



CFRI NEWSLETTER



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Established in November 1946, Central Fuel Research Institute is a unique Institute of its kind in India under CSIR, New Delhi to conduct research in different areas of Fuel Science and Technology with emphasis on coal and lignite.

Mission: Enhance the position of the Institute as a premier R&D centre for technology development and transfer by forging strategic alliance with other agencies and continuously strive for excellence in the area of potential expertise for generation of basic knowledge, innovation, and advanced concepts in science and technology for economic, efficient, and environmentally safe energy management.

HIGHLIGHTS OF THE COMPLETED PROJECTS

ASSESSING THE POTENTIAL OF UTILISING THE COKE BREEZE OF TCL FOR UTILISATION IN LIME KILN OF TATA CHEMICALS LTD (*Tata Chemicals Ltd., Mithapur, Jamnagar, Gujrat*)

TCL uses imported coke and/or coke produced from imported coal for its vertical shaft lime kiln (VSLK) where specific size of coke (+15 -60mm) is used. The generation of -15 mm coke breeze is to the tune of 10 tpd, which may also be increased in future. TCL desires to utilise the coke breeze in the lime kiln as substituted briquetted fuel. CFRI having the expertise of making briquettes as per requirement (tailor-made) accepted the offer for developing the required technology for utilisation of TCL coke breeze.

After detailed characterisation of coke breeze procured from TCL and lab scale investigations to optimise the dose of asphalt binder and curing conditions, about 400 kg of ovoid shaped briquettes were produced in 1 tph briquetting pilot plant at CFRI with 94.0% coke breeze (x3 mm) and 6.0% binder. The characteristics of cured briquettes were assessed and observed to be strong enough with average point crushing strength of 155 kg and satisfactory shatter and micum indices values. The product can prove to be advantageous in its use for lime kiln.

TECHNO-ECONOMIC FEASIBILITY OF DIFFERENT NON-RECOVERY TYPE OF COKE OVENS FOR SATHVAHANA STEEL PLANT (*Sathvahana Ispat Ltd, Ameerpet, Hyderabad*)

The objective of this study was to do pre-design techno-economic evaluation of non-recovery type of coke ovens developed and designed by CFRI for comparative studies. The coke ovens basically work on the principle of heating the coal bed, both directly and indirectly, by burning the volatile matter (VM) of coal and utilising the sensible heat of the flue gas respectively. After releasing considerable heat to the ovens, the flue gas goes out to the chimney, which may be utilised for pre-heating incoming primary and secondary cold air for the efficient combustion of VM and faster rate of coking.

The techno-economic analysis has been carried out for a battery of ovens having 200 tpd coal charging capacity producing coke to the tune of 150-160 tpd. The total capital investment for one such battery may be up to Rs 5-9 crores depending upon the location of the plant and mechanisation involved therein. As the international coke market is changing very fast and the present cost of imported coke is above 170 dollar/t, the investment in the above plant looks lucrative and the pay back period may be within 3 years under the present scenario. The study may be helpful in taking positive investment decision.

PARTICIPATION IN 19TH W M C & EXPO-2003

Dr. L.C. Ram, Scientist participated in the 19th World Mining Congress (Motto: Mining in the 21st Century-Quo Vadis) as delegate held during 1-5 Nov.2003. This Congress was inaugurated by Hon'ble President of India, Dr A.P.J. Abdul Kalam. About 400 hundred participants from the country and 50 countries from abroad participated in the conference. CFRI with its stall under Jharkhand Pavilion participated in Expo-2003 held at Pragati Maidan, New Delhi during the period concurrent with WM Congress. The Expo-2003 was inaugurated by Hon'ble Union Minister for Coal, Shri Karia Munda. In this exhibition various countries like UK, China, USA, Australia, Poland, Congo, Iran, Mozambique, Russia, Japan, Germany, Belarus, etc. and various states of India like Tamilnadu, Chattisgarh, Jharkhand, Goa, Karnataka, Orissa, etc. participated enthusiastically. Hon'ble Chief Minister of Jharkhand Shri Arjun Munda came on his visit to Expo-2003 on 2nd Nov. 2003 and discussed about the activities of CFRI at its stall.

The next 20th WMC & EXPO was announced to be held in Tehran (Iran) during Nov 7-11, 2005. The Islamic Republic of Iran is hosting this programme in collaboration with the International Organising Committee of WMC.

(Website - www.20wmce2005.com)



Hon'ble Chief Minister, Jharkhand Shri Arjun Munda at CFRI stall, Dr. Rajesh Kumar, Scientist explaining him about R&D activities of the Institute.

VIGILANCE AWARENESS WEEK

Vigilance awareness week was observed from 3rd Nov. to 8th Nov. 2003. The programme was inaugurated by Shri A. K. Malhotra, Dy. General Manager, IISCO, Chasnala, Dhanbad. This weeklong programme covered essay competition on "Ways and means to eradicate corruption in public offices/institutions". A seminar on vigilance awareness was arranged on 5 Nov. 2003 and also a

workshop was organised on 6 Nov. 2003. Shri Rajesh Pradhan, General Manager, BSNL, Dhanbad was the chief guest on the valedictory function of the programme on 7 Nov. 2003 and delivered a talk on "General Vigilance Awareness". The chief guest also gave out prizes to the winners of essay competition.



Inauguration of Vigilance awareness week by Shri A. K. Malhotra, Dy. G.M. IISCO, Chasnala, Dhanbad (L to R: Dr Kalyan Sen, Director, Shri A.K.Malhotra, Dr. S.K.Srivastava, Scientist F, Shri. S. Kandasawamy, Controller of Administration)

QAUMI EKTA OBSERVANCE

On 19th Nov. 2003 Qaumi Ekta Divas, a symbolic gesture of the birth day of Former Prime Minister late Smt. Indira Gandhi, was observed. On this occasion, pledge was taken by all the staff members and stamps for communal harmony were sold to raise the fund for poor and orphan children rendered destitute in the mindless act of communal violence in the country. The event professes the message of brotherhood among the countrymen and reminds the age-old tradition of India for tolerance and faith in one God "Manzil Ek Rahen Alag-Alag".

JAPANESE COAL DELEGATION

Japanese Coal team visited CFRI on 25 and 26th Nov. 2003. This team comprised of Mr Hajime Endo, General Manager, Energy Development, Japan Coal Energy Centre, Tokyo; Mr Nobuhiro Koyanagi, Staff Manager, Japan Coal Energy Centre, Tokyo; Mr Katsuhiko Suzuki, Director, Coal Production, Kushiro Coal Mine Co. Ltd., Kushiro City, Hokkaido; Mr Tomonori Fujimoto, Energy & Mineral Resource Business Development office, Energy & Mineral Resource Company, Nisskolwai Corporation; and Indian representatives viz, Ms. Rebecea Pyne and Mr. R. K. Maity. They had meeting with Director, CFRI on the 26th Nov. 2003 and visited De Nobili School, Mohalbani village, CFRI's newly commissioned Fine Coal Treatment Pilot Plant, Drop Tube Furnace, Reconstituted Coal Water Emulsion bench scale plant, etc.. They had

also discussion with scientists of Coal Preparation Division and Orissa Sponge Iron Group.

NEW ESTABLISHMENT

Two New Divisions i.e. Non-conventional Energy headed by Shri P. K. Bandyopadhyay Scientist 'G' and Fuel Cell headed by Dr. A. K. Bandopadhyay, Scientist EII were introduced w.e.f. 24.11.03.

TECHNICAL PRESENTATION

Shri Ajay Pratap Singh, Manager (Accounts), Elsevier (Science & Technology), New Delhi made a presentation on "Demonstration on Science Direct" on 14.11.03. His demonstration cum lecture covered the methodology to use computer for Internet access of Elsevier & other science and technology publications.

LECTURE

1. Dr S. N. Singh, Sct. F & Head, Environmental Science Division, NBRI, Lucknow delivered a lecture on "Plant Mediated Emission of GHG" on 18 Nov. 2003.
2. Dr S. K. Gupta, Executive Vice-Chairman, Jindal Vijayanagar Steel Ltd., Bangalore and Former Chairman CFRI-RC delivered a talk on "Business Strategy: A Case Study of Steel Plant" on 27.11.03.

CSIR AND CFRI INTERACTION

1. Dr Krishna Reddy, Retired Scientist of IICT, Hyderabad and assigned for a special task from CSIR, New Delhi to spell out the newly introduced DRDO Scheme of Recruitment and Assessment for Group IV Scientists in CSIR came to CFRI Dhanbad and had an interaction cum lecture programme on 28.11.03
2. Shri P. Ananthakrishnan, Chief Vigilance Officer, CSIR, New Delhi came to CFRI on 10.12.03 and discussed about the vigilance practices and other related matters with Dr Kalyan Sen, Director, CFRI. Shri S. Kandaswami, Controller of Administration also delivered a talk "Corruption in CSIR system and its mitigation through vigilance awareness".

WINTERFEST-2003

A cultural evening was organised in CFRI on 25th December 2003. In this programme well known poet Shri Joy Goswami and Shri Nand Dulal Acharya had the grace to be present and recited their poetries to the audience. On the eve of New Year 2004, an entertainment programme was organised at the Netaji Complex to bid a valediction to the year 2003 and welcome 2004. On this occasion Shri M. Das,

Former-Director, GSI, Kolkata unveiled a 3 m long statue of the great son of mother India-Netaji Subash Chandra Bose. Shri Subrata Ghosh, Scientist, CGCRI, Kolkata delivered a lecture on Netaji's vision on R&D of independent India and Shri Shuvomoy Mitra, photo journalist showed his film Dhrupad and Ajit. Shri A. Basu, Head, TATA Steel, Jharia Division also delivered a lecture on the "Role of Netaji as Trade Union leader at the TISCO in 1930's".

DEPUTATION ABROAD

Dr Kalyan Sen, Director visited Japan during 6-7 Nov. 2003 in connection with the discussion on beneficiation of coal with the Umbrella Company "JCOAL" and Australia during 9-14 Nov. 2003 for attending the 19th meeting of ISO-TC 27 at Shoal Bay, Australia.

WORLD AROUND

DR A.P.J. ABDUL KALAM, PRESIDENT OF INDIA INAUGURATES 19TH WORLD MINING CONGRESS

His Excellency Dr APJ Abdul Kalam, President of India, in his inaugural address, outlined the VISION FOR THE MINING INDUSTRY. While focusing on the vision he pointed out that "The Mining has provided the answer to the manufacturing and energy needs of the past century. Coal has been a major contributor in providing energy security in this period. It is possible that this pattern may change and there could be emphasis on Uranium and Thorium based power plants during the later part of the 21st century, in addition to the emphasis on renewable energy sources".

He stressed on the need of collaborative venture and suggested to re-look at the total management solution, for attracting investment in new mines. The solution would lead to the creation of JV institutions with central government, state government and private sector as partners.

Dr Kalam, pointed out for a long time we have been talking about integrated gasification and combined cycle technology and urged PSUs like NTPC, BHEL and CSIR labs to work on this project as a mission mode. On the role of R&D, he advised that our researchers must evolve a technology for using high power laser system for safe, pollution-free and precision mining. He further pointed out that humanity will require mega missions for harnessing solar energy, drinking water from sea water through desalination process and bringing minerals from other planets.

He requested this Congress to address the problem and prepare a detailed plan for undertaking such challenging missions through a consortium of multiple nations. A major challenge to the mining community is that of rampant fires, which have

engulfed large and densely populated coal bearing areas. This congress can take a lead in finding a technological, cost-effective, safe and minimum disturbance solution to this problem by focussing the attention of the best minds in the field: Dr Kalam opined.

While speaking on mine safety the President of India suggested that the Congress should create a website - "Web of Life - Mines Safety". This could be a forum through which many countries can exchange their views on the aspects of mine accidents. On information and Communication Technologies for the Mining Industry, Dr Kalam suggested that the IT experts should work with mining community to bridge the gap between developed and developing countries in the application of information technology for technological upgradation of mines.

Indian Mining Industry should expand the scope of their contribution to the GDP from the existing 3-5% to over 10%. The challenge to the mining industry is therefore to work for increasing the productivity from 0.5t per man-shift to 5t per man-shift in underground coal mines using long wall mining and from 15t per man-shift to 30t per man-shift in open cast mines.

He wished the mining congress a grand success.

PATENT INFORMATION: COAL AND ITS UTILISATION

1.US Patent Application No. 20030005634 dated January 9, 2003

Title: Method for producing clean energy from coal

Inventors: Calderon, Albert (Bowling Green, OH); Laubis, Terry James (Bowling Green, OH)

Abstract: This invention deals with a method for producing clean energy from coal which is capable of making active carbon.

2.US Patent Application No. 20030106843 Dated June 12,2003

Title: Froth flotation process and apparatus

Inventors: Jameson, Graeme John (New South Wales, AU); Lambert, Noel William Alexander (New South Wales, AU).

Abstract: A froth flotation process typically used to separate particulate materials such as coal, has a mixed size feed separated in a sieve bend into a stream of relatively fine particles and a stream of relatively coarse particles. The fine particles are fed to a flotation cell in the normal manner, while the coarse particles are mixed with wash water and distributed onto or into the froth layer by wash water distribution apparatus. Alternative variations of wash water distribution apparatus able to handle coarse particles are also described.

3.US Patent Application No. 20030157008 dated August 21, 2003

Title: System and process for removal of pollutants from a gas stream

Inventors: Pahlman, John E. (Bloomington, MN); Carlton, Steve C. (Emily, MN); Huff, Ray V.; (Florence, AL) ; Hammel, Charles F. (Escondido, CA); Boren, Richard M. (Bakersfield, CA); Kronbeck, Kevin P. (Baxter, MN); Larson, Joshua E. (Burnsville, MN); Tuzinski, Patrick A. (Bloomington, MN); Axen, Steve G. (Golden, CO).

Abstract: This invention describes a system for removal of targeted pollutants, such as oxides of sulfur and nitrogen, mercury compounds and ash from combustion and other industrial process gases and processes utilising the system.

(Source-www.uspto.gov)

CFRI IN MEDIA

1. Vigilance week observed in CFRI (*Hindustan 4.11.03*).
2. MoU signed between V. B. University, Hazaribagh and CFRI (*Prabhat Khabar 1.10.03*).
3. Country's future in progress of Hindi: Prof. Rao (*Dainik Jagaran & Hindustan 1.10.03*).
4. Song recital in CFRI (*Hindustan 26.12.03*).
5. Winterfest in CFRI on 31 December 2003, (*Prabhat Khabar 30.12.03*)
6. Unveiling of Netaji's Statue (*Hindustan 31.12.03*).

OBITUARY

Gaur Gopal Sarkar, formerly Acting Director (June 1978 to April 1979) CFRI passed away for his heavenly abode on 9th October 2003 at his residence in Bolpur. He was a renowned coal washing scientist of international repute and had received many awards to his credit for his outstanding R& D achievements and contribution to the world of Coal Science.

His death is an irreparable loss to the field of Coal Science. A condolence meeting was held at CFRI on 10th Oct. 2003 and all the staff members prayed for the peace of the departed soul in rest.

EVENTS AHEAD

1. Republic Day Celebration on 26th Jan. 2004
2. National Science Day on 28th Feb. 2004

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