COAL PREPARATION SIMULATION FOR INDIA

ADVANCING CLEAN COAL TECHNOLOGY
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
THANK YOU

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