



MONITOR

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From President's Desk...



Greetings! I am glad that our society is gearing up to organize another National Conference on Condition Monitoring during 04-05 Oct 2013. This year, the conference is being hosted by Gas Turbine Research Establishment (GTRE), a premier DRDO laboratory at Bangalore. I hope that this year's conference would provide the necessary fillip to maintenance engineers to adopt latest practices in condition monitoring. One of the last year's important resolutions is to prepare a representation to Union Government for a National policy on Condition Monitoring. The society is in the process of preparing the same and suggestions are welcome from members on the same.

Latest trends clearly indicate that worldwide industries are moving towards e – maintenance and integrated operations. Key drivers of e - maintenance concept can be broadly seen as advancement in ICT and innovative technologies apart from utilization of wireless and remote monitoring. e – maintenance involves prognostics and diagnostics out of which derived information can be effectively used for asset management. Technological advancements are driving most industries to outsource their non – core works. This enables the industry to focus on its core area while saving major investment in non – core area. On the other hand, integrated operation is evolving and is now spanning across all aspects of plant management. Open O&M frame work is available today for integrated operations and collaborative life cycle management. I therefore urge all stake holders to catch up with latest technologies so that condition monitoring becomes integral part of plant management and provide the expected ROI. Wish you all good times ahead!

... Dr. V Bhujanga Rao

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Dr K Tamilmani, Director General (Aero), DRDO to inaugurate NCCM-2013



National Conference on Condition Monitoring (NCCM 2013) scheduled for 04-05 Oct 2013 at IISc, Bangalore will be inaugurated by **Dr K Tamilmani, Distinguished Scientist & Director General (Aero), DRDO**, Ministry of Defence, Govt of India. The conference is being jointly organized by Gas Turbine Research Establishment (GTRE) and Condition Monitoring Society of India (CMSI).

The inauguration will be graced by **Dr. DN Reddy, Chairman, Recruitment and Assessment Centre (RAC), DRDO**, New Delhi and **Dr. PS Subramanyam, Director, Aeronautical Development Agency (ADA)**, Bangalore as guests of honor. The two day conference would feature invited talks by several experts apart from 70 contributed papers chosen for presentation. The conference will be attended by many practicing engineers from Industry, academicians, R&D professionals and leading vendors of condition monitoring equipment. The deliberations would be held on various aspects and latest developments of condition monitoring. Special topics of discussion include vehicle health monitoring, structural health monitoring and Turbine health monitoring apart from usually discussed topics i.e. Vibration Monitoring, IR Thermopography, Oil/ Wear debris analysis, Motor Current Signature analysis, Ultrasonics, Expert systems, Neural Networks, Online and Real Time Monitoring systems.

Enroll as a member of our society & advertise your products in News Letter 'MONITOR' and Website www.comsoi.org Check Website for details..

MOTOR DRIVE PULLEY STEADY BEARING FAILURE IDENTIFICATION

K4420-3 is a two stage in-line reciprocating compressor which is driven by a two speed (960/400 rpm) Laurence Scott electric motor via a 9 belt pulley system giving a compressor speed of either 345 rpm or 144 rpm respectively.

This machine forms part of a monthly vibration monitoring schedule and is one of a team of three identical units that produce CO₂ for the chlorine liquefaction process, Fig. 1 below shows the layout of the machine.

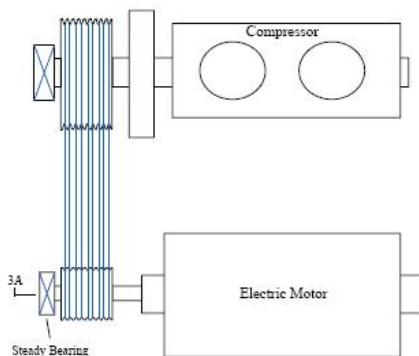


Fig. 1 Two stage reciprocating Compressor

Historically, the overall vibration levels throughout the machine had been consistently low (around 1.4 mm/s rms) and had never given any cause for concern, however, the overall vibration levels recorded at the motor drive pulley outboard steady bearing exhibited a marked increase in the axial direction (position 3A), see Fig. 2 below.

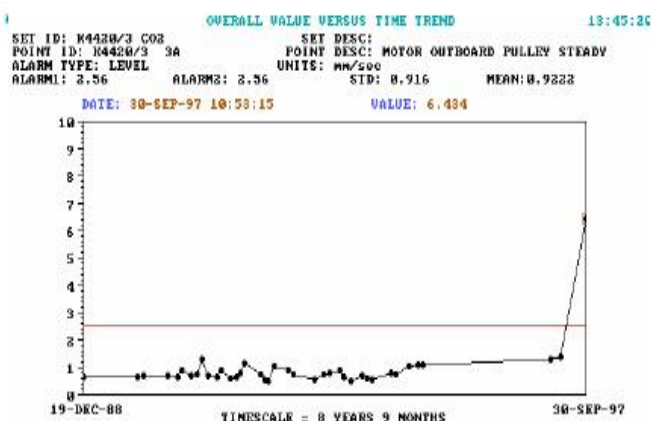


Fig. 2 Motor outboard pulley steady bearing

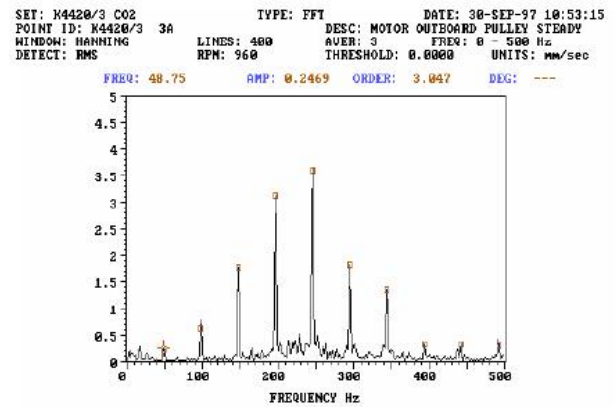


Fig. 3 Vibration spectrum indicating suspected bearing damage

The site Mechanical Engineer was immediately made aware of the change in the vibration levels with a recommendation to replace the bearing as soon as possible.

The machine was subsequently taken off line and the bearing replaced. On examination of the original bearing, a large area of flaking (spalling) was evident on the outer race, see Fig. 4. Due to the accurate analysis and prompt action by the Engineering Department a catastrophic failure had been prevented with a mechanical cost saving of several thousand pounds.



Fig.4 Photograph showing bearing outer race damage

Web resource: www.avtechnology.co.uk

Terminology: Rundown Time

The time taken by a turbine in a gas turbine engine to come to a complete halt after the engine has been switched off. It is one of the indicators of the state of health of an aircraft engine. Also called *spool-down time*.

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SEMINAR ON CONDITION MONITORING AT JHARIA DIVISION OF TATA STEEL, JAMSHEDPUR

Jharia Division of Tata Steel hosted a **seminar on Condition Monitoring & Knowledge Conclave** (Bearing) on 26th July, 2013 for officers of its Maintenance & Engineering section. The seminar was jointly organized by **Condition Monitoring Society of India (CMSI), Jamshedpur, and SKF India.**

Inaugurating the seminar, the **Chief Guest, Mr Sanjay Kumar Singh, General Manager, Jharia Division,** emphasized on the importance of condition monitoring for the equipment and its benefits.

Shedding light on the subject, Mr Rajesh Mishra, Chief, Engineering Services, briefed the participants on the latest techniques of condition monitoring and their importance.

Mr Subrata Das, Chief, Sijua Group, noted that the machines and operators have a close association and, therefore, developing failures can be immediately eliminated with the help of condition monitoring.

Mr A K Paul, Senior Manager, Condition Monitoring, MED, Tata Steel, Jamshedpur, explained various techniques used, like thermography, NDT testing and vibration monitoring. Mr D K Dikshit, Head, Technical Services, SKF, spoke on various types of bearing failures, root causes and its impact on machine life as well as the benefits of the correct usage and care of bearings.



Product News: Vibration Sensor - Model 8102 Accelerometer



The Model 8102 is a low cost, plug & play triaxial accelerometer. Featuring stable piezo-ceramic crystals, the accelerometer incorporates full power and signal conditioning with a maximum current consumption of only 22 micro-amps. The model 8102 is available from $\pm 25g$ to $\pm 6000g$ ranges and provides a flat frequency response up to 6 kHz. The housing provides two holes for screw mounting and is offered in anodized Aluminum or stainless steel options.

Applications: Asset Monitoring, Data Loggers, Impact Monitoring, Machine Health Monitoring, System Wake-Up Switch, Product R&D

<http://www.meas-spec.com/product/>

DID YOU KNOW?!

CURRENT USE OF THERMOGRAPHY	%CONSUMPTION
Detection of overheating components	73
Measurement of transformer temperatures	53
Identification of heat loss areas	43.7
Motor Inspections	36.7
Repair of electrical components	35.9
Identification of material wear	28.9
Monitoring of outdoor wiring	27.8
Building Inspections	23.3
Management of maintenance inventory levels	14.4
Roof Asset management	12.6

CMSI to publish Book on 'Vibration Condition Monitoring' authored by Dr V Ramamurti

Dr V Ramamurti, Retd Professor from IIT, Madras has authored a book entitled '**Vibration Condition Monitoring**' at the request of CMSI. The book **will be published by CMSI** on completion of editing. The book is a **compilation of many case studies** that were undertaken by Dr Ramamurti **from various types of industries** across the length and breadth of the country. Though a number of books are available on the subject, one hardly finds a book with **emphasis** and extensive coverage **on real life case studies**. This book is expected to fulfill the need expressed by many practicing maintenance engineers for a book on condition monitoring with practical case studies.

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Condition Monitoring Society of India (C M S I)

CMSI Member in News



Prof. K. Venkatasubbaiah, Department of Mechanical Engineering, Andhra University received the prestigious **ENGINEER OF THE YEAR-2013** for his contribution in the field of Engineering (Academic and Research). Award is given by **Govt. of Andhra Pradesh** and **The Institution of Engineers (India), AP State Centre** on the occasion of 46th Engineers day celebrations held at Hyderabad on 15-09-2013. He served as Dean (Transport) of Andhra University & Honorary Director, Andhra University Development Centre. Published 164 papers and guided 14 PhD and 71 M.E theses. Received Technology Excellence Award, Two National awards for the best papers published in Industrial Engineering Journal and Dr. Sarvepalli Radhakrishnan award as the Best Academician of the year from Andhra University.

**** CM Conferences around the Globe ****

27th International Congress of Condition Monitoring and Diagnostic Engineering Management (COMADEM-2014) is being held during **16-18 September 2014** at **Brisbane Convention and Exhibition Centre, Australia**.

The **COMADEM 2014** Technical Committee invites papers in area of expertise related to condition monitoring and diagnostic engineering management. The conference theme in 2014 will be **"Implications of life cycle analysis in asset and maintenance management"** and papers must look to address this theme.

CALL FOR PAPERS: Deadline Friday 20th December 2013, Further Details Contact: comadem2014@informa.com.au

CMSI Welcomes New Members!!

Life Members:

Mr. BHASKAR DATTATREY MALPURE
Mr. SUSHANTA K ROY
Mr. SANJEEV SIKKA
Mr. K UDAYANAND
Cdr. AVSN MURTY
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CMSI Welcomes its New Institutional Member!

Gas Turbine Research & Establishment (GTRE), DRDO, Bangalore

Reference Book

Maintenance Planning, Scheduling & Coordination, 1st Edition by Don Nyman & Joel Levitt

ISBN 9780831131432



Maintenance Planning, Scheduling and Coordination focuses on and deals specifically with the preparatory tasks that lead to effective utilization and application of maintenance resources. It is a vital training document for planners, an educational document for those to whom planners are responsible, and a valuable guide for those who interface with the planning and scheduling function and are dependent upon the many contributions of planning and scheduling operational excellence.

This book aids organizations that pursue **"Maintenance Excellence"** - that state of maintenance management and performance that effectively applies the leading edge policies, procedures, systems, structures, methods, and technologies to maintenance.

BOOK POST

If undelivered please return to:

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All feedback, comments and contributions to the news letter are most welcome.

- Editor