



IT2010

7th International Conference on

Industrial Tribology

Theme

Tribology for Steel & Mining Industries

December 2-4, 2010

Venue : Ispat Bhawan, SAIL, Ranchi, India

PROGRAMME

Organised by



**R & D Centre for Iron and Steel
Steel Authority of India Ltd.
Ranchi**

In Association with



CET, SAIL, Ranchi



CCL, Ranchi

Under the aegis of



Tribology Society of India



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PROGRAMME OVERVIEW

December 2, 2010 (Thursday)

08:00-09:00 Hrs	Registration
09:00-11:00 Hrs	Inaugural Session (Auditorium)
11:00-13:00 Hrs	Plenary Session (Auditorium)
13:00-15:45 Hrs	Technical Session I A: Tribology in Steel Processing (Auditorium)
	Technical Session I B: Tribology in Mining (Committee Room)
	Technical Session I C: Engine Tribology (Seminar Room)
	Poster Session & Technical Exhibition (Auditorium Foyer)
16:00-17:45 Hrs	Technical Session II A: Tribology in Metalworking (Auditorium)
	Technical Session II B: Contact Mechanics & Friction (Committee Room)
	Technical Session II C: Design & Manufacturing (Seminar Room)
	Poster Session & Technical Exhibition (Auditorium Foyer)
19:00-23:00 Hrs	Cultural Programme (Auditorium) and Dinner (MTI Premises)

December 3, 2010 (Friday)

08:30-09:00 Hrs	Registration
09:00-10:45 Hrs	Technical Session III A: Bearing & Gear Tribology-I (Auditorium)
	Technical Session III B: Surface Treatment & Coatings (Committee Room)
	Technical Session III C: Tribo-Testing (Seminar Room)
	Poster Session & Technical Exhibition (Auditorium Foyer)
11:30-13:00 Hrs	Manufacturer's Presentation Session I (Auditorium)
14:00-15:30 Hrs	Manufacturer's Presentation Session II (Auditorium)
15:45-17:30 Hrs	Technical Session IV A: Wear Mechanism (Auditorium)
	Technical Session IV B: Bearing & Gear Tribology-II (Committee Room)
	Technical Session IV C: Bio-Tribology (Seminar Room)
	Poster Session & Technical Exhibition (Auditorium Foyer)
19:00-23:00 Hrs	Cultural Programme and Dinner (MTI Premises)

December 4, 2010 (Saturday)

08:00-09:00 Hrs	Registration
09:00-11:00 Hrs	Technical Session V A: Condition Based Maintenance System (Auditorium)
	Technical Session V B: Lubricants & Additives (Committee Room)
	Technical Session V C: Computational Techniques (Seminar Room)
	Technical Exhibition (Auditorium Foyer)
11:15-12:45 Hrs	Valedictory Session (Auditorium)
12:45-14:00 Hrs	Lunch (MTI Premises)

INAUGURAL SESSION

Main Auditorium, 0900 – 1100 Hrs

- Welcome Address** : **Shri A S Mathur**, Executive Director I/c (RDCIS, SAIL) & Chairman (Organizing Committee)
- Invocation Song** : Children of Delhi Public School, Ranchi
- Lighting of lamp** : Chief Guest with other dignitaries on dais
- Address** : **Shri Anand Kumar**, Former Director (Indian Oil R&D) & President (TSI)
- Address** : **Shri S S Mohanty**, Managing Director (Bokaro Steel Plant) & Guest of Honour
- Inaugural Address** : **Shri R K Saha**, Chairman & Managing Director (Central Coalfields Ltd.) & Chief Guest
- Release of Proceedings & Souvenir** : Chief Guest with other dignitaries on dais
- Theme Lecture** : Role of third bodies in protective coatings
Dr Irwin L Singer, Physicist, Naval Research Lab, USA
- Vote of Thanks** : **Dr D Mukerjee**, Executive Director (RDCIS, SAIL) & Co-Chairman (Organizing Committee)
- Inauguration of Exhibition** : **Shri R K Saha**, Chairman & Managing Director (Central Coalfields Ltd.) & Chief Guest
- Inauguration of Poster** : **Shri S S Mohanty**, Managing Director (Bokaro Steel Plant) & Guest of Honour

HIGH TEA

Auditorium Foyer, 1100 – 1130 Hrs

PLENARY SESSION

Main Auditorium, 1130 – 1300 Hrs

- Paper-1**
Tribology of a light weight engine alloy
Prof. SK Biswas
Indian Institute of Science, Bangalore, India
- Paper-2**
Tribology Practices in Steel Industry
C Mishra
CEO (ME&TC) &
Former GM (Tata Steel), Jamshedpur, India
- Paper-3**
Tribological Behaviour of Engineered Coatings
Dr. G. Sundararajan
Director (ARCI), Hyderabad, India

LUNCH

MTI Premises, 1300 – 1400 Hrs

December 02, 2010 (Thursday)

TECHNICAL SESSION – IA

Main Auditorium, 1400 – 1545 Hrs

TRIBOLOGY IN STEEL PROCESSING

5 Keynote Paper

Increasing Efficiency & Productivity of Steel Plants Through Proper Lubrication

Naveen Shukla

Exxon Mobil (STLE, USA, Representative)

6 Oral Paper-1

Root cause failure analysis of spiral bevel gear box of NTM stand #18 of Wire Rod Mill at Tata Steel

R. Mishra, H S Mandal, Dr. A Prabhakaran, Vivek Kudva and G.R.P. Singh

TATA STEEL, Jamshedpur, Jharkhand, India

7 Oral Paper-2

Key Performance Index of Emulsion System at Tandem Cold Mill

AK Marik, N Mondal, P Pathak, AP Singh, DS Gupta, Ram Avatar and D Mukerjee

Research & Development Centre of Iron & Steel, SAIL, Ranchi, Jharkhand, India

8 Oral Paper-3

An insight into selection of material for improving wear resisting performance of steel plant mechanical equipments

PK. Swain, S. R. Mohapatra, PK. Mohanty and Anil Barik

Rourkela Steel Plant, SAIL, Orissa, India

9 Oral Paper-4

A conceptual framework for developing an expert system for selection of tribological materials for steel plant applications

K.K. Singh, R.R. Prasad, Dr. Ram Avtar and Dr. D. Mukerjee

Research & Development Centre for Iron and Steel, SAIL, Ranchi, Jharkhand, India

TEA BREAK

Auditorium Foyer, 1545 – 1600 Hrs

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December 02, 2010 (Thursday)

TECHNICAL SESSION – IB

Committee Room, 1400 – 1545 Hrs

TRIBOLOGY IN MINING

16 Keynote Paper

Improvement in availability of underground loading machines by use of advanced fire resistant hydraulic fluid – a case study from coal mines

R K Saha, and M I Alam

CCMC, CCL, Ranchi, Jharkhand, India

17 Oral Paper-1

Typical un-lubricated wear in HEMM & techno-economic solutions through its surface conditioning - a case study from South Eastern Coalfields Ltd.

A.K.Mishra, I.R. Suryawanshi, Kamal Mukherjee, S. Kumar and P. Kumar

CEWS, Gevra, South Eastern Coalfields Ltd., Bilaspur, Chhatisgarh, India

18 Oral Paper-2

Use of tribology as an energy saving potential in heavy earth moving machines used in coal industry

Kamal Mukherjee

CEWS, Gevra, South Eastern Coalfields Ltd., Bilaspur, Chhatisgarh, India

19 Oral Paper-3

Effect of temperature on dynamic characteristics of MR fluid squeeze film dampers

H.P.Jagadish, L.Ravikumar and G.Saravanakumar

RMS Evening College of Engineering, Bangalore, Karnataka, India

20 Oral Paper-4

Terocote protection on wear prone components utilized in Mining Industry

P.Sasi Anand

EWAC Institute, Larsen & Toubro, Mumbai, Maharashtra, India

TEA BREAK

Auditorium Foyer, 1545 – 1600 Hrs

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December 02, 2010 (Thursday)

TECHNICAL SESSION – IC

Seminar Room, 1400 – 1545 Hrs

ENGINE TRIBOLOGY

15 **Keynote Paper**

Automotive Engine oils – trends, issues and significance

R Suresh, Indian Oil Corporation Limited, Mumbai, Maharashtra, India

16 **Oral Paper-1**

Study of friction characteristics of a diesel engine running on different viscosity grade engine oils using conventional and acoustic emissions technique

D. Singh*, F.Elamin*, F.Gu*, O.Gilkes*, J.D.Fieldhouse*, A.K.Jain**, Nishan Singh** and S.K.Singal**

*University of Huddersfield, School of Computing and Engineering, UK and **Indian Institute of Petroleum, Dehradun, CSIR, India

17 **Oral Paper-2**

Interpretation & analysis of 15W40 grade engine oil viscosity – a case study of 85 ton dumper applications in open cast mine

D.Kabiraj* and Kamal Mukherjee**

*Central Coalfields Limited, Ranchi, Jharkhand, India, **South Eastern Coalfields Limited, Bilaspur, Chhatisgarh, India

18 **Oral Paper-3**

Studies for the development of energy efficient top compression piston ring for IC engines

R.K.Pandey, N.Tandon and T.K.Sambharwal
IIT, Delhi, New Delhi, India

19 **Oral Paper-4**

Variation in lubrication regime for changes in ring geometry in a multi cylinder IC engine test rig

Ganesh B. Aware, B. M. Sutaria and D. V. Bhatt
S.V.National Institute of Technology, Surat, Gujarat, India

TEA BREAK

Auditorium Foyer, 1545 – 1600 Hrs

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December 02, 2010 (Thursday)

TECHNICAL SESSION – IIA

Main Auditorium, 1600 – 1745 Hrs

TRIBOLOGY IN METAL WORKING

20 **Keynote Paper**

Tribological investigations during precision forging of hollow polygonal disc

Dr. Surender Kumar and Vikas Kumar
GLA Institute of Technology & Management, Mathura, U.P., India

21 **Oral Paper-1**

Roll bite lubrication, benefits and future direction

Peter Gandy
Quaker Chemicals, Australia

22 **Oral Paper-2**

Improvement in lubrication system in backup roll bearings in System- A of Tandem Mill - 2 of Bokaro Steel Plant

K.K. Ojha*, Rakesh*, D Kumar* and A K Mishra **

*Bokaro Steel Plant, SAIL, Bokaro, Jharkhand, **Research and Development Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

23 **Oral Paper-3**

Managing roll life in hot rolling

Rajeev Baskiyar, Binod Krishna, Daya Shanker Gupta and Ram Avtar
R&D Centre for Iron and Steel, SAIL, Ranchi, Jharkhand, India

CULTURAL PROGRAMME & DINNER

Auditorium & MTI Premises, 1900 – 2300 Hrs

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December 02, 2010 (Thursday)

TECHNICAL SESSION – IIB

Committee Room, 1600 – 1745 Hrs

CONTACT MECHANISM AND FRICTION

Keynote Paper

Aluminium fly ash and SiC metal matrix composite and its wear behavior

K. V. Mahendra *, M. Ramachandra ** and K. Radhakrishna **

*RR Institute of Technology, Chikkabanavara, Bangalore, Karnataka, India and **
B.M.S. College of Engineering, Bangalore, Karnataka, India

Oral Paper-1

A study on the potential of bagasse fiber reinforced polymer composite for tribological applications

Punyapriya Mishra, S.K.Acharya

National Institute of Technology, Rourkela, Orissa, India

Oral Paper-2

Friction wear performance of injection molded asymmetric gears

Ratna Kumar Kommogi, M.S.S. Santosh Kumar, Prateek Kumar and S. Senthilvelan

Indian Institute of Technology, Guwahati, Assam, India

Oral Paper-3

Transient thermo elastic analysis of volvo disk brake

Chiranjit Sarkar* and Harish Hirani**

* Machine Dynamics & Maintenance Engineering Centre, IIT Delhi, New Delhi, India,

** Mechanical Engineering Department, IIT Delhi, New Delhi, India

Oral Paper-4

Debottlenecking of coil yard operation

L. Sreenivas Rao and Vishnu Raj Kharche

JSW Steels, Bellary, Karnataka, India

December 02, 2010 (Thursday)

TECHNICAL SESSION – IIC

Seminar Room, 1600 – 1745 Hrs

DESIGN AND MANUFACTURING

Keynote Paper

Tribology aspects in design and manufacturing specific to nuclear facilities

N.L.Son

Fluid Power & Tribology, BARC, Trombay, Mumbai, India

Oral Paper-1

Study of wear characteristics of Lechler roll cooling nozzle

Sudhaker Jha, Suresh Vasani and Santosh Chacko

Lechler (India) Pvt. Ltd., Thane, Maharashtra, India

Oral Paper-2

Influence of Rim Thickness on the Tooth Bending Stress of Girth Gear used in Rotary Kiln

Srikant Inje, Gajanan Nirwal, Dr. Barun Chakrabarti and S.V. Herwadkar

Larsen & Toubro Limited, Mumbai, Maharashtra, India

Oral Paper-3

Lubrication system design of a wind turbine gearbox using system level simulation to improve performance

Pradip Subramaniam and Mayank Tiwari

GE India Technology Centre, GRC, Bangalore, Karnataka, India

Oral Paper-4

Temperature-displacement coupled modeling for disc brakes

Ramkumar.E and Mayuram.M.M

IT Madras, Tamilnadu, India

POSTER SESSION

Auditorium Foyer, 1030 – 1730 Hrs

(List of papers given at the end)

December 03, 2010 (Friday)

TECHNICAL SESSION – IIIA

Main Auditorium, 0900 – 1045 Hrs

BEARING AND GEAR TRIBOLOGY- I

Keynote Paper

Anand N Bapat
National Engineering Industries Ltd., Jaipur, India

Oral Paper-1

Endurance life testing of indigenously developed high precision M50 Steel bearings

S. Madhu Kiran, M. Solai Raju, N. Rajaram, M. Tamilmani, S. Ganesan and C. Chandrasekaran
Combat Vehicles Research and Development Establishment, DRDO, Chennai, India

Oral Paper-2

Torsional stiffness analysis of a vertical hydro generator tilting pad thrust bearing
Duriseti.V. Srikanth
Bhaskar Engineering College, Moinabad, Hyderabad, Andhra Pradesh, India

Oral Paper-3

Study of lubrication aspects of journal bearing failure in a sugar mill
S. M. Muzakkir*, Harish Hirani*, G. D. Thakre** and M. R. Tyagi***
*Indian Institute of Technology, Delhi, India and **Indian Institute of Petroleum, Dehradun, Uttarakhand, India

Oral Paper-4

Tribological Studies on Aluminium-Tin-Silicon Based Plain Bearing Material
T Rameshkumar*, Dr I Rajendran** and A D Latha***
*Bannari Amman Institute of Technology, Sathyamangalam, Tamilnadu, ** Mahalingam College of Engineering & Technology, Pollachi, Tamilnadu, ***Nandam Engineering College, Perundurai, Tamilnadu

December 03, 2010 (Friday)

TECHNICAL SESSION – IIIB

Committee Room, 0900 – 1045 Hrs

SURFACE TREATMENT AND COATINGS

Keynote Paper

Application of high performance abrasion resistant materials in hammers and screens for coal and coke preparation units of integrated steel plant
Ram Avtar, R.K.Tiwary and A.S.Mathur
Research & Development Center for Iron & Steel, SAIL, Ranchi, Jharkhand, India

Oral Paper-1

High Temperature Abrasion and Erosion of Hard Faced Surfaces
Manish Roy
Defence Metallurgical Research Laboratory, Hyderabad, Andhra Pradesh, India

Oral Paper-2

Genesis of furnace roll pick up and functional requirements for roll coating
S K Mohapatra, A P Singh, D S Gupta and Ram Avtar
R & D Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

Oral Paper-3

Tribological performance optimization of electroless Ni-B coating using grey based taguchi method
Suman Kalyan Das*, Prasanta Sahoo
Jadavpur University, Kolkata, West Bengal, India

Oral Paper-4

Improving Wear Performance of Primary Zone Equipments of Steel Plant through Surface Engineering
B.S.Sahu, Gopichand, S.C. Sabat, Anil Barik
Kourkela Steel Plant, SAIL, Orissa, India

December 03, 2010 (Friday)

TECHNICAL SESSION – IIIC

Seminar Room, 0900 – 1045 Hrs

TRIBO TESTING

Keynote Paper

43 Simulating aluminium cold rolling mill conditions on a standard bench-top instrument

Richard Baker
PCS Instruments, London, UK

Oral Paper-1

44 Performance study of a shock absorber on a inhouse developed test rig

Satish Purohit*, S.R.Lapalika** and R.K.Porwal*
*SG Institute of Technology and science, Indore, M.P, India and **Indore Institute of Technology and science, Indore, M.P, India

Oral Paper-2

45 Experimental determination of traction coefficient under starved lightly loaded rolling non-conformal line contact conditions

N. Anandan* and R.K. Pandey**, *Pondicherry Engineering College, Puducherry, India and **Indian Institute of Technology, New Delhi, India

Oral Paper-3

46 A Rig Test and Novel Approach to Predict Friction and Wear of Piston Ring and Cylinder Liner Tribo Pair

M.M.Mayuram, A. Hemasundararao and A.Ramanaiah
Department of Mechanical Engineering, IIT Madras, Chennai, India

Oral Paper-4

47 Measurement of interfacial frictional forces during compressive deformation of Al-MMC foam

J. Ghose*, V. Sharma* and S. Kumar**
*Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India and **G.L.A. Institute of Technology & Management, Mathura, U.P., India

December 03, 2010 (Friday)

MANUFACTURER'S PRESENTATION SESSION – I

Main Auditorium, 1130 – 1300 Hrs

Presentation-1

48 Shell India
Akhil Jha
Shell India Markets Pvt. Ltd., India

Presentation-2

49 CSM Instruments
Gregory Favaro
CSM Instruments, Switzerland

Presentation-3

50 Welding Alloys Asia
S Ghosh
Welding Alloys South Asia Pvt. Ltd., India

December 03, 2010 (Friday)

MANUFACTURER'S PRESENTATION SESSION – II

Main Auditorium, 1400 – 1530 Hrs

51 **Presentation-1**

Raj Petro Specialities

Dr. J Bhatia, Raj Petro Specialities Pvt. Ltd., India

52 **Presentation-2**

PCS Instruments

Richard Baker, PCS Instruments, UK

53 **Presentation-3**

Indian Oil Corporation Ltd.

R Suresh, Indian Oil Corporation Ltd., India

TEA BREAK

Auditorium Foyer, 1530 – 1545 Hrs

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December 03, 2010 (Friday)

TECHNICAL SESSION – IVA

Main Auditorium, 1545 – 1730 Hrs

WEAR MECHANISM

54 **Keynote Paper**

Sub-surface strain hardening during sliding wear of Ni-Cr-Mo-V steel with respect to different microstructures

Dr D. Rai, RDCIS, SAIL, Bhadrabati Centre, Bhadrabati, Karnataka, India

55 **Oral Paper-1**

Tribological behaviors of Leaded Phosphor Bronze under dry and water lubricated conditions

Neelima Khare, P.K.Limaye, N.L.Soni, M.K.Mishra and D.N.Badodkar
BARC, Trombay, Mumbai, Maharashtra, India

56 **Oral Paper-2**

Friction and wear performance of dry lubricants under boundary lubrication regime

Aravind Vadiraj*, M. Kamaraj** and Sreenivasan V. S.*,
*Ashok Leyland Technical Center, Vellivoyalchvadi, Chennai, Tamilnadu, India
**IIT Madras, Chennai, Tamilnadu, India

57 **Oral Paper-3**

Study of wear of EN-31 steel under unlubricated conditions

M.R. Tyagi*, G.D. Thakre*, Navdeep S. Chahal** and Kulwant S. Dhanoa**
* Indian Institute of Petroleum (CSIR), Dehradun, Uttarakhand, India, ** National
institute of Technology, Jalandhar, Punjab, India

58 **Oral Paper-4**

Wear characterization of austempered ductile iron

P.K. Bandyopadhyay, S.K. Sen and D. Mukherjee
Research and Development Centre for Iron and Steel, SAIL, Ranchi, Jharkhand, India

59 **Oral Paper-5**

Improved life of conveyer idler

Manoj Kumar, Jyoti Cerro Rubber, Jamshedpur, Jharkhand, India

CULTURAL PROGRAMME & DINNER

MTI Premises, 1900 – 2300 Hrs

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December 03, 2010 (Friday)

TECHNICAL SESSION –IVB

Committee Room, 1545 – 1730 Hrs

BEARING AND GEAR TRIBOLOGY - II

Keynote Paper

A "systems approach" for performance evaluation of open gear lubricants

Dr. Barun Chakrabarti and S. V. Herwadkar

R&D – E&C Division, Larsen & Toubro Limited, Mumbai, Maharashtra, India

Oral Paper-1

Performance characteristics of 3-lobe three-pocket hybrid journal bearing system compensated with orifice restrictor by considering the influence of wear

Vikas M. Phalle, Satish C. Sharma and C. Jain

Indian Institute of Technology, Roorkee, Uttarakhand, India

Oral Paper-2

Increase in life expectancy of work roll bearings in Tandem Mill II of Bokaro Steel Plant

A.K. Mishra*, G Bhattacharya** and KK Ojha**

* Research and Development Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

** Bokaro Steel Plant, SAIL, Bokaro, Jharkhand, India

Oral Paper-3

Influence of journal misalignment and wear on the performance of constant flow valve compensated non-recessed hybrid journal bearing operating in turbulent regime

Nathi Ram, Satish C. Sharma and S.C. Jain

Indian Institute of Technology, Roorkee, Uttarakhand, India

Oral Paper-4

"Planetary Gear Drives" – Overview of Energy Efficient Drives for Sugar Mill Application

S. R. Durugkar

R&D – E&C Division, Larsen & Toubro Limited, Mumbai, Maharashtra, India

December 03, 2010 (Friday)

TECHNICAL SESSION –IVC

Seminar Room, 1545 – 1730 Hrs

BIO TRIBOLOGY

Keynote Paper

Recent advancements in development of biodegradable greases

Ranjit Panesar*, Dr. J. Bhatia** and Sukumar Mahanti**

*Proventus (UK) Ltd., Leeds, United Kingdom, **Raj Petro Specialities Pvt. Ltd. Chennai

Oral Paper-1

Tribocorrosion assessment of biomedical alloys: influence of chemical and electrochemical parameters

Stefano Mischler, C. Stähli, J. Stojadinovic, EPFL, Station 12, CH-1015 Lausanne, Switzerland

Oral Paper-2

Study of lubricity characteristics of non-edible vegetable based bio-lubricant and low SAP engine lubricants

Devendra Singh, A.K.Singh, Nishan Singh and S.K.Singal

Indian Institute of Petroleum, Dehradun, CSIR, Uttarakhand, India

Oral Paper-3

Comparison of sliding tribocorrosion and fretting corrosion behavior of Ti-13Nb-13Zr in physiological solution

N.S. More*, S.N. Paul**, N. Diomidis***, S. Mischler**** and Manish. Roy*****

*RC Patel Institute of Technology, Shirpur: 425 005, Maharashtra, India,

Visvesvaraya National Institute of Technology, Nagpur, Maharashtra, India, *

EPFL, Station 12, CH-1015 Lausanne, Switzerland, ****Defence Metallurgical

Research Laboratory, Hyderabad, Andhra Pradesh, India

Oral Paper-4

Studies on Cup Profile Thickness variation of Deep Drawn 304L Sheets using Green Lubricants

S.R.Jayaram and Y.M.Shashidhara, Malnad College of Engg., Hassan, Karnataka,

POSTER SESSION

Auditorium Foyer, 1030 – 1730 Hrs

(List of papers given at the end)

CULTURAL PROGRAMME & DINNER

MTI Premises, 1900 – 2300 Hrs

CULTURAL PROGRAMME & DINNER

MTI Premises, 1900 – 2300 Hrs

December 04, 2010 (Saturday)

TECHNICAL SESSION – VA

Main Auditorium, 0900 – 1100 Hrs

CONDITION BASED MAINTENANCE SYSTEM (CBMS)

Keynote Paper

Condition monitoring and reliability analysis of rolling-element bearings

Dr. Harprasad, Consultant, Centre for Tribology (CETR), USA

Oral Paper-1

Detection of bearing fault for equipment running at slow speed

Chiranj Mandal*, Ravi Ranjan Prasad*, Arun Kumar Samantaray** and Ranjan Bhattachayya**, *R & D Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India, **IIT Kharagpur, West Bengal, India

Oral Paper-2

Oil analysis program as a tool for continued airworthiness assurance of aeroengines

Amarnath Kosgi and S K Jha, Centre for Military Airworthiness and Certification, Ministry of Defence (R&D), Bangalore, Karnataka, India

Oral Paper-3

An improved bearing condition monitoring technique for online fault stimulation

Amandine Bernier and S. Swarnamani, IIT Madras, Tamilnadu, India

Oral Paper-4

Integration of Acoustic Emission technique and Oil analysis for condition monitoring of super slow rotating machineries

Alok Kumar Mukherjee, Nitesh Ranjan and Banibrata Mukherjee
Bokaro Steel Plant, Steel Authority of India Limited, Bokaro, Jharkhand, India
Development of condition monitoring system for rolling stands of Rail Mill, Bhilai Steel Plant

Oral Paper-5

Deepak Kumar*, Anup Prasad*, Vikas Kumar*, Archana Sharan*, R Pawar*, Prashant Lakhe**, Usha Rani*, S Majumdar* and S R Singh**

*R & D Centre for Iron & Steel, Steel Authority of India Limited, Ranchi, Jharkhand, India, **Bhilai Steel Plant, Steel Authority of India Limited, Bhilai, Chhattisgarh, India

TEA BREAK

Auditorium Foyer, 1100 – 1115 Hrs

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December 04, 2010 (Saturday)

TECHNICAL SESSION – VB

Committee Room, 0900 – 1100 Hrs

LUBRICANTS AND ADDITIVES

Keynote Paper

Molecular engineering of a high performance synthetic base stocks by spectroscopic techniques

A.S. Sarpal, IOCL, Research & Development Centre, Sec-13, Faridabad, Haryana, India

Oral Paper-1

Steel plant lubrication trends - experiences at Tata Steel

G.R.P. Singh and B.K. Das, Tata Steel, Jamshedpur, Jharkhand, India

Oral Paper-2

Studies on the effect of cerium oxide nanoparticle as an anti-wear lubricant additive using Taguchi Technique

Shyam K Sharma, Arun K Nirala and S. Kanagaraj
Indian Institute of Technology, Guwahati, Assam, India

Oral Paper-3

Attempts towards addressing the customer demands in drawing lubricants

P.V. Joseph, Deepak Saxena, Pankaj Bhatnagar, R.T. Mookken, K.P. Naithani and R.K. Malhotra, IOCL, Research & Development Centre, Sec-13, Faridabad, Haryana, India

Oral Paper-4

Performance study of an eco-friendly roll pass lubricant

Dr. M.L. Das*, M.C. Dash*, Dr. B. Ghosh*, K. Gopinathan*, D.S. Gupta** and Kundan Prakash**, Balmer Lawrie & Co. Ltd. Kolkata, West Bengal, India and **R&D Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

Oral Paper-5

Disposal of Lubricating Oil Sludge by Bioremediation at Bokaro Steel Plant

Darshan Keshari*, Subrat Kumar Panda**, H.K. Ganguly***, Dr. M.P. Singh**** and Dr. Manoj Upreti*****

*IOCL, Bokaro, Jharkhand, India, **IOCL, Bihar State Office, Bihar, India, ***IOCL, CTSM, Mumbai, Maharashtra, India, ****IOCL, R&D Centre, Faridabad, Haryana, India

TEA BREAK

Auditorium Foyer, 1100 – 1115 Hrs

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December 04, 2010 (Saturday)

TECHNICAL SESSION – VC

Seminar Room, 0900 – 1100 Hrs

COMPUTATIONAL TECHNIQUES IN TRIBOLOGY

Keynote Paper

Dang-van fatigue life model for porous steels

N. Govindarajan, TCS Ltd., SIPCOT IT Park, SEZ, Siruseri, India

Oral Paper-1

Artificial Neural Network modeling of fractal dimension in CNC milling of mild steel material and comparison with RSM

T. K. Barman and P. Sahoo, Jadavpur University, Kolkata, West Bengal, India

Oral Paper-2

Estimation of coefficient of friction of cold rolling oil emulsion using mill data and DEFORM software

S. Rath, A. K. Marik, P. Pathak, A. P. Singh, D. S. Gupta and Ram Avtar

Research & Development Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

Oral Paper-3

Optimization of friction performance of Al-5%SiC metal matrix composite using Taguchi Method

Shouvik Ghosh, Rabindra Behera, Goutam Sutradhar and Prasanta Sahoo
Jadavpur University, Kolkata, West Bengal, India

Oral Paper-4

Finite element based unloading of a deformable sphere loaded against a rigid flat – effect of varying material properties

Biplab Chatterjee and Prasanta Sahoo, Jadavpur Univ., Kolkata, West Bengal, India

Oral Paper-5

Fault diagnosis of rolling element bearings using artificial neural networks and self organizing maps using complex morlet wavelet

P. K. Kankar, Satish C. Sharma and S. P. Harsha

Indian Institute of technology, Roorkee, Uttarakhand, India

TEA BREAK

Auditorium Foyer, 1100 – 1115 Hrs

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December 04, 2010 (Saturday)

VALEDICTORY SESSION

Main Auditorium, 1115 – 1245 Hrs

Welcome address : **Shri A S Mathur**, Executive Director I/c (RDCIS) & Chairman (Organizing Committee)

Brief of ICIT 2010 : **Shri R R Prasad**, DGM & HOD (EM) RDCIS & Technical Secretary (ICIT 2010)

Panel Discussion : **Eminent Panellists**

ICIT Awards : **Chief Guest**

TSI Life Time Achievement Awards : **President (TSI)**

Valedictory Address : **Shri S N Singh**, Managing Director (Rourkela Steel Plant) & Chief Guest

Vote of thanks : **Dr Ram Avtar**, GM & HOA (RT) RDCIS & Organising Secretary (ICIT 2010)

LUNCH

MTI Premises, 1245 – 1400 Hrs

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A capillary compensated hole-entry hybrid misaligned journal bearing operating in turbulent regimeNathi Ram, Satish C. Sharma and S.C. Jain
Indian Institute of Technology, Roorkee, Uttarakhand, India

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Comparative study of wear behavior of AISI 1040 and AA 6061 with boric acid as solid lubricantS.L. Dinesh and S.R. Jayaram,
Malnad College of Engineering, HASSAN, Karnataka India

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P03
Wear characterization of lantana-camara fiber reinforced epoxy composites in multi-pass abrasive wear applicationsChittaranjan Deo*, S.K.Acharya* and Chandrakanta Mishra**
*NIT, Rourkela, Orissa, India, **SIET, Dhenkanal, Orissa, India

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Wear control in hot rolling rolls through improved roll cooling technology in Hot Strip Mill, Bokaro Steel PlantN. Mondal, P. Pathak, A.K. Marik, A.P. Singh, D.S. Gupta, A.K.P. Singh & Ram Avtar
Research and Development Centre for Iron and Steel, SAIL, Ranchi, Jharkhand, india

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P05
Mechanism of roll pass wear in shape rolling and measures to improve roll pass life in SAIL long product millsS.Dutta, R.Topno, S.K.Jha, S.Kumar, B.Krishna and D.S.Gupta
R & D Centre for iron & Steel, SAIL, Ranchi, Jharkhand, India

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Multicylinder IC engine performance studies under different lubricants- a case studyGanesh B. Aware, Atul S. Shah, B. M. Sutaria and D. V. Bhatt
S.V.National Institute of Technology, Surat, Gujarat, India

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Water: An eco friendly medium for fluid power systemsSaurabh B. Pandharikar and N. L. Soni
Bhabha Atomic Research Centre, Mumbai, Maharashtra, India

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Field evaluation of heavy duty broaching oilS. Paul, S. Arunagirisamy, J.N. Pandey, D. Saxena, R.T.Mookken, K.P. Naithani and R.K. Malhotra
IOCL, Research & Development Centre, Faridabad, Haryana., India

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Vibration signature analysis of rolling element bearing due to defectsS. H. Upadhyay*, S. C. Jain** and S. P. Harsha**
*Sardar Vallbhbhai Patel Institute of Technology, Vasad, Uttarakhand, India and
**Indian Institute of Technology, Roorkee, Uttarakhand, India

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Integrated monitoring system for reliability improvement of HEMM with indigenously developed software – a case study on 120t, rear dump truck of south eastern coalfields limitedK K Varma and G K Dwivedi
Gevra, Korba, Chattishgarh, India

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Oil condition monitoring techniques for extending life of lubricant and critical machines in steel plant

R.B.Choudhary, A.K.Mishra and R.R.Prasad
Research and Development Centre for Iron and Steel, SAIL, Ranchi, Jharkhand, India

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Study on effect of roll bite lubrication on rolling parameters of hot strip mill

P Pathak¹, N Mondal², AK Singh³, SK Jha⁴, AP Singh⁵, DS Gupta⁶ and R Avtar⁷
¹RDCIS, SAIL, Ranchi, Jharkhand India, ²Bokaro Steel Plant, SAIL, Bokaro, Jharkhand, India, ³Birla Institute of Technology, Ranchi, Jharkhand, India

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Life enhancement of roll bending and balancing cylinders in Tandem Mill-II of Bokaro Steel Plant

Rakesh¹, P.Pathak², K.K.Ojha³ and N.Mondal⁴
Bokaro steel Plant, SAIL, Bokaro, Jharkhand, India, Research & Development Centre for iron & Steel, SAIL, Ranchi, Jharkhand, India

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Experimental investigation of lives of ball bearings at higher level of reliabilities

N. C. Murmu
Central Mechanical Engineering Research Institute, Durgapur, West Bengal, India

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Production and quality control of rim quenched and tempered wear resistant wheels at Durgapur Steel Plant

D. K. Jain, S. K. Jha and D S Gupta
Research & Development Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

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Kamal Mukherjee
CEWS, Gevra, South Eastern Coalfields Ltd., Bilaspur, Chhattisgarh, India

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Neelima Khare, P.K.Limaye and N.L.Soni
BARC, Trombay, Mumbai, Maharashtra, India

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Anand Prabhakaran, B.K.Das, Anurag saxena, Sunil Tiwary and A.K Upadhyaya
Tata Steel, Jamshedpur-831001, Jharkhand, India

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A multi asperity model for contact between a smooth sphere and a rough flat in presence of adhesion

Anirban Mitra, Prasanta Sahoo and Kashinath Saha
Jadavpur University, Kolkata, West Bengal, India

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Effect of stacking sequence on the erosive wear behaviour of jute and jute-glass fabric reinforced epoxy composite

S.K.Acharya¹, B.C.Patel² and D.Mishra³
¹National Institute of Technology, Rourkela, Orissa, India, ²SEC, Sundargarh, Orissa, India, ³VSSUT, Burla, Sambalpur, Orissa, India

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GLA Institute of Technology, Mathura, U.P., India

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Kundan Prakash*, D.S. Gupta**, Sanjeev Kumar**, S.K. Jha** and A.V. Kamalakar***

*R&D Centre for Iron & Steel, SAIL, Bhilai Centre, Bhilai Steel Plant, Bhilai-49000,
R&D Centre for Iron & Steel, SAIL, Ranchi-834002, *Rail & Structural Mill, Bhilai Steel Plant, SAIL, Bhilai-490001

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IOCL, Research & Development Centre, Faridabad, Haryana, India

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Sardar Vallabhbhai National Institute of Technology, Ichchhanath, Surat, Gujarat, India

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Research & Development Centre for Iron & Steel, SAIL, Ranchi, Jharkhand, India

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Combat Vehicles Research & Development Establishment, DRDO, Chennai, India

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CCL, Ranchi, Jharkhand, India

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SRES College of Engineering, Kopargaon, India

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Evaluation of Deep drawing Oil Using a Four Ball Tribo-testerB. D. Bachchhav*, Dr. H. Bagchi* and Dr. (Mrs.) Geeta Lathkar**
*Sinhgad College of Engineering, Pune, Maharashtra, india and **MGM's College of Engineering, Nanded Maharashtra, india

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Chiranjit Sarkar and Dr. Harish Hirani, IIT Delhi, New Delhi, India

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*SBIT, Khammam, Andhra Pradesh, India; **Maheswara Engineering College, Hyderabad, Andhra Pradesh, India ***JNTUH, Hyderabad, Andhra Pradesh, India130
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*SRM University, Chennai, Tamilnadu, India, **DMI College of Engineering, Chennai, Tamilnadu, India, ***Indira Gandhi Center for Atomic Research, Kalpakkam, Tamilnadu, India, **** ANNA University, Chennai, Tamilnadu, India

POSTER SESSION

Auditorium Foyer, 1030 – 1730 Hrs

Friction and wear behaviour of rice husk (RH) ceramic reinforced epoxy composite (31)S.P.Samantara, S.K.Acharya and G.Raghavendra
NIT, Rourkela, Orissa, India

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RDCIS, SAIL, Ranchi, Jharkhand, India

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Reliability assessment of tribological failures helps to suggest better maintenance policy for HEMM – a case study of 85 t dumpers from an open cast mine (33)Kamal Mukherjee*, R.K.Darad** and D.Kabiraj***
*CEWS, Gevra, SECL, Bilaspur, Chhatisgarh, India, ** CRS, Barkakana, CCL, Ranchi, Jharkhand, India, *** Rajrapa OCP, CCL, Ranchi, Jharkhand, India

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