# Optimal Operational and Maintenance Strategies for a Flue Gas Desulphurization System in a coal-fired Thermal Power Station

(Paper ID-PP259)

## Welcome Delegates of Indian Power Stations International O&M Conference, IPS 2024

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***Good O&M Practices : Win-Win for All***

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**Takeaways**:

- Key facets of FGD O&M practices- Emergency and Routine Inspection & Monitoring.
- Pivotal role of Skilled Manpower - Continuous Upskilling.
- Significance of Spares Availability, Efficient Resource Utilization

Hope to serve as a valuable resource for power plant professionals, offering insights into the best practices for FGD O&M.

***Learning is mutual***

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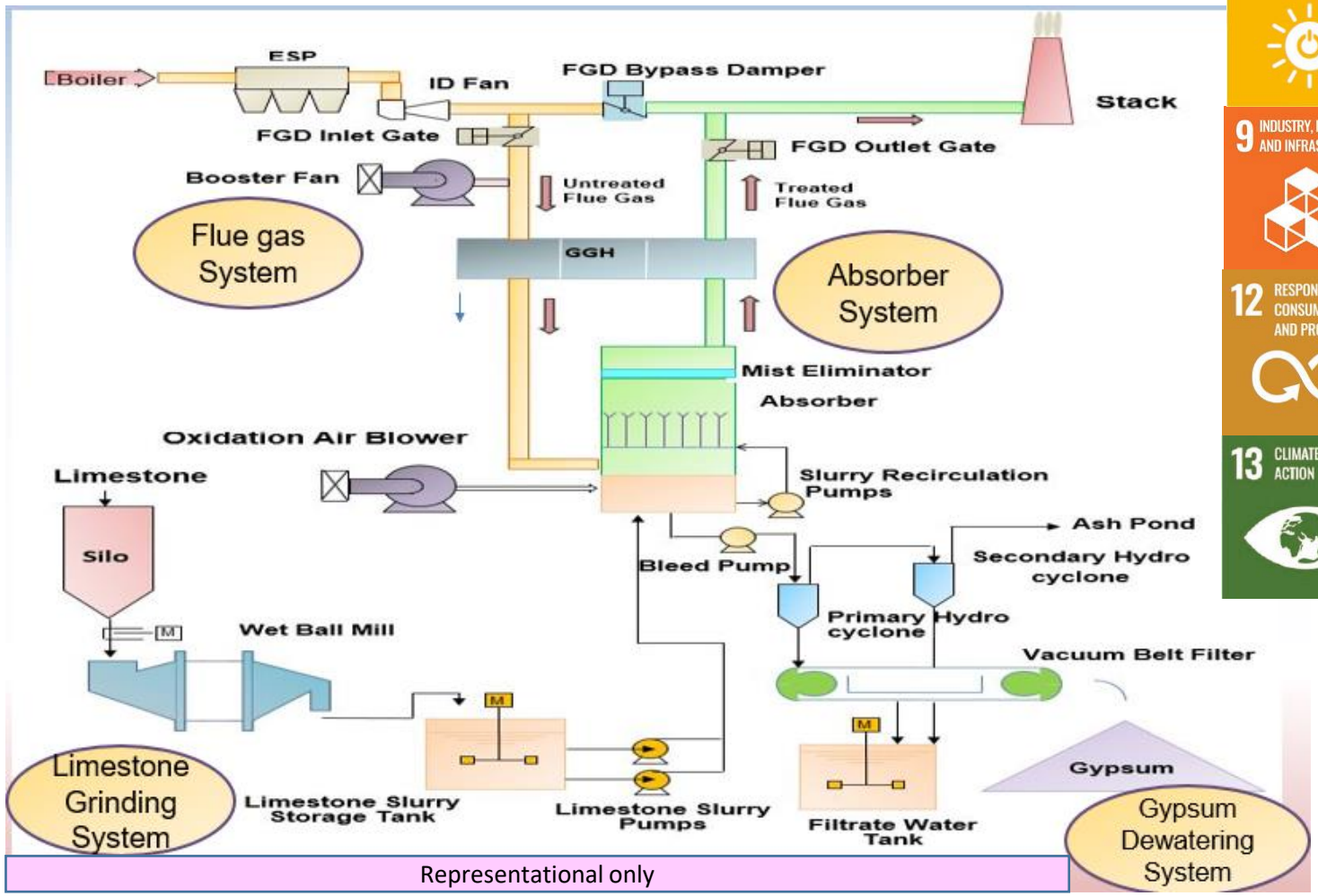
## Flue Gas Desulphurization (FGD)

- India is contributing ~15% of global SOx emissions.
- Minimizing SOx emission limited to 100 mg/$Nm_3$ (earlier, 600 for <500 MW & 200 for >500 MW) in existing thermal power plant.
- India has undertaken ambitious plan to install Flue Gas Desulphurization (FGD) in all thermal power plants by 2026.




Representational only

7 AFFORDABLE AND CLEAN ENERGY

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

***Reducing Pollutant Footprints : Providing Sustainable Solutions***

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**Four (4) Major FGD Sub-systems in the Wet Limestone FGD plant are:**

- ❖ Flue Gas System including Chimney/ Stack
- ❖ Absorber System
- ❖ Limestone Grinding/ Slurry Preparation System
- ❖ Gypsum Dewatering & Handling System

***Wet Limestone FGD : Dominant Technology in India***

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***Framework for an Optimal O&M Strategy***

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## Process Control

Systematic management and regulation of processes and involves monitoring and adjusting various parameters to maintain desired operating.

1. **Documentation and Procedures**
2. **Continuous Improvement**
3. **Predictive Maintenance**

***Help to maintain desired operating conditions***

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## Safety & Reliability

1. **Safety in Design:**
2. **Regular Inspection and Monitoring:**
3. **Periodic Changeover of Standby Equipme**
4. **Preventive Maintenance:**
5. **Calibration of Instruments:**


***Take care of Equipment reliability, hazardous areas, chemicals handling, fire safety, etc.***

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## Efficiency & Optimization

Various measures are deployed to achieve efficiency and optimization.

1. **Efficient Reagent Management**:

2. **Data Analysis and Optimization**:

3. **System Performance Monitoring**:

4. **Water Management**:


***Monitoring and Control Systems are utilized to assess the performance***

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## Spares Management

Effective spares management ensures the reliability and availability of equipments

1. **Identification of Critical Spares:**
2. **Inventory Management**
3. **Partnering with Local Suppliers for Emergency Troubleshooting**:

***Minimize downtime and reduce operational costs***

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## Four (4) Governing Facets of Optimal O&M:

1. **Robust Design & Installation Process**
2. **Standard Operating Procedures**
3. **Skilled Human Resources**
4. **Local Supplier Development**

***A must for O&M Strategy – from Concept to Commissioning & Continuance***

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## Specific O&M Practices:

1. **Flue Gas Circuit:** Condensate collection and treatment

2. **Absorber Circuit:** Operation of Agitators, Gypsum bleeding at specified concentration

3. **Limestone Circuit:** Limestone slurry feed as per boiler airflow**.**

4. **Gypsum Circuit:** Cake thickness and moisture monitoring

***Every FGD Plant is Unique and Alike – Develop Specific Practices***

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## Some more Learnings:

- FGD plant should be with short start-up time and compatible with the load changes in the main plant
- suitable to all possible modes of operation for reliable continuous operation.
- Plant specific input material like limestone, lime, coal, chemicals and consumables also play significant role in O&M strategy.

*Continuous Learning : Write to us on rajesh_itbhu@yahoo.com and psranjanmit@gmail.com*


Thank you