

GE's Helps ST CMS Electric Company's Effluent Water Treatment Program Dramatically Reduce Water Use, Protect the Environment and Save Money

Challenge

Driven by a desire to protect India's precious water supply and the environment, ST CMS Electric Company took a serious look at the millions of gallons of cooling water blowdown it was conventionally discharging each year. The 250 Megawatt lignite-fired plant uses a lot of water for cooling purposes, and the blowdown water after reuse in ash disposal was sent to Nalla as clarified ash water. As India has focused on maximizing its scarce water resources and protecting the environment and public health, plants such as ST CMS' in Tamilnadu could contribute to the conservation.

As part of environmental improvement in accordance with CMS' corporate policy, utilization of the ash pond water for cooling water makeup was initiated in the year 2004. "We were using 15,000 m³/d of water," said Mr Muthukumar, the Chief Chemist, which compared favorably with the best of industry norms. "However, we decided to explore possibilities of further improvement."

Representative K, Vijaykrishnan of GE Water & Process Technologies, who was involved in the project, said that ST CMS was conducting a study for reuse of ash pond water for cooling system makeup and GE joined the efforts with very positive and innovative ideas in the combined study of the project.

Solution

Based on the study, it was decided to recycle the ash pond water back to the cooling tower makeup and the cooling water blowdown for ash handling. The water was recycled to the cooling towers, leading to huge savings in water and in the electricity needed to run the plant. After 11 months of recycle operation, the condensers remain clean and well protected, thanks to GE's superior cooling water treatment program.

The cooling water system is an open recirculation type with a capacity of 26,400 m³/hr. The makeup water consumption for the cooling tower was at an average of 15,000 m³/d.

ST CMS taps bore well water to meet its entire cooling and service water needs.

Results

The results have been very impressive. Water savings are an amazing 482,166,460 US gallons, with daily water savings of 5,000 m³. Total financial savings exceed US\$26K annually and the plant now uses six bore well pumps, instead of eight, with a daily savings of 10,800 Rupees or US\$251.

The plant has become a model for others in India to follow, attracting attention from people interested in replicating the recycle program.

"The recycling program perfectly met our needs and expectations," said Mr. N. Sundararajan, GM of the ST CMS plant. "It has saved us money, protected our scarce resources and proven to be very reliable."

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CS1095EN Dec-07