

Record notes of discussions of the meeting on 8th Dec 2017 at NRPC, Katwaria Sarai New Delhi held under Chairmanship of Member(Thermal), CEA, New Delhi on 'Adherence to Environmental Norms as per Environment (Protection) Amendment Rules 2015 for Thermal Power Stations' with IPPs-installations of FGD.

List of participants is at annexure.

Chief Engineer (UMPP), CEA welcomed all participants from private power generating utilities across the country and briefed about the agenda of the meeting and requested the chair to address the participants.

Member (Thermal), CEA in his address stressed on the conformity to the Environment norms issued by MOEF&CC and advised all Thermal Power Producers to initiate actions to control emissions from their power plants to remain within the specified norms. He also urged everyone to adhere to the phasing plan as framed by CEA in consultation with various stakeholders so that the new norms could be achieved by the end of year 2022. He also informed that there shall be no relaxation or exemption beyond the time limit of 2022.

Chief Engineer (UMPP), CEA thanked the chair and requested Chief (Engineering), CERC to address the issues in allowing increase in tariffs on account of implementation of new environment norms under the prevailing regulations. Chief (Engineering), CERC gave a detailed presentation on various regulatory provisions, related issues and challenges before the Regulatory Commissions. Replying to the queries of the private developers/IPP, he clarified that the prevailing tariff regulations of CERC provides for allowing any capital expenditure on account of change in law as additional capital expenditure. However, there is no explicit provision for allowing any increase in O&M expenditure or review of operational norms on account of change in law. He further clarified that there is provision in the PPA in case of competitive bidding projects, to provide compensation on account of change in Law. The PPA provides restoring the generator to the same economic position, as if change in law has not occurred. Accordingly, the generator could be compensated for any capital expenditure as well as increase in operation and maintenance expenditure coupled with the relaxation in operational parameters. The merchant generators do not fall under the jurisdiction of regulatory commissions and are required to fend themselves by building any increase in their tariff. He further clarified that the expenditure could be allowed under change in law subject to due prudence check of the Commission after establishing optimum and most suitable technology, viability of such expenditure considering balance useful life and reasonableness of the cost. He further added that it would be easier for regulatory commissions to take a view with regard to allowing increase in tariff if the proposal of generator is appraised by the CEA.

Chief Engineer (UMPP), CEA thanked Chief (Engineering), CERC for his valuable inputs and requested Chief Engineer (TETD), CEA to address the issues relating standard technical specifications and various technologies available of FGD installations. Chief Engineer (TETD), CEA talked about the standard technical specifications for wet FGD which CEA is preparing and informed that it would be available within a week or so. Further Chief Engineer (TETD), CEA clarified that presently CEA has come up with standard technical specifications for wet FGD , however, this is only advisory in nature and power producers have liberty to choose any suitable technology for reducing SO_x.

Chief Engineer (TPE&CC), CEA discussed the phasing plan for installations of FGD in private companies across the country and stressed on the of adherence of the plan. Some of the private companies pointed out that their names are appearing inspite of already meeting the new norms. Chief Engineer (TPE&CC), CEA clarified that in case power plants already meeting the new norms need not be concerned by the phasing plan.

Chief Engineer (UMPP), CEA thanked Chief Engineer(TPE&CC), CEA and gave a presentation on various aspects of FGD installations including comparison of different technologies available and also the cost comparison. It is reiterated in the meeting to submit the data required by CEA for deciding the specific technology and associated costs and other related matters in installations of systems to control emission levels as per the norm.

Chief Engineer (UMPP), CEA requested power utilities present to elaborate views and difficulties faced by them in implementation of new environmental norms. Many of the issue put up by the private companies were discussed and sorted out. However, the following issued remained unaddressed and need to be taken up with various authorities:

- I.** For 162 GW coal power stations, about 15 million tonnes of limestone per annum is required by the year 2022. Is Ministry of Mines & Minerals ready with their plans of production of 90% - 95% pure Limestone over and above the requirements of the cement industry.
- II.** In technical specifications for FGD, Chimney height and the gas velocity should be specified to design the booster fan.
- III.** Processing and disposal of effluents that are generated from impurities in limestone should also form a part of specification for arriving capital cost and O&M cost.
- IV.** If the by-product (Gypsum) is not of commercial quality, the same needs to be disposed-off like Ash. Accordingly, the capital cost and land required for disposal of Gypsum needs to be identified.

- V.** Depending upon the targeted source of limestone mines, the logistics and transportation cost will vary from project to project. The chemical analysis of the limestone also will vary from mine to mine. Handling the impurities will involve the capital cost and O&M costs. While assessing the cost of FGD Project it should be done on equilibrated basis as it would be specific to each power station.
- VI.** While arriving at the O&M costs, the escalation on the cost of reagents may be considered as the demand on these reagents will increase phenomenally post commissioning of FGDs by the year 2022.
- VII.** The schemes for treating and disposal of effluents / by-products (Gypsum) may also be considered while deriving the cost per MW of FGD accordingly.
- VIII.** CERC may prima-facie clarify that installation of FGD shall be admissible under change of law.
- IX.** Additional capex/opex could be recognized as consequence to “Change in Law” under the existing PPA provisions and tariff regulations. There is a need to establish a mechanism for ensuring fast approvals to enable funding and to limit litigations by Discoms.
- X.** The generators has submitted that early movers in implementing the new environmental norms shall be at disadvantage due to increase in energy Charges on account of deterioration of heat rate and aux energy consumption. They have requested that such generators should be given preference in the Merit Order Dispatch (MOD). Alternatively, there should be some incentive for early movers in implementing new environmental norms such as power purchased from such plants may be counted towards RPO.
- XI.** As some of the plants are already financially distressed incurring such a huge expenditure to install FGD/SCR would be difficult.
- XII.** Prevailing Regulations do not support pass through of cost for the part of capacity not having PPA (Part PPA).

The meeting ended with a cordial note.

List of Participants

S. No	Name (S/Shri)	Designation	Organization
1	PD Siwal	Member(Thermal)	CEA
2	SC Srivastav	Chief (Engineering)	CERC
3	Chandra Shekhar	Chief Engineer (UMPP)	CEA
4	Dr. LD Papney	Chief Engineer(TETD)	CEA
5	BC Mallick	Chief Engineer(TPRM)	CEA
6	Gorakh Thakur	Chief Engineer(TCD)	CEA
7	Narendar Singh	Chief Engineer(TPE&CC)	CEA
8	Neeraj Kumar	Director(TCD)	CEA
9	Ramesh Kumar	Director(UMPP)	CEA
10	Ms Mitali Konwar	Senior Manager	CEA
11	Manoj Kumar	Asstt Director (UMPP)	CEA
12	Tarun Aggarwal	Asstt Director (UMPP)	CEA
	<u>Private Power Utilities (Alphabetic Order)</u>		
13	Manoj Kumar	AGM Project	ACB India Ltd.
14	Shiv Chaudhary	AVP	Adnani Power Ltd.
15	Narendra Kumar Ojha	Deputy Manager	Adnani Power Ltd.
16	Ashok Singh Yadav	Jt. G.M.-O & M	AVANTHA POWER
17	V.K.S. Bankoti	CEO	Bajaj Energy Ltd
18	R.V. BHAT	Sr. VP	CEPL
19	A. Hazra	DGM	CESC Ltd
20	Sandeep K. Mishra	Head - MISF Perform	CGPL Mundra
21	S. Rajasekaran	Manager	Coastal Energy
22	Manu K. Namboothiri	Manager Director	DB Power
23	Sukhbir Singh	Executive VP	DB Power
24	V.K. Kulshrestha	Advisor	DBPC
25	Sanjay Waghmare	General Manager	DCPL Mumbai
26	Champak Sen	General Manager	DCPL New Delhi
27	Kush Kumar	Head Corporate Affairs	Dhaiwal Infrastructure Ltd.
28	Nilesh Narain	General Manager	EPGL
29	Naveen Shetty	Sr. Manager	ESSAR POWER GUJARAT LTD.
30	Abaniprasad Mishra	Head Contracts & Regulatory	GMR
31	Ramesh Bhagat	Head CC	GMR
32	Ms. Khyati Gupta	Associate Manager (C & R)	GMR Energy
33	G. Muralidhar Gupta	AGM	GMR POWER
34	Molay Maitra	AGM	GMR POWER
35	M. Ramamurty	Director	GVK Power
36	Hemant Sharma	Manager Coordinator	GVK Power

37	Bhaskar Kumar Ganguly	GM (OS)	Haldia Energy Ltd.
38	Surajit Roy	DM (OS)	Haldia Energy Ltd.
39	Kamal Kant	CEO	IPCL
40	S.K. Bagai	President	Jaypee
41	V.S. Bajaj	Senior President	Jaypee
42	M.K.V. Rama Rao	Director Technical	Jaypee
43	Karunakar Jha	DGM Commercial	Jhajjar Power
44	D.K. Singh	DGM (Corporate Affairs)	JITPL
45	Punit Gupta	Executive Director	JITPL
46	R. Raveen Nair	CEO	JITPL
47	K. Prasanna Rao	GM	JPL/CPL
S. No	Name (S/Shri)	Designation	Organization
48	Om Prakesh Hota	GM (Production)	JPL/CPL
49	J.K. Soni	EVP	JSPL
50	Amitava Samantra	EVP	JSPL
51	Shantanu Dubey	Deputy Director	JSW
52	Pranav	Vice President	KSK MAHANADI POWER COMPANY
53	RadhaKrishna Alapati	Head- Engineer	LANCO
54	Vamsi Krishna Boppana	Senior Deputy GM	LANCO
55	Vibhuti	DGM	LANCO
56	Mukesh Kumar Sinha	Sr. VP (Engg & OS)	LPGCL BAJAJ POWER LTD
57	Balbir Singh	Advisor	LPGCL BAJAJ POWER LTD
58	M.S. Rahman	Head Project	Maithon Power Ltd.
59	Tushar Anlawat	Environment Dept.	Maruti Clean Coal Power
60	Dinesh Batra	Vice President	MBPMPL
61	Anil Kumar Singh	Head Engineering & Quality	MBPMPL
62	Z.A. Ansari	Head EMC	MPPGCL
63	Pramod Bhateley	Head Commercial & Regulatory	Nabha Power Ltd
64	B.C. Majhi	Head Boiler Maint.	Nabha Power Ltd
65	Aashutosh Aggarwal	EA to Chief Executive	Nabha Power Ltd
66	Ajay Vishwakarma	Manager	Rattan India Power Ltd.
67	Bijan Mishra	Senior Vice President (Environment)	Reliance Power
68	J.M. Jadagh	AVP	Reliance Power
69	Sunil Kumar	AVP	Reliance Power (Rosa Power)
70	Baliram Jadhav	AVP (OPN)	Reliance Power (VIPL)
71	Amit Kr. Singh	Sr. Manager	Reliance Power (Sasan Power)
72	Sanjay Yadav	Deputy Manager	RKM Powergen
73	Bellana Reddy	AVP	SEMBCORP
74	William J. Nazareth	Head Project-SGPC	SEMBCORP

75	V. Gopal	General Manager	TAQA Neyveli Power Ltd.
76	R.S. Gadre	Chief PE	Tata Power
77	Pramod Singh	Head Advocacy	Tata Power
78	Gaurav Lodha	Program Manager	Tata Power
79	R.S. Negi	General Manager	Torrent Power
80	Amit Mittal	GM Power Sales And Energy	TSPL Vedanta
81	M. Durairaj	Head Project	TSPL Vedanta
82	Bimalendu Mohapatra	Technical Head Cell	Vedanat Ltd
83	Viral Mehta	Vice President	Vedanat Ltd
84	Aditya Pyasi	Head Regulatory	Vedanat Ltd

Format 3 is designed to capture data for analysis of data of individual power plants for arriving at an optimum technology and associated cost in installations of FGD Systems in order to achieve Environmental norms as per Environment (Protection) Amendment Rules 2015 for Thermal Power Stations.

As per the Notification of Ministry of Environment, Forest and Climate Change (MOEF&CC), the new Environmental norms to be achieved by 2022.

The format is in MS Excel and it is requested to use single sheet by power plants and feed data of multiple units in the same sheet. No cells should be kept blank.

Data may please be provided in the format through mail at fgdcea@gmail.com.