



Coal Mining Task Force

COAL PREPARATION **SIMULATION** **FOR INDIA**



**ADVANCING
CLEAN COAL
TECHNOLOGY**



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INTRODUCTION

- INDO-US ENERGY DIALOGUE COAL WORKING GROUP AND ASIA-PACIFIC PARTNERSHIP COAL MINING TASK FORCE IDENTIFIED COAL BENEFICIATION AS PRIORITY NEED FOR INTERNATIONAL COLLABORATION;
- RESULTS LAY FOUNDATION FOR DISCUSSING BARRIERS AND PLANS FOR ENHANCING COAL WASHERY CAPACITY;



ECONOMIC AND ENVIRONMENTAL VALUE

- THERMAL COAL BENEFICIATION
 - one of the fastest growing industries in core energy sector in India
 - new coal washeries are being planned or set up in all the major coalfields
- BENEFICIATION OF THERMAL COAL IN INDIA IS NECESSARY TO
 - mitigate environmental degradation,
 - to enhance power plant equipment lifespan,
 - to conform to regulatory requirements, and
 - to reduce the thermal energy generation cost besides other intangible benefits



BENEFITS FROM COAL BENEFICIATION: CASE STUDIES and SPECIFIC FINDINGS

- COAL BASED GENERATION IN 2008-2009 > 50,000 MKW
- WASHED COAL HAS SHOWN AT LEAST A 10% IMPROVEMENT IN GENERATION IN ALL STUDIES,
- REDUCTION IN RAIL FREIGHT OF 7.5%,
- HIGHER EFFICIENCY MEANS LOWER EMISSIONS.
 - A 10% ash reduction has proven to reduce CO₂ by 190kg/kWh.
 - 13 million tons of Carbon from existing plants,
 - additional 8.0 million when applied to planned capacity growth in next 20 years



TECHNOLOGY & PROCESS SELECTION

- NO COMPREHENSIVE INTEGRATED SIMULATION PACKAGE AVAILABLE IN INDIA FOR DESIGN OF COAL BENEFICIATION PLANTS AND FOR CARRYING OUT TECHNO-ECONOMICS OF COAL BENEFICIATION PROJECTS
 - most suitable time to develop a simulation package for coal beneficiation in India
 - objective, an R&D study to develop an “Indian coal specific” simulation package for coal beneficiation
 - work has to be done before the target of washing entire quantity of high ash coal for all categories of power plants (pit-head or load centre) is achieved.



COMPUTER SIMULATION AND MODELING

- PRIMARY OBJECTIVES OF THE STUDY ARE AS FOLLOWS:
 - To develop a simulation package to select the optimum washery circuit, technology and equipment for washing Indian thermal coal
 - Aim is to conserve of energy and reduce the loss of combustibles with the washery discards through efficient design,
 - To determine an optimum ash level to which beneficiation should take place for a particular coal & a particular use to make it economical



COMPUTER SIMULATION AND MODELING (CONT.)

- PRIMARY OBJECTIVES OF THE STUDY (CONT.):
 - Consider all related issues e.g. level of washing, economics of operation of power plant, cost of washing, utilization of rejects and environmental impacts
 - Be able to determine break-even cost of washing that can be allowed for a pit-head power plant or load-center power plant, with or without reject utilization



COMPUTER SIMULATION AND MODELING (CONT.)

- PRIMARY OBJECTIVES OF THE STUDY (CONT.):
 - It will be able to calculate the break-even cost of washed coal for different ash level depending upon the distance of the load centre
 - It will be able to determine the break-even cost of washed coal at different ash levels for different levels of plant load factor achieved due to use of washed coal



SUMMARY

- COST/BENEFITS OF COAL PREPARATION
WILL BE WELL DOCUMENTED
- EXPANSION OF COAL BENEFICIATION
CAPACITY NOT A TECHNICAL PROBLEM
- RESULTS WILL BUILD UPON RECENT
INITIATIVES AND ESTABLISH THE
ENVIRONMENTAL VALUE ADDED FROM THE USE
OF CLEANER COAL



Sharpe International LLC

DEVELOPMENT OF A COAL PREPARATION
PLANT COMPUTER SIMULATION

THANK YOU

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