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09.20 **Plenary Keynote Lecture - [101] Thermal analysis: condition monitoring or non-destructive testing? N/A**

09.50

Author - Mr T Clausing, President of the American Society for Nondestructive Testing

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*Authors - J Enrique, C Questa, A F Diez, V R Montejano and F Polo
Camacho Questa of Ingeteam Service*

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Authors - KA Karikari-Boateng, C Little and H Lee NAREC

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*Authors - C Q G Muñoz¹, F P G Marquez¹, A A Jimenez¹, A A Jimenez¹, L Cheng²,
M Kogia², A Mohimi², M Papaelias³
¹Castilla-La Mancha University ²Brunel University ³University of Birmingham*

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*Authors - L Zhang¹, Z Lang¹ and W-X Yang²
¹University of Sheffield ²Newcastle University*

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*Authors - E Giannouli, Z Huang, A Amini, P Vallely and M Papaelias
The University of Birmingham*

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*Authors - A P Marugán¹, F P G Márquez¹, R R H González-Carrato²
¹University of Castilla-La Mancha ²CUNEF-Ingenium*

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¹Moscow State University of Psychology ²Russian Aviation Co

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Moscow State University of Psychology and Education

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¹Joint Stock Company N A Dollezhal Research and Development Institute of Power Engineering ²RANEP

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¹COMPUREG Plzen ²Academy of Sciences of the Czech Republic

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Author - E Miguelañez-Martin¹ and D Flynn²
¹Atkins – RAM ²Heriot-Watt University

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*Authors - O F Eker¹, F Khan¹, Z Skaf¹, F Camci² and I Jennions¹
¹Cranfield University ²Antalya International University*
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*Authors - M Mishra¹, J Odelius², M Rantatalo², R Johnsson², J-O Larsson³,
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¹SKF-University Technology Centre, Luleå University of Technology
²Luleå University of Technology ³SKF Nordic Region
⁴BillerudKorsnäs, Karlsborgsverken*
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*Authors - S Lee¹ and S Lee²
¹Doosan Heavy Industries & Construction
²Ulsan National Institute of Science and Technology*
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*Author - F Elasha¹, J A Teixeira I and D Mba²
¹Cranfield University ²London South Bank University*

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¹TWI ²Brunel University*

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Authors - J Kanfoud, A Romero, S Souza and T-H Gan TWI

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*Authors - Y Suzuki¹, T Kudo² and H Kamoshida²
¹Hitachi Ltd ²Mitsubishi Hitachi Power Systems*

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Author - Prof L Swedrowski, Poland Chair - Prof L Gelman

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Authors - E S Asensio¹, J M P Pérez², F P G Márquez¹ and R Ruiz de la Hermosa González-Carrato²

¹University of Castilla-La Mancha ²CUNEF-Ingenium

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Authors - R Ruiz de la Hermosa González-Carrato¹, G Márquez², F Pedro² and M Papaelias³

¹Colegio Universitario de Estudios Financieros, Serrano Anguita

²Ingenium Research Group ³University of Birmingham

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Authors - S Hajiabady¹, E J Camacho Questa², F Polo², V R Montejano², M Murillo³, C Roldan³, F P G Marquez⁴, S Hillmansen¹, P Tricoli¹ and M Papaelias¹

¹The University of Birmingham ²Ingeteam Service

³Indra Sistemas ⁴Universidad de Castilla-La Mancha

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Authors - V N Kostyukov^{1,2} and E V Tarasov²

¹SPC Dynamics ²Omsk State Technical University

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*Authors - V N Kostyukov, A P Naumenko,
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SPC Dynamics*

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Chair: Dr S Ganeriwala 2C – Charlbury Room

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Author - S Ganeriwala SpectraQuest

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Author - S Ganeriwala SpectraQuest

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Authors - A Masoumi¹, M Karimi² and H Ahmadi³

¹Kerman Power Generation Management Co, Iran

²School of Mechanical and Manufacturing Engineering, Australia

³MAPNA Turbine Engineering & Manufacturing Co

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¹The University of Sheffield

²AMRC with Boeing

³Messier-Bugatti-Dowty

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Brunel University*

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The University of Birmingham*

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Authors - S Muthuraman, J Twiddle, L Varley, J Rongong and N Noor

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*Authors - S Muthuraman, B Staneff, M Singh, A Patel and J Twiddle
Cranfield University*

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*Authors - S Muthuraman and G Newcombe
Cranfield University*

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Authors - G Jombo¹, P Pilidis¹, S Sampath¹ and David Mba²

¹Cranfield University (UK)

²London South Bank University

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*Authors - A A Jaber^{1,2} and R Bicker¹
¹Newcastle University, Newcastle upon Tyne
²University of Technology, Baghdad*

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*Authors - A P Ompusunggu and T A Bartic
Flanders Make vzw*

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*Author - T Lago
Tech Fuzion, Qirra Sound Technologies Europe AB*

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*Authors - T Jackson and J Austin
Cybula*

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¹University of Grenoble Alpes, GIPSA-Lab, France
²IRIT-TESA, INP-ENSEEIH*
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*Authors - T Gerber¹, M Firla¹, Z-Y Li¹, P Bellemai¹ and C Mailhes²
¹University of Grenoble Alpes, GIPSA-Lab, France ²IRIT-TESA, INP-ENSEEIH*
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 AGH University of Science and Technology*

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¹University of the Negev ²R K Diagnostics*

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*Authors - M Khmelnitsky¹, U Ben-Simon², R Klein³, M Tur⁴ and J Bortman¹
¹University of the Negev ²Israel Aerospace Industries
³RK Diagnostics ⁴Tel Aviv University*

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*Authors - M Abdel-Sayed^{1,2,4}, D Duclos¹, G Fay², J Lacaille³ and M Mougeot⁴
¹SAFRAN TECH (Safran Group) ²CentraleSupélec – MAS
³Snecma (Safran Group) ⁴Université Paris Diderot – LPMA*

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Author - A Juna BINDT

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Luleå University of Technology

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University of Genova

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Authors - A Lucifredi¹, P Giribone¹, P Silvestri¹, R Ravalli² and P Magliano²
¹University of Genova
²CSS Engineering – Crane, Safety and Security Engineering

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Author - A Lucifredi¹, G Medico², P Silvestri¹ and A Assenzio¹
¹University of Genova ²Magneti Marelli Powertrain

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Author - J Liska, J Jakl and J Strnad University of West Bohemia

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Menoufia University, Egypt*
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*Author - R A Smith (President of the British Institute of Non-Destructive Testing),
L J Nelson, M J Mienczakowski and R T Boumda, University of Bristol*

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Author - T Lago Tech Fuzion Qirra SoundTechnologies Europe AB

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Authors - E Esteban¹, O Salgado¹, A Iturrospe² and I Isasa³

¹IK4-IKERLAN

²Mondragon Unibertsitatea

³Orona EIC S Coop

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¹University of Lyon ²CETIM

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Author - *G Zusman*
Vibration Measurement Solutions Inc

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Authors - *A Wyłomańska¹, R Zimroz^{1,2}, J Janczura¹, J Obuchowski¹ and G Żak¹*
¹Wroclaw University of Technology ²KGHM CUPRUM Ltd

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Author - E Juuso University of Oulu

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University of Oulu*

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*Authors - J Laurila, A Koistinen, E Juuso and T Liedes
University of Oulu*

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Author - S Ahmadi Udine University

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Author - R Bottomley Lloyd's Register

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*Authors - P V R Sai Kiran, J Rao, V Domse, S K MallikarjunaSwamy and V Upendranath
CSIR-National Aerospace Laboratories*

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Author - J Obuchowski¹, R Zimroz^{1,2} and A Wyłomańska¹
¹University of Technology, Poland ²KGHM CUPRUM Ltd

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Authors - E F Sierra-Alonso¹, O Cardona-Morales^{1,2}, C A Aguirre-Echeverry¹
and G Castellanos-Dominguez¹
¹Universidad Nacional de Colombia ²Universidad Catolica de Manizales

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Authors - O Cardona-Morales¹, H A Fandiño-Toro², H D Benitez-Restrepo³
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¹Universidad Nacional de Colombia
²Instituto Tecnológico Metropolitano ³Pontificia Universidad Javeriana

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Author - K Karioja and E Juuso University of Oulu

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Author - N Avdelidis University Laval, Canada

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Authors - C Ruiz-Cárcel and A Starr Cranfield University

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Author - Prof G Singh (India) Chair: Prof L Gelman

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Author - Prof I Gray CBE, UK Chair - Prof L Gelman

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Czech Technical University in Prague*

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*Authors - O Hanuš and V Horyna
Czech Technical University in Prague*

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09.30 [303] Novel vibration diagnosis of rolling bearings N/A

Authors - L Gelman and T Patel Cranfield University

09.50 [306] Novel vibration diagnostics of rumble gas turbines N/A

Authors - L Gelman¹, I Petrunin¹, M Walters² and C Parrish²

¹Cranfield University ²Rolls-Royce

10.10 [309] Modelling for NDT in civil engineering N/A

Authors - L Gelman and L Fragonara Cranfield University

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Author - D Whittle RMS Ltd

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Author - S Mills SpectrumCBM Ltd

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Author - I Taylor Mistras Group Ltd

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Authors - To be confirmed AE Working Group

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Author - D Manning-Ohren ERIKS UK

11.50 **[316] Inelasticity monitoring of structural materials at fatigue 678**

Author - G Pisarenko and A Mailo

National Academy of Sciences of Ukraine

Energy conservation by addressing resonance of VFD driven condensate extraction pump at DTPS 679

*Authors - H M Bari, A A Deshpande and S S Patil
Department of Maintenance Planning, Condition Monitoring Cell,
Reliance Energy, Mumbai, INDIA.*

This paper shares a success story out of the Implementation of CM techniques at DTPS, wherein imminent Resonance problem of VFD driven 650 Kw HT auxiliary Condensate Extraction Pump – 2B was diagnosed. In 2007, VFD was retrofitted for reducing pump speed in order to achieve energy conservation. Reducing pump speed with control valve full open condition after VFD installation achieves Deaerator level control as well as reduction in power consumption. On 17/07/2014, Pump Mechanical seal replaced to attend leakage & pump again put back in service. On 22.07.2014, it was observed that only Motor DE bearing vertical vibrations deviated from 0.6 to 3.1 mm/sec (RMS) between speed ranges of 1310 to 1335 rpm in VFD mode. From vibration spectrum analysis, suspected Electrical or Mechanical resonance problem. VFD -THD measurement carried out but all readings found within limits which eliminated possibility of electrical resonance. To pinpoint mechanical resonance, Bump test carried out. It showed natural frequency of system 1320 rpm which is very close to operating speed of Pump in VFD mode.

After studying all data, it was noticed that vibration of Motor increased only after Mechanical seal replacement. Hence, concluded that rise of vibration might be happening due to disturbance in contact area of new seal w.r.t. old seal which changed the stiffness of Pump & ultimately shift of natural frequency near to operating speed creating resonance in Pump, resulting in high vibration. By Observing increasing vibration trend, decided to changeover pump. During maintenance, pump seal removed. Cleaning, Inspection & Mechanical seal re-fitting done. The catastrophic failure of Motor & Pump is avoided, thus prevented downtime & achieved desired energy conservation. The importance of Vibration & Bump test measurement helped in diagnosing the exact root cause of abnormality well in advance which could have caused total cost of £3,129.

A self-organising communication system of a sensors network, based on the swarm algorithm 690

Author - Krzysztof Stankiewicz Institute of Mining Technology, Poland

An idea of a self-organising system to transfer of measuring data, based on swarm algorithm, with a special attention to the new approach to the routing of a data packet in communication networks of the mesh structure, has been presented. The system is designed mainly to be used in mine sensory networks of a static or slow-changing structure. An impact of the subject system on effectiveness of a communication network has been presented as well as an increase of the functional safety of the machines and equipment, in which similar multi-redundant solutions of transfer of measuring data are used, has been indicated.