

CII National Award For Environmental Best Practices 2025

Project:

- Desulphurization through WET Limestone FGD
- EPC – Zhejiang TUNA Enviromental Science & Tech. Ltd. - China

Plant Capacity -1200 MW (2x600 MW)







Presented by DB Power:- Mr. Rajesh Kumar Singh, Project Head
& Mr. Manoj Kumar Panda, Environment Head

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Visionary Leaders Promoting Environment Excellence, Energy and Resources Conservation as an Independent Power Producer



L E A D E R S H I P		<p>Girish Agarwal Managing Director, DB Power</p> <p><i>Sector: Power</i></p>	<h3 style="background-color: #0070c0; color: white; padding: 2px;">Proven Feasibility</h3> <ul style="list-style-type: none"> Demonstrates that wet FGD retrofits with absorber top chimney is viable even in high-capacity Thermal Plants. Sets a precedent for early adoption, not just compliance.
	<ul style="list-style-type: none"> Committed US\$320m of equity in the power business Leading one of the youngest power stations. Outstanding Entrepreneur' at Asia Pacific Entrepreneur Awards. Over 31 years of experience in print media and new business development. E&Y Entrepreneur of 2006 in Media Category. Active member of Indian Newspaper Society (INS), he was the youngest chairman of INS MP. Under his leadership, Divya Bhaskar won the 'Best in Print' at IFRA Asia Pacific Awards 	<h3 style="background-color: #0070c0; color: white; padding: 2px;">Benchmark for Design and Operation</h3> <ul style="list-style-type: none"> Its technical configuration and operational success have confirmed the CEA's standard specifications for wet FGD retrofits. Offers a template for Engineering, Procurement, and Commissioning (EPC) contracts. <h3 style="background-color: #0070c0; color: white; padding: 2px;">Policy and Industry Confidence</h3> <ul style="list-style-type: none"> Wet FGD can be installed in limited space and at a lower cost. Encouraged other plants to adopt similar systems. 	


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Erection & Commissioning Milestones of FGD Plant		
Year	Particulars	Remarks
01-10-2019	Zero Date (FGD System Ordered)	Engineering discussions initiated, considering lining of 275-meter-tall Chimney.
2020	Design & Procurement	Design changes made to include absorber top chimney to accommodate in limited space .
2021	Civil & Structural Work	Construction of absorber, limestone slurry units, and booster fans began. (Project delayed due to Covid)
2022	Major Equipment Installation	Absorber vessels, ducting systems, ID fans, booster fans installed.
2023-2024	Testing & Commissioning	Wet limestone scrubber commissioned with performance testing.

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Performance Parameters			
SN	Guaranteed Performance Parameters	Guaranteed Value	Current Operational Value
1	SO ₂ at Stack @ 6% O ₂ dry basis	150 mg/Nm ³	40-80 mg/Nm ³
2	SPM at Stack @ 6% O ₂ dry basis	50 mg/Nm ³	0-10 mg/Nm ³
3	Hg at Stack @ 6% O ₂ dry basis	0.03 mg/Nm ³	BDL
4	Reagent (Limestone) Consumption for both units	15.1 TPH	8.56 TPH
5	Auxiliary Power Consumption Guarantee (for both units)	11560 kWh(1%)	7860 kWh(0.68%)
7	Water Consumption Guarantee (for both units)	278 TPH	178 TPH
8	By-product (Gypsum) Generation-Quantity & Moisture, for both units	25.54 TPH & ≤ 15%	13.7 TPH & ≤ 11%
9	Wastewater (limestone FGD only) (for both units)	17 TPH	6-8 TPH
10	Mist Eliminator Droplet Carryover Guarantee	20 mg/Nm ³	18 mg/Nm ³

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Challenges & Overcoming Measures during Implementation		
<ul style="list-style-type: none"> • COVID-19 restrictions delayed logistics and manpower mobilization. • Vendor selection challenges due to limited Indian experienced vendors in large-scale FGD execution. (EPC: M/s Zhejiang Tuna Environmental Science & Technology co ltd) • Heavy erection works: Mobilized 800 MT crane for absorber cone & chimney erection (8 major lifts across 2 units). • Geopolitical issues: Visa delays(not provided even in some cases) for Chinese experts mitigated through local skill development and remote guidance. • Commissioning manpower experience gaps addressed via intensive training and knowledge transfer. • Performance Guarantee (PG) Testing vendor finalized after rigorous technical evaluation. • O&M readiness: Plant personnel trained using manuals and digital learning resources for smooth operation. 		

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Uniqueness of DB Power FGD Project



- First IPP in India to successfully commission FGD in retrofit mode
- Commissioned without any loss of generation (leveraged opportunity shutdown)
- In- spite of several policy changes / relaxation on FGD , DBPL continued to install wet FGD as a commitment towards environment.
- DBPL FGD features Absorber-top chimney design which is unique in large IPPs . It eliminates wet flue gas duct requirement.
- Single booster fan with 110% capacity and booster fan bypass operation at 60% load with existing ID Fans.
- Installed in limited space near the existing chimney & flue gas duct, showcasing superior retrofit engineering.
- Lower auxiliary power consumption as compared to conventional systems because of lowest duct losses and optimized use of spray layers.
- Optimized specific lime & water consumption.
- Bucket elevator-based material handling, eliminating the need for conveyor systems.

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Replication Potential in Indian Industry



- Proven feasibility for replication in existing large-scale coal-based power plants.
- Reduced construction time and CAPEX compared to conventional wet-limestone FGD systems.
- Lower OPEX enhances long-term sustainability and industry adoption.
- Less space requirement

Achievements

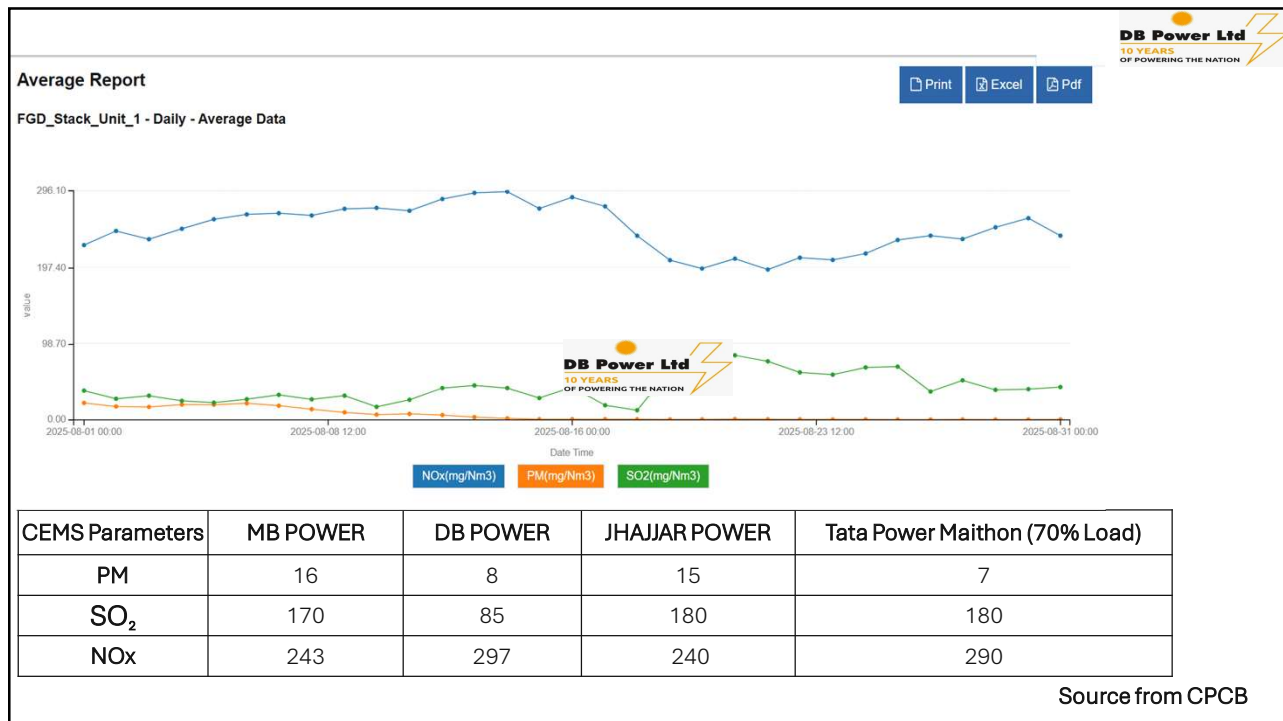
Compliance with National Standards

- Achieved SO₂ emissions < 100 ppm, well below the statutory norm of 200 ppm.
- Capital expenditure maintained at ₹0.31 Cr/MW, significantly lower than the benchmark estimates of 0.85Cr/MW to 1.2 Cr/MW.
- Optimized resource utilization with minimal water, lime, and auxiliary power consumption, setting new benchmarks.
- 100% Gypsum disposal; more revenue earned due to better Gypsum quality
- Suspended particulate matter emission reduced to 0-10 mg/Nm³.

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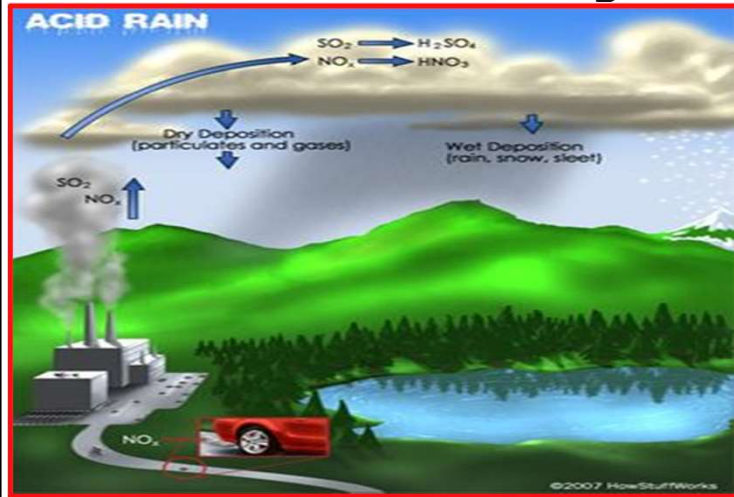
Benefits	
Tangible Benefits	Intangible Benefits
Low project cost – below industry benchmarks.	Multi Pollutant Controls like Hg, Particulate Matters & Acid-Mist in addition to SO ₂ .
Wet FGD offers Low Lifecycle costs due to higher efficiency and By-product recovery.	Employment generation during construction, commissioning, and O&M phases.
Revenue from Sale of Gypsum.	Improvement in Public Health and Air Quality
Reduced Aux. Power requirement better than design.	Enhancement in Regulatory Trust and Goodwill
	Corporate Reputation and ESG Value
3+1 spray layer gives a wide range of operating margin at varying SOx/Boiler Loading as compared to 2+1 (conventional design)	Organizational Learning and Innovation Culture-Enhanced technical know-how & learning for engineers and operators involved in the project.
	Future readiness against Stricter Norms

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“Can short-term cost savings justify long-term impairment of ambient air quality and the health of future generations?”



Q & A

THANKS