Installation of Automatic Condenser Cleaning by CET Enviro in Balco Power Plant 300MW unit

Case Study by CET Enviro

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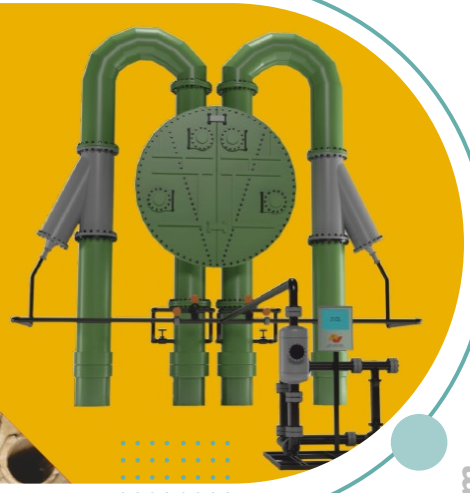
Introduction



CET Enviro, a leading manufacturer of state-of-the-art automatic condenser cleaning systems, significantly improved the efficiency of Balco Power Plant by implementing their innovative technology, keeping the condenser clean online 24/7. Balco, a major aluminum manufacturer in India, operates a large internal power plant with a capacity of 4 units of 300 MW and an additional 4 units of 135 MW. Previous attempts to improve condenser cleaning using an old Chinese make ball cleaning system had yielded no benefits.

BALCO (Bharat Aluminium Company Limited) is a prominent aluminum manufacturer in India, playing a vital role in introducing aluminum as a potential alternative to other metals in various industries.

Problem

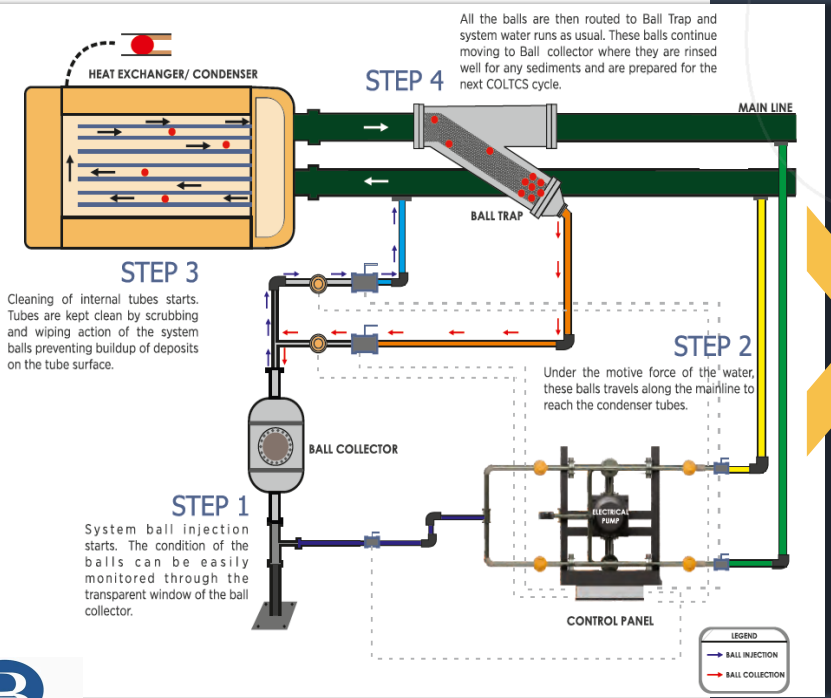
BALCO's smelter capacity produces 345 KTPA through modern Prebake Technology based on Soderberg Process, supported by uninterrupted power supply through Captive Power Plants.

Solution

CET resolved engineering mistakes associated with the previously installed Automatic condenser cleaner system, introducing their uniquely designed ball trap that significantly improved condenser cleaning efficiency

Solution

COLTCS HOW IT WORKS



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- CET's newly designed condenser cleaning system includes a specially designed ball trap that prevents bolts from escaping, ensuring even distribution of bolls across the condenser.
- The balls do not come in contact with the pump, increasing their lifespan and making the system reliable, robust, and economical, resulting in a clean condenser 24/7.

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Implementation, Results and Benefits

Implementation

Retrofitting the new condenser cleaning system was relatively simple, involving the removal of the non-functioning old ball traps and the installation of the new ones, which were customized to fit the same dimensions as the old systems.

Results and Benefits

- The installation of the CET automatic condenser cleaning system led to a significant improvement in condenser vacuum and heat rate, resulting in **thermal energy savings of**
- The system achieved an average coal saving of

Annual Savings

22,123,850,024 kCal

Annual Savings

5852.87 tons **$456,456**

The return on investment (ROI) was achieved within the first year of installation

Energy Savings

Calculation of energy saving		
Parameters		
Improvement in condenser vacuum	0.0065	kg/cm2
Improvement in mmHg	4.914	mmHg
Heat Rate improvement@ 2 kCal/kWh	9.83	kCal/kWh
Avg. Total generation in year 350 days operation	2251200000	KWH
Thermal energy saved per year	22123850024	kCal/year
Average coal GCV	4500	kCal/kg
Coal saved in year considering boiler efficiency of 84%	5852.87	Ton per year
Cost of the coal	78	$./Ton
Annual saving	**456,456**	**US $/ year**

Sustainability at Balco

- Balco is committed to sustainable development, aligning with their strategy based on responsible stewardship, building strong relationships, adding and sharing value, and strategic communications.
- They aim to achieve **zero harm, zero waste, zero discharge**, and make a positive impact on surrounding communities.

Balco COO stated, "The contribution to the plant efficiency and sustainability goals of Balco are important to us, and this system has proven itself to contribute on both aspects."

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Conclusion

- The implementation of CET's automatic condenser cleaning system has led Balco to achieve significant efficiency improvements in their coal-fired power plant.
- By keeping the condenser clean, major efficiency gains are achieved, ensuring the power plant operates at optimal levels and contributes to Balco's sustainability goals.

Call to action

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For more information on CET Enviro's sustainable solutions, please contact them at info@cet-enviro.com or visit their website at cet-enviro.com.