



VISAKHAPATNAM STEEL PLANT – RASHTRIYA ISPAT NIGAM LIMITED

Adjust Fan Blades in Cooling Tower at Chilled Water Plant for Winter and Summer Conditions

SUMMARY OF THE OPTION

Rashtriya Ispat Nigam Limited (RINL) is the corporate entity of Visakhapatnam Steel Plant. The steel plant is located 26 km south of Visakhapatnam city. The plant has a capacity to produce 2.656 MT (million tones) annually of saleable steel of which 2.410 MT is finished steel.

Chilled water plant -4 supplies chilled water to Computer centre, Quality Assurance and Technology Development department, Energy centre and Telecom centre for meeting their air conditioning requirements. The Plant has vapour compressor type refrigeration chillers. Cooling water is used in the condensers of the chillers. The circulating cooling water is cooled in a cooling tower which is provided with two Cooling Tower (CT) fans. The power consumption and the air handled by the CT fans, vary with the blade angle.

KEY WORDS

India Iron and Steel, Cooling tower, Fans and blowers

OBSERVATIONS

- CT fans need to be operated 24 hrs a day and 365 days in a year.
- In winter and rainy seasons, the higher CT fan blade angle resulted in higher power consumption although the water temperature obtained was lower (which in these seasons, was not required for the process).

OPTIONS

The blade angle of the cooling tower CT was reduced from 50⁰ to 45⁰. This resulted in reduced power consumption and rationalized air flow. For the summer season the blade angle remains the same as modified but the number of cooling tower cells under operation are increased.

RESULTS

Financial benefits

- Investment: none
- Annual cost savings: Rs. 2.12 lakhs or US\$ 4923 (= 105,840 kWh X Rs. 2 @ Rs 43/US\$)
- Payback period: immediate



Environmental benefits

- Annual electricity savings: 105,840 kWh (18 kWh X 5880 hrs)
 - Reduction in CT Fans (2 nos) electrical power consumption: 18 kW
 - Annual operating hours during winter and rainy seasons: 5880 hr
- Annual GHG emission reduction: 95 tons of CO₂ (= 105,840 kWh X 0.000893 tons of CO₂/kWh) [1]

[1] – UNEP GHG Calculator. Value specific to India

FOR MORE INFORMATION

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