3rd annual international summit

COAL ASIA 2012

Summit Theme: Solution for Sustainable Environment & Energy Supply

Held on 27 - 28 February 2012
NDCC II Convention Centre, NDMC Complex, New Delhi, India

Summary

an initiative by

Mission Energy Foundation

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Ministry of Coal
Ministry of Power
Ministry of Environment & Forest*
Ministry of Chemical & Fertilisers*

Introduction

27th February, 2012, some of 270 professionals across the country and overseas gathered at NDCC II Convention Centre, NDMC Complex, New Delhi, on the occasion of 3rd Annual Summit COAL ASIA: 2012 – *Solution for Sustainable Environment & Energy Supply*. The Summit is organised in support of Ministry of Coal & Ministry of Power by Mission Energy Foundation in association with Abhijeet Group and extensive support from the energy sector. Looking back at COAL ASIA: 2012, the summit summarised the rich ideas that were shared over the two days.

For the unprecedented two days, the cream of energy sector - large and dynamic cadre – enjoyed the rare opportunity to meet and learn from each other; discussing, clarifying, and codifying their common goals and disparate experiences; acknowledging the obstacles to success- even as they began to shape the realistic strategies overcoming them.

Their organisational titles ranged wildly. Back at their home offices, these professionals were variously known as the Chairman's, Director's, CEO's, Managing Director's, President's, Vice President's, General Manager's and Manager's. Indeed when the summit organisers first contacted many of the nations's leading organisations to recruit participants; their request to speak with the top people was frequently met with baffled silence, followed by a furious fishing through organisational rolodex.

Participants agree that coal availability and gasification of the same is largely misunderstood within the energy sector. For many eminent industry gurus and governing boards, it remains a source of uncertainty and anxiety – even suspicion. Throughout the sector, the skills, expertise, and enthusiasm of professionals and the coal are underutilized. Their potential contribution is muted.

The aim and focus this summit – in New Delhi and beyond had been to help illuminate the commercial opportunities that continue to exist and emerge in addition to regulatory and governmental frameworks which govern and encourage the industry sector's development. The aim of the summit is to provide the participants with the opportunity to hear from experts from all aspects of the industry and discuss most important issues in this field through a mix of case studies and presentations. Rather, the participants took advantage of an unusual opportunity for exhilarating collegial knowledge sharing.

The summit was constructed around eight topical sessions scheduled over two days. Each session began with a brief presentation followed by vigorous discussion and debate.The quality of the conference presentations varied as it always does. However, we were impressed with the overall merit of the subject matter contained in the papers. It was particularly gratifying to hear the success stories from BHEL. The conference organisers do not make “best paper” selections for special recognition so we will also refrain from recommending specific papers and leave you to find your own titbits of information (but, we assure you, they are there). Suffice is to say, there were numerous excellent papers covering a wide array of coal productivity and varied coal gasification technology with current status and viability.

THINGS IN PERSPECTIVE

From the beginning of the summit, it was clear that all of the participants - those from the largest, most sophisticated national organisations to those from much smaller local and regional groups shared one troubling concern; as we were waiting for the Honourable Union Minister of Coal , Shri Sriprakash Jaiswal for the inauguration and due to the sudden change in his schedule he had to miss the same.

However, we had our inauguration in esteem presence of Shri A K Shrivastava, Group Director - **Abhijeet Group**, Shri V R Sharma, DMD & CEO - **JSPL**, Shri Ashwinkumar, Director General - **Mission Energy Foundation**, Shri R K Sachdev, Former Advisor Coal - **Ministry of Coal**, Shri Chandra Bhushan, Dy. Director - **CSE**, Dr. Endre Simonyi, Scientist- **Hungary**, K P Singh, Former Member (Thermal) - **CEA** by lighting the lamp

The remainder of our summary will attempt to place the 3rd annual international summit **COAL ASIA: 2012** in perspective. This has, however proved to be more difficult than we at first envisioned. When we started to write the conference summary, we naively assumed to simply take a retrospective look back to the conference and make some observations regarding the impact it has had on events that have taken place since then. But now that we actually in process of putting words on paper, we have come to the conclusion that this undertaking is much like reporting on negotiations aimed at a peace accord. The goal everyone espouses will, if implemented, result in substantial benefits; the significance of these benefits and their ramifications to future generations will be enormous, although at the present time we can only "guesstimate" their magnitude. Numerous other meetings have preceded this one, often without visible signs of major progress at least in part because some players appeared to have other, less altruistic agendas.

Many attendees at this meeting shared an expectation that a workable solution to the problem of too much suppression and not enough prescription will finally be forthcoming. It is too early to tell. Past meetings have also generated such optimism, only to result in missed opportunities and dashed hopes. The bottom line is that we are cautiously optimistic. We think we have a window of opportunity, but a number of people have already stubbed their fingers on the sill.

Virtually all attendees agreed that the present situation is untenable. In fact, we suspect most natural resource and a substantial majority of interested technocrats, bureaucrats, and politicians agree that many ecosystems are showing increased signs of stress, and that is not the major reason. But is the culprit too much, not enough, or the wrong kind of approach. The answer depends upon the community in question.

The Indian coal in general have high ash content up to 40% and are highly reactive and the high ash limits its suitability for gasification. On the contrary petcoke have very low ash content and are not highly reactive and combination of coal with petcoke forms a balanced feed for gasifiers. A new approach is to build smaller modular plants with advantages of lesser investment, higher flexibility, faster implementation and returns on investment much faster. New ideas can be incorporated and risk management can be done effectively. An array of methodologies will be necessary as human desires and environmental conditions change both spatially and temporally (although overall approaches may be similar in many cases).

WHAT GOT US WHERE WE ARE TODAY?

Please bear with us while we briefly summarize our view of what got us to where we are today. The forester used to say: "You can no more get to where you don't know where you're going than you got to where you think you are from where you don't know where you've been." In other words, if we want to reach a specific objective, we should know where we started from, how we got to the present situation, and whether it is a step in the right direction in order to avoid further exacerbating the situation.

Coal is the natural choice as primary energy source in India. India is the third- largest coal-producing country after China and USA. India's domestic consumption is expected to increase multi-fold within the next five to 10 years, due to the completion of ongoing power projects, and demand from steel mills, cement producers and other industries. India imports coal to meet this demand. Non-coking coal reserves make up about 85 percent while coking coal reserves are the remaining 15 percent. Since oil shocks of seventies, coal is the single most important energy source for India. India needs to sustain an 8% to 10% economic growth rate, over the next 25 years. Coal provides 52% of primary energy for India against 27% globally 65% of power generation in India depends on coal against 41% internationally and the trend is likely to continue in the foreseeable future. Integrated Energy Policy envisages a coal demand of 2.04 Bt. in 2031-32 with 8 % GDP growth & 2.34 Bt. with 9 % GDP growth in the TY of XV Plan22. India has the fourth-largest reserves of coal in the world after USA, Russia, and China. So, there is utmost need for enhancement of production and productivity in India which needs revolution in economic reforms, technological up-gradation, intensive mechanization, detailed exploration and opening up new projects.

Today civilization is measured in terms of per capita energy consumption. Consumption of per capita commercial energy in India is 0.2 Toe, while in US, it is 7.82, and even China, 0.66. World average is 1.43 Toe. By 2030, if our country's population grows to 1.3.billion and achieves an economic growth of 6-7%, the country would enhance its power generation from a present level of 1 lakh MW to 3.8 lakh MW. This means country's coal requirement has to go to 1300 MT. It is needed heavy capital investment in the coal industry for getting a quantum jump. Neither the PSU coal companies facing severe resource crunch are able to invest nor is government able to extend budgetary support, stopping other development activities. Despite capital inducted in PSUs, instead of paying dividends, some of them are in debt trap.

The below reforms are proposed for Indian Coal Industry:

- To invite private capital and attract imports.
- Withdrawal of budgetary support.
- Deregulation of all grades of coal from the earlier administered pricing regime, making the market forces to dictate the coal prices.
- Reduction of tariffs on imported coal.
- Encourage long term Fuel Supply Agreements (FSAs).
- Planning Commission should make investor friendly recommendations on Integral Coal Policy.
- Proposed amendment to Coal Mines Nationalization Act allowing any Indian company to mine coal for commercial purpose.
- New amendments to Contract Labour (Regulation & Abolition) Act, 1970, permitting presently prohibited activities in deploying contractors.
- New proposed Coal and Lignite (R&D) Bill permitting reconnaissance, prospecting and mining operations to be allotted through competitive bidding.
- Expediting institutional reforms
- Extend fiscal concessions and tax benefits in line with other infrastructure sectors.
- Accelerate exploration and production at all levels.
- Streamline procedure for land acquisition, forest land diversion and environmental clearance
- Need for clean coal technology and coal beneficiation for low emissions; amendment to environment act.
- New business strategy like Mine Developer 'Cum' Operator (MDO), Technology Provider 'Cum' Operator
  (TPO), Risk/Gain sharing, Public Private Partnership (PPP) can be worked out.
- Establishment of Coal Washeries for improving Useful Heat Value (UHV) or Gross Calorific Value (GCV) of Coal.

Reasons for Poor Production & Productivity:

- Limited open cast reserves
- Initial capital intensive
- Steep gradient leads to high stripping ratio and larger area of external dumping
- Land Acquisition
- Deeper deposits
- Poor maintenance and under utilisation of haul roads & HEMM
- Stability of Pit and dump slopes
- Rehabilitation and Resettlement
- Mis-matching HEMM Combination
- Wild Life Board Permissions

WHERE DO WE GO FROM HERE?

India's demand for electricity production far exceeds their supply capabilities and India has vast supplies of coal reserves – 3rd largest in the world. Current electricity consumption is approx 750 billion kWh with an estimated per annum increase of 8-10%. Coal will continue to be used. Clean coal technology provides immediate, lower cost coal beneficiation solutions to allow Indian electricity producers to upgrade dirtier coals into more efficient, low sulphur, low ash feedstock. Beneficiation of low-rank coals improves useable reserve lifetime, addressing concerns related to energy security.

Immediate economic benefit helps to finance development of improved clean coal technologies proved clean coal technologies and other renewable technologies. It usually addresses atmospheric problems resulting from burning coal and is an umbrella term used to describe technologies being developed to reduce the environmental impact of coal based energy generation. It addresses Dual Crisis – Energy crisis v Climate change crisis. Under the energy crisis scenario, CO2 emissions will increase 55% by 2030. The power generator industry will account for the bulk of these emissions because of their heavy reliance on coal.

The energy crisis demands that the cheapest and most available energy resource is utilized – COAL. The climate change crisis demands that the heaviest emitters of CO2 are reigned in – COAL. Clean Coal Technologies is where these two immoveable demands meet.

CBM/CMM/AMM Exploration & Exploitation, R&D Projects:

- An UNDP/GEF/GOI funded demonstration project under implementation for production & utilisation of CBM.
- CIL entered into JV with ONGC for development of CBM in 2 blocks.
- A perspective plan for harnessing
- CMM/AMM from CIL 43 command area.

Underground Coal Gasification:

- ONGC & GAIL pursuing UCG in collaboration with CIL.
- MOU signed between CIL & ONGC for a pilot project in JV mode.

Coal Liquefaction:

- CIL and Oil India limited to sign an MOU for a 5000 barrels/ day.

CONCLUSIONS

India is the third largest coal producer in the world and is producing nearly 88% of coal from opencast mining presently. Opencast mining has its own limitations due to depth, land acquisition, R&R, and environment pollution etc. Exploitation of coal is almost exhausted upto 300m depth. The increased cost of production from UG mines indicates need of opening up new opencast mines to augment the sustainable production. This needs operating opencast mines at greater depths with higher stripping ratio (around 1 in 12).

For a healthy, economic and balanced growth of coal mining industry in the coming decades, Opencast and Underground production shall be planned in the ratio of 75:25. Hence it is imperative to get bulk production by deploying intensive high capacity machinery and applying total productive maintenance. Most of the shallow deposits have already depleted, further going into deep, need to innovate suitable open cast mining technology as the existing shovel dumper combination is not viable due to high population of HEMM and other operational, safety constraints.

In this regard, due to increased depth & increased volumes, In-pit crushing & conveying technology needs to be adopted in the years to come, apart from introduction of higher capacity equipment, particular to reduce the fleet of equipment. There must be amalgamation of small adjacent mines/blocks to have bigger mines to optimize the operational efficiency and benefits of economy sake further.

The Different business models like Mine Developer 'Cum' Operator (MDO), Technology Provider 'Cum' Operator (TPO), Risk/Gain sharing, Public Private Partnership (PPP), Build-Own-Operate & Transfer (BOOT) can be worked out with foreign participants. Besides that, coal washeries can be introduced in a large scale to improve the quality. Hence, the Indian coal mining industry must plan to introduce most promising Longwall Technology in viable UG projects, high capacity HEMM in opencast projects and wherever feasible, daylighting of UG mines, enhancing production from working mines, to meet the demand and cut down the imports

- Gasification process completely converts coal / petroleum residues into more value added products
- Gasification based energy systems/IGCC are becoming stable , affordable for high-efficiency energy supply with a minimal environmental impact

- Feedstock flexibility – utilization of low-cost available feedstock (petroleum coke, biomass, municipal and industrial waste, and coal)
- Petcoke / Coal mixture is considered a better feedstock as it balances some negative aspect of each other
- Higher product flexibility ; electricity, fuels, chemicals, hydrogen, and steam
- The most economical technology for CO2 capture
- Serious R & D efforts are being made to make the gasification/ IGCC technology more reliable & cost effective

The production and utilization of energy is an essential requirement for all societies in the twenty-first Century. Efficiency and conservation are key components of energy. Sustainability the concept that every generation should meet its energy needs without compromising the energy needs of future generations. Energy sustainability focuses on long-term energy strategies and policies that ensure adequate energy to meet today's needs, as well as tomorrows. Sustainability also includes investing in research and development of advanced technologies for producing conventional energy sources, promoting the use of alternative energy sources, and encouraging sound environmental policies.

"Ministry of Coal is focusing on development of Clean Coal Technologies in coal mining. The efforts to ensure consistency in quality of coal supplies have helped in augmenting washed coal production for power generation. Areas like Underground Coal Gasification, Coal to Liquid etc. are also being promoted" said Shri Sriprakash Jaiswal, Union Minister Coal at the valedictory session of the 3rd annual international summit COAL ASIA: 2012

Last but not the least, Shri Ashwinkumar, Director General - Mission Energy Foundation did raised the industry concern on supply, demand & production gap currently prevailing the coal industry and how to raising the production bars of coal to bring solution for sustainable growth in presence H'ble Union Minister of Coal; and further thanking the participants of the summit.

LATEST INITIATIVE BY GOVT OF INDIA

- Govt to auction 2 Coal Blocks shown in the below table for surface gasification:
  Meguli, Sursa(Tatapani) – total reserves 135.55 MT

Much Needed Power Booster

TOTAL 18,186.2 MT

Open cast **Underground** Medium Depth

Sector	Blocks earmarked	Major blocks/ coalfields	Total reserves (Million Tonnes)	Type of mines
Power	16	Tentuloi (Talcher), Tamla North (Raniganj)	8165.28	5, 8, 3
State mining corporations	12	Deocha-Pachami (Bhirbhum), Banai (Mand Raigarh)	4453.32	1, 3, 8
Integrated steel	12	Badam Dip Side (N Karanpura), Aluara (Jharia)	4414.61	1, 11
Cement	7	Dahegaon Dhapewada (Kamptee), Andal Babuisole (Raniganj)	636.86	1, 5, 1
Sponge iron	5	Shahdol (Sohagpur), Kalambi Kameshwar (Kamptee)	380.58	All
Surface gasification	2	Meguli, Sursa (Tatapani)	135.55	All

Source: EconomicTimes, dt: 16th March, 2012

Look forward meeting you at **COAL GAS: 2013**, scheduled for 14-15 February 2013 at New Delhi.

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