



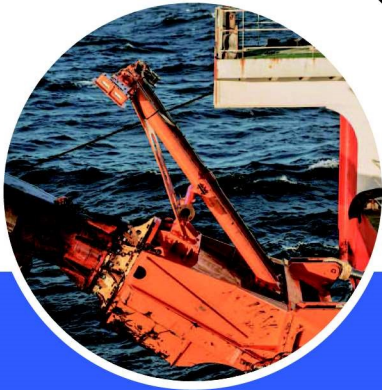
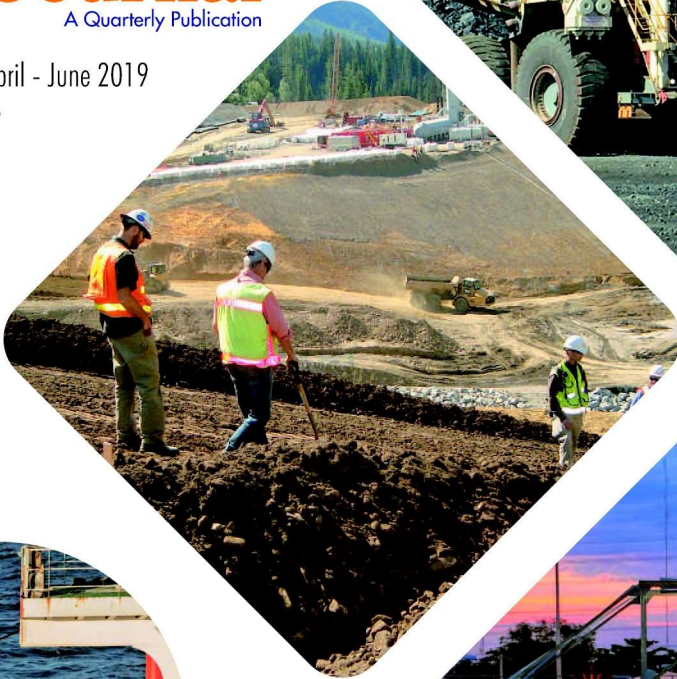
MGMI

News Journal

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President's Message



It gives me immense pleasure that the April June 2019 issue of the MGMI News Journal is before you with pool of the latest information in the field.

MGMI, since its inception has travelled a long journey of 113 years and with the pool of knowledge bank it has, should come up in a big way at the National as well as International level in providing expertise in the field of earth science. I urge upon all the fellow members of this august institute to come forward with innovative ideas so that we can have a major role to play in meeting the energy security of the country.

You are perhaps aware through this column, I have conveyed to you that the Council of MGMI has decided to organize the 8th Asian Mining Congress (AMC) and International Mining Exhibition (IME 2019), during 06-09, November, 2019 at Kolkata.

Various activities taken up during 2019 by MGMI Headquarters and some of the Branches of MGMI were quite satisfactory. Yet, I am of the opinion that a lot more needs to be done to make the image of MGMI excellent at National as well as International level.

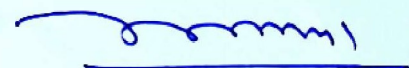
IME 2019 is the perfect platform at this appropriate time to provide an unrivaled opportunity for the manufacturers of Mining Machinery of the world to exhibit their products/ activities and do business.

The preparation for the forthcoming 8th Asian Mining Congress is going on well and I hope all the members of MGMI will take keen interest for success of the event in a big way.

I look forward to your active participation and wholehearted support in organizing this event in a befitting manner so that participants can enhance their knowledge to meet the challenges ahead and make this event a grand success. The Congress brochure with detailed information has already been posted to all members and put up in MGMI's Website www.mgmiindia.in.

I hope our distinguished members will come forward and have a positive outlook on the various issues for the benefit of our people, the mineral industry and the country at large.

Once again, I extend my sincere good wishes for a steady progress.


Anil Kumar Jha
President, MGMI



From the Editor's Desk

Online Weighing of Bulk Materials on Conveyor Belts

Use of belt conveyors in Indian mineral industry is going to increase in the coming years due to environmental and economic requirements. Like the weigh bridges with truck transport system, there will be many online belt weighing systems to work with the bulk material transport system. Let me bring out few relevant information regarding the online weighing of bulk materials that is legal for trades. There are many developers of such measuring system and we are not any commenting on selecting any of these.

Determining the accuracy of the measurement of the weight of the material being transported by conveyor belt, while the material is being transported, has remained a serious concern since such systems were first developed more than 100 years ago. There are many online belt weighing systems in use today, however, there is always a question of accuracy, particularly when legal issues are involved. The accuracy of a measurement system is determined by the deviation of the measured value from the true value or a standard. The presence of errors in measurements is difficult to determine as this requires the true value to be compared with. In modern weighing system a strain-gauge based Load Cells is used as a transducer that converts applied load into a proportionate electrical voltage signal. This signal is digitized to display the measured weight. The reliability and accuracy of weighing system are maintained by periodic testing and calibrating.

Measurement systems need to be 'legal for trade' for commercial applications. To be considered as legal for trade, a measurement system needs to undergo vigorous testing to get a certificate of conformance from government approved agencies / organizations. Legal for trade instrumentation for measurement is essential where the subject of measurement is used to calculate tax,

remuneration, bonus, penalty or any other such payments. Most of the countries in the world have their system of certifying and testing organizations and follow the International Organization of Legal Metrologies (IOLM) guidelines in relation to use and manufacture or measuring and weighing instruments for applications in commercial practices.

The weighing instruments can be automatic or non-automatic, static or non-static or dynamic types. Indian Legal Metrology has classified non-automatic weighing machines into four accuracy classes – I, II, III and IV, depending on permissible errors for a measurement, with class I being the most accurate and class IV the least. Most of the scales used for 'legal for trade' purpose are certified for class III. One important specification valid for class I and II is that the accuracy of the scale can be 1, 2, 5 or 10 times the least count of the scale. This specification is not applicable to Class III and Class IV machines. For these machines, the accuracy of readings is between 0.5x to 1.5x of the scale resolution, or 1x as an average (simplified for ease of understanding).

In case of material transported by belt conveyor the measurement of the materials being conveyed are carried out by online conveyor belt scales, normally it is expected that such scales will provide a 0.1% accuracy. The challenge, however, in conveyor belt is that they need to measure material that is continuously in motion. Therefore, it needs to measure the weight of the materials as well as the speed with which it is moving. Such speed can be up to 6m/s or more. Moreover, there is a wide range of application variations in terms of the length of the conveyor, degree of inclinations, extent of belt tensions, flow rates. The material conveyed may also vary in density, lumpiness, moisture content, etc. during the operational period. Thus, it is a challenging task to certify accuracy of online weight measurements of bulk materials in conveyor belts for long term stability.

The accuracy stated by the International Organization of Legal Metrology (IOLM) is 0.5%, 1.0% and 2% accuracy rating. However, this may not be sufficient for 'legal for trade' requirement. In Canada 'legal for trade' scale needs +/- 0.5% accuracy. However, in 2006 Measurement Canada accepted 0.1% accuracy, which also requires tests to have a maximum limit of error of +/- 0.075%. Though, such stringent requirements are not yet specified in many other countries, it is essential that India develops appropriate tests for measuring accuracy of online belt weighing systems developed abroad and marketed in the bulk material handling systems in mines, metallurgical plants, thermal power stations and ports of India. The international guidelines on weighing accuracy stress on importance to verify load cell accuracy to ensure that desired overall accuracy is achievable. The load cell(s) used in a weighing scale should be able to deliver the accuracy in terms number of divisions, equal to or better than weighing scale divisions, to achieve desired accuracy. It has been pointed out by experts that the Indian Legal metrology, despite following OIML guidelines, is yet to specify rules for load cell certification. As a result, the market is brimming with cheap weighing scales using unapproved load cells and the least count of scale being often projected as 'accuracy'. However, companies in India with global standards and ethical practices, use OIML approved load cells for weighbridge applications corresponding to accuracy classes of scales manufactured by them.

The measurement of weight of the conveyed material depends on the flowrate. However, the flow rate on a conveyor belt vary in real-life situation due to the variability in the feeding system or in the installation parameters. As per the article 174 of the Measurement Canada Act 2014, the belt scales must be measuring within 0.1% from the lowest to the highest flowrates. The verification of belt scale accuracy over a wide range of operating flowrates can provide improved measurement system in making it 'legal for trade'.

<https://www.averyweigh-tronix.com/en-IN/products/weighbridges--trucksscales-india/zm510-j2/>

The measurements may be affected by ambient temperatures, mechanical wear or electronic problems of the measuring system. This requires that there should be proper calibrations and correcting practices. Normally, maintenance inspection of belts is carried out and prescribes a belt replacement schedule. However the need for calibrating the belt weighing system during such belt deterioration period are not available in the measurement guidelines. The prescribed and mandatory recertification needs can be ascertained through an extensive survey of online belt weighing systems in Indian Industries. Such study can assess the need to adopt a regular certification interval to ensure reliability of the measurements carried out by online belt weighing system as accurate and 'Legal for Trade' scales.

Considering the growing installations of belt conveyors in the Indian mining sector it is expected that there will be a need certification of online belt weighing systems and a large number of belt scales will be installed, therefore the industry should take necessary steps under skill development to train their technicians to be an expert as a belt scale technician similarly there should be special awareness programme for the government inspectors on belt scale technology. Though India has a huge bulk material handling business and aspiring to produce 1 billion tonnes of Coal as well as hundreds of million tonnes of Iron-ore, Copper-ore, Zinc-ore, and Manganese-ore, etc. India does not have any institutions or laboratories dedicated to design, develop, maintain or monitoring of bulk material handling and transportation. However, considering the possibilities of future legal issues regarding measurement of materials while conveying India should pay proper attention to the 'Legal for Trade' scales and technology development for these with participation of technical universities and industries.

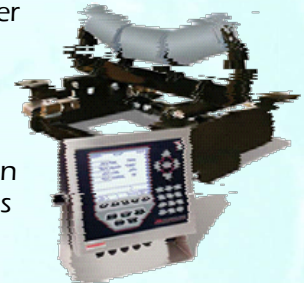


Image of Belt weighing system from Utah scale centre

Dr. Khanindra Pathak
Prof. IIT, Kharagpur

PHOTO GALLERY



Shri Anil Kumar Jha, President, MGMI and Chairman, CIL Inaugurating the lift of MGMI Building. Others are S/Shri JP Goenka, Ranajit Talapatra, Rajiw Lochan and Prasanta Roy.



S/Shri Akilesh Choudhury, Prof SP Banerjee, Prof BB Dhar, VK Arora, JP Goenka, NC Jha and Dr Amalendu Sinha along with Shri Anil Kumar Jha, President, MGMI at the Centre were present during the Inaugural function of the lift.

PHOTO GALLERY



Shri Anil Kumar Jha, President, MGMI conducting 882nd Council Meeting held on April 7, 2019



Council Meeting of Bhubaneswar Chapter held on 27.06.2019

Know your Ministers in the New Government



SHRI PRALHAD JOSHI

**Honourable Minister of Parliamentary Affairs;
Coal and Mines**

Shri Pralhad Venkatesh Joshi (born 27 November 1962) is an Indian politician who is the current Minister of the Parliamentary Affairs of India, Minister of Mines, Minister of Coal in the Second Modi Ministry and member of the 17th Lok Sabha from the Dharwad and he is a former Karnataka State President of the BJP.



SHRI PRAKASH JAVADEKAR

**Honourable Minister of Environment,
Forest and Climate Change
and Information and Broadcasting**

Shri Prakash Keshav Javadekar (born 30 January 1951) is an Indian politician. He is a member of the Bharatiya Janata Party (BJP) and currently serving as the Minister of Environment, Forest and Climate Change and Minister of Information and Broadcasting. He was elected to the upper house Rajya Sabha as a Member of Parliament from Maharashtra in 2008 and re-elected from Madhya Pradesh in 2014.



SHRI DHARMENDRA PRADHAN

**Honourable Minister of Petroleum
and Natural Gas and Steel**

Shri Dharmendra Debendra Pradhan (born 26 June 1969) is a BJP leader and currently the Minister of Petroleum & Natural Gas and Minister of Steel in the Second Modi Ministry. He was previously also the Minister of Skill Development and Entrepreneurship in the First Modi Ministry. He was elected to the Rajya Sabha in March 2018 from Madhya Pradesh. Shri Pradhan was a member of the 14th Lok Sabha of India. He represented the Deogarh constituency of Odisha. Shri Dharmendra Pradhan was also a member of 12th Assembly of Odisha (2000 - 2004) elected from Pallalhara constituency. He is also a member of RSS. He is the son of former BJP MP Dr. Debendra Pradhan.

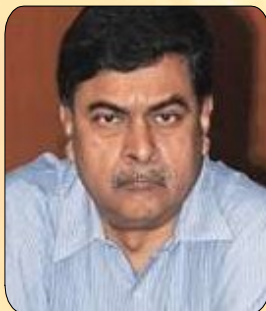


SHRI BABUL SUPRIYO

**Honourable Minister of State in the Ministry
of Environment, Forest and Climate Change**

Shri Babul Supriyo (born 15 December 1970) is an Indian playback singer, live performer, television host, actor and politician. He is a Member of Parliament from Asansol in the 17th Lok Sabha and the Minister of State for Environment, Forest and Climate Change, in the Union Council of Ministers. He made a career as playback singer in Hindi cinema in the mid-nineties and has sung for many films since then. He primarily sings in Hindi and Bengali. However, he has also done playback singing in 11 other languages during his musical career.

Know your Ministers in the New Government



SHRI RAJ KUMAR SINGH

Honourable Minister of State (Independent Charge)
Ministry of New and Renewable Energy

Shri Raj Kumar Singh is a former Indian bureaucrat and a current Minister of State in the Government of India. He is a Member of the Indian Parliament since May 2014. Singh is a 1975 batch Bihar cadre Indian Administrative Service officer and former Home Secretary of India. On 3 September 2017 he was appointed as the Minister of

Power in Prime Minister Narendra Modi's cabinet. On 30 May 2019, he was appointed as Minister of State (Independent Charge) of the Ministry of Power, Minister of State (Independent Charge) of the Ministry of New and Renewable Energy and Minister of State in the Ministry of Skill Development and Entrepreneurship, Government of India.



SHRI ARVIND GANPAT SAWANT

Honourable Minister (Heavy Industries & Public Enterprises)

Shri Arvind Ganpat Sawant (born 31 December 1951) is an Indian politician from the Shiv Sena party. He has been the Minister of Heavy Industries and Public Enterprises since 2019 and a Member of Lok Sabha since 2014.

In 1968, Sawant started his political career

with Shiv Sena as a 'gat pramukh', the lowest rank of the party hierarchy. During this time, he worked as a polling agent and also participated in various protests which were organized by the party. He also joined Sthaniya Lokadhikar Samiti, which worked to demand jobs for the local people.

Achievement of Members

Congratulations and Best Wishes



Shri B N Shukla is new CMD of Mahanadi Coalfields Ltd

On June 14, 2019: Shri Bhola Nath Shukla took over the charge of Chairman-cum-Managing Director (CMD) at Mahanadi Coalfields Limited (MCL), a leading subsidiary of Coal India Limited.

Having a distinguished career of 37 years in Coal industry, Shri Shukla was Director (Technical) in Coal Mine Planning and Design Institute (CMPDI), before taking over the charge of MCL.

A mining engineering graduate from IIT (BHU) and M.Tech in Opencast Mining from IIT (Indian School of Mines), Dhanbad, Shri Shukla is credited for introduction of innovative technologies into coal mining.

During his earlier stint at MCL, Shri Shukla had held appointments in the coalfields as well as at the headquarters. While serving as Area General Manager of Hingula and Bharatpur areas in the Talcher coalfields, he had successfully managed rehabilitation and resettlement issues, leading the units to a new growth trajectory.

As a General Manager (Corporate Planning & Projects), Shri Shukla was instrumental in

company's new initiatives into energy sector and infrastructure development for Coal Mining and despatch.

Creation of Mahanadi Basin Power Limited (MBPL) company for pithead Super Critical Thermal Power Plant (2 x 800 MW), fillip to the work at Jharsuguda-Barapalli rail link, diversification into solar, port and power transmission, evolved as new areas of growth of company as a "total energy solution provider".

Earlier, Shri Shukla was also the Director (Technical)/Coal Resource Development), CMPDI and Director (Technical), Eastern Coalfields Limited (ECL), Asansol (West Bengal).

MCL, which produced 144 million tonne during the year 2018-19, is targeting 167 million tonne coal production during the current fiscal.

Besides his technical acumen and having presented several technical papers, Shri Shukla was also into adventures sports and had cycled from Varanasi to Kathmandu (Nepal).

Headquarters Activities

Report of the 881st Council Meeting

The 881st Council Meeting was held at MGMI Bldg., GN-38/4, Sector - V, Salt Lake, Kolkata - 700 091 on 8th December, 2018 at 11.30 a.m. (Duly approved in the 882nd Council Meeting).

Present: Shri Anil Kumar Jha President in the Chair. The meeting was attended by Prof Banerjee SP, S/Shri Jha N C, Ritolia R P, Saha R K, Mandal P R, Goenka J P, Talapatra Ranajit, Ghosh Samir Kr, Prof(Dr) Khanindra Pathak, Shri Roy Prasanta, Prof (Dr) Mukhopadhyay Subir Kumar, Acharya Amrita, Arora V K, Prof. Bhattacharjee Ashis, Biswas Anup, Chakraborti Bhaskar, Choudhury Akhilesh, Prof N C Dey, Karmakar Anil K, Prof.(Dr) Karmakar G P, Prof. Sarkar Bhabesh Chandra and Lochan Rajiw.

- 0.1 Meeting called to Order by the President, Shri Anil Kumar Jha.
- 0.1.1 Leave of absence was granted to those who could not attend the meeting.
- 0.1.2 President welcomed Past Presidents S/Sri Prof. S P Banerjee, N C Jha, R P Ritolia, R K Saha, all members of the Council present and newly elected Council Members. He extended his gratitude to members for electing him as President of the oldest professional Institute in India and prestigious of the World. He strongly expressed that MGMI should be made financially self-sufficient and visible globally.

Condolence:

As reported by MGMI Past President Prof. S P Banerjee on 8th Dec'2018, One-minute silence was observed in the memory of the departed soul, namely, Late C M Deothale (LM 2808), Nitish C Mitra (LM 2002), C P Bansal (LM 6471) and Dr L K Das.

President thereafter requested Hony. Secretary to take up Agenda items.

To confirm the Minutes of the 880th meeting of the Council held at the MGMI Bldg. Kolkata - 700091 on 18th August, 2018 at 12.30 p.m.

The Minutes were circulated to all Council

Members. So far, no comments were received. The Council then resolved that:

Resolution: The Minutes of the 880th (4th meeting of the 112th Session) meeting of the Council held on 18th August, 2018 at the MGMI Bldg. Kolkata - 700091 be confirmed.

To consider matters arising out of the Minutes.

The Council then considered the Action Taken Report on the Minutes of the 880th Council Meeting held on 18th August, 2018 at Kolkata and noted the report.

To report about the National Seminar held on 29th September, 2018 at Bishwa Bangla Convention Centre (BBCC), Newtown, Kolkata.

The Hony. Secretary presented brief report on the National Seminar MES2018- "Management of Excavation Stability" which was organized at Biswa Bangla Convention Centre (BBCC), Newtown, Kolkata on 29th September 2018. The Seminar was attended by more than 145 Delegates, Members and Guests. The event was inaugurated by Shri P K Sarkar, DG, DGMS as Chief Guest of the Seminar along with Shri Anil Kumar Jha, Chairman, Coal India Ltd. The Council also noted with pleasure that there is surplus over expenditure. The six Keynote Speakers and their deliberation include:

- i. Dr Loren J Lorig, presented a paper on "Five Things you should know about Slope Stability",
- ii. Dr P K Rajmeny, presented paper on 'Successful Remediation of a Destabilized Pit Slope & Keeping it Productive for Another 4 Years: A Unique Experience',
- iii. Shri M K Prasad, General Manager, Khadia Project, NCL presented a paper on "Case Study: Strategic Recovery & Management of Coal Face after Major Dump Deformation at Khadia (NCL)" authored by S/Shri P K Sinha, M K Prasad, Suman Saurabh and Manish Kumar.
- iv. The paper on 'Assessment of Global Slope

Stability of Left and Right Banks of Chenab Bridge by 3DEC' presented by Dr J Aglawe, Director, Itasca India Consulting Ltd, authored by S/Shri Varun, B Damjanac, L Lorig, J Aglawe and R R Mallick.

- v. Dr Srikant Annavarapu, Technical Advisor, Itasca India Consulting Pvt Ltd, Nagpur presented a paper on "Development of a Geotechnical Trigger-Action-Response-Plan for Underground Mines",
- vi. Shri J.K. Singh, Chief Scientist of Rock Slope from CSIR-CIMFR, Dhanbad presented a paper entitled "Effective & Cost-effective Slope Monitoring Potential through Application of 3D Terrestrial Laser Scanner in Indian Surface Mines". The paper was authored by S/Shri J.K. Singh, V.K. Singh, Ajit Kumar, S K Roy and Ritesh Kumar.

The Hony. Secretary also informed the house that MGMI jointly with CSIR — CIMFR organized a Short Term Course on "Technologies for Safety Enhancement in Mines" during December 3-8, 2018 at MGMI (HQ), Kolkata and CSIR-CIMFR, Dhanbad. The training was attended by 34 Officers from different Mining industries. Coordinator Shri Prasanta Roy further briefed the Council. Council was also informed that Dr Amalendu Sinha has proposed next short course training programme during April/May 2019 which was agreed. President suggested to organize more and more such courses even at mining industry work place in coordination with their HRD Deptt. MGMI will provide resource persons for such courses.

While, Hony. Secretary reporting on the 60th Holland Memorial Lecture it was informed that Dr Kirit Shantilal Parikh, Chairman, Integrated Research and Action for Development (IRADe), was due to deliver the lecture on 29th September 2018. The topic of the lecture was "Future of Coal in Power Generation". Unfortunately, Dr Parikh fell sick and had been hospitalized. The printed lecture material was distributed to the members present. In this connection, the President mentioned that the subject matter is very much relevant and it is talk of the day. So, Dr Parikh should be requested again to take the trouble to deliver the lecture in person at his convenience,

preferably at Kolkata so that galaxy of mining fraternity gets benefitted through his experience.

To discuss about the 8th Asian Mining Congress (6 9th November, 2019)

Hony. Secretary gave a brief account of date and venue for the 8th Asian Mining Congress (AMC) and International Mining Exhibition (IME) as proposed by the Council at its 878th meeting wherein Council proposed that the Congress may be organised during November 2225, 2019 (Friday, Saturday, Sunday and Monday) preferably at Biswa Bangla Convention Centre, Newtown. However, Shri I P Wadhwa, Managing Worker of M/s. TAFCON communicated that the venue for the Exhibition is normally required for about a month. He has checked the availability of the ECO Park and the same would be available for the IME-2019 during November 6-9, 2019 (Wednesday, Thursday, Friday and Saturday).

It was accordingly proposed to plan the concurrent 8th Asian Mining Congress during November 6-8, 2019. However, the management of BBCC intimated that the halls of BBCC are blocked for November 6-8, 2019. Council accepted the dates for the 8th AMC and it will be held during November 6-8, 2019, however, venue for the same will be explored in New Town Areas, if BBCC will not be available.

Arising out of the discussion, the Council has taken a serious note of the fact that a balance of Rs.25 lacs is still due from TAFCON in connection with Exhibition account of the 7th IME/AMC. According to the terms and conditions, balance amount should have been paid within 31st March, 2018. Council agreed to consider request of TAFCON to grant time up to the end of this month i.e. December, 2018 to clear all outstanding dues for MGMI.

Council has nominated Shri R K Saha, Past President, MGMI as the Chairman of the 8th Asian Mining Congress (8th AMC) and Shri Prabhat Kr Sinha, CMD, NCL as the Chairman of the International Mining Exhibition (IME). Dr Amalendu Sinha has been nominated as the Chairman of the Technical Committee of the Congress and Shri J P Goenka and Shri V K Arora have been nominated as Joint Convenors of the Exhibition Committee.

To Elect Office bearers viz Vice-Presidents, Hony. Jt Secretary, Hony. Treasurer and Hony. Editor amongst Council Members of the Institute for the year 2018 -2019.

Vice President: The following persons have been elected unanimously as Vice Presidents of MGMI for the year 2018-19

Shri Prabhat Kr Sinha, CMD, NCL

Shri Avijit Ghosh, CMD, HECL

Shri Pravat Ranjan Mandal, Former Advisor, Ministry of Coal

Shri J P Goenka, Mg. Partner, NMC

For the year 2018-19 the following persons have been elected unanimously as:

Hony. Jt. Secretary - Shri Ranajit Talapatra

Hony. Treasurer- Shri Samir Kr Ghosh

Hony. Editor - Prof. (Dr) Khanindra Pathak

To consider applications for membership and the membership position of the Institute.

- The Council approved 07 Life Membership applications
- The Council noted the present position of membership which is as follows:

Membership Position (As on 08.12.2018)

	18.08.2018	Add	Trans	Loss	08.12.2018
Member	265	-	-	-	265
Life Member	2511	07	-	-	2518
Associate	40	-	-	-	40
Student Associate	06	-	-	-	06
Life Subscriber	32	-	-	-	32
Subscriber	01	-	-	-	01
Donor	02	-	-	-	02
Patron	4	-	-	-	04
Corporate	08	-	-	-	08
	2869	07	-	-	2875

Any other matter with the permission of the Chair.

- President's Cup Golf Tournament:** Shri J P Goenka and Shri V K Arora have been nominated as Convenors for the Tournament and venue may be preferred at MCL Sambalpur (Odisha).
- Prof. N C Dey proposed to open **Students' Chapter** at the **Technical Institutes/ Colleges**. The Council constituted a Committee with the following members to submit a white paper with criteria in this regard for consideration and approval of Council:
 - Prof N C Dey
 - Prof Khanindra Pathak
 - Prof Asish Bhattacharjee
 - Shri Anup Biswas
- Prof. S P Banerjee proposed MGMI should collaborate with Coal India's subsidiaries to organize Training Courses at their Training Centres where MGMI will provide resource persons from its knowledge bank. Council assigned Prof. N C Dey and Shri Anup Biswas to prepare possible modules for further deliberation in the Council and Way forward.
- MGMI Awards for Innovation** has been proposed and a committee has been constituted to prepare criteria and categories for consideration of the Council. Committee members are:
 - Prof. Khanindra Pathak
 - Prof. Bhabesh Chandra Sarkar
 - Prof. N C Dey
- It was agreed that MGMI Chapters will be motivated to organize more sessions on Technical Papers even to organize **Technical Quiz Competition**.

Email Ids of MGMI have been changed to

1. secretary@mgmiindia.in

2. office@mgmiindia.in

Chapter Activities

Assam Chapter

MGMI Assam Chapter organized a General Body Meeting on 10th June 2019. The Meeting was chaired by the Chairman, MGMI Assam Chapter, NEC, Margherita.

At the very outset, the President extended welcome all the members present in the meeting. It was discussed that the membership strength of Assam Chapter has been sustainably decreased due to transfer/superannuation/death of members. It was also decided that a membership drive has to be taken mainly to induct new technical executives who have joined NEC in recent years.



A scene from Ledo Colliery, NECL

It was also discussed and decided that to increase the activities of the Chapter a calendar of activity to be prepared mentioning different type of events to be taken up upto March 2020. The responsibility entrusted to Shri S P Dutta, Chairman of the Committee, Shri S Bora, Member, Shri Manish Das, Member, Shri Rakesh Kalita, Member and Shri S Bhattacharjee, Member and Honorary Secretary.

The General Body unanimously agreed to nominate Shri Binay Dayal, Director (Technical), CIL as the Chairman of MGMI, NEC, Assam Chapter.

Local Chapters are requested to send brief report of their activities and information of the members for sharing.

We will be happy to publish your encouraging achievements and motivating pictures of events conducted at your Chapter.

We also appreciate if you organize collaborative workshop/ seminar or technical talks with other organization. However, due mention of the collaborators and appreciation of their efforts must be properly acknowledged.

-Editor

Bhubaneswar Chapter

Report of the Council Meeting of MGMI Bhubaneswar Chapter held on 27th June 2019.

The Council Meeting was attended by S/Shri GS Khuntia, AB Panigrahi, Abhiram Sahoo, JK Hota, PK Mishra, JN Praharaj, JP Panda and Gokulananda Sahoo.

The Minutes of the last Council Meeting held on 25th March 2019 were confirmed. It was decided that the plan of action for 2019 to be pursued continuously. Financial help has been received by way of advertisement from RENTAR, Pune/USA & OMC for paper reading promotional activities.

It was proposed that further efforts are necessary for enhancement of membership and in this connection, Chairman has written letters, sent messages and spoke on the telephone to the prospective persons to become member of MGMI. It was also desired that all Council members must attempt to put effort continuously and try for one member each.

There was a proposal for organizing one International Seminar on Steel and Power Industries of India by 2030, Raw Materials Resource Development, Constraints on 12/2020. MDC ON SHE has decided to organize this seminar in collaboration with MGMI-BBSR, supports from Odisha Govt. Steel & Mines

Departments and Steel and Mines Ministry, GOI and DGMS organization also will be obtained. In this connection, Shri GS Khuntia, Chairman, MGMI, BBSR has already discussed in MDC on SHE and they agreed to help. It has been proposed to invite President of MGMI who is also Chairman of CIL.

A special paper presentation was organized where S/Shri SK Bhuyan, SK Patnaik and NP Pramanik were present.

Shri GS Khuntia presented a paper on Impact of Taxation in Mining Industries on Steel Makers Security for uninterrupted supply of Iron Ore at economical price during April 2020 and 2030 and future health of Steel Industry. Shri J P Panda presented a paper on Project management of Coal India Ltd.

Some of the Council Members suggested that the paper presented in the paper presentation session to be circulated to the Council Members immediately which Chairman agreed upon.

All members present in the meeting felt that the "Impact of Taxation in Mining Industry on Steel Makers Security for uninterrupted supply of Iron Ore at economical price during April 2020 and 2030 and future help for Steel Industry" is a very important subject and needs further deliberation.

News about Members

As on 02.4.2019

Shri Vijay Kumar (6560-LM)

MMGI is now at C-303, Sai Sthaan CHS, Plot 4//5/6, Sector 29, Nerul, Navi Mumbai PO & Dist Thane, Maharashtra 400706 (M) 9819751222 email: vijaykn7@gmail.com

Shri Jammalamadaka Dattatreyyulu (10719-LM)

MMGI is now at D.No 15/551-12-3, Panchayatraj Colony, Srinivasa Nagar, Machilipatnam, Krishna (Dist) AP 521 001 email : jdattatreyyulu@hotmail.com

Shri P Thangavel (9149-LM)

MMGI is now DGM(MM), GM Office, Argada Area, CCL PO Argada 829101, Dist Ramgarh, Jharkhand email: pthangavel108@yahoo.com

Shri Sobhendu Pal, (10353-LM)

MMGI is now at Qtr No C39, V N Colony, Coal India Officer's Qtr, Sonepur Bazari Project, Paschim Burdwan 713 362, West Bengal email : sobhendupal@yahoo.co.in

Shri Dharendra Nath Choudhury, (10540-LM)

MMGI Ex.Sr. Manager(Civil) NEC, CIL Margherita, is now at B R Enclave, House No 4(2nd Floor), By Lane No 5, Pub Sarania, PO Silpukhuri, Guwahati, Assam 781 003 Ph: 9435138301, email: choudhurydn11@gmail.com

Shri Rajiva Kumar Singh (9272-LM)

MMGI is now at 9B, Arsh Height (Amber Block), Behind AG Office Road, NOP, Doranda, Ranchi 834 002 (M) 8969397892 / 9431106533 email: lionrajivasingh@gmail.com

Shri B D Gupta (8937-LM)

MMGI is now Advisor (E&M/CHP) Rajmahal Coal Mining Ltd., 4/310, Vineet Khand, Gomtinagar, Lucknow 226 010 (UP) (M) 7541812411 email: bdgupta3@gmail.com

Shri Vishvajeet Jha (10787-LM)

MMGI is now at C2-202 Meadows, Shantigram, Nr Vaishnodevi Circle, Ahmedabad 382 421 (M) 9883780282 email: jha.vishvajeet@gmail.com

Mr Rajesh Kumar (10632-LM)

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Shri Bijitendra Biswas (7580-LM)

MMGI is now at 482, Purbalok, Malati Kuthir, 3rd Floor, Kolkata 700 099 (M) 98300074074 email: bijitbiswas@yahoo.com

Shri Ramanathan Seshadri (4632-LM)

MMGI is now Chief Manager(Excavation) Western Coalfields Ltd. Nagpur Area, Jaripatka, Nagpur 440 014, Maharashtra email: ramanathansesh@gmail.com

Shri T. Victor (5853-LM)

MMGI is now Mineral Engineering Consultant, Plot D-8, H # 13/1, NALANDA, Shivnagari, Farmagudi, PONDA Post, Goa-403 401 (M): 09822123498 email: tvictor.goa@gmail.com

MGMI encourages its members to induct new young members.

Office bearers of all the Local Chapters are always appreciated for their innovative programmes to motivate the young Geologists, Mining Engineers, Petroleum Engineers And Metallurgical Engineers to become Life Member of MGMI and to propose new events: virtual or real!

New Members

(As approved in Council Meeting on 07. 04. 2019)

As Life Member

10801-LM , Shri Manjit Singh Sandhu,
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(Ministry of Petroleum), 1646 Sector, 80 Mohali,
Punjab – 140308, Ph: 9971026198 (O)
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10802-LM, Shri Suman Saurabh, B.Tech(Min),Chief
Manager (Min), Northern Coalfields Limited, D-19,
Khadia Project, Dist. Sonebhadra, P.O. Shaktinagar,
Uttar Pradesh – 231222,Ph: 9405588295 (O)
/8698900870, Mail: sumansaurabh90@gmail.com

10803-LM, Shri Ranjan Sinha, M. Sc (Tech) Appl.
Geo, M. Tech (Petroleum),M. Tech (Hydrology) DGM,
CAIRN OIL & GAS,193, FF Orcuid Island, Sector –
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Mail: rsinha1368@gmail.com

10804-LM , Shri Tarun Kumar Mishra, B. Tech
(Min)MBA,VP, Tech Engineering (P) Ltd.,105 – B,
Block B – 3, Keshav Puram, Delhi – 100035,
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10805-LM , Shri Partha Narayan Hajra, B Sc
(Chemistry),M Sc (Chemistry) General Manager
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Noida – 201501, Ph: 08368976378/ 08595396517,
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10806-LM , Shri Pratik Roy, B Sc (Geol), M Sc (Appl
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– 201301,Ph:0120-3772717 (O)/4296367 (R),
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/geoidpratik@gmail.com

10807-LM , Shri TRP Singh,
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Advisor, Mining & Earth Science,
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10808-LM , Dr. Eswaraiah Chinthapudi,
Ph D Chemical, M Tech, Principal Scientist, CSIR
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Bhubaneswar – 751013,
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-11, Anant Bihar Phase – 2, Pokhariput, BBSR –
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10811-LM , Shri Chandra Nath Ghosh,
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10816-LM , Shri Rajeev Kumar,
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E-mail: rajeevmcl@gmail.com

As Life Donor Member

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588, Kipushi Road, Commune Annexe,
Lubumbashi Town, Haut-Katanga Province,
Democratic Republic of Congo,
Ph: 2438 414000145
email: hiteshchung@gmail.com

Upcoming Events

Asia Pacific International Mining Exhibition (AIMEX)

August 27, 2019 – August 29, 2019
Sydney, Australia

Australia is very similar to Canada in many ways and as such is a comfortable market to enter. It however also develops its own array of technologies due to its remote position from North America. Australia typically looks north to the Asia market the same way that Canada looks to Latin America. After maturing in Latin America Canadian companies next look to the Asia Pacific region.

<https://canadianminingsuppliers.com/event/asia-pacific-international-mining-exhibition-aimex/>

13th International Conference on Mine Closure

03 September 2019 - 05 September 2019

The series of International Conferences on Mine Closure is a fixture on the calendars of many mining professionals, providing topical and high quality papers and presentations on a range of topics of immediate interest and relevance.

<https://www.globalminingreview.com/events/13th-international-conference-on-mine-closure/>

Future of Mining EMEA 2019

04 September 2019 - 05 September 2019

The Future of Mining EMEA conference has been created to connect C-suite, heads and managers of mine operations and mining equipment, technology and services (METS) providers to to debate and define the future mining landscape across Europe Middle East and Africa.

<https://www.globalminingreview.com/events/future-of-mining-emea-2019/>

PRUMIN 2019

16 September – 2019 - 20 September – 2019

Venue : Institute of Mining Engineers of Peru, Calle Los Canarios 155 -157 Urb.San Cesar II Stage, La Molina. Peru. LIMA 12, Peru Contact.

Web: perumin@iimp.org.pe

The 19th International Mining & Minerals Recovery Exhibition **MINING INDONESIA 2019**

18 September 2019 - 21 September 2019

Mining Indonesia is Asia's largest international mining equipment exhibition - a comprehensive showcase for the mining, mineral recovery, mineral handling, and processing industries. The show attracts industry leaders and key players in the global mining industry; to showcase the latest products and services in one venue, the Jakarta International Expo.

<https://www.globalminingreview.com/events/the-19th-international-mining-minerals-recovery-exhibition-mining-indonesia-2019/>

MetCoke World Summit 2019

05 November 2019 - 07 November 2019

Don't miss this opportunity to network, educate and discuss key global economic initiatives for increased success and profitability for the coke, coal and steel industry.

<https://www.globalminingreview.com/events/metcoke-world-summit-2019/>

International Mining, Equipment Minerals & Metals Exhibition

06 November 2019 - 09 November 2019

8th IMME-2019. "International Mining, Equipment Minerals & Metals Exhibition", For further detailed contact: miningexpo@tafcon.com

6th International Symposium on Sustainable Minerals"

10 June 2020 11 June 2020

Sustainable Minerals '20 6th International Symposium on Sustainable Minerals" Venue Falmouth, united Kingdom.

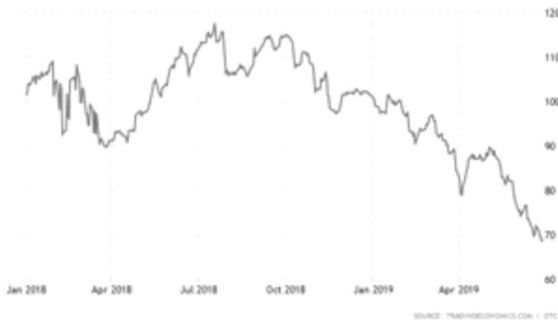
Contact, bwills@min-eng.com

<https://www.mining.com/sustainableminerals20/>

INTERNATIONAL MINING NEWS

Global Coal Price

Coal price in US decreased 31.57 USD/MT or 31.44% since the beginning of 2019, according to trading on a contract for difference (CFD) that tracks the benchmark market for this commodity. Historically, Coal reached an all time high of 139.05 in January of 2011 and a record low of 48.80 in January of 2016.



The collapse of coal price globally is a concern for coal industry with its increasing production costs.

Coal is a global industry, with coal mined commercially in over 50 countries and used in over 70. Coal is readily available from a wide variety of sources in a well-supplied worldwide market.

The European and Australian Scenario

The coal price is collapsing in Australia and Europe also. Coal prices at Newcastle in Australia — the world's second-biggest exporter of the power-station fuel — slumped 20 percent from early March to the lowest level since 2017 on April 3. The fall can trace some of its origins to Europe.

However.....

The current collapse isn't indicative of a global shift away from the dirty fuel.

The fossil fuel will continue to be a key provider of heat and light through to 2040, according to the International Energy Agency, while BHP Group sees India and other low income emerging markets driving demand into the future.

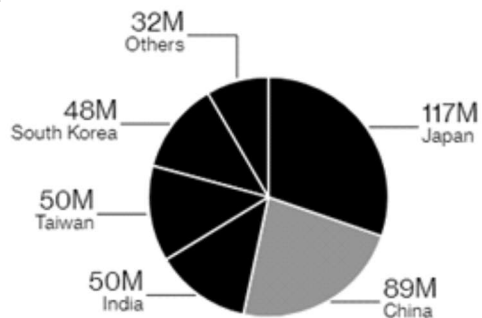
Atlantic Drag

European coal hit by gas slide is weighing on the Australian coal benchmark



European gas tumbled last month on an oversupply, subsequently dragging Atlantic Basin coal lower, which in turn weighed on Newcastle prices, according to Citigroup Inc. However, prices could start to recover as warmer temperatures boost air-conditioning use, according to Credit Suisse Group AG.

The coal price fluctuations may bring changes in the export scenario of Australian Coal. In 2018 China was the largest volume buyer of Australian Coal.

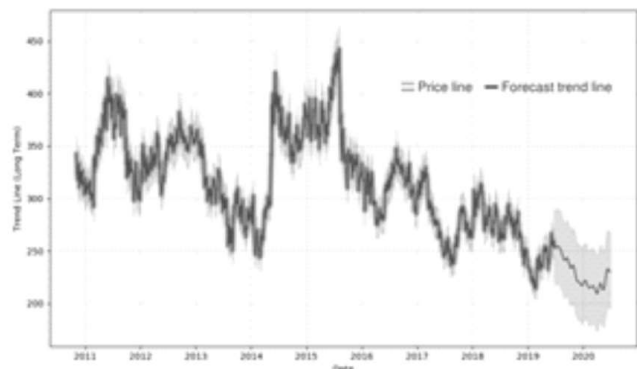


Source: Australian Bureau of Statistics

Note: Volume in metric tons and includes thermal and metallurgical coal

Indian Trend

India's trend is also following the global trend.



China's Jinan Hi-Tech takes big stake in graphite mine now

Jinan Hi-tech Holding Group Co. Ltd, China that mainly offers infrastructure construction and project development services and involved in industrial park construction, public facility construction, landscaping, and sewage treatment engineering construction services is investing in graphite now by owning 34% of **Triton Minerals**, the graphite miner in Mozambique. Jinan Hi-tech Holding Group also provides investment, industrial park operation, and project exhibition services. The company has now invested A\$8.5 million to buy new shares as well as acquiring real estate developer group Shandong Tianye's 19.3% stake in the ASX-listed graphite company for \$11 million.

Triton Minerals Limited is an Australian Securities Exchange(ASX) listed company that has emerged as graphite producer with three world class graphite projects in the Cabo Delgado region of Northern Mozambique, one of the world's best locations for graphite. Triton is involved in the following projects.

ANCUABE GRAPHITE PROJECT

The Ancuabe Project is in the proven graphite region of Cabo Delgado in north eastern Mozambique. Compared to all other ASX listed graphite projects in East Africa, the Ancuabe project is located approximately 60km west from Pemba, in northern Mozambique. The project is also adjacent to the producing AMG Graphit Kropfmuhl(GK) graphite mine.

Triton has an MOU with Chinese graphite company, Qingdao Jinhui Graphite Co. in relation to the development of the Ancuabe graphite project. Chinese domestic producers are now actively looking to East Africa to expand and diversify their high purity and large flake supply chains in preparation for the significant growth anticipated in the battery and flame-retardant materials markets.

BALAMA GRAPHITE PROJECT

The Balama graphite mine is estimated to hold a combined proven and probable reserves of 114.5 million tonnes (Mt), at an average TGC grade of 16.6%. Flake graphite content is estimated to be 18.9Mt.



The combined measured, indicated and inferred resources are estimated to be 1.19 billion tonnes (bt), at a TGC grade of 11%, with contained graphite estimated to be at 128.5Mt.

The mine also hosts vanadium resources of 1.15bt at an average vanadium oxide (V₂O₅) grading of 0.24% for 2.7Mt of contained V₂O₅.



The vanadium resource will be developed under a separate \$80m project, dubbed the Balama Vanadium Project. Two projects are there at Balma

Balama North Project

The Balama North Project is the world's largest known combined graphite-vanadium resource. It is in northern Mozambique, some 240kms from Pemba Port. The resource consists of two significant areas of interests that are currently being evaluated, including: Nicanda Hill Nicanda West Cobra Plains Nicanda Hill Nicanda Hill resource is one of the world's largest graphite

Balama South Project

The Balama South Project is located approximately 35 km south of the Balama township within the same north-east trending geological domain covered by the Balama North

project which hosts the Cobra Plains deposit and the Nicanda Hill prospect. To date, only limited exploration activities have been completed on the Balama South project.

NICANDA HILL PROJECT

The Nicanda Hill Project is one of the world's largest graphite deposits and a globally significant Vanadium deposit. The project is located approximately 240kms by road from Pemba port in the Cabo Delgado region in northern Mozambique. The Nicanda Hill Project has a JORC Inferred and Indicated Mineral Resource of 1.43 billion tonnes at 11.1% TGC for 158.9 million tonnes of contained graphite (ASX 16 September 2016) and 1.44 billion tonnes at 0.29% V2O5 for 4.2 million tonnes of contained vanadium (ASX 30 October 2015).

Metallurgical test work highlights that Nicanda Hill graphite is ideally suited to supply the rapidly growing lithium-ion battery market, and associated EV and energy storage markets, with predominately fine and small flake material.

Russian Metalloinvest invest in Bulk Material Handling

Metalloinvest, the leading global producer and supplier of Hot Briquetted Iron (HBI), a premium form of Direct Reduction Iron or Sponge iron and iron ore products, and a regional **producer of high quality steel**, is going to invest 11.5 M rubbles for advanced Bulk Material Handling and Transport with construction of a major in pit crushing and conveying (IPCC) facility at its Mikhailovsky GOK iron ore operation to produce 15 Mt of iron ore per year. .



Its ore body is located 200 m underground and it will receive iron ore from heavy trucks, crush it to 150 mm pieces and deliver it through an underground gallery to the NKMZ high angle conveyor.

Due to its size and characteristics, the steeply inclined conveyor of the crushing and conveyor facility will be unique in Russia; its incline angle is 37 degrees with a lifting range of 215 m. The sandwich angle conveyor with load carrying and clamping belts will be used to transport iron ore. Eight sections out of thirteen had already been installed by end May 2019. The storage complex is also currently being constructed and installation of the stacker and external power supply lines is ongoing.

The crushing and conveyor facility being constructed in the southern part of the pit will deliver iron ore without transportation from the deepest underground points to the surface. Using the facility will reduce iron ore transportation costs by optimising the pit transportation scheme. The number of loading points and amount of loading equipment will be reduced, and the distance required for rail transportation will be shortened.

What TERI says.....

Demolishing the myth that the country has plenty of coal, a TERI (The Energy Research Institute) Policy Brief says that India may be living in a fool's world. It has less coal than it thinks. The coal that can be extracted — taking into account the geological, technical and economic aspects — is only a small per cent of the total coal inventory, without considering the no-go areas where mining may not be permitted, according to Mr R.K. Batra and Mr S.K. Chand, authors of the paper titled "India's coal reserves are vastly overstated".

NATIONAL MINING NEWS

India's state copper miner plans \$800m expansion



Indian state copper miner Hindustan Copper is in the initial stages of an \$800 million expansion program, Resources Monitor reported Tuesday.

Currently, Hindustan produces around 40,000 tonnes of copper per year, but the company plans to increase production to around 200,000 tonnes by 2025.

Construction is underway at a major new underground mine in the state of Madhya Pradesh, according to Resources Monitor, and expansions are planned at its operations in the states of Jharkhand and Rajasthan.

Hindustan Copper's production of 40,000 tonnes is only a small proportion of the 650,000 tonnes that India used last year domestically in the electrical, construction and transport industries, the report reads.

NITI Aayog Sets Up High-Level Committee to Boost Mining in India

- The committee includes officials from steel, coal and mines ministry, public sector mining companies, with representation from the private sector.
- The industry has also demanded a reduction in the timeline for environment and forest clearances from 840 days to 180 days and complete removal of the cap on mining in India.

- Industry experts say mining contributes about 2 percent to India's GDP, and has the potential to increase it to 10 percent.

A high-level committee has been set up by Niti Aayog on mines, minerals and coal sectors to identify key challenges and negate their impact. The committee includes officials from steel, coal and mines ministry, public sector mining companies, with representation from the private sector.

In FY18 India's import bill was at \$465 billion of which \$ 126 billion or 27% of FY18 import bill was on account of metals and minerals alone.

Inadequate exploration, need for investment to increase exploration activities, high incidences of taxes, increase in taxes, mining royalty, license fee and the environment and forest clearances remain a big hurdle for the mining sector in the country.

Now, private players have suggested single stage auction for unexplored Greenfield sites on the basis of expression of interest (EoI) for complete exploration and operation plan on revenue sharing basis like it happens in the oil and gas sector under OALP or Open acreage licensing policy.

The industry has also demanded a reduction in the timeline for environment and forest clearances from 840 days to 180 days and complete removal of the cap on mining in India.

Coal imports have risen 9% in FY19 to 234 million tonnes. The coal ministry has suggested bringing in coal linkage for the steel sector for a period of 15 years.

The steel ministry has suggested single stage bid to reduce the impact of very high premium payment in multiple state auction, and has suggested removal of royalty review every 3 years, and need to bring in the unified tax regime to negate cumulative cost on steelmakers.

Industry experts say mining contributes about 2 percent to India's gross domestic product (GDP) and has the potential to increase it to 10 percent, directly and indirectly with the creation of 2.5 million jobs in the next 5 years.

Major Environment Orders



No mining along Kaziranga National Park: Supreme Court

The two-member bench of Justice Arun Mishra and Justice Deepak Gupta of the Supreme Court (SC) on April 12 ordered that all kinds of mining and related activities along Kaziranga National Park (KNP) area, and in the entire catchment area of rivers/streams and rivulets originating in Karbi Anglong Hill ranges and flowing into KNP, including Tiger Reserve, are restrained. Further, no new construction shall be permitted on private lands which form part of the nine identified animal corridors.

The Director General of Police, Assam, and the Superintendent of Police concerned have been asked to ensure that no illegal mining takes place in the aforesaid area and no transportation of illegally mined material take place from Karbi Anglong Hills.

9 Trapped Meghalaya Miners' Families Agree To Stop Ongoing Search Ops

The bodies of only two victims have been retrieved from the mine in East Jaintia Hills district.



Families of nine of the 16 miners trapped inside an illegal rat-hole coal mine in Meghalaya since December, have given consent to the district administration to stop the ongoing search

operations which entered its 130th day on Sunday, officials said.

The bodies of only two victims one from nearby Lumthari village and another from Assam, have been retrieved from the mine in East Jaintia Hills district early this year.

"We have received letters of consent from the families to stop the ongoing search operations. The letters, submitted by families to the district administration, have been sent to the state government and the same will be submitted to the Supreme Court for granting necessary approval," a senior official told PTI.

Those who have written to the administration include families of two miners hailing from Lumthari village in East Jaintia Hills and the rest from Assam, the official said.

The miners were trapped after water from the nearby Lytein river gushed into the 370-foot deep mine in Lumthari village in the Ksan area on December 13 last year.

On January 28, the Supreme Court had asked the Centre and the Meghalaya government to continue their multi-agency operations to rescue the miners.

The families, however, have requested that the compensation be increased, he said.

East Jaintia Hills district deputy commissioner FM Dophth had submitted all the letters to the state government on April 16 last and cited that the operation be called off as there had been no tangible result.

Mr Dophth also informed that there was no reduction of water level at the main shaft where the miners are trapped even after several crores litre of water had been discharged.

Currently, submersible pumps of Coal India Ltd, Kirloskar Brothers Ltd and KSB are engaged in pumping out water from the ill-fated mine and nearby mines on a daily basis.

The ongoing operation involves the NDRF, the Indian Navy, the Army and the Air Force besides the states disaster response team and the fire services.

The Supreme Court monitors the operation on a weekly basis.

The district administration has paid Rs. 3 lakh interim relief to the families of the 16 miners trapped in the mine at Ksan area but the families have demanded the relief amount be increased, Mr Dophth said.

Of the 21 miners who went down on the morning of December 13 last year, 5 narrowly escaped the flooded mine and the rest were trapped.

CANCER CELL DETECTION 'DOTS' DEVELOPED FROM COAL IN ASSAM



Costs one-twentieth of imported carbon quantum dots (CQDs).

A team of scientists in Assam has developed a chemical process that turns 'dirty' coal into a biomedical 'dot' to help detect cancer cells.

The team, led by Binoy Kumar Saikia and Tonkeswar Das, has applied for a patent for their chemical method of producing carbon quantum dots (CQDs) from cheap, abundant, low-quality and high-sulphur coals.

CQDs are carbon-based nanomaterials whose size is less than 10 nm, or nanometre.

"Carbon-based nanomaterials are used as diagnostic tools for bio-imaging, especially in detecting cancer cells, for chemical sensing and in opto-electronics. A few chemical companies in the U.S. and Japan have been manufacturing CQDs. What we have done is develop fluorescent carbon nanomaterials at one-twentieth the cost of imported CQDs," Mr. Saikia told *The Hindu* on Wednesday.

He is a scientist in the Polymer Petroleum and Coal

Chemistry Group of the Council of Scientific & Industrial Research-North East Institute of Science and Technology (CSIR-NEIST) in eastern Assam's Jorhat, about 300 km from Guwahati.

The CQDs that the CSIR-NEIST team developed emit a bluish colour with "high-stability, good-conductivity, low-toxicity, environmental friendliness, and good optical properties". The finer details have been published in their study published in the *Journal of Photochemistry and Photobiology*.

"Our source material is abundant, low-quality Indian coal not directly suitable for thermal electricity production. Even if the selling price is twice our cost of production of 50 per ml, it will be much cheaper than the imported CQDs with market price of up to 2,000 per ml," he said. Scientists said CQDs are futuristic materials whose demand in India has been increasing leading to a considerable volume of import. The CSIR-NEIST technology can produce approximately 1 litre of CQDs per day at a low cost to become an import substitute.

Other advantages of the process are the use of environment-friendly reagents and less water than methods elsewhere. The process can also be recycled with a manageable supply chain, the scientists said.

The other members of the team that developed the "blue fluorescent and biocompatible carbon dots derived from abundant low-quality coals" are H.P. Dekaboruah, Manobjyoti Bordoloi, Dipankar Neog, Jayanta J.Bora, Jiumoni Lahkar, Bardwi Narzary, Sonali Roy, and Danaboyina Ramaiah.

RELOCATION OF REFINERY SITE

Ratnagiri Refinery and Petrochemicals Ltd (RRPCL) relocates its 40 Billion Dollar Ratnagiri Refinery project site to Raigad. This project is a joint venture between the Indian Oil Corporation (IOCI), Bharat Petroleum Corporation (BPCL) and Hindustan Petroleum Corporation (HPCL). Saudi Arabian Oil Company – Saudi Aramco and the Abu Dhabi National Oil Company (Adnoc) are also partners for this project and own 50% stake in the mammoth project. The remaining 50 % is shared by the Indian consortium.

Capable of processing 1.2 million barrels of crude oil per day (60 million metric tonnes per annum), the project will produce a range of refined petroleum products, including gasoline and diesel meeting BS-VI fuel efficiency norms. In addition to this, higher quality automotive and aviation fuels benchmarked to international standards such as the Euro-VI along with a range of petrochemical products will also be produced at the complex.

Protests by locals in the Ratnagiri region where the refinery was originally planned have led the Maharashtra Government to relocate the gigantic project site to the neighbouring district of Raigad. The new site is around 10,000 acres and is being identified as a better option than the former Ratnagiri land.

Initially, the mega project was anticipated to be commissioned by 2022 however, now the deadline has been pushed to 2025.

As of April 1, 2019, the oil refining capacity of India stood at 249.4 million tonnes, making it the second largest refiner in Asia. As of April 1, 2019, the oil refining capacity of India stood at 249.4 million tonnes, making it the second largest refiner in Asia.

GOVERNMENT INITIATIVES IN OIL AND GAS SECTOR

Some of the major initiatives taken by the Government of India to promote oil and gas sector are:

1. to set up around 5,000 compressed bio gas (CBG) plants by 2023.
2. to invest Rs 70,000 crore (US\$ 9.97 billion) to expand the gas pipeline network across the country.
3. fiscal incentives to attract investments and technology to improve recovery from oil fields which is expected to lead to hydrocarbon production worth Rs 50 lakh crore (US\$ 745.82 billion) in the next twenty years.
4. investments of worth Rs 723 crore (US\$ 111.30 million) in Uttar Pradesh to improve the liquefied petroleum gas (LPG) infrastructure in a bid to promote clean energy and generate employment,.
5. to bring market-driven pricing in the energy market of India
6. to set up bio-CNG (compressed natural gas) plants and allied infrastructure at a cost of Rs 7,000 crore (US\$ 1.10 billion) to promote the use of clean fuel.

"Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do."

Apple Inc.

IMPRESSIVE CONVEYING TECHNOLOGY: EFFICIENT AND SAFE



Efficient transportation of raw material from quarry to dispatch is very important factor for plant and therefore reliable and cost-efficient technical solutions are a necessity of the time for the success of plant productivity

and performance. Conventionally most of the plant are getting the raw material by road transport from mines, which is always costly and polluting the environment. Introduction to overland conveying technology has improved efficiency, capital and operating costs, and made the conveying process more environmental friendly, low energy consuming, less human interface and sustainable. This makes overland conveying considerably more attractive and economically feasible solution versus trucking.

Overland conveyor systems eliminate the restrictions commonly found with the traditional straight belt conveyor design. The technology options allow miles of continuous conveying without the need of transfer points.

The two most flexible types of overland conveyors are the pipe conveyor and curved trough conveyor. In general the overland curved trough conveyor can carry a higher capacity of material than the pipe conveyor but the pipe conveyor can turn corners with shorter radii. Both have their place in the overland conveying of bulk solids and both can save civil costs of installation and reduce the operating costs when compared to trucking.



Introduction of Overland Belt Conveying Systems

Modern systems can be fully enclosed and overcome significant topographical obstacles including steep elevations. Now it is easy to handle materials too difficult for traditional conveyors. Conveying can replace fleets of noisy, environmentally harmful trucks and eliminate the impossible new routes with tough topographical challenges.

Pipe Belt and Horizontal Curve Trough Belts Conveyors allow us to meet modern demands for distance transfer. They also allow maximized optimization of the conveying format irrespective of installation site.



"Long distances, extreme heights, high temperatures - the range of custom system solutions from BEUMER Group is as broad as the range of requirements in the conveying technology sector." Thanks to our vast technical expertise, we always find the right way to transport your products quickly, safely and efficiently from A to B.

Design		
		
Typical Capacity Range	50 to 2000 tph, Bi direction conveying capable	500 to 10,000 tph, Bi direction conveying capable
Transfer Tower Requirement	None	None
Curves Possible	Yes horizontal and vertical	Yes horizontal and vertical
Fully Enclosed	Yes fully enclosed	Can be enclosed with hood covers or jumbo covers
Overcoming Topography Challenges	Yes with maximum incline and decline angles	Yes with limits to incline and decline angles
Spillage Free	Yes on entire length	Best achieved with belt turning stations at each end
Advantages	<ul style="list-style-type: none"> • Material conveyed fully enclosed inside the formed tube • No material spillage - Material and environment are protected • Capable of steep inclines and declines • Capable of making vertical and horizontal curves - Eliminates transfer towers • Tight curve radii 	<ul style="list-style-type: none"> • Capable of vertical and horizontal curves with longer radii • High capacity limit on upside • Belt turning stations eliminates spillage on return strand • Capable of extremely long distances and difficult topography • Very cost competitive and uses less power to move a ton of material

Beumer Group is globally offering solution for efficient transport raw material from mines to plant either by Overland Belt Conveyor or Pipe Conveyor System.

The special features of the descending material transport and sophisticated drive concept, as well as the level of technology in the field of continuous conveying with horizontal and vertical curves.

Application Case Studies

The application case study looks at a long distance curved trough belt conveyor installed in a UltraTech Cement Limited's unit Vikram Cement Works, Neemuch of Madhya Pradesh state of India. The conveyor has to navigate three horizontal and 12 vertical curve along the entire



Breif technical specification of Overland Conveyor at Vikram Cement

Description	Parameter
Material Conveyed	Limestone
Capacity Rated/Design (TPH)	1600/1800
Center Distance (m)	2998
Lift (m)	21
No. of Vertical Curve	12
No. of Horizontal Curve	3
Belt Width (mm)	1000
Belt Speed (m/sec)	4.8
Filling Level approx. (%)	63
Installed Motor Power (kW)	900 kW
Number of Feeding Points	1
Number of discharge Points	1
Take up System	Automatic take-up winch (PLC controlled), located at discharge area

HEALTH TITBITS

Cauliflower gives cancer curry Eating vegetables such as cauliflower in a curry may help prevent and treat prostate cancer, according to new research from the US. Scientists say that the spice turmeric, which gives curry its yellow colour, reduced the development of cancers in lab mice, as did a naturally-occurring substance called phenethyl isothiocyanate. It is abundant in vegetables such as watercress, cabbage, broccoli, Brussels sprouts, kale, turnips and cauliflower.

Technical Note

E-MAINTENANCE OF MINING MACHINERY: AN EMERGING NEED of INDIAN MINING INDUSTRY

Aditya Tiwari¹ and Dr K. Pathak²

Today's mining is implementation and exploitation of advanced technology in machines, explosives and monitoring. Exciting and innovative technology products are continuously being introduced to be used by the field engineers. Selecting the right equipment and having its maximum capacity utilized is becoming a challenge today. Maintenance of machinery is a very critical area particularly when its economic and financial implications are considered. With the increasing complexity of operations being carried out by machines, maintaining the machine has become a challenging task. The planned preventive maintenance and condition based maintenance that was extensively practiced in the mining industry are now not adequate to ensure wellbeing and reliability of machines. The Industry now needs looking beyond conventional maintenance system: towards a smart maintenance system.

With the same motivation, all are leading towards the somewhere quiescent concept of **e-maintenance** and has reached at a point where we have to use information technology and artificial intelligence for the maintenance of mining machinery. Today number of devices and technologies are being used in order to make maintenance effective and to compete with the growing market. In this technical note we are bring out few of recent developments in e-maintenance.

1. RFID (Radio Frequency Identification) technology

The RFID technology has appeared for some decades, yet it was not having any real world applications until recently. Today RFID technology is considered as one of the most useful and advanced way of connecting physical assets with the information technology infrastructure. Therefore, it has used in Information and Communication Technology (ICT) solutions for engineering asset management and is thus considered a key element in e-Maintenance.

The early primary use of RFID technology has been for identification purposes. Avoiding the necessity for line-of-sight, it is a more sensible option, compared to bar codes. In addition, RFID tags can store limited information locally. This feature is very useful for maintenance manage. It is the accepted link between the physical and the IT world, and considered as a key technology that facilitates the computerization of the asset. Asset management and the integration of asset with Enterprise Resource Planning (ERP) systems. A more recent trend is the integration of RFID tags with sensing technology (Roy et al. 2010). This is particularly important to e-Maintenance, as in the future, it will enable the merging of identification and sensing into simpler to install, to operate and to manage solutions. The measurements taken are then instantly contextualized, which means that they are linked to a precise asset that operates under certain conditions. Coupled with the use of handheld devices, this level of integration makes the shop floor machinery data universally available to the networked enterprise users. Although the state of-the-art is now reaching this level of technological advances, the technology needs to mature further and prove to be reliable and cost efficient in practice for even wider e-Maintenance adoption.

The RFID technology is being applied in monitoring highly distributed belt conveyor components simultaneously and automatically (Figure 1). RFID technology can provide the solution for wireless communication network for wide area monitoring for maintenance of conveyor belt systems in mines.. In a hydraulic excavator or drills number of hose pipes are there which controls various operating members. By having RFID tag to save information like Equipment number, Inspection date and time, Hose length and diameter, Conductivity, Test pressure, Date of the next inspection etc. maintenance requirement warning and maintenance needs may be automated.

1 UG student, Department of Mining Engineering, NIT Raipur

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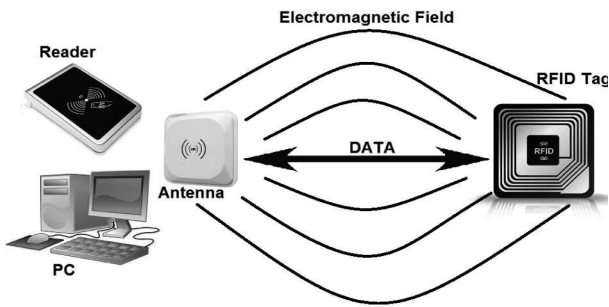


Figure 1 RFID Tag Sensor to capture and transmit important maintenance decision data

2. Sensors for maintenance decision

Maintenance engineering often employ condition monitoring and data analysis solutions, as key enablers for the implementation of e-maintenance. Chiefly, it enables a significant level of data processing at the lowest possible level, next to the sensing element, taking the burden from the portable device and reducing the data communication requirements to more manageable levels. From the e-Maintenance perspective, the wireless sensing nodes are becoming smart monitoring agents, capable of performing automated computational and data storing operations, ranging from basic sample filtering to advanced number crunching. The e-Maintenance vision considers that such wireless sensing components can be exploited and integrated in on line maintenance management systems, insofar as the CMMS can encapsulate at least part of the domain knowledge that is related to condition monitoring, including wear and failure modes modelling, as well as component life prediction. All mining machinery now are provided with necessary sensors for health monitoring and for maintenance decision making (Figure 2)



Figure 2 Sensors installed in machines for maintenance information needs

3. Personal Device Assistant and Augmented reality

This device will play a very important role in bringing mobile maintenance to a much simpler level by using on-line guidance on the results of decision-making and analysis of product result. The PDAs directly enables the maintenance personnel to gain information from monitored machinery. Most PDAs can synchronize their data with the applications on users compute. This allow the user to update contact, schedule, or other information on their computer using software such as Microsoft outlook, and have same data transferred to PDA or from PDA back to the computer system. This eliminates need for user to update their data at two places. In addition, this enables the maintenance operator to respond to any situation swiftly and then to prepare accordingly, in addition to this the high-speed communication provide quick expert advice and accelerate the information flow among the monitoring agent, connecting product and maintenance support system.

It is being made possible through the augmented reality development that the personal device can show the problems of a machine at remote location and also can guide step by step how to eliminate the problem (Figure 3) interactive guided maintenance.



Figure 3 Remote maintenance service through personal device assistant (<https://www.italpressegauss.com/en-us/innovation-and-technology/ame>)

4. Predictive Health and Performance Monitoring

In order to use the measured process and condition monitoring signals in an ideal way to support the diagnosis and prognosis phases of e-Maintenance, refined signal analysis should be used. Recently, the processing power of processors has improved and some of the sensors

already have processing ability providing information for maintenance analyses. However, in the future when the data becomes obtainable from the increasing number of sensors the signal analysis has to be automated so that it then supports programmed diagnosis and prognosis. In the future there will be service providers for the machinery diagnostic and prognosis. More sensors and monitoring will provide data to upkeep machines by actions based on real time condition monitoring. It will be possible to better understand the degradation of machines and wear of components of the machinery through the automation of diagnosis. It is expected that in the future supplementary process data will be available and appropriate simulation models will be available to provide added information to support diagnosis and prognosis. Due to the difficulty of diagnosis and prognosis of rotating machinery, data mining and classification, the techniques today do not provide sufficient support, but they are very useful in spare parts and resources management. This is based on statistical decision than physical modelling. . At present level of technology available, e-Maintenance solutions can carry out all the ordering of the spare parts and manage work force automatically thereby saving a lot of time. Use of e-maintenance tools in the future will push predictive health and performance monitoring of machinery into prescriptive maintenance decisions. Figure 4 is an example of today's vibration monitoring for maintenance decision.

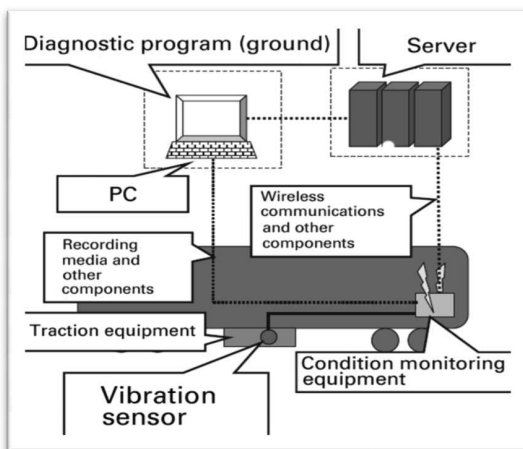


Figure:4 Vibration monitoring for maintenance decision making

5. Web Services

Often the data measured by the devices have to be stored in hardware specific format. However, today's system aims at establishing a standardized format of datasets in order to make the integration of hardware and software for maintenance more straightforward. Machinery Information Management Open System Alliance (MIMOSA) is developing and encouraging the adaptation of an open information standards for different types of maintenance in manufacturing and facility environment. Open System Architecture of Condition Based Maintenance (OSA-CBM) is provided by MIMOSA for information acquisition processes and to support interpolation through different CBM components. To complement the information standards MIMOSA also provides a standard Open System Architecture For Enterprise Application Integration (OSA-EAI) to deal with the problems of integrating dissimilar application. OSA-EAI is in fact a large database enclosing hundreds of tables. MIMOSA scheme has covered subjects associated to measurements, condition monitoring, diagnosis, prognosis, and management of maintenance work order. Even though MIMOSA is well documented, it is not easy to start with such a database in a pragmatic way and it is very difficult to maintain such a large database. In addition, there are Semantic web technologies that facilitates the interoperability of the information by giving meaning in a way that is acceptable by the computers, which further enables an easier application integration. Ultimately, there is a need of adopting a common data format to make the maintenance easier across the service chain.

Conclusion

When Indian coal mining is going to advance to meet the target of 1 Bte of coal production from difficult to mine coal seams, large scale mechanization will be indispensable. The high capital investment will take place in procuring the selected machinery. However, it will be essential to ensure capacity utilization of these machinery. To this end the maintenance engineering must be

augmented. Application of advanced information technology for e-maintenance or smart maintenance of mining machinery is now the demand of the time and our mining industry must get prepared for it.

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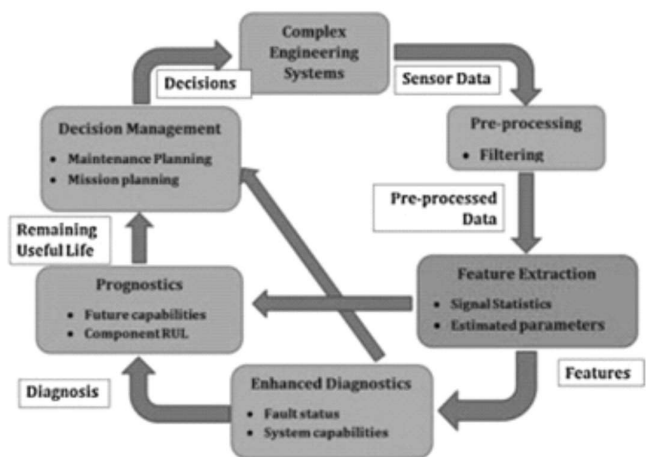
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Conceptual framework of e-maintenance

Mining Industry needs moving towards e-maintenance to get rapid corrective actions taking the service of internet of things.

Vasuki Upadhyay of WIPRO says mining industry could be highly benefitted by the recent developments in Internet of Things (IOT). IOT solutions can complement remote operation adoption across mine sites and plants by including additional data analytics and visualization for the next level of optimization. With the integration of the mining process across the value chain, real time data from downstream process to upstream process can provide an opportunity for high impact improvement in integration.

IOT further enhances this because of the integration which can lead to game-changing activities like real time data based mine plan optimization.

However, the mining industry must conduct cost-benefit analyses before implementations on any particular case to avoid high risk capital investment. Optimization of mining processes could be possible by application of IoT and data analytics. It is opined that organizations can look at off-the-shelf products rather than customized solutions for cost savings but the important thing is the realization that even a small step towards this direction can change the future of an organization.

“VISION ZERO HARM” - AN EXCELLENCE TOWARDS SAFETY

K.P. Sharma*

Trend of accident rate is alarmingly increasing day by day in spite of adopting stringent rules, regulations, Technical circulars, different guidelines and various recommendations. Even undesirable and unexpected accidents are occurring often. On analysing any accident, we find mainly following observation.

1. Non implementation of statutory rules, regulations, Act etc properly.
2. No proper system of work followed
3. Overall System failure

As SAFETY IS A TEAM EFFORT, so it is WE to give thought to overcome the total failure on our part to achieve overall ZERO HARM maintaining a risk-based SHMS (Safety Health Management System) and achieving the same for our industry.

Main Objectives of vision ZERO HARM in Mining industry

Fundamental Belief –

- i) Every accident at work place is preventable.
- ii) Prevention of workplace accident leads to sustainable mining.

Our moral responsibility is to ensure that **RISK** (Low, Medium or High) from work place activities be **ALARA** (AS LOW AS REASONABLY ACHIEVABLE)

How the objectives of risk-based SHMS (Safety Health Management System) is achieved for our industry?

- i. Imposing safety and health obligations on persons who operate mines or who may affect safety and health of others at mines
- ii. Providing adequate and effective SHMS to manage risk effectively

- iii. Making regulations and recognised standards or guide lines to require and promote risk management and control
- iv. Providing safety and health representatives to represent the interests of mine workers
- v. Providing Inspectors to monitor effectiveness of risk management and control at mines, and take appropriate action to ensure adequate risk management
- vi. Providing methods for competencies of persons to be assessed and recognised
- vii. Providing a suitable management structure so that persons may competently supervise safe operation
- viii. Providing for an appropriate mines rescue capability
- ix. Providing for satisfactory level of emergency preparedness
- x. Providing for health assessment of workers

As per safety status of North Eastern Coalfields(NEC), Coal India Limited Margherita is concerned, NEC has been achieving *ZERO ACCIDENT POTENTIAL* for last 5 (Five) years and strive hard to follow **VISION ZERO HARM** (A Third eye concept).

REMEMBER- Safety is a cheap and effective insurance policy and it starts with me...

*Area Safety Officer, NEC, Margherita

SOIL STABILISATION AND BIO RECLAMATION OF OB DUMP OF TIRAP OPEN CAST MINE USING VETIVER GRASS

Naruttam Das*

Introduction

Vetiver is a tall perennial grass and belongs to Poaceae family, which grows wild in drier and periodically flood inundated plains of many parts of India (Kumar and Kumar, 2016). It has a spongy root system consisting of a root system with numerous root branches. Vetiver is an extremely tolerant plant and survive in extreme climatic conditions such as prolonged drought, flood submergence, extreme temperature variation, wide range of soil pH from 3.3 to 12.5 without soil amendment and highly tolerant to hazardous metal. It is used by common people for different purposes such as making curtains, mats, and other fancy goods and for extracting the oil from its roots for using as fixative blending in the perfume. It is also having medicinal uses. Vetiver Grass technology was first developed for soil water conservation in farmland.

Vetiver Grass has unique morphological, physiological and ecological characteristic that play a key role in the area of environmental protection. One unique morphological characteristic is its massive and finely structured, deep root system with penetration up-to 2m to 3 m in the soil. Apart from the massive root system, it helps to increase the shear strength of the soil, hence increase soil stability (Ranjan et al., 2015). Based on the experiences gained at Joda East Iron ore mines of Tatasteel and a number of mines of Rungta iron Ore Company, Vetiver Grass has been selected for OB dump stabilization at Tirap OCP of North Eastern Coalfields, Coal India Limited situated in Ledo town of Tinsukia District, Assam.

Site Conditions of OB Dump of NEC

Climate

The EIA, EMP report of CMPDI, July 2008 reveals that a wet temperate climate is prevalent in the area. The area experiences humid, sultry summer, short-to-prolonged rainy season and thereafter a fairly cold winter.

The maximum temperature in summer is as high as 36°C and in winter it falls to 6°C. The area experiences a very high annual precipitation ranging from 3000 to 4250 mm. Although monsoon extends from April to September, the area practically experiences rainfall for 8 to 9 months. Humidity ranges from 87% to 91% in monsoon period. The dry period is generally December to March – a stretch about 150 days in full year.

Characteristic of Soil

Soil test of the Over Burden of Tikak OCP which is an adjacent colliery of Tirap OCP was done by the Department of Soil Science, Assam Agricultural University, Jorhat on 1993. From the test it is observed that 20-25 % of OB samples contained broken and partially weathered rock and coal fragments. When passing through 2.00 mm sieve is observed that the texture of the soil is sandy loam in nature hence moisture retention capacity is less. The chemical analysis of the OB suggests that soil is strongly acidic in nature with high content of exchangeable Al^{3+} and H^+ . It is reported that when exchangeable Al^{3+} in the soil exceeds 1ppm it exerts the toxic effect on roots hence restrict the growth of plant.

Vetiver Plantation and Observations

Preparation for plantation

69000 Nos. Vetiver Grass sleeves was purchased from M/s Brindaban Vishal Uddan, Guwahati and kept in the Central nursery of NEC. 4 Nos. of bed has been prepared, and manured with vermi compst. The procured vetiver slips were planted in the bed. After obtaining a height of 6-7 inch the plants were transplanted to plastic poly-bags with organic nutrient supplied soil and then to the designated site.



Figure 1 Preparation of Vetiver plantation site.

*Management Trainee of North Eastern Coalfields, Coal India Limited

Preparation of site

Approximately 0.22 ha of the OB dump area was selected at Tirap OCP adjacent to the Ledopani Nulla. Physical reclamation of the slope was carried out and mini terraces/steps were prepared with horizontal cut of 0.3 m width and height of 0.26 m at 1 m intervals. Steps are created in the slope of the OB dump to reduce the effect of run-off hence to reduce the soil erosion. After making the necessary plantation preparation to transfer the vetiver from poly pouches at 10 cm intervals, the plantation was completed. The maintenance period of the planted saplings was 6 months. Figure 1 shows the site preparation and Figure

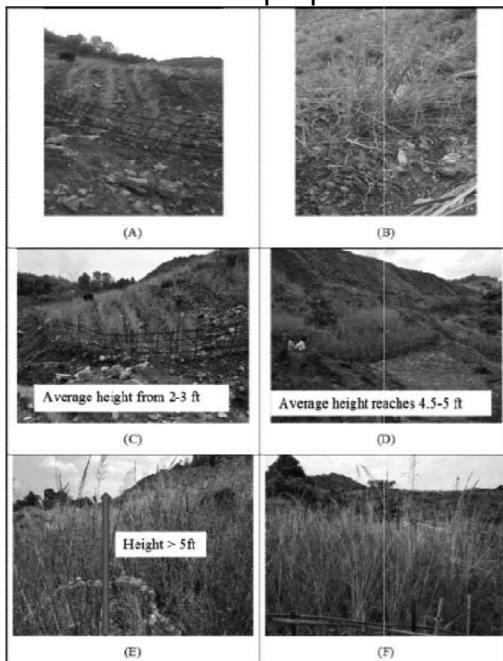


Figure 2 (A& B) Vetiver plantation 1st month of maintenance, May 2018 (C) June 2018 (D) July 2018 (E) August 2018 (F) 5th month of maintenance September 2018

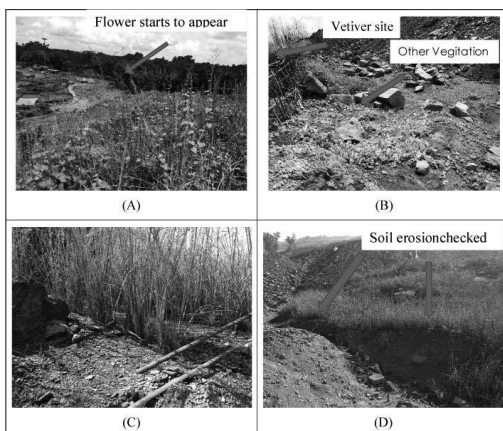


Figure 3 (A) Flowers appeared in the month of July 2018 (B) Appearance of other vegetation near the Vetiver plantation site (C) Dried vetiver grass during winter, Nov 2018 (D) Effectiveness of vetiver to prevent soil erosion.

2 shows the periodic growth.

Observation

Site preparation and plantation of Vetiver was completed in the month of April, 2018 (Fig 2.) In the first month of the maintenance may, 2018 it was observed that the growth of the vetiver is low, which might be due to acclimatization of the vetiver in the harsh condition of OB dump and in the following month its height increased approximately 2 – 3 ft. During 3rd month of maintenance, July, 2018 the average height was 4.5-5 ft and the flowering started. The appearance of the other vegetation near the Vetiver site suggests that a positive effect of vetiver grass on the surrounding environment got initiated. During the 4th month of maintenance the height of vetiver is more than 5 ft. after the 6th month of maintenance Vetiver Grass starts drying as its natural cycle and response to dry season. This was observed that vetiver grass did prevent soil erosion and the vetiverized section was stabilized. Trimming and mulching was done in the month of April, 2019 and during the observation in May 2019 it is found that after trimming there was rapid growth as seen in Figure 4..

Conclusion

From the above experimental project, it is established that vetiver grass can survive and grow in OB of coal mines with extreme soil and climate conditions. Growing vetiver requires minimal soil amendment. Effect of acidity and other toxic metal is very less on the root of Vetiver grass. It has a supportive effect on surrounding ecosystem. Though the growth rate of root was not recorded, it has demonstrated a very good soil anchoring effect and successfully prevented soil erosion

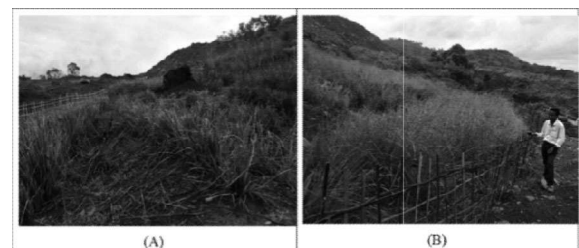


Figure 4 (A) Trimming and mulching before monsoon April 2019 (B) Growth of Vetiver Grass after trimming , June 2019.

of OB dump and stabilised the slope of the OB dump.

Acknowledgement

I would like to express my deepest gratitude to Dr. Khanindra Pathak, Independent Director Coal India Limited, Professor Mining Engineering Department for his personal commitment, involvement and valuable guidance and initiation of the project. He helped in procurement of saplings, preparation of the nursery and site plantation and advised for the maintenance. I am also thankful to the Shri J K Borah General Manager, NEC for his for his continuous guidance and supervision. I would also like to thank Shri S P Dutta, General Manager Operation for help throughout work. I also wish to extend my thanks to Shri Shibdas Bhattacharjee, Senior Manager Mining, HoD Environment and Forest Dept. for without whose support the work could not have been carried out. I am also thankful to my

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Recent Achievements in Indian Oil and Gas Sector

- Construction of around 13,500 km long gas pipeline is under way, at the end of 2018.
- Under City Gas Distribution (CGD) network, 86 Geographical Areas constituting 174 districts in 22 States/ Union Territories are covered
- As of December 5, 2018 more than 58.3 million connections have been released under Pradhan Mantri Ujjwala Yojana (PMUY).

Challenges Ahead

Energy demand of India is anticipated to grow faster than energy demand of all major economies, on the back of continuous robust economic growth. Consequently, **India's energy demand as a percentage of global energy demand is expected to rise to 11 per cent in 2040 from 5.58 per cent in 2017.**

Crude oil consumption is expected to grow at a CAGR of 3.60 per cent to 500 million tonnes by 2040 from 221.76 million tonnes in 2017.[^]

Natural Gas consumption is forecasted to increase at a CAGR of 4.31 per cent to 143.08 million tonnes by 2040 from 54.20 million tonnes in 2017

LUCY, THE MOTHER OF MANKIND IN THE SKY WITH DIAMONDS

Compiled by Dr A. K. Moitra*

On the night of 24th November 1974, a remote corner of a remote village Hadar in Ethiopia air was ranted with a song 'Lucy in the sky with diamonds', a very popular song of that time composed by Hippias. Along with that tune not perfectly being sung few paleontologists and paleoanthropologists were dancing crazily. What was the occasion for such a frenzied celebration? Well indeed it was a great moment of joy as this group of scientists, anthropologists and paleontologists discovered a treasure of 'human' fossils, a rarest of rare discovery!!!

Let us go back to that day at Hadar in Ethiopia. A group of paleoanthropologists and paleontologists headed by Dr. Donald C Johnson and Tom Gray led an expedition to Ethiopia in search of fossils of ancient human relatives.



On 24th Nov 1974 in an expanse of arid badlands, after a day long search the team was returning to the camp rather disappointed and exhausted exactly then the Donald leader of the team stumbled over a limb bone apparently of human ancestor at the site of Hadar.

This was moment of great joy for the team and the joy was compounded by many folds when area surrounding the site of the first finding the team spotted hundreds of other skeletal fragments and later found to be belonging to a single female body of our ancestor. A great treasure to celebrate these fragments which constituted 40% of the body, when studied revealed that the remains are that of a female hominid and species was named as *Australopithecus afarensis*. The skeleton was named as Lucy after the song sung celebrating the findings. The skeleton of Lucy when reconstructed joining hundreds of pieces of Lucy was very fondly called 'Dinkinesh' in local Amharic (Ethiopian) language meaning 'you are marvelous'.

Finding so much from a skeleton revealed tremendous amount about Lucy and about human evolution in general. Though the fossils were very old, 40% remains when assembled gave a fair idea of her height and posture.

The study further depicted that 'Lucy' had flat feet and acquired bipedality, a trait hominid possessed, trails needed for walking. Some researches put forth that by Lucy's time our ancestors were not very competent tree climbers having evolved to

find food on the ground not requiring to climb trees. Fully grown Lucy was much smaller that measured when standing 3.7 feet (1.1 meters) tall and weighted just 64 lbs (29 kg). Lucy had hook-like hands and her flexible shoulders indicated she was an expert in climbing tree. It is likely that Lucy divided her time between the ground and tree.



She was one who started walking upright taking the first faltering steps on way to become human beings.

Lucy's death is still a mystery. Her broken ribs suggest that Lucy died most unceremoniously due to long fall from a tree. However, some argue that the 'broken' ribs may

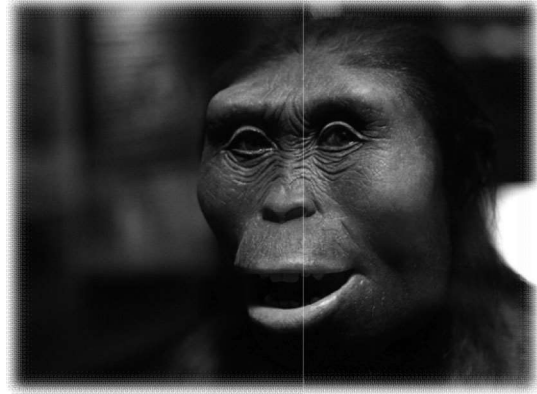
be due to pressure of sediments under which Lucy was buried which split the ribs as seen in many cases like elephants whose fall from tree cannot be corroborated. Some researchers argued that by Lucy's time our forerunners were no longer good tree climbers. It is likely that Lucy had ability to walk on the tree freely. Question is Lucy the first hominid and acclaimed mother of mankind??? Well, discovery of Ardi short version of *Ardipithecus ramidus* again in Africa which is 4.4 million years old is more primitive than Lucy which had also acquired bipedality but her other features are closer to ape. We will take up this find of Ardi in future. So, the mystery continues.



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Miller John Kappelmam, a paleoanthropologist at the University of Texas at Austin, with 3-D printouts of Lucy's skeleton. Credit Marsha University of Texas at Austin.



The face of Lucy

March 7, 2006: The face of "Lucy," an Australopithecus afarensis and part of the "Evolving Planet" exhibit, is displayed at the Field Museum in Chicago, Illinois. The new exhibit, which opens to the public March 10, presents the evolution of life, taking a visitor through a four-billion-year journey. (Photo by Tim Boyle/Getty Images)

Sharing Interesting Experiences of Work

Dr Saurindra Mohan Kolay

As General Manager, Sohagpur Area in SECL, in one year I stated development and commissioned one Opencast Mine, Sarada OCP, two inclines Subhash Incline and Vivek Incline within the span of one year and also dug four bore wells for drinking water for the neighboring villages and got free cataract operation done for few hundred poor inhabitants of Shadol district at the Central Hospital under mu administration. I erected and commissioned a 20 cum dragline along with a Russian expert and later prepared Dragline Erection Manual, which was published by CMPDI. CMPDI also published my book on Open cast Mine Planning, for which the Honble President of India awarded me Indira Gandhi Award First Prize in the Ashoka Hall, Rastrapati Bhavan.

Post-retirement from BCCL as Director (Tech), in 1998, the Government of Australia, in environmental Management and Institutional Strength Training Project in India, assigned me the function of the sole Indian Expert, along with other Australian experts.

I prepared as an associate consultant along with a British expert Mineral Expert Report for three coal assets in India for an Indian Company for its enlisting in London Stock Exchange.

European Union Commission engaged two German experts and two Indian experts, including me through DMT, for study of LVHRC coals in India for beneficiation and design of pilot beneficiation plant.

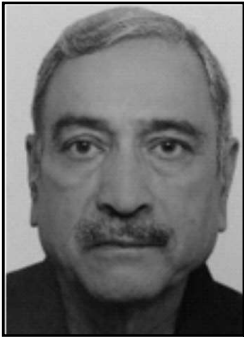
While I was engaged as Advisor to Lanco group, Hyderabad, I had to prepare pre-feasibility report and financial projection including cost of coal production over the life of the project for Moher opencast dragline mine 15 MTPA, with 50 cum bucket dragline to be introduced for the first time in the country. Cost of power

produced at the pit top, about 3960 MW (6X660MW) at about 90% PLF was calculated as Re1.29 per KWH unit. In bidding for the linked Sasan Ultra Mega Power Project, Lanco group became the lowest cost bidder. They could have built the project but could not arrange finance. Reliance Power was selected after they matched the lowest power cost bid. The Plant is now operated by Sasan Power Ltd, a subsidiary of Reliance Power Ltd. Moher and adjacent Moher Amlori Extension produced 18MT in FY18. The mines deploy 61 cum bucket dragline, along with 240Tonner dumper, 42 cum Rope shovel and 42 cum Front end loader. Sasan Power Ltd has long term offtake agreement with 7 states for the entire 3960MW. The Plant has operated at 92% PLF and even above the same. Performance of the Mine-cum-Power Plant has been commendable, against global standards.

Sincere thanks to Dr Kolay for sharing his glorious experiences, I am sure many of us have such experiences of achievements to share. We are also looking forward to the stories of those uncrowned heroes who might have worked a lot for our achievements, there could be many moments of happiness and sorrows in those bygone days. Please share those untold stores and glories of unnoticed soldiers who made India produce minerals....

I request all our members to kindly send us some old mining photos clearly mentioning the location and year. Let us know our past to march forward with a bolder step!

Editor



Down the Memory Lane

Er S. C. Agarwal

Five Decades of active service from 1963 to 2013 has taught me a lot of lessons. Each decade of service had many bend, curves, turning points, even

U-turns, but I continued walking because there was a road which carried many memories. All memories fade away with time but some memories last till you survive.

After graduating in Min Engg from BHU in 1963, obtained Second Class Mines Manager (Coal) certificate in 1965, First Class Coal Mines Manager certificate in 1966, and was serving as Dy Manager of Chinakuri 1&2 pits colliery, belonging to M/S Bengal Coal Company, (Andrew Yules) W. B. In 1968 I was promoted from Dy Manager to Manager Mines and posted at Poidih colliery, in Sitarampur Region, Asansol (WB).

Period of the late sixties and early seventies was full of upheavals, political turmoil and challenges which adversely effected industrial environment in WB. CPI(M) was dominating the State which was highly charged with violence, strikes, gheraos. The general environment, even in Coal Mines the State was adversely affected as majority of labor union were controlled by CPI(M) leaders.

In the late sixties a typical type of public agitation started in the industrial area of WB, called Gherao. Here a good number of workers encircled the mine manager to pressurize him to accept their demands, else they would not let him go free out of their circle. At times they lightened fire close-by and throw chili powder to further stress the manager. It is for this reason many major industrial units either rolled down their shutters or shifted in other States, causing large unemployment.

Bengal Coal Co (WB) was the largest coal company having +30 coal mines in Asansol (Burdwan) region, all mining non- coking coal. In almost all mines, industrial environment was adversely affected. The BCC organized a lecture for its senior mining officials by Mr Masman , Superintendent Admin and former SP, Burdwan(WB) District, on the strategies for handling the burning issue of Gherao. Mr Massman stressed that it was essential first to establish that it was a gherao and not simple union negotiation as usually claimed. Officer in wrongful confinement had to try to come out forcibly and if not allowed, the situation was of a Gherao. He then explained as how to handle the situation, specifying duties of different officer at mines level like, Under Manager, Welfare Officer, Security personnel to act upon as defined. Once it is proved that it was gherao, forceful& illegal

retention, judicial action would be taken to obtain a search warrant from court to rescue the officer.

In the early seventies the political situation in Eastern coal field, now ECL, further worsened, with the inception of the Naxalite movement. Every day was of challenge to face mob of CPI(M), to remain vigilant and provide safety to all workers and officers. Sound even from a smallest cracker in surrounding was checked and confirmed and reported to HO at Sanctoria.

My bungalow was across the village dominated by CPIM followers and influenced by Naxalite. I was moving under escort from bungalow to office and to mines. Bungalow gate remained locked and guarded by armed guard. To infuse sense of safety, workers were armed with lathis tipped sharp iron arrow.

Sometime in 1971, I received a letter from Naxalite HQ where I was listed at SI No.5. All the persons listed were threatened either to meet their demands else face consequences. I remember the day when first three were executed in open public, one of them was a union leader of Chinakuri 1&2 and Chinakuri-3 mines. He was executed in day light at the railway x-ing and his memorial was built up close by.

At one stage of time mine workers about 250 in nos residing in mine area were so scared and agitated that they wanted to take offensive action and wanted just one night to eliminate all these miscreants in village across the road. I denied strongly and advised them to be defensive and not offensive.

I remember when late Sri Sidharth Sankar Roy was brought to WB as CM, search operations, jointly by Military and State Police personals, were conducted and order were issued to shoot at sight such miscreants. So was the situation in Eastern Coal field where mining officials had to work. Still situation continued till I moved to Dhanbad.

Yes, here I felt scared for safety of my family. Even the management felt helpless and advised me to take my decision. I then decided to submit my resignation and moved to Dhanbad and joined Kharkhari colliery in Katrasgarh(Jharia).

Just after a month or so on 15th Oct 1971, all the coking coal mines were nationalized and Bharat Coking Coal Ltd came into existence.

Er S. C. Agarwal

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