01 Day Training Program on

FGD System and NOx Reduction Technologies for Air Quality Improvement

ORGANIZED BY
Central Board of Irrigation and Power
CBIP Centre of Excellence

UNDER THE AEGIS OF
The Society of Power Engineer (India

VENUE
Central Board Of Irrigation and Power
Centre of Excellence, Plot- 21, Sector-32, Gurgaon

Introduction

As per the directions of Ministry of Environment, Forest and Climate Change (MoEFCC), implementation of FGD (Flue Gas Desulphurization) systems & NOx reduction technologies is mandatory to curb SOx & NOs emissions in both existing and upcoming thermal power plants. The time line for compliance of FGD Systems has been fixed from December 2022 to December 2024 depending upon the category and location of the power plant.

Central Board of Irrigation and Power is organizing one day training program on FGD System and NOx Reduction Technologies for Air Quality Improvement, designed to help participants to inculcate awareness and necessity of sustainable development through better operational and environmental practices employing new clean technologies.

Participant Benefits

After attending this program, the participants will be able to:

- Understand present environment norms for air quality
- Describe various technologies available for air quality improvement
- Appreciate latest trends in air quality improvement area
- Understand instrumentation systems related to air quality measurement and reporting.

Who May Attend

Executives from Thermal power plants.

Program Schedule

DAY 01 — 1000 HRS – 1300 HRS

An Overview of FGD (Flue Gas Desulphurization) System & Working of "Limestone based Wet Flue gas desulphurization" System

1. Why SOx control?
2. Environmental norms.
3. Technology required for up-gradation in plants.
4. Factors to be considered for technology selection.
5. Capital Expenditure & Operating Expenditure.
6. Overview of Various types of FGD System.
7. Design basis of a typical limestone based FGD system.
8. Quality of Gypsum bi-product.
9. Predicted performance of "Wet FGD System of a typical unit".
10. Basic Chemistry of FGD System.
11. Estimated quantity of SO2 liberated.
12. Factors affecting lime consumption.
13. Wet FGD Process-
    - i. Flue Gas & Limestone handling system
    - ii. Reagent preparation & Reagent feed system
    - iii. Absorber, Reaction tank, Mist eliminator system, Recycle Spray System, Forced OxidationSystem, Aux storage system.
    - iv. Primary & Secondary Dewatering System
    - v. Gypsum handling system
    - vi. Filtrate water system

What is FGD:

Coal Combustion in our Conventional boiler result in generation of harmful gases like NOx, Sox & SPM (Suspended Particulate Matter) etc. Environment Norms are becoming stringent day by day and in order to keep Sox emission under prescribed limit one of the technology used is FGD. This process absorbs SO2 from flue gas and brings down Sox level at stack outlet below prescribed limit.

Take Aways

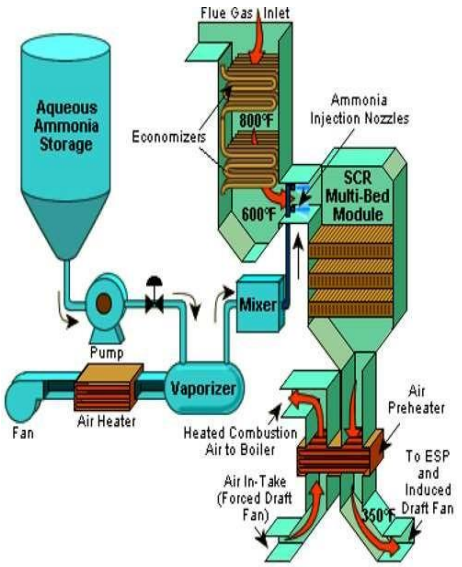
FGD is the need of the hour to improve the environmental performance of the thermal power generating stations. The contents are designed to meet the requirement of operation, Efficiency management, Commissioning, Maintenance and Erection employees about the function and working of each system, the process of absorption of SO2 with lime slurry and its final conversion to the by-product Gypsum.

DAY 01 **1500 HRS – 1800 HRS**

NOx reduction technologies for air quality improvement

The contents of the program are as under:

1. Why NOx control?
2. Environmental norms for air quality improvement
3. Types of Nox
4. Reagent consumption.
5. NOx reduction technologies.
6. Norms for consumption of reagent & APC for emission control system
7. Issues & Challenges
8. Performance Guarantees



What are NOx control technologies?

These are the pre-combustion technologies like Low NOx burners & Air staging & Post-Combustion technologies like SNCR / SCR to bring down NOx levelat stack outlet below prescribed limit.

Take Aways

The contents are designed to meet the requirement of Operation, Boiler Maintenance, Efficiency management group, Erection & Environment division.

Faculty

Experienced and reputed faculty having in-depth knowledge of the subject shall be drawn from reputed organization. The case studies would also be discussed so as to make this training program effective and meaningful.

Registration Fee

- For Physical mode- Rs 5,000/- per participant + 18% GST shall be charged extra.
- For Online mode- Rs 2,500/- per participant + 18% GST shall be charged extra.
- 10% Discounted fee for members of CBIP & SPE, per participant.

The registration fee will cover the professional fees; working lunch; Tea/ coffee/ snacks during the course.

Methodology of the Training

Highly interactive training sessions by subject matter experts, Presentations from the experts, Case Studies and Group Discussions. The duration for the training will be for 1 day. The methodology will be Hybrid mode session, i.e., Participants can participate either physically or in virtual/ online mode. The online will be shared through MST platform by link which will be provided by CBIP.

The event is nonresidential. Participants will have to make their own arrangements for travel, boarding and lodging etc.

Participants taking part in Physical mode will be provided training material/ tools & kits, each Candidate shall be provided a Certificate at the end of the Training Programme. Participants with Virtual mode will be provided MST link to join session virtually, Recording of sessions, training study material/ PPTs and Certificate.

Seats- **First 50 Participants can accommodate for Physical Mode** and rest may appear with Virtual Mode.

How to Register

The participants, desirous of attending the above training may register themselves by Online or Offline mode, along with necessary payments. **Participants are advised to bring GST No, of their organization along with name of office to whom the invoice is to be sent.**

CLICK TO REGISTER (Online Application)

Or by sending the following details to CBIP by mail / email through Offline Mode

REGISTRATION FOR

(To be filled in block letters preferably)

1. **Name** : _____
2. **Position** : _____
3. **Organization** : _____
4. **Address** : _____
5. **Phone** :_____**Fax No.** _____
6. **Email** : _____

Date_____ **Signature**_____

Payment

All payments be made through Cheque at par/ Demand Draft drawn in favour of "Central Board of Irrigation & Power", payable at Gurgaon

[OR]

By Bank Transfer to the following Bank Account-

Beneficiary Name	**: Central Board of Irrigation & Power**
PAN No.	**: AAAJC0237F**
GST No.	**: 06AAAJC0237F1ZW**
Bank Details	**: Indian Overseas Bank, Sco 26, Sec-31, Gurgaon, Haryana, PIN-122002**
Saving Bank Account No.	**: 236701000000922**
Branch RTGS/ NEFT/ IFSC	**: IOBA0002367**
Branch Code	**: 2367**

After making of the payment online in respect of the event, the details like UTR/ Organization name to be furnished immediately.

Address For Correspondence

Shri Sanjeev Singh, Director (Energy), CBIP
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Shri. Jaideep Singh, Sr. Manager (T), M: 9871718218, E-mail: jaideep@cbip.org

Note-

- Photocopies of the registration form can be used for additional requirements, if any.
- Spot registration facilities will also be available, provided the prior information is received.

About CBIP

Central Board of Irrigation & Power (CBIP) a premier Institution, setup by GOI in 1927 is serving the nation in the disciplines of Power, Renewable Energy and Water Resources Sectors for more than 95 years. It is an exchange and knowledge bank for dissemination of technical knowledge & professional experience to help Engineers/ Professionals to update their knowledge and gain practical know-how.

CBIP's main Objective is

- To disseminate technical knowledge through various modes, e.g., publication of technical documents, organizing conferences /workshops.
- To provide specialized training to the professionals in the Power, Renewable Energy and Water Resources Sectors.

Strengths of CBIP

- A 95 years old establishment into dissemination of knowledge in Power, Irrigation and Renewable sectors.
- Almost all reputed utilities of Power, Irrigation and Renewable sectors of the country are the institutional members and at least 3000 senior officers of the level of Chief engineer and above from these sectors are the members.
- Easy availability and access to the reputed and highly experienced faculty because of above two facts.
- Has a strong base of the very senior officers with deep experience of various disciplines of Power and irrigation sector.

Has the secretariat of at least 10 international organizations and the Secretary CBIP is the secretary or the member secretary of their India chapters.

About Society of Power Engineer (SPE India)

The Society of Power Engineers (India) is an apex body engaged in the activities of technological upliftment of the power engineers of this country by making available latest technological developments all over the world to the members. Publication & distribution of information Journal, Workshops/Seminar, group discussion are regular features of the society.

The aims and objects for which the Society is constitute to promote the advancement of power engineering and allied subjects, and their applications, and to provide facilities for the exchange of information and ideas on those subjects amongst the members of the Society and for that purpose

Who can become Member of Society of Power Engineers (India)

- Any students' studying for Diploma in Engineering or Degree in Engineering in any Discipline having inclination to work on Power Sector.
- Any Diploma or Degree holder in any discipline having power engineering related interest.
- Any Institute which is engaged in the power engineering business or is interested in Development of power Sector.

Membership Grade

- Student
- Associate Member
- Member
- Life Member
- Fellow Member
- Institution Member

Membership Fee

For Student Member: Rs.500/- (including Admission Fee and annual Subscription Fee and Local Fee).

For Associate Member: Rs.700/- (including Admission Fee and annual Subscription Fee and Local Fee)

The Benefits and Opportunities of SPE India Members are outlined below

- Members will have access of half yearly periodic Journal contains latest articles by the experts
- Members will have preference to publication of article in the Society Journal
- Members can have free online access of SPE INDIA and CBIP's international Societies technical papers / presentations and publications.
- Free online access to Telephone Directory of Key Personnel in Power, Renewable and Water resources sectors being published by CBIP
- Regular intimation about the activities and events being organized by Society and its chapters from time to time.
- 10% discount maximum up to Rs. 500/- in the participation fee for the events being organized from time to time by the Society.
- 10% concession for publishing advertisement in the periodical/Journal of the Society.
- Inclusion of one page write-up about the Organization in Journal for Institutional Members.
- Network and opportunity to interact with industry leaders and corporate officials during various events being organized by Society, which will help the student members for making their career in power sector.
- Members will receive "Certificate of Membership"
- Student Members will have opportunity to participate in online quiz being organized by Society free of cost
- Save Rs.2500 to Rs.5000 per annum while attending various events organized by SPEINDIA time to time.

****For More Details and to Become a Member of SPE India Please Click****