is increased and paper breakage reduced. There were no investment costs and annual savings were US\$ 266. There is a potential of six times these savings if both desuperheating stations are commissioned, but because a new plant will be constructed the company is putting off further investments.

#### KEY WORDS

Pulp & Paper, Bangladesh, Boilers & thermic fluid heaters, De-superheater, steam, paper machine, paper breakage

#### OBSERVATIONS

The Team made the following observations:

- The plant is using superheated steam ( $250^{\circ}\text{C}$ ) instead of saturated steam ( $150\text{-}160^{\circ}\text{C}$ ) as required for paper-making.
- The two desuperheating stations at the paper machines are currently not utilized.
- This affects the heating process as it causes:
  - Non-uniform heating
  - Heating at a higher temperature than necessary
  - Problems in condensate drainage.

#### OPTIONS

The Team proposed to install a desuperheater at the boiler to control the steam going to the paper machine at  $160^{\circ}\text{C}$ . This will also minimize the losses in the steam distribution because now steam would be distributed at  $160^{\circ}\text{C}$  instead of  $250^{\circ}\text{C}$ .

The existing desuperheating stations that are currently not utilized could be commissioned instead of buying new equipment.



## **RESULTS**

Below are the results of the partial implementation of the option, and the potential results if both desuperheating stations would be commissioned.

### **Financial Benefits:**

- Investment: none
- Annual operating costs: none
- Annual cost savings: US\$ 266 (potential: US\$ 1724)
- Payback period: immediate

### **Environmental Benefits:**

- Annual fuel oil savings: 2 kiloliters (potential: 12.5 kiloliters)
- Annual GHG emission reductions: 5 tCO<sub>2</sub> (potential: 34 tons CO<sub>2</sub>)
- Reduced waste because of reduced paper breakage in the paper machines: not quantified

## **FOR MORE INFORMATION**

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### ***GERIAP Company in Bangladesh***

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