

WORKSHOP ON COAL BENEFICIATION TECHNOLOGY – 2007

COAL BENEFICATION FOR POWER GENERATION- USERS' PERSPECTIVE

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PRESENT INSTALLED CAPACITY

(Capacity in MW)

Year	Thermal				Hydro	RES	Nuclear	Total
	Coal	Gas	Diesel	Total				
As on 31.03.07	71121	13692	1202	86015	34654	7760	3900	132329
As on 31.07.07	71932	13802	1202	86936	33376	10175	4120	135007

Capacity Addition Proposed During 11th Plan

(Capacity in MW)

Sector	Thermal				Hydro	Nuclear	Total
	Coal	Lignite	Gas	Total			
Central	24310	1000	1490	26800	9685	3380	39865
State	23135	450	762	24347	3605	0	27952
Private	5460	0	2037	7497	3263	0	10760
All India Total	52905	1450	4289	58644	16553	3380	78577

FUEL-WISE/LOCATION-WISE THERMAL CAPACITY ADDITION PROPOSED DURING 11TH PLAN

(Capacity in MW)

Region	Coal based Projects				Lignite	Gas/ LNG	Total
	Pit head	Load Centre	Coastal	Total			
Northern	2500	9805	0	12305	625	220	13150
Western	9090	6210	500	15800	325	2258	18383
Southern	500	4560	3800	8860	500	1001	10361
Eastern	12120	3070	0	15190	0	0	15190
N-Eastern	0	750	0	750	0	810	1560
All India	24210	24395	4300	52905	1450	4289	58644

COAL WASHING STATUS

A. WASHERIES IN OPERATION*

I)	COKING COAL	MTY.
	CIL	20.10
	PRIVATE	12.27
	SUB TOTAL	32.27
II)	NON-COKING COAL	
	CIL	20.20
	PRIVATE	50.15
	SUB TOTAL	70.35

B. WASHERIES UNDER PROPOSAL/CONSTRUCTION*

21.00

* Ministry of coal web site.

CONTD.----

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C. PROJECTED DEMAND BY END OF 11TH PLAN FOR THERMAL POWER SECTOR PRIMARILY FOR LOAD CENTRE STATIONS

	CAPACITY (COAL BASED)(MW)	LOAD CENTRE (MW)	WASHING REQ. (MTY)
EXISTING (AS ON 31.3.07)	71,121	About 40,000	200
DURING 11 TH PLAN	52,905	24,395	120
TOTAL			320

D. WIDE GAP EXISTS BETWEEN PROJECTED DEMAND OF WASHED COAL AND ITS AVAILABILITY

PROBLEMS ASSOCIATED WITH SUPPLY OF ROM COAL AS RECEIVED AT POWER PLANTS

- NON UNIFORM SIZE, PRESENCE OF BOULDERS, SHALES, FINES AND OTHER EXTRANEIOUS MATTER.
- WIDE VARIATION IN COAL QUALITY-HIGH ASH CONTENT & LOW CALORIFIC VALUE.
- GRADE SLIPPAGES BY 1 TO 2 GRADES. COAL RECEIVED INVARIABLY CORRESPONDS TO LOWER LIMIT OF THE SUPPLY GRADE.
- LOW COAL QUALITY RESULTS IN INCREASED QUANTITY OF COAL HANDLING THUS CAUSING OPERATIONAL PROBLEMS IN CHP/AHP/MILLS SUCH AS THEIR OVERLOADING, DELAYS IN WAGONS' CLEARANCE, FREQUENT FAILURES ETC.

MEASURES BEING TAKEN FOR USE OF ROM COAL

- USE OF ROM COAL AS MADE AVAILABLE TO POWER PLANTS IS TAKEN CARE TO A LARGE EXTENT BY PROVIDING VARIOUS MEASURES DURING DESIGN STAGE. SUCH FEATURES INCLUDE:
 - Boiler and auxiliaries sizing for wide range of coal quality.
 - Low gas velocities.
 - Adequate margins in sizing of various systems such as CHP, AHP, ESP etc.
 - Materials selection based on high abrasion characteristics of Indian coals.
 - Type of equipment selection
 - Suitable protection in high corrosion areas.
- THE ABOVE FEATURES ADD TO THE PLANT COST.

KEY DRIVERS FOR USE OF WASHED COAL

- **COAL WASHING RESULTS IN COAL OF GOOD AND CONSISTENT QUALITY, FREE OF EXTRANEIOUS MATTER LEADING TO :**
 - Reduced Transportation Cost
 - Less Wear And Tear Of Coal Handling Plant, Coal Pulverizers And Other Boiler Components
 - Low Initial Cost In Case Of New Plants – Smaller ESP, Reduced Size of Equipments, Less Space Requirements etc.
 - Restoration Of Plant Output Availability If Constrained By Poor Coal Quality
 - Reduced Auxiliary Power Consumption And Secondary Oil Support Etc.,

- **MOE&F REQUIREMENT FOR USE OF COAL WITH ASH CONTENT LESS THAN 34% IN PLANTS LOCATED MORE THAN 1000 KM FROM COAL SUPPLY SOURCE**

- **COAL WASHING FACILITATES USE OF INDIGENOUS COAL IN LARGE SIZE SUPERCRITICAL BOILERS**

BARRIERS TO WIDER ADOPTION OF COAL WASHING- FOR PIT HEAD STATIONS

- INDIAN COALS HAVE LOW WASHING YIELD
- HIGH COST OF COAL WASHING WHICH IS NOT ALWAYS COMMENSURATE WITH THE BENEFITS THAT MAY ACCRUE
- PROBLEM OF DISPOSAL OF WASHERY REJECTS
- INCREASE IN MOISTURE CONTENT AS A RESULT OF COAL WASHING THUS AFFECTING EFFICIENCY
- AVAILABILITY OF SIZED COAL WITH REMOVAL OF STONES/SHALES ALONE COULD BE BENEFICIAL.

USE OF WASHERY REJECTS

- HUGE QUANTITY OF REJECTS GENERATION FROM EXISTING & FUTURE WASHERIES.
- HOWEVER USE OF REJECTS AS FUEL FOR GENERATION HAS THE LIMITATION OF
 - Low Energy Conversion Efficiency
 - Technology Limitations
 - Need For Blending with ROM Coal
 - Specific Skill Sets Required For Electricity Generation
 - Ownership of Rejects.
- THUS, THERE IS A NEED TO INTEGRATE POWER GENERATION BASED ON FLUIDISED BED COMBUSTION USING REJECTS WITH THE COAL WASHERY

CONCLUSIONS

- LOAD CENTRE THERMAL POWER STATIONS TO BE PRIORITY CANDIDATES FOR USE OF WASHED COAL AS THESE PLANTS HAVE
 - To comply with MOE&F notification
 - Inherent economic advantage due to lower transportation cost
 - Reduced load on Rail coal transportation infrastructures
- PITHEAD STATIONS TO BE CONSIDERED ONLY ON CASE SPECIFIC BASIS
 - Coal characteristics may exhibit good washability
 - Generation technology adopted may necessitate use of washed coal

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- COAL WASHERY OPERATION SHALL REST WITH EITHER COAL MINING COMPANY OR A THIRD PARTY WASHERY OPERATOR DUE TO
 - **Location considerations**
 - **Specific skill sets required for operation**
 - **Mobilisation of operation personnel**
- THUS TO ACHIEVE THIS OBJECTIVE THERE IS NEED TO EVOLVE SUITABLE MECHANISM FOR INTEGRATED OPERATION OF WASHERY AND FLUIDISED BED BASED GENERATION USING COAL WASHERY REJECTS.
- PLANT DESIGNED FOR WASHED COAL SHOULD BE ENSURED FOR SUPPLY OF WASHED COAL THROUGHOUT ITS LIFE.

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THANK YOU