



# **Vibration Analysis of Complex Electro-Mechanical Equipment: from the Theoretical Bases to Industrial Applications**

*Lecturer: Prof. Len Gelman Cranfield University, UK*

## **Short description of the lecture (up to 10 sentences):**

The lectures will present classical and novel vibration analysis that could be employed for complex electro-mechanical equipment.

The lectures will describe the theoretical bases of vibration analysis of equipment, sensors and data acquisition systems, the main vibration tests of equipment, equipment functions and failures, P-F interval for vibration analysis of equipment and equipment failure modes. The lectures will also describe the radically new approach, vibration root cause analysis of equipment faults/failures, the three novel techniques for performing a root cause analysis of equipment faults/failures and 20 industrial case studies related to vibration root cause analysis.

Failure mode and effect analysis technique and failure Mode, effect and criticality analysis Technique for Vibration Analysis of Equipment

## **Syllabus of the lecture subjects (enlisted):**

1. Vibration Analysis of Equipment: Theoretical Bases
2. Sensors and Data Acquisition Systems for Vibration Analysis of Equipment
3. The Main Vibration Tests of Equipment
4. Equipment Functions and Failures; P-F Interval for Vibration Analysis of Equipment
5. Equipment Failure Modes
6. Vibration Root Cause Analysis of Equipment Faults/Failures
7. Fault Tree Analysis Technique for Vibration Root Cause Analysis and Troubleshooting
8. Event Tree Analysis Technique for Vibration Root Cause Analysis and Troubleshooting
9. Hazard and Operability Analysis (HAZOP) Technique for Vibration Root Cause Analysis and Troubleshooting
10. Vibration Root Cause Analysis of Equipment Fault/Failure: 20 Industrial Case Studies
11. Failure Mode and Effect Analysis (FMEA) Technique for Vibration Analysis of Equipment



12. Failure Mode, Effect and Criticality Analysis (FMECA) Technique for Vibration Analysis of Equipment
13. New International Standard for Vibration Analysis of Equipment
14. Four Industrial Case Studies for Vibration Analysis of Equipment
15. Vibration Analysis of Equipment: Two Video Industrial Case Studies

<b>Terminy wykładów</b>			
<b>Data</b>	<b>Dzień tyg.</b>	<b>Godzina</b>	<b>Sala</b>
2015-10-14	Wed	8.15-14.00	WEiA E28
2015-10-15	Thu	8.15-11.00	WEiA E28
2015-10-16	Fri	8.15-14.00	WEiA E28