



REPORT
ON
FLY ASH GENERATION
AT
COAL/LIGNITE BASED THERMAL POWER STATIONS
AND
ITS UTILIZATION IN THE COUNTRY
FOR
1ST HALF OF THE YEAR 2013-14
(April, 2013 to Sept., 2013)



CENTRAL ELECTRICITY AUTHORITY

NEW DELHI

MARCH, 2014

CONTENTS

PARA No.	DESCRIPTION	PAGE No.
1.0	Background	1
2.0	Ash Generation & Utilization during the 1 st Half Year 2013-14	2
2.1	A Brief Summary	2
2.2	Power Utility wise status of fly ash generation & its utilization during the 1 st Half Year 2013-14	2
2.3	State wise status of fly ash generation & its utilization during the 1 st Half Year 2013-14	6
3.0	Present status of fly ash utilization as per MoEF's amendment notification dated 3 rd November, 2009	7
3.1	Range of Fly Ash utilization during the 1 st Half Year 2013-14	7
3.2	Thermal Power Stations that have achieved 100% or more ash utilization during the 1 st Half Year 2013-14	8
3.3	Power Stations in Fly Ash Utilization Range of less than 100% and up to 75% during the 1 st Half Year 2013-14	10
3.4	Power Stations in Fly Ash Utilization of less than 75% and up to 60% during the 1 st Half Year 2013-14	11
3.5	Power Stations with Fly Ash utilization level of less than 60% during the 1 st Half Year 2013-14	12
4.0	Modes of Fly Ash utilization during the 1 st Half Year 2013-14	14
5.0	Conclusions & Recommendations	16
6.0	List of Abbreviations	19
Annex-I	Fly ash generation and its utilization at coal/lignite based thermal power stations in the country during the 1 st Half Year 2013-14 (Power Utility Wise)	

LIST OF TABLES & FIGURE

TABLE No.	TITLE OF TABLE	PAGE No.
I	Summary of fly ash generation and utilization during the 1 st Half Year 2013-14	2
II	Power Utility wise status of fly ash generation & utilization during the 1 st Half Year 2013-14	3
III	State wise status of fly ash generation & utilization during the 1 st Half Year 2013-14	6
IV	Range of percentage ash utilization during the 1 st Half Year 2013-14	7
V	Thermal Power Stations with ash utilization level of 100% or more during the 1 st Half Year 2013-14	8
VI	Thermal Power Stations with ash utilization level of less than 100% and up to 75% during the 1 st Half Year 2013-14	10
VII	Thermal Power Stations with ash utilization level of less than 75% and up to 60% during the 1 st Half Year 2013-14	11
VIII	Thermal Power Stations with Ash Utilization Level of below 60% during the 1 st Half Year 2013-14	12
IX	Major modes of fly ash utilization during 1 st Half Year 2013-14	15
FIGURE-1	Mode of fly ash utilization during the Period April, 2013 to September, 2013	15

CENTRAL ELECTRICITY AUTHORITY
THERMAL CIVIL DESIGN DIVISION

**FLY ASH GENERATION AT COAL/LIGNITE BASED THERMAL POWER
STATIONS AND ITS UTILIZATION IN THE COUNTRY
(FOR THE 1ST HALF OF THE YEAR 2013-14)**

1.0 BACKGROUND

Coal/Lignite based Thermal Power Generation has been the backbone of power capacity addition in the country. Indian coal is of low grade with ash content of the order of 30-45 % in comparison to imported coals which have low ash content of the order of 10-15%. Large quantity of ash is, thus being generated at coal/lignite based Thermal Power Stations in the country, which not only requires large area of precious land for its disposal but is also one of the sources of pollution of both air and water.

Central Electricity Authority (CEA) on behalf of Ministry of Power has been monitoring since 1996 the fly ash generation and its utilization at coal/ lignite based thermal power stations in the country. Data on fly ash generation and utilization including modes of utilization is obtained from thermal power stations on half yearly as well as yearly basis. The data thus obtained is analyzed and a report bringing out the status of fly ash generation and its utilization in the country is prepared. The said report is forwarded to Ministry of Power, Ministry of Environment and Forests and is also uploaded on the web site of CEA for bringing out the information in the public domain so that users of fly ash have access to the information on the availability of fly ash at different thermal power stations in the country, in order to facilitate and promote the utilization of fly ash.

To reduce the requirement of land for disposal of fly ash in ash ponds and to address the problem of pollution caused by fly ash, Ministry of Environment & Forests (MoEF) has issued various Notifications on fly ash utilization, first Notification was issued on 14th September, 1999 which was subsequently amended in 2003 and 2009 vide Notifications dated 27th August, 2003 and 3rd November, 2009 respectively. The said Notification as noted below prescribe targets of Fly Ash utilization in a phased manner for all Coal/Lignite based Thermal Power Stations in the country so as to achieve 100% utilization of fly ash.

The Thermal Power Stations in operation before the date of the Notification (i.e. 3rd November, 2009) are to achieve the target of fly ash utilization in successive 5 years - 50% in first year; 60% in second year; 75% in third year; 90% in fourth year and 100% in fifth year. The new Thermal Power Stations which have come into operation after the MoEF's notification (i.e. 3rd November, 2009) are to achieve the target of fly ash utilization as 50% in the first year, 70% during two years, 90% during three years and 100% during four years depending upon their date of commissioning.

The report on fly ash generation and its utilization at coal/lignite based thermal power stations provides factual information and the status of fly ash utilization in the country. It also facilitates to ascertain the level of fly ash utilization achieved by various power stations in relation to targets prescribed in MoEF's notification of 3rd November, 2009 and to take corrective measures in cases of Thermal Power Stations that are lagging behind achieving the prescribed targets of fly ash utilization.

2.0 ASH GENERATION & UTILIZATION DURING THE 1ST HALF OF THE YEAR 2013-14

2.1 A Brief Summary

Fly ash generation & utilization data for the 1st half of the Year 2013-14 (April, 2013 to Sept., 2013) has been received from **141** (One hundred forty one) coal/lignite based thermal power stations of various power utilities in the country.

Data received has been analyzed to derive conclusions on present status of fly ash generation and its utilization in the country as a whole. A brief summary of status is given in Table-I below:

TABLE-I
SUMMARY OF FLY ASH GENERATION AND UTILIZATION DURING
THE 1ST HALF OF THE YEAR 2013-14

Description	:	1st Half Year 2013-14
• Nos. of Thermal Power Stations from which data was received	:	141
• Installed capacity (MW)	:	1,28,515.30
• Coal consumed (Million tons)	:	247.09
• Average Ash Content (%)	:	34.27
• Fly Ash Generation (Million tons)	:	84.67
• Fly Ash Utilization (Million tons)	:	47.10
• Percentage Utilization	:	55.62

Power Station wise fly ash generation & its utilization status including modes of utilization for the 1st half of the Year 2013-14 for all the **141** thermal power stations is given in the statement at **Annex-I**.

2.2 Power Utility wise Status of Fly Ash Generation & its Utilization during the 1st Half of the Year 2013-14

The status of fly ash generation & utilization for the 1st half of the year 2013-14 for various power utilities in the country has been assessed based on data received from Thermal Power Stations and the same is given in Table-II:

TABLE-II**POWER UTILITY WISE FLY ASH GENERATION AND UTILIZATION FOR THE 1st HALF OF THE YEAR 2013-14**

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
1	2	3	4	5	6	7
1	Andhra Pradesh Power Generation Corporation (A.P.GEN.CO)	7	5092.50	5.9241	2.7680	46.72
2	ACBPL (Chhattisgarh)	1	270.00	0.4326	0.3214	74.29
3	APL (Gujarat)	1	4620.00	0.9160	0.9160	100.00
4	APCPL (Haryana)	1	1500.00	0.7151	0.0471	6.58
5	AMNEPL (Maharashtra)	1	246.00	0.0682	0.0148	21.74
6	BEPL (UP)	5	450.00	0.5425	0.4432	81.70
7	Bihar State Electricity Board	1	220.00	0.0000	0.0002	100.00
8	C.E.S.C. Ltd.	4	1285.00	1.1571	1.1571	100.00
9	C.G.P.L (Gujarat)	1	4000.00	0.0260	0.0080	30.77
10	Chattisgarh State Power Generation Company Ltd. (C.S.P.G.C.L.)	3	1780.00	1.6010	0.1500	9.37
11	Damodar Valley Corporation (D.V.C.)	6	5710.00	4.5347	3.5275	77.79
12	Durgapur Projects Ltd. (D.P.L.)	1	641.00	0.3605	0.3347	92.87
13	D.P.S.C.Ltd. (West Bengal)	2	42.00	0.0136	0.0136	100.00
14	E.P.G.L (Gujarat)	1	1200.00	0.0980	0.0910	92.86
15	Gujarat Industries Power Corporation Ltd. (G.I.P.C.L.)	1	500.00	0.2041	0.2041	100.00
16	Gujarat Mineral Development Corporation Ltd. (G.M.D.C.L.)	1	250.00	0.0487	0.0354	72.62
17	G.S.E.C.L. (Gujarat)	5	3720.00	1.5970	1.1710	73.32
18	Haryana Power Generation Cor. Ltd. (H.P.G.C.L.)	3	3167.80	2.0051	0.8436	42.07
19	Inderprastha Power Generation Company Ltd. (I.P.G.C.L)	1	135.00	0.0943	0.0895	94.83
20	Jharkhand State Electricity Board (J.S.E.B.)	1	770.00	0.1448	0.0079	5.46

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
1	2	3	4	5	6	7
21	J.H.P.L (Haryana)	1	1320.00	0.5361	0.4491	83.77
22	J.P.L (Chhatisgarh)	1	1000.00	1.0890	0.5280	48.48
23	JSW Energy Ltd.	2	2060.00	0.2560	0.2508	97.98
24	Karnataka Power Corporation Ltd. (K.P.C.L.)	2	2720.00	1.8718	0.7121	38.045
25	Kanti Bijlee Utpadan Nigam Ltd.(K.B.U.N.L.)	1	220.00	0.0155	0.0141	91.13
26	Lanco Power Ltd.	2	1800.00	1.0338	0.1770	17.121
27	Madhya Pradesh Power Generation Corporation Ltd. (M.P.P.G.C.L.)	3	3182.50	2.2928	1.0968	47.836
28	M.P.L (Jharkhand)	1	1050.00	0.8385	0.7923	94.49
29	Maharashtra State Power Generation Corporation Ltd. (M.S.P.G.C.L)	7	6960.00	5.3314	3.3422	62.69
30	Neyvelli Lignite Corporation Ltd. (N.L.C.LTD)	5	2990.00	0.7023	0.6054	86.21
31	NSPCL (Chhatisgarh)	1	500.00	0.4503	0.3531	78.42
32	N.T.P.C.LTD.	16	32355.00	27.4650	11.8490	43.14
33	NTECL (Tamil Nadu)	1	1000.00	0.0679	0.0000	0.00
34	Odisha Power Generation Corporation Ltd. (O.P.G.C.L.)	1	420.00	0.4754	0.0202	4.24
35	Punjab State Power Corporation Ltd. (P.S.P.C.L).	3	2630.00	1.7242	1.4639	84.90
36	Rajasthan Rajya Vidyut Utpadan Nigam Ltd. (R.R.V.U.N.L.)	4	3490.00	2.4603	2.2967	93.35
37	Reliance Infrastructure Limited (R.I.L)	1	500.00	0.3830	0.3490	91.12
38	RPSCL (UP)	1	1200.00	0.6916	0.3409	49.29
39	R.W.P.L. (JSW)	1	1080.00	0.4103	0.3769	91.86
40	SEL (Odisha)	1	2400.00	1.5013	0.2963	19.74
41	SEPL (AP)	1	300.00	0.0352	0.0321	91.36
42	SVPPL TPP	1	63.00	0.0000	0.0000	0.00
43	ST-CMS Electric Company Pvt.Ltd.	1	250.00	0.0759	0.0630	83.03
44	Tata Power Company (T.P.CO.)	2	1297.50	0.6167	0.6945	112.62

Sl. No.	Name of Power Utility	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
1	2	3	4	5	6	7
45	Tenughat Vidyut Nigam Ltd.(T.V.N.L.)	1	420.00	0.2741	0.3150	114.91
46	T.N.G & D Corporation (Tamil Nadu)	4	2860.00	2.4518	2.5782	105.16
47	Torent Power Ltd.	1	411.00	0.1700	0.1800	105.88
48	UPCL (Karnataka)	1	1200.00	0.0770	0.0603	78.30
49	Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd.(U.P.R.V.U.N.L.)	5	4844.00	3.6847	1.3289	36.06
50	VESPL (Chhatisgarh)	1	35.00	0.0000	0.0000	0.00
51	West Bengal Power Development Corporation Ltd. (W.B.P.D.C. L)	5	3860.00	3.0790	2.6695	86.70
52	WPCL (Maharashtra)	1	540.00	0.3519	0.3519	100.00
53	Gupta Energy Pvt. Ltd.(Maharashtra)	1	120.00	0.0377	0.0377	100.00
54	Jaypee Bina Thermal Power Plant (MP)	1	500.00	1.7240	0.1379	8.00
55	Adhunik Power & Natural Resources Ltd.	1	540.00	0.3257	0.1648	50.60
56	V.I.P Ltd. (Maharashtra)	1	600.00	0.1172	0.0059	5.07
57	EMCO ENERGY Ltd. (Maharashtra)	1	600.00	0.2039	0.2007	98.44
58	Spectrum Coal & Power Ltd.(Chhattisgarh)	1	50.00	0.0766	0.0766	100.00
59	Adani Power Ltd. (Maharashtra)	2	2640.00	0.7900	0.2810	121.69
60	Indiabulls Power Ltd. (Maharashtra)	1	270.00	0.0822	0.0822	100.00
61	Ideal Energy Projects Ltd.(Maharashtra)	1	270.00	0.0053	0.0010	18.97
62	ESSAR POWER MP LTD.(M.P)	1	1200.00	0.0729	0.0729	100.00
63	Meenakshi Energy Pvt. Ltd. (A.P)	1	300.00	0.0242	0.0127	52.25
64	ACB (INDIA) Ltd. (Chhattishgarh)	1	30.00	0.0603	0.0603	100.00
65	GMR Kamalanga Energy Ltd (Odisha)	1	700.00	0.0561	0.0321	57.23
66	Indian Metals & Ferro Alloys Ltd. (Odisha)	1	138.00	0.2004	0.1990	99.30
	GRAND TOTAL	141	128515.30	84.6728	47.0962	55.62

It may be seen from the Table-II above that:

The data of fly ash generation and utilization for the 1st half of the year 2013-14 was received from 66 Power Utilities out of which **16** Power Utilities have achieved fly ash utilization level of 100% or more and **21** Power Utilities have achieved fly ash utilization level in the range of less than 100% to 75%;

The performance of these power utilities in fly ash utilization has been excellent during the aforesaid period (i.e. during the 1st half of the year 2013-14).

2.3 State wise Status of Fly Ash Generation & its Utilization during the 1st half of the Year 2013-14

The state wise status of fly ash generation & utilization in the country based on data received from Thermal Power Stations/ Power Utilities has also been assessed and the same is given in Table-III below:

TABLE-III

STATE WISE FLY ASH GENERATION AND ITS UTILIZATION DURING THE 1ST HALF OF THE YEAR 2013-14

Sl. No.	Name of State	Nos. of TPS	Installed Capacity (MW)	Fly Ash Generation (Million-ton)	Fly Ash Utilization (Million-ton)	% age
1	2	3	4	5	6	7
1	ANDHARA PRADESH	11	10292.50	10.1735	4.8808	47.98
2	BIHAR	3	2780.00	1.9985	0.6203	31.04
3	CHHATISGARH	13	9908.00	9.0634	3.1894	35.19
4	DELHI	2	840.00	0.6783	0.5805	85.57
5	GUJARAT	11	14701.00	3.0598	2.6054	85.15
6	HARYANA	5	5987.80	3.2563	1.3397	41.14
7	JHARKHAND	8	5347.50	3.7457	3.4093	91.02
8	KARNATAKA	4	4780.00	2.0828	0.9064	43.52
9	MADHYA PRADESH	6	9142.50	7.3727	2.8296	38.38
10	MAHARASHTRA	19	15036.00	7.4065	4.6759	63.13
11	ODISHA	6	7118.00	5.8442	1.8686	31.97
12	PUNJAB	3	2630.00	1.7242	1.4639	84.90
13	RAJASTHAN	7	5480.00	3.1598	2.9628	93.76
14	TAMILNADU	10	6850.00	3.1486	3.0975	98.38
15	UTTAR PRADESH	17	16004.00	12.5760	5.8339	46.39
16	WEST BENGAL	16	11618.00	9.3823	6.8321	72.82
	GRAND TOTAL	141	128515.30	84.6728	47.0962	55.62

It may be seen from Table-III above that:

- (i) 2 states namely Andhra Pradesh and Uttar Pradesh have generated more than 10 million-ton of fly ash during the 1st half of the Year 2013-14 and the maximum fly ash of more than 12 million ton was generated in U.P. during the aforesaid period.

- (ii) During the 1st half of the Year 2013-14, the State of Tamil Nadu has achieved fly ash utilization level of more than 98 % and the States of Delhi, Gujarat, Jharkhand, Punjab, Rajasthan and West Bengal have achieved the fly ash utilization level of more than 70%.

The performance of aforesaid states in fly ash utilization has been excellent during the aforesaid period.

3.0 PRESENT STATUS OF FLY ASH UTILIZATION AS PER MoEF'S NOTIFICATION OF 3rd NOVEMBER, 2009

Fly ash generation and utilization data received from Thermal Power Stations/Power Utilities in the country for the 1st half of the year 2013-14 has been compiled to see the fly ash utilization vis-à-vis the target of fly ash utilization as prescribed in MoEF's notification of 3rd November, 2009.

During the 1st half of the Year 2013-14, all those thermal power stations which were in operation on the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization about 90% within four years from the date of notification i.e. by 2nd November, 2013. All those thermal power stations which have come into operation after the date of issuance of MoEF's notification (i.e. 3rd November, 2009) should have achieved the target of fly ash utilization as 50% in the first year, 70% during two years, 90% during three years and 100% during four years depending upon their date of commissioning. However, it is seen that the target set by MoEF notification has not achieved as a whole.

3.1 Range of Fly Ash Utilization during the 1st Half of the Year 2013-14

Based on the fly ash utilization data received from Thermal Power Stations/Power Utilities, the thermal power stations have been grouped into 5 categories as noted below depending upon range of utilization of fly ash by the stations.

TABLE-IV

RANGE OF PERCENTAGE FLY ASH UTILIZATION DURING THE 1st HALF OF THE YEAR 2013-14

Sl. No.	Level of Fly Ash utilization	Nos. of Power Stations
(1)	(2)	(3)
1	100% and more than 100%	39
2	Less than 100% and up to 75%	29
3	Less than 75% and up to 60%	17
4	Less than 60%	52
5	Nos. of TPS which have not generated any significant fly ash or any fly ash	04
	Total	141

3.2 Thermal Power Stations that have achieved Fly Ash utilization level of 100% or more during the 1st half of the Year 2013-14

The following names of Thermal Power Stations achieved the fly ash utilization level of 100% or more during the 1st half of the year 2013-14. The fly ash utilization level achieved by each of these power stations is given in Table-V below:

TABLE-V

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF 100% OR MORE DURING THE 1st HALF OF THE YEAR 2013-14

SI.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	RAMAGUNDAM'B'	A.P.GENCO Andhra Pradesh	62.50	0.0795	0.0821	103.27
2	MUNDRA TPS	APL (Gujrat)	4620.00	0.9160	0.9160	100.00
3	BARAUNI	B.S.E.B.(Bihar)	220.00	0.0000	0.0002	100.00
4	B.B.G.S.	C.E.S.C. (West Bengal)	750.00	0.7460	0.7460	100.00
5	S.G.S.	C.E.S.C. (West Bengal)	135.00	0.1510	0.1510	100.00
6	T.G.S	C.E.S.C. (West Bengal)	240.00	0.2370	0.2370	100.00
7	NEW COSSIPORE	C.E.S.C. (West Bengal)	160.00	0.0231	0.0231	100.00
8	CHANDRAPURA	D.V.C. (Jharkhand)	890.00	0.8911	0.9788	109.85
9	DURGAPUR	D.V.C. (West Bengal)	350.00	0.2992	0.3103	103.71
10	DISHERGARH POWER STATION	DPSC (West Bengal)	12.00	0.0136	0.0136	100.00
11	MAHAN	ESSAR POWER MP Ltd. Madhya Pradesh	1200.00	0.0729	0.0729	100.00
12	SURAT LIGNITE	G.I.P.C.L. (Gujarat)	500.00	0.2041	0.2041	100.00
13	GANDHINAGAR	G.S.E.C.L. (Gujarat)	870.00	0.2500	0.2580	103.20
14	KUTCH LIGNITE	G.S.E.C.L. (Gujarat)	290.00	0.1680	0.1680	100.00
15	SIKKA	G.S.E.C.L. (Gujarat)	240.00	0.0560	0.0840	150.00
16	VIJAYANAGAR	JSW Energy Limited (Karnataka)	860.00	0.1340	0.1340	100.00
17	KORADI	M.S.P.G.C.L. (Maharashtra)	1100.00	0.3820	0.6420	168.06
18	PARLI	M.S.P.G.C.L. (Maharashtra)	1130.00	0.3323	0.4225	127.14
19	NEYVELI -I EXPN	N.L.C.Ltd. (Tamilnadu)	420.00	0.1214	0.1214	100.00
20	BARSINGSAR LIGNITE	NLC (Rajsthan)	250.00	0.1491	0.1491	100.00
21	TALCHAR (TPS)	N.T.P.C.Ltd. (Odisha).	460.00	0.5850	0.5850	100.00

SI.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
22	DADRI	N.T.P.C.LTD. (Uttar Pradesh)	1820.00	1.2250	1.2470	101.80
23	KOTA	RRVUNL (Rajsthan)	1240.00	0.9197	1.0020	108.95
24	GIRAL	RRVUNL (Rajsthan)	250.00	0.1093	0.1093	100.00
25	JOJOBERA	T.P.CO. (Jharkhnad)	547.50	0.5819	0.6618	113.75
26	SABARMATI	Torrent Power Ltd. (Gujarat)	411.00	0.1700	0.1800	105.88
27	TENUGHAT	T.V.N.L (Jarkhnad)	420.00	0.2741	0.3150	114.91
28	ENNORE	T.N.G & D Corporation (Tamil Nadu)	340.00	0.3017	0.4024	133.39
29	METTUR	T.N.G & D Corporation (Tamil Nadu)	840.00	0.6199	0.9325	150.44
30	NORTH CHENNAI	T.N.G & D Corporation (Tamil Nadu)	630.00	0.4250	0.4300	101.18
31	PANKI	U.P.R.V.U.N.L. (U.P)	210.00	0.1444	0.2327	161.15
32	KOLAGHAT	W.B.P.D.C.L (West Bengal)	1260.00	1.0503	1.2905	122.87
33	BANDEL	W.B.P.D.C.L (West Bengal)	450.00	0.2608	0.3231	123.87
34	WARDHA WARORA	WPCL (Maharashtra)	540.00	0.3519	0.3519	100.00
35	GEPL TPP	Gupta Energy Pvt.Ltd. (Maharashtra)	120.00	0.0377	0.0377	100.00
36	RATIJA TPS	Spectrum Coal & Power Ltd. (Chhattisgarh)	50.00	0.0766	0.0766	100.00
37	KAWAI	Adani Power Ltd. (Rajasthan)	1320.00	0.1400	0.1400	100.00
38	AMARAVATI TPS	Indiabulls Power Ltd.(Maharashtra)	270.00	0.0822	0.0822	100.00
39	CHAKABURA TPP	ACB (INDIA) Ltd (Chhattishgarh)	30.00	0.0603	0.0603	100.00

It may be seen from Table-V above that:

During the 1st half of the Year 2013-14, **39** thermal power stations have achieved the fly ash utilization level of 100% or more including **18** thermal power stations which have achieved fly ash utilization level of more than 100%.

Power Stations which have achieved fly ash utilization level of more than 100% during the 1st half of the year 2013-14 have utilized the fly ash stored in ash ponds during earlier years.

3.3 Power Stations in Fly Ash Utilization Range of less than 100% and up to 75% during the 1st half of the Year 2013-14

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 100% and up to 75% during the 1st half year 2013-14 along with fly ash utilization level achieved by each of these power stations are given in Table-VI below:

TABLE-VI

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 100% AND UP TO 75% DURING THE 1st HALF OF THE YEAR 2013-14

Sl.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	BARKHERA	BEPL (Uttar Pradesh)	90.00	0.1140	0.0912	80.00
2	KHAMBER KHERA	BEPL (Uttar Pradesh)	90.00	0.1056	0.0845	80.00
3	KUNDARKI	BEPL (Uttar Pradesh)	90.00	0.1007	0.0877	87.08
4	MAQSOODPUR	BEPL (Uttar Pradesh)	90.00	0.1101	0.0881	80.00
5	UTRAULA	BEPL (Uttar Pradesh)	90.00	0.1121	0.0918	81.85
6	BOKARO 'B'	DVC (Jharkhand)	630.00	0.4942	0.4884	98.82
7	DURGAPUR PROJECTS POWER STATION	D.P.L (West Bengal).	641.00	0.3605	0.3347	92.87
8	SALAYA	EPGL (Gujarat)	1200.00	0.0980	0.0910	92.86
9	RAJGHAT	IPGCL (Delhi)	135.00	0.0943	0.0895	94.83
10	MAHATMA GANDHI	JHPL (Haryana)	1320.00	0.5361	0.4491	83.77
11	RATNAGIRI	JSW Energy Ltd. (Maharashtra)	1200.00	0.1220	0.1168	95.76
12	MUZAFFARPUR TPS	K.B.U.N.L (Bihar)	220.00	0.0155	0.0141	91.13
13	MAITHON RBTPP	MPL (Jharkhand)	1050.00	0.8385	0.7923	94.49
14	SANJAY GANDHI	M.P.P.G.C.L Madhya Pradesh	1340.00	1.1051	0.9000	81.44
15	NEYVELI - II	N.L.C.LTD (Tamilnadu)	1470.00	0.2691	0.2226	82.72
16	BHILAI	NSPCL (Chhattisgarh)	500.00	0.4503	0.3531	78.42
17	BADARPUR	NTPC Ltd.(Delhi)	705.00	0.5840	0.4910	84.08
18	LEHRA MOHABAT	P.S.P.C.L. (Punjab)	920.00	0.6702	0.5055	75.44
19	ROPAR	P.S.P.C.L. (Punjab)	1260.00	0.8560	0.8257	96.45
20	SURATGARH	RRVUNL (Rajsthan)	1500.00	1.1535	0.9176	79.55
21	CHHABRA	RRVUNL (Rajsthan)	500.00	0.2779	0.2678	96.36
22	JALIIPA KAPURDI	RWPL (Rajsthan)	1080.00	0.4103	0.3769	91.86
23	DAHANU	Reliance Infrastructure Ltd.(Maharashtra)	500.00	0.3830	0.3490	91.12

Sl.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
24	SIMHAPURI	SEPL (Andhra Pradesh)	300.00	0.0352	0.0321	91.36
25	CUDDALORE	ST-CMS (Tamil Nadu)	250.00	0.0759	0.0630	83.03
26	TROMBAY	T.P.CO (Maharashtra)	750.00	0.0349	0.0327	93.83
27	UDUPI	UPCL (Karnatak)	1200.00	0.0770	0.0603	78.30
28	EMCO ENERGY Ltd.	EMCO ENERGY Ltd.(Maharastra)	600.00	0.2039	0.2007	98.44
29	INDIAN METALS & FERRO ALLOYS LTD. (Odisha)	INDIAN METALS & FERRO ALLOYS LTD. (Odisha)	138.00	0.2004	0.1990	99.30

It may be seen from Table-IX above that **29** thermal power stations during the 1st half of the year 2013-14 have achieved fly ash utilization level in the range of less than 100% to 75%.

3.4 Power Stations in Fly Ash Utilization Range of less than 75% and up to 60% during the 1st half of the Year 2013-14

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 75% and up to 60% during the 1st half of the year 2013-14 along with fly ash utilization level achieved by each of these power stations are given in Table-VII below:

TABLE-VII

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF LESS THAN 75% AND UP TO 60% DURING THE 1ST HALF OF THE YEAR 2013-14.

Sl.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	RAYALSEEMA	A.P.GENCO Andhra Pradesh	1050.00	0.9913	0.6735	67.94
2	Dr. N.T.R (Vijawada)	A.P.GENCO Andhra Pradesh	1760.00	2.1429	1.4712	68.66
3	KASAI PALLI	ACBPL (Chhattishgarh)	270.00	0.4326	0.3214	74.29
4	MEJIA	DVC (WeastBengal)	2340.00	2.1350	1.5771	73.87
5	AKRIMOTA	G.M.D.C.L. (Gujarat)	250.00	0.0487	0.0354	72.62
6	UKAI	G.S.E.C.L. (Gujarat)	850.00	0.4890	0.3010	61.55
7	AMARKANTAK TPS	Lanco Power Ltd. (Chhattisgarh)	600.00	0.2496	0.1770	70.91
8	KHAPARKHEDA	M.S.P.G.C.L. (Maharastra)	840.00	0.7893	0.5291	67.03
9	NASIK	M.S.P.G.C.L. (Maharastra)	630.00	0.6452	0.4523	70.10
10	NEYVELI - I	N.L.C.LTD (Tamilnadu)	600.00	0.1626	0.1123	69.06

Sl.No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
11	UNCHA HAR	N.T.P.C.LTD. (Uttar Pradesh)	1050.00	1.1000	0.7160	65.09
12	BATHINDA	P.S.P.C.L. (Punjab)	450.00	0.1980	0.1327	67.00
13	TUTICORIN	T.N.G & D Corporation (Tamil Nadu)	1050.00	1.1053	0.8133	73.59
14	HARDUAGANJ	U.P.R.V.U.N.L (Uttar Pradesh)	670.00	0.5038	0.3048	60.50
15	PARICHHA	U.P.R.V.U.N.L (Uttar Pradesh)	1140.00	0.8565	0.6321	73.79
16	SAGARDIGHI	W.B.P.D.C.L (West Bengal)	600.00	0.4376	0.3061	69.96
17	BAKRESWAR	W.B.P.D.C.L (West Bengal)	1050.00	0.9316	0.6936	74.45

It may be seen from Table-VII above that **17** thermal power stations during the 1st half year 2011-12 have achieved fly ash utilization level of less than 75% and up to 60%.

3.5 Power Stations with Fly Ash Utilization Level of less than 60% during the 1st half of the Year 2013-14

The names of Thermal Power Stations which have achieved the fly ash utilization level of less than 60% during the 1st half year 2013-14 along with fly ash utilization level achieved by each of these power stations are given in Table-VIII:

TABLE-VIII

THERMAL POWER STATIONS WITH FLY ASH UTILIZATION LEVEL OF BELOW 60% DURING THE 1st HALF OF THE YEAR 2013-14

Sl. No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	KOTHAGUDEM	A.P.GENCO Andhra Pradesh	720.00	1.1150	0.1449	13.00
2	KOTHAGUDEM-V	A.P.GENCO Andhra Pradesh	500.00	0.7702	0.0961	12.48
3	KOTHAGUDEM-VI	A.P.GENCO Andhra Pradesh	500.00	0.3953	0.1313	33.21
4	KAKATIA	A.P.GENCO Andhra Pradesh	500.00	0.4299	0.1688	39.28
5	INDIRA GANDHI	APCPL (Haryana)	1500.00	0.7151	0.0471	6.58
6	MIHAN	AMNEPL (Maharastra)	246.00	0.0682	0.0148	21.74
7	MUNDRA UMPP	CGPL (Gujrat)	4000.00	0.0260	0.0080	30.77
8	KORBA (WEST)	C.S.P.G.C.L Chhattisgarh	840.00	0.6970	0.0000	0.00
9	DSPM	C.S.P.G.C.L Chhattisgarh	500.00	0.3600	0.0000	0.00
10	KORBA (EAST)	C.S.P.G.C.L Chhattisgarh	440.00	0.5440	0.1500	27.57
11	Durgapur Steel	DVC (West Bengal)	1000.00	0.5200	0.1728	33.22

Sl. No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
12	KODARMA	DVC (Jharkhand)	500.00	0.1953	0.0001	0.08
13	CHINAKURI	DPSCL (West Bengal)	30.00	No significant fly ash was generated		
14	WANAKBORI	G.S.E.C.L (Gujarat)	1470.00	0.6340	0.3600	56.78
15	HISAR	H.P.G.C.L (Haryana)	1200.00	0.7854	0.2274	28.95
16	YAMUNANAGAR	H.P.G.C.L (Haryana)	600.00	0.3440	0.1722	50.06
17	PANIPAT	H.P.G.C.L (Haryana)	1367.80	0.8757	0.4439	50.69
18	O.P.Jindal	JPL(Chhattisgarh.)	600.00	0.3440	0.1722	50.06
19	PATRATU	J.S.E.B. (Jharkhand)	770.00	0.1448	0.0079	5.46
20	BELLARY	K.P.C.L(Karnataka)	1000.00	0.6361	0.2275	35.77
21	RAICHUR	K.P.C.L(Karnataka)	1720.00	1.2357	0.4846	39.22
22	THAMMINAPATN AM TPS	Meenakshi Energy Pvt. Ltd. (A.P.)	300.00	0.0242	0.0127	52.25
23	SATPURA	M.P.P.G.C.L. (Madhya Pradesh)	1392.50	0.8358	0.1044	12.50
24	AMARKANTAK	M.P.P.G.C.L. (Madhya Pradesh)	450.00	0.3520	0.0923	26.23
25	BHUSAWAL	M.S.P.G.C.L. (Maharashtra)	420.00	0.7520	0.3295	43.82
26	CHANDRAPUR	M.S.P.G.C.L. (Maharashtra)	2340.00	1.8070	0.7873	43.57
27	PARAS	M.S.P.G.C.L. (Maharashtra)	500.00	0.6235	0.1795	28.79
28	NEYVELI-II EXPN	NLC (Tamilnadu)	250.00	No significant fly ash was generated		
29	VALLUR	NTECL (Tamilnadu)	1000.00	0.0679	0.0000	0.00
30	RAMAGUNDAM	N.T.P.C.Ltd. Andhra Pradesh	2600.00	2.4080	1.4000	58.14
31	SIMHADRI	N.T.P.C.Ltd. (Andhra Pradesh)	2000.00	1.7820	0.6680	37.49
32	KAHALGAON	N.T.P.C.Ltd.(Bihar)	2340.00	1.9830	0.6060	30.56
33	KORBA	N.T.P.C.Ltd. (Chhattisgarh).	2600.00	2.8080	1.0800	38.46
34	SIPAT	N.T.P.C.Ltd. (Chhattisgarh).	2980.00	2.2960	0.4430	19.29
35	VINDHYACHAL	N.T.P.C.Ltd. (Madhya Pradesh)	4260.00	3.2830	1.5220	46.36
36	TALCHAR(KAN)	N.T.P.C.Ltd. (Odisha).	3000.00	3.0260	0.7360	24.32
37	RIHAND	N.T.P.C. Ltd. (Uttar Pradesh)	3000.00	2.0890	0.8450	40.45
38	SINGRAULI	N.T.P.C. Ltd. (Uttar Pradesh)	2000.00	1.8660	0.6470	34.67
39	TANDA	N.T.P.C. Ltd. (Uttar Pradesh)	440.00	0.5930	0.2660	44.86
40	FARAKKA	N.T.P.C.Ltd. (West Bengal)	2100.00	1.8180	0.5970	32.84
41	MOUDA TPS	N.T.P.C.Ltd. (Maharashtra)	1000.00	0.0190	0.0000	0.00
42	IB VALLEY	O.P.G.C.L.(Odisha)	420.00	0.4754	0.0202	4.24

Sl. No.	Name of TPS	Power Utility	Installed Capacity	Fly ash Generation	Fly ash Utilization	% age
(1)	(2)	(3)	(4)	(5)	(6)	(7)
43	ROSA PHASE-I	RPSCL (Uttar Pradesh)	1200.00	0.6916	0.3409	49.29
44	STERLITE	SEL (Odisha)	2400.00	1.5013	0.2963	19.74
45	SVPL	SVPPL (Chhattisgarh.)	63.00	No significant fly ash was generated		
46	ANPARA 'A' & 'B'	UPRVUNL (Uttar Pradesh)	1630.00	1.5157	0.0051	0.34
47	OBRA	UPRVUNL (Uttar Pradesh)	1194.00	0.6643	0.1541	23.20
48	BUTIBORI	V.I.P Ltd. (Maharashtra)	600.00	0.1172	0.0059	5.07
49	SANTALDIH	W.B.P.D.C.L (West Bengal)	500.00	0.3987	0.0562	14.09
50	JAYPEE BINA TPP	Jaypee Bina Thermal Power Plant (Madhya Pradesh)	500.00	1.7240	0.1379	8.00
51	TIRORA	Adani Power Ltd. (Maharashtra)	3300.00	0.6500	0.1410	21.69
52	BELA TPS	Ideal Energy Projects Ltd. (Maharashtra)	270.00	0.0053	0.0010	18.97
53	KAMALANGA TPP	GMR Kamalanga Energy Ltd. (Odisha)	700.00	0.0561	0.0321	57.23
54	ANPARA 'C'	Lanco Power Ltd. (U.P.)	1200.00	0.7842	0.0000	0.00
55	MAHADEV PRADESH TPS	Adhunik Power & Natural Resources Ltd. (Jarkhand)	540.00	0.3257	0.1648	50.60
56	KATGHORA	VESPL (Chhattisgarh.)	35.00	No significant fly ash generated.		

It may be seen from Table-VIII above that:

During the 1st half of the year 2013-14, out of **141** (one hundred forty one) thermal power stations, **52** stations could not reach the level of fly ash utilization to 60%.

4.0 MODES OF FLY ASH UTILIZATION DURING THE 1st HALF OF THE YEAR 2013-14

The data on fly ash utilization received from Thermal Power Stations/Power Utilities for the 1st half of the year 2013-14 has been analyzed to ascertain the modes in which fly ash was utilized and the quantity utilized in each mode.

The modes in which fly ash were utilized during the 1st half year 2013-14 along with utilization in each mode are given in Table-IX below:

TABLE-IX

MODES OF FLY ASH UTILIZATION DURING THE 1st HALF OF THE YEAR 2013-14

Sl. No.	Mode of utilization	Quantity of Fly Ash utilized in the mode of utilization	
		Million-ton	Percentage (%)
(1)	(2)	(3)	(4)
1	Cement	19.56	41.53
2	Mine filling	5.37	11.40
3	Reclamation of low lying area	5.20	11.04
4	Bricks & Tiles	5.03	10.68
5	Ash Dyke Raising	4.27	9.07
6	Roads & flyovers	2.20	4.67
7	Agriculture	1.47	3.12
8	Concrete	0.68	1.44
9	Others	3.32	7.05
Total		47.10	100.00

The pie diagram showing the modes of utilization of fly ash during the 1st half of the Year 2013-14 is given in Figure-1 below:

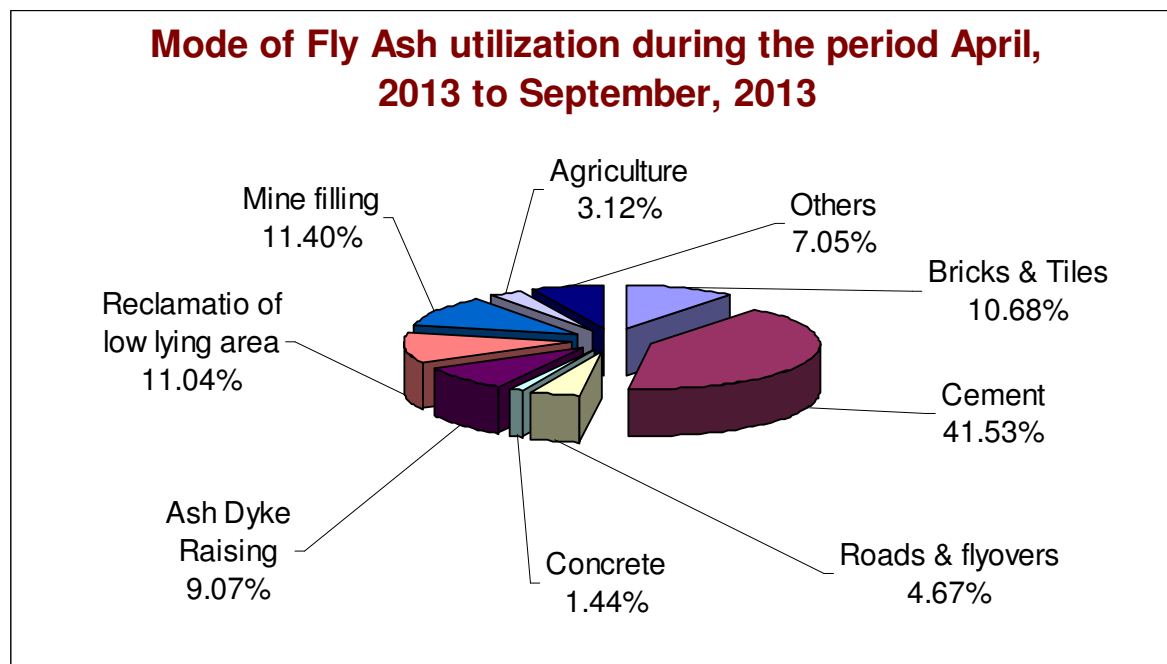


FIGURE-1

It may be seen from Table-IX and Figure -1 above that:

During the 1st half of the Year 2013-14, the maximum utilization of fly ash to the extent of 41.53 % of total fly ash utilized was in the Cement sector, followed by 11.40 % in mine filling 11.04 % in reclamation of low lying area, 10.68 % in making bricks & tiles, 9.07 % in ash dyke raising, 4.67 % in roads & embankments etc.

5.0 CONCLUSIONS & RECOMMENDATIONS

1. The highest level of fly ash utilization of about 62.6% was achieved in the year 2009-10 and it was about 58.48% in the year 2011-12 and about 61.37% in the year 2012-13. During the instant period i.e 1st half of the year 2013-14, utilization of fly ash is 55.62% which is behind the stipulated target.
2. While according environmental clearance to Thermal Power Projects, MoEF has been recently stipulating conditions to the effect that fly ash shall not be used in filling of low lying areas, in agriculture and in backfilling/stowing of mines etc. These conditions are contrary to provisions in MOEF's own Notification of 3rd November, 2009 on fly ash utilization and are going to have adverse impact on the pace of fly ash utilization in the country. Many organizations including NTPC have raised their concern on these conditions. These conditions may have to be suitably reviewed by MoEF so that the target of 100% utilization of fly ash as mandated in MoEF's Notification of 3rd November, 2009 could be achieved.
3. The utilization of fly ash in mine filling, in making fly ash based building products and in the construction of roads & embankments has been less than 12% or around 10% in each of these areas of fly ash utilization. These areas have large potential of fly ash utilization which needs to be explored for increasing the overall utilization of fly ash in the country.
4. A few strategies which need to be adopted to further increase the utilization level of fly ash are given below:
 - Renovation and modernization of coal/lignite based Thermal Power Station needs to include the technological advancement required to ensure development of dry fly ash collection, storage and disposal facilities so that fly ash in dry form could be made available to its users. Renovation and modernization should also include a marketing strategy for the development of fly ash based industries and making available fly ash and fly ash based building products in the nearby markets.
 - The states and districts where thermal power stations are located need to be sensitized to the need for utilization of fly ash and fly ash based building products and take necessary measures to promote them in the construction of buildings, highways/roads/ flyovers and other infrastructure projects. Measures can include policy intervention, planning strategies, fiscal incentives, recognizing specific efforts etc.
 - Use of fly ash based building products like fly ash based bricks, blocks, tiles etc. by both Govt. and Public & Private Construction agencies at Central and State levels is required to be ensured especially in construction works within a radius of 100km of any coal/ lignite based thermal power station as mandated in MoEF's Notification of 3rd November, 2009. The government agencies responsible for approval of building plans may have to ensure stipulation of a condition in their approval to the effect that only fly ash based building products like bricks/blocks/tiles etc shall be used in the construction of buildings as prescribed in MoEF's Notification of 3rd November, 2009 within a prescribed distance from any thermal power station especially in the construction of large office/commercial buildings and housing projects being developed both in government and private sectors.

- Use of fly ash in the construction of roads, road embankments and flyovers is well established and is slowly picking up. However, its potential is yet to be fully utilized. The use of fly ash in these projects within a radius of 100 km of any thermal power station as mandated in MoEF's Notification of 3rd November, 2009 has to be ensured right from project formulation stage and included in tender documents by having a prior tie up with the concerned thermal power station for their requirement. There is a need to sensitize National Highway Authority of India, CPWD, State PWDs and other agencies both at Central and State levels that are involved in the construction of highways, roads, flyovers etc. in this regard.
- Use of fly ash in backfilling/stowing of closed/abandoned/running open cast and underground mines has large potential for utilization of fly ash, especially for pit head thermal power stations which otherwise have limited avenues for fly ash utilization. However, its potential is yet to be fully utilized. The use of fly ash in back filling/stowing of open cast and underground mines within a radius of 50 km of any thermal power station as mandated in MoEF's Notification of 3rd November, 2009 has to be ensured right from initial stage of preparation of mine development plan. Inclusion of fly ash and bottom ash as backfill materials in the guidelines for preparation of mine closure plan is required for which Ministry of Coal and other concerned Ministries/Authorities have to take necessary action. There are environmental and safety concerns for use of fly ash along with OB material for back filling of operating open cast mines. These concerns need to be addressed.
- Use of fly ash in the construction of embankments for laying railway lines has also significant potential for large scale utilization of fly ash. There are safety concerns in use of fly ash in the construction of railway embankments having passenger traffic. There is a need to address these concerns by carrying out necessary studies by organizations like RDSO, a research organization under the Ministry of Railways.
- Thermal Power Stations have to ensure the utilization of fly ash and fly ash based building products within the thermal power station for the development of infrastructure like construction of buildings & roads, reclamation of low lying areas, the raising of ash dyke etc.
- The use of fly ash in Agriculture and waste land development has large potential but the utilization is below expectation. This may be attributed mainly to reservations in various quarters for use of fly ash in agriculture because of presence of heavy metals and radioactive elements in fly ash however, findings of research projects funded by Fly Ash Unit under Ministry of Science & Technology and studies carried out by other organizations indicate that there are no adverse effects in using fly ash in agriculture. Therefore, these concerns are required to be addressed for increasing the fly ash utilization.
- A large number of technologies have been developed for gainful utilization and safe management of fly ash through research projects funded by Fly Ash Mission/ Fly Ash Unit under Ministry of Science & Technology, GOI since 1994. Propagation of these technologies by establishing 'Self sustaining technology demonstration centers' would facilitate and accelerate the fly ash utilization in the country.

- Thermal Power Stations have to explore and promote all possible modes of fly ash utilization at their respective thermal power station for increasing the fly ash utilization in the country in line with MoEF's notification of 3rd November, 2009.
- There is a need to encourage 'Industry-Institute Interactions' for entrepreneur development, creating awareness and organizing training programmes and workshops.
- In view of large quantity of fly ash generation, this may be introduced as construction material in academic curriculum of Engineering, architecture, mining, agriculture etc.

* * *

6.0

Abbreviations

1. CEA : Central Electricity Authority
2. MoEF : Ministry of Environment & Forest
3. MW : Mega Watt
4. MoP : Ministry of Power
5. MT : Million Tonnes
6. TPS : Thermal Power Stations
7. APGENCO: Andhra Pradesh generation Corporation Ltd.
8. ACBPL: Aryan Coal Benefication Private Ltd.
9. APL : Adani Power Ltd.,
10. APCPL: Aravali Power corporation Pvt.Ltd.
11. AMNEPL: Abhijet MADC Nagpur energy Pvt. Ltd.
12. BEPL : Bajaj Energy Pvt. Ltd.
13. BSEB : Bihar State Electricity Supply Company
14. CESC : Calcutta Electric Supply Company
15. CGPL : Coastal Gujarat Power Ltd.
16. CSPGCL: Chattisgarh State Power Generation Company Ltd.
17. DVC : Damodar Valley Corporation
18. DPL : Durgapur Project Ltd.
19. DPSC : Dishengardh Power Supply Company Ltd.
20. EPGL : Essar Power Gujarat Ltd.
21. GIPCL : Gujarat Industries Power Corporation Ltd.
22. GMDCL: Gujarat Mineral Development Corporation Ltd.
23. GSECL: Gujarat State Electric Corporation Ltd.
24. HPGCL: Haryana Power Generating company Ltd.
25. IPGCL: Indraprastha Power Generation Company Ltd.
26. JSEB : Jharkhand State Electricity Board.
27. JHPL : Jhajjar Power Ltd.
28. JPL : Jindal Power Ltd.
29. JSW : Jindal Steel Works
30. KPCL : Karnataka Power Corporation Ltd.
31. KBUNL: Kanti Bijlee Utpadan Nigam Ltd.
32. MPPGCL: Madhya Pradesh Power Generating Company Ltd.
33. MPL : Maithon Power Ltd.
34. MSPGCL: Maharashtra State Power Generating Company Ltd.
35. NLC: Neyvelli Lignite Corporation
36. NSPCL: NTPC -SAIL Power Corporation Ltd.
37. NTPC : National thermal Power Corporation
38. NTECL: NTPC – Tamilnadu Electric Company Ltd.
39. OPGCL: Odisha Power Generation corporation Ltd.
40. PSPCL: Punjab State Power Corporation Ltd.
41. RRVUNL: Rajasthan Rajaya Vidyut Utpadan Nigam Ltd.
42. RIL : Reliance Infrastructure Ltd.
43. RPSCL: Rosa Power Supply Company Ltd.
44. RWPL: Raj West Power Ltd.
45. SEL : Sterlite energy Ltd.
46. SVPL: Shri Vardhman Power Pvt. Ltd.

47. ST-CMS: ST-CMS
48. TPCO : Tata Power company Ltd.
49. TUNL : Tenunghat Vidyut Nigam Ltd.
50. TNG&D: Tamil Nadu Generating and Distribution Corporation Ltd.
51. UPCI: Udupi Power Company Ltd.
52. UPRVUNL: Uttar Pradeh Rajaya Vidyut Utpadan Nigam Ltd.
53. VESPL: Vandanca energy Supply Power Ltd.
54. WBPDC: West Bengal Power Development Corporation Ltd.
55. WPCL : Wardha Power Company Ltd.
56. GEPL : Gupta Power Company Ltd.
57. VIP : Vidharbha Industries Power Ltd.
58. EPL : Essar Power Ltd.
59. ACB : Aryan Coal Beneficiary Ltd.
60. AP : Andhra Pradesh
61. MP : Madhya Pradesh
62. TN : Tamil Nadu
63. UP : Uttar Pradesh
64. WB : West Bengal

**HALF YEARLY DATA ON FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY DURING THE PERIOD FROM APRIL-2013 TO SEPTEMBER-2013
(POWER UTILITY- WISE)**

Sl. No.	Name of TPS	Power Utility & State	FLY ASH GENERATION AND ITS UTILIZATION							MODES OF UTILIZATION										Total Utilization	
			Installed Capacity	Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based/ Bricks/ Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector in RCC Dam Construction	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture/ Waste land Development	Others			
			(MW)	(million ton)	% age	(million ton)	(million ton)	%	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)		
58	THAMMINAPATNAM TPS	Meenakshi Energy Pvt. Ltd. (A.P)	300.00	0.4248	5.71	0.0242	0.0127	52.25	0.0000	0.0057	0.0000	0.0000	0.0000	0.0000	0.0070	0.0000	0.0000	0.0000	0.0000	0.0000	0.0127
59	MAITHON RBTPP	MPL (Jharkhand)	1050.00	1.8633	45.00	0.8385	0.7923	94.49	0.0000	0.0022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.7901	0.0000	0.0000	0.7923	
60	SANJAY GANDHI	M.P.P.G.C.L. (M.P.)	1340.00	2.9657	37.26	1.1051	0.9000	81.44	0.0020	0.8980	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9000	
61	SATPURA	M.P.P.G.C.L. (M.P.)	1392.50	2.1570	38.75	0.8358	0.1044	12.50	0.0121	0.0028	0.0878	0.0000	0.0000	0.0000	0.0018	0.0000	0.0000	0.0000	0.0000	0.1044	
62	AMARKANTAK	M.P.P.G.C.L. (M.P.)	450.00	1.0454	33.67	0.3520	0.0923	26.23	0.0029	0.0894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0923	
63	BHUSAVAL	M.S.P.G.C.L.(Maharashtra)	420.00	1.9084	39.41	0.7520	0.3295	43.82	0.0981	0.1793	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0055	0.0466	0.3296	
64	CHANDRAPUR	M.S.P.G.C.L.(Maharashtra)	2340.00	4.7518	38.03	1.8070	0.7873	43.57	0.0296	0.5288	0.0108	0.0601	0.0000	0.0000	0.0000	0.0180	0.0420	0.0981	0.7873		
65	KHAPARKHEDA	M.S.P.G.C.L.(Maharashtra)	840.00	2.0359	38.77	0.7893	0.5291	67.03	0.1990	0.0359	0.2544	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0398	0.5291		
66	KORADI	M.S.P.G.C.L.(Maharashtra)	1100.00	0.9510	40.17	0.3820	0.6420	168.06	0.2490	0.0000	0.3710	0.0000	0.0000	0.0000	0.0220	0.0000	0.0000	0.0000	0.0000	0.6420	
67	NASIK	M.S.P.G.C.L.(Maharashtra)	630.00	1.6271	39.65	0.6452	0.4523	70.10	0.3522	0.0992	0.0000	0.0000	0.0000	0.0000	0.0007	0.0000	0.0003	0.0000	0.4523		
68	PARAS	M.S.P.G.C.L.(Maharashtra)	500.00	1.4321	43.54	0.6235	0.1795	28.79	0.1636	0.0159	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1795	
69	PARLI	M.S.P.G.C.L.(Maharashtra)	1130.00	0.6936	47.91	0.3323	0.4225	127.14	0.1906	0.1140	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0136	0.1042	0.4224		
70	NEYVELI - I	N.L.C.LTD.(Tamilnadu)	600.00	2.8800	5.65	0.1626	0.1123	69.06	0.0180	0.0930	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0013	0.1123	
71	NEYVELI -I EXPN	N.L.C.LTD.(Tamilnadu)	420.00	1.8180	6.68	0.1214	0.1214	100.00	0.0242	0.0767	0.0000	0.0000	0.0000	0.0000	0.0011	0.0194	0.0000	0.0000	0.1214		
72	NEYVELI - II	N.L.C.LTD.(Tamilnadu)	1470.00	6.0133	4.48	0.2691	0.2226	82.72	0.0516	0.1037	0.0000	0.0000	0.0000	0.0000	0.0673	0.0000	0.0000	0.0000	0.2226		
73	NEYVELI - II EXPN	NLC (T. Nadu) (No generation)	250.00	0.0000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
74	BARSINGAR LIGNITE	NLC (Rajsthan)	250.00	0.6224	23.97	0.1491	0.1491	100.00	0.0064	0.0708	0.0000	0.0000	0.0000	0.0000	0.0000	0.0720	0.0000	0.0000	0.0000	0.1491	
75	BHILAI	NPSCL (Chhattisgarh)	500.00	1.1621	38.75	0.4503	0.3531	78.42	0.0409	0.3122	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.3531	
76	VALLUR	NTECL (Tamilnadu)	1000.00	0.2079	32.63	0.0679	0.0000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
77	RAMAGUNDAM	N.T.P.C. (Andhra Pradesh).	2600.00	6.4280	37.46	2.4080	1.4000	58.14	0.1370	0.5160	0.0040	0.0000	0.0000	0.0000	0.3200	0.0020	0.1160	0.0050	0.3000	1.4000	
78	SIMHADRI	N.T.P.C. (Andhra Pradesh).	2000.00	5.0800	35.08	1.7820	0.6680	37.49	0.1130	0.0680	0.0010	0.0000	0.0000	0.0000	0.1420	0.0000	0.0000	0.0000	0.3440	0.6680	
79	KAHALGAON	N.T.P.C.LTD.(Bihar)	2340.00	5.8310	34.01	1.9830	0.6060	30.56	0.0980	0.1190	0.0200	0.0000	0.0000	0.0000	0.2980	0.0720	0.0000	0.0000	0.0000	0.6070	
80	KORBA	N.T.P.C. (Chhattisgarh).	2600.00	6.9640	40.32	2.8080	1.0800	38.46	0.0340	0.0220	0.0000	0.0000	0.0000	0.0000	1.0240	0.0000	0.0000	0.0000	0.0000	1.0800	
81	SIPAT	N.T.P.C. (Chhattisgarh).	2980.00	5.9090	38.86	2.2960	0.4430	19.29	0.0990	0.3170	0.0000	0.0000	0.0000	0.0000	0.0000	0.0240	0.0000	0.0000	0.0030	0.4430	
82	BADARPUR	N.T.P.C.LTD (Delhi).	705.00	1.9480	29.98	0.5840	0.4910	84.08	0.1740	0.2280	0.0680	0.0000	0.0000	0.0000	0.0200	0.0020	0.0000	0.0000	0.0000	0.4920	
83	VINDHYACHAL	N.T.P.C.LTD. (M.P.)	4260.00	9.5310	34.45	3.2830	1.5220	46.36	0.0770	0.1580	0.0000	0.0000	0.0000	0.0000	0.3300	0.3000	0.1580	0.0000	0.6570	1.5220	
84	TALCHAR(KAN)	N.T.P.C.LTD.(Odisha).	3000.00	8.0690	37.50	3.0260	0.7360	24.32	0.0460	0.0120	0.0000	0.0000	0.0000	0.0000	0.1450	0.3510	0.0000	0.0000	0.1820	0.7360	
85	TALCHAR(TPS)	N.T.P.C.LTD.(Odisha).	460.00	1.5000	39.00	0.5850	0.5850	100.00	0.0000	0.0210	0.0000	0.0000	0.0000	0.0000	0.0000	0.5640	0.0000	0.0000	0.0000	0.5850	
86	RIHAND	N.T.P.C.LTD. (U.P.)	3000.00	6.2160	33.61	2.0890	0.8450	40.45	0.0070	0.0500	0.0000	0.0000	0.0000	0.0000	0.4750	0.3140	0.0000	0.0000	0.0000	0.8460	
87	SINGRAULI	N.T.P.C.LTD. (U.P.)	2000.00	5.4500	34.24	1.8660	0.6470	34.67	0.0010	0.2500	0.0000	0.0000	0.0000	0.0000	0.1020	0.0100	0.0000	0.0000	0.2840	0.6470	
88	UNCHAHAR	N.T.P.C.LTD. (U.P.)	1050.00	2.6590	41.37	1.1000	0.7160	65.09	0.0020	0.6050	0.0020	0.0000	0.0000	0.0000	0.0000	0.0220	0.0000	0.0050	0.0800	0.7160	
89	TANDA	N.T.P.C.LTD. (U.P.)	440.00	1.4300	41.47	0.5930	0.2660	44.86	0.0020	0.0810	0.0000	0.0000	0.0000	0.0000	0.0510	0.0130	0.0000	0.0000	0.1190	0.2660	
90	DADRI	N.T.P.C.LTD. (U.P.)	1820.00	3.8970	31.43	1.2250	1.2470	101.80	0.1400	0.8100	0.0310	0.0000	0.0000	0.0000	0.0000	0.1400	0.2670	0.0000	0.0000	1.2480	
91	FARAKKA	N.T.P.C.LTD. (W.B.)	2100.00	4.6800	38.85	1.8180	0.5970	32.84	0.0140	0.2050	0.2330	0.0000	0.0000	0.0000	0.0090	0.1360	0.0000	0.0000	0.0000	0.5970	
92	MOUDA TPS	N.T.P.C.LTD (Maharashtra)	1000.00	0.0490	38.78	0.0190	0.0000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
93	IB VALLEY	O.P.G.C.L.(Odisha)	420.00	1.1153	42.62	0.4754	0.0202	4.24	0.0006	0.0000	0.0000	0.0000	0.0000	0.0000	0.0196	0.0000	0.0000	0.0000	0.0000	0.0202	
94	BATHINDA	P.S.P.C.L. (Punjab)	450.00	0.6029	32.85	0.1980	0.1327	67.00	0.0080	0.1247	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1327	
95	LEHRA MOHABAT	P.S.P.C.L. (Punjab)	920.00	2.6115	25.66	0.6702	0.5055	75.44	0.0022	0.4494	0.0000	0.0257	0.0000	0.0000	0.0282	0.0000	0.0000	0.0000	0.0000	0.5055	
96	ROPAR	P.S.P.C.L. (Punjab)	1260.00	2.7228	31.44	0.8560	0.8257	96.45	0.0214	0.7576	0.0000	0.0174	0.0000	0.0000	0.0248	0.0000	0.0045	0.0000	0.0000	0.8257	
97	KOTA	RRVUNL (Rajsthan)	1240.00	2.8434	32.34	0.9197	1.0020	108.95	0.2656	0.6473	0.0391	0.0103	0.0000	0.0000	0.0000	0.0000	0.0046	0.0350	1.0020		
98	SURATGARH	RRVUNL (Rajsthan)	1500.00	3.0605	37.69	1.1535	0.9176	79.55	0.0591	0.8391	0.0000	0.0194	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.9176	
99	CHHABRA	RRVUNL (Rajsthan)	500.00	0.7817	35.55	0.2779	0.2678	96.36	0.0006	0.1954	0.0000	0.0000	0.0011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0707	0.2678	
100	GIRAL	RRVUNL (Rajsthan)	250.00	0.3330	32.81	0.1093	0.1093	100.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1093	0.0000	0.0000	0.0000	0.1093	
101	JALIPA KAPURDI	RWPL (Rajsthan)	1080.00	2.7626	14.85	0.4103	0.3769	91.86	0.0217	0.1993	0.0000	0.0000	0.0000	0.0000	0.0000	0.0381	0.1179	0.0000	0.0000	0.3770	
102	ROSA PHASE-I	RPSCL(U.P)	1200.00	2.5190	27.45	0.6916	0.3409	49.29	0.0003	0.1042	0.0533	0.0008	0.0000	0.0000	0.1823	0.0000	0.0000	0.0000	0.0000	0.3409	
103	DAHANU	Reliance Infrastructure	500.00	1.3300	28.80	0.3830	0.3490	91.12	0.0003	0.0000	0.0000	0.1580	0.0000	0.0000	0.1460	0.0000	0.0000	0.0000	0.0447	0.3490	
104	SERLITE	SEL (Odisha)	2400.00	3.4015	44.14	1.5013	0.2963	19.74	0.0000	0.0000	0.1244	0.0000	0.0000	0.0000	0.1719	0.0000	0.0000	0.0000	0.0000	0.2963	
105	SIMHAPURI	SEPL(A.P)	300.00	0.6595	5.33	0.0352	0.0321	91.36	0.0314	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0321	
106	CUDDALORE	ST-CMS (Tamil Nadu)	250.00	1.0202	7.44	0.0759	0.0630	83.03	0.0000	0.0599	0.0000	0.0000	0.0000	0.0000	0.0000	0.0030	0.0000	0.0000	0.0000	0.0630	
107	SVPL	SVVPL (Chhattisgarh.)	63.00	0.0000	0.00	0.0000	0.0000	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
		No fly ash generation & utilization during period.																			
108	JOJOBERA	T.P.CO. (Jarkhnad)	547.50	1.3136																	

**HALF YEARLY DATA ON FLY ASH GENERATION AND ITS UTILIZATION AT COAL/LIGNITE BASED THERMAL POWER STATIONS IN THE COUNTRY DURING THE PERIOD FROM APRIL-2013 TO SEPTEMBER-2013
(POWER UTILITY- WISE)**

Sl. No.	Name of TPS	Power Utility & State	FLY ASH GENERATION AND ITS UTILIZATION						MODES OF UTILIZATION										Total Utilization
			Installed Capacity	Coal consumed	Ash content of coal	Fly Ash Generation	Fly Ash Utilization	% age Utilization	In making of Fly Ash based/ Bricks/ Tiles etc.	In manufacture of Portland Pozzolana Cement	In construction of Highways & Roads including Flyovers	Part replacement of cement in concrete	In Hydro Power Sector in RCC Dam Construction	In Ash dyke raising	In reclamation of low lying Area	In Mine filling	In Agriculture/ Waste land Development	Others	
			(MW)	(million ton)	% age	(million ton)	(million ton)	%	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	(million ton)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
116	ANPARA 'A' & 'B'	U.P.R.V.U.N.L. (U.P.)	1630.00	4.3305	35.00	1.5157	0.0051	0.34	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0043	0.0000	0.0000	0.0008	0.0051
117	HARDUAGANJ	U.P.R.V.U.N.L. (U.P.)	670.00	0.9874	51.02	0.5038	0.3048	60.50	0.0000	0.1128	0.0000	0.0000	0.0000	0.0000	0.1920	0.0000	0.0000	0.0000	0.3048
118	OBRA	U.P.R.V.U.N.L. (U.P.)	1194.00	1.6593	40.03	0.6643	0.1541	23.20	0.0000	0.1541	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1541
119	PANKI	U.P.R.V.U.N.L. (U.P.)	210.00	0.4204	34.35	0.1444	0.2327	161.15	0.0003	0.0472	0.0000	0.1853	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2327
120	PARICHHA	U.P.R.V.U.N.L. (U.P.)	1140.00	2.5809	33.19	0.8565	0.6321	73.79	0.0009	0.3296	0.0000	0.0000	0.0000	0.2811	0.0204	0.0000	0.0000	0.0000	0.6321
121	UDUPI	UPCL (Karnatak)	1200.00	0.1407	54.74	0.0770	0.0603	78.30	0.0004	0.0445	0.0000	0.0155	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0603
122	KATGHORA	VESPL (Chhattisgarh.)	35.00																
123	BUTIBORI	V.I.P Ltd.(Maharashtra)	600.00	0.3219	36.42	0.1172	0.0059	5.07	0.0000	0.0055	0.0000	0.0000	0.0000	0.0000	0.0005	0.0000	0.0000	0.0000	0.0059
124	KOLAGHAT	W.B.P.D.C.L(W.B.)	1260.00	2.6900	39.04	1.0503	1.2905	122.87	0.2169	0.2129	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6881	0.1721	1.2900
125	SAGARDIGHI	W.B.P.D.C.L(W.B.)	600.00	1.0606	41.26	0.4376	0.3061	69.96	0.0336	0.1411	0.1094	0.0000	0.0000	0.0000	0.0220	0.0000	0.0000	0.0000	0.3061
126	BANDEL	W.B.P.D.C.L (W.B.)	450.00	0.7957	32.78	0.2608	0.3231	123.87	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2946	0.0173	0.3231
127	SANTALDIH	W.B.P.D.C.L (W.B.)	500.00	1.0608	37.58	0.3987	0.0562	14.09	0.0039	0.0000	0.0000	0.0000	0.0000	0.0000	0.0493	0.0000	0.0000	0.0029	0.0562
128	BAKRESWAR	W.B.P.D.C.L(W.B.)	1050.00	2.3387	39.84	0.9316	0.6936	74.45	0.0260	0.4192	0.0000	0.0000	0.0000	0.0000	0.2211	0.0000	0.0000	0.0273	0.6936
129	WARDHA WARORA	WPCL (Maharashtra)	540.00	1.0380	33.90	0.3519	0.3519	100.00	0.0006	0.2258	0.0000	0.0000	0.0000	0.0000	0.0360	0.0000	0.0000	0.0896	0.3520
130	GEPL TPP	Gupta Energy Pvt. Ltd.(Maharashtra)	120.00	0.1147	32.81	0.0377	0.0377	100.00	0.0017	0.0329	0.0000	0.0000	0.0000	0.0012	0.0019	0.0000	0.0000	0.0000	0.0377
131	JAYPEE BINA TPP	Jaypee Bina Thermal Power Plant (MP)	500.00	0.4109	419.57	1.7240	0.1379	8.00	0.0002	0.0554	0.0000	0.0000	0.0000	0.0000	0.0823	0.0000	0.0000	0.0000	0.1379
132	MAHADEV PRADESH TPS	Adhunik Power & Natural Resources Ltd. (Jarkhand)	540.00	0.8343	39.04	0.3257	0.1648	50.60	0.0029	0.0170	0.0330	0.0025	0.0000	0.0467	0.0628	0.0000	0.0000	0.0000	0.1648
133	EMCO ENERGY Ltd.	EMCO ENERGY Ltd. (Maharashtra)	600.00	0.6020	33.88	0.2039	0.2007	98.44	0.0000	0.1045	0.0000	0.0000	0.0000	0.0000	0.0000	0.0962	0.0000	0.0000	0.2007
134	RATIJA TPS	Spectrum Coal & Power Ltd. (Chhattisgarh)	50.00	0.1495	51.27	0.0766	0.0766	100.00	0.0059	0.0000	0.0000	0.0000	0.0000	0.0000	0.0707	0.0000	0.0000	0.0000	0.0766
135	TIRORA	Adani Power Ltd. (Maharashtra)	1980.00	2.3000	28.26	0.6500	0.1410	21.69	0.0080	0.0000	0.0000	0.0000	0.0000	0.0000	0.1330	0.0000	0.0000	0.0000	0.1410
136	KAWAI	Adani Power Ltd. (Rajasthan)	660.00	0.5660	24.73	0.1400	0.1400	100.00	0.0000	0.0100	0.0000	0.0000	0.0000	0.1300	0.0000	0.0000	0.0000	0.0000	0.1400
137	AMARAVATI TPS	Indiabulls Power Ltd. (Maharashtra)	270.00	0.2616	31.42	0.0822	0.0822	100.00	0.0034	0.0000	0.0000	0.0000	0.0000	0.0788	0.0000	0.0000	0.0000	0.0000	0.0822
138	BELA TPS	Ideal Energy Projects Ltd. (Maharashtra)	270.00	0.0170	31.05	0.0053	0.0010	18.97	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0010	0.0000	0.0000	0.0000	0.0010
139	CHAKABURA TPP	ACB (INDIA) Ltd. (Chhattisgarh)	30.00	0.1229	49.05	0.0603	0.0603	100.00	0.0089	0.0049	0.0000	0.0000	0.0000	0.0000	0.0356	0.0000	0.0000	0.0109	0.0603
140	KAMALANGA TPP	GMR Kamalanga Energy Ltd. (Odisha)	700.00	0.1236	45.40	0.0561	0.0321	57.23	0.0007	0.0000	0.0000	0.0000	0.0000	0.0000	0.0314	0.0000	0.0000	0.0000	0.0321
141	INDIAN METALS & FERRO ALLOYS LTD.	INDIAN METALS & FERRO ALLOYS LTD. (Odisha)	138.00	0.3933	50.94	0.2004	0.1990	99.30	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.1878	0.0000	0.0000	0.0000	0.1990
GRAND TOTAL			128515.30	247.09	34.27	84.67	47.10	55.62	5.03	19.56	2.20	0.68	0.00	4.27	5.20	5.37	1.47	3.3192	47.10