

# IMM Vibration Conference



Reported by: Dr. Zulkarnain Kedah, Serba Dinamik Group Berhad (IMM Vibration Committee 2016-2018, Secretary)  
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**Date : 16<sup>th</sup> November 2017**  
**Venue : Corus Hotel, Kuala Lumpur**

## IMM aims to reel in more local youths into hi-tech programs related to Oil & Gas.

One of main activities organised by the IMM Vibration Committee in 2017 is to organise an international conference to create awareness programmes and educate the audience about the importance of vibration technology and its significant benefits to health, safety, environment and commercial aspects. This conference was successfully organised by Institute of Materials, Malaysia (IMM), IMM Vibration Committee and attended by a total of 104 participants which comprised of various industry players and academicians.



*Figure 1: Mr. Mohd Azmi Mohd Noor, President of IMM delivered his opening speech*

## Morning Session:

Dato' Dr. Ir. Mohd Abdul Karim, the Group President/CEO of Serba Dinamik Sdn. Bhd. who was the first guest speaker, presented an overview of Vibration Practitioner Levels 1 and 2 as well as Vibration Specialist Levels 3 and 4 based on ISO 18436, respectively. He explained the programme objectives, minimum requirements, learning outcomes and programme contents for each certification level. He also highlighted the importance of vibration technology that can benefit significantly not only various industries such as oil and gas, marine and railway but also government agencies such as Royal Malaysian Navy and Royal Malaysian Air Force. He ended his presentation by encouraging the participants interested to become 'xifu' in this field to enrol in the international vibration certification programmes based on ISO 18436.

Next, Mr. Ravindran, Business Development Manager from Vibratec Asia-Pacific presented 'The Sensitivity Study of Slug Induced Fatigue in Flow Line Spools'. He explained that the fatigue generated by slugs in pipelines depends on the pipe structure, slug density, velocity and length. He also emphasised that highest vibration and stress levels are due to an unfavourable phase angle between the oscillating response of the structure and the dynamic excitation applied to it.



*Figure 2: Dato' Dr. Ir. Mohd Abdul Karim Abdullah, Chairman of Vibration Committee presented the first topic related to vibration certification programmes based on ISO 18436*

Then, Mr. Paul Crowther, Principal Consultant from Wood Group presented 'The Specifying and Management Appropriate Reciprocating Pump and Compressor Studies'. He discussed the designed standards for reciprocating pumps and compressors and emphasised the pulsation which must be considered in reciprocating pump piping design for critical systems. He also described that assessments in the standards can be used to solve operational issues.

This was followed by Prof. Lin from Traction Power State Laboratory of Southwest Jiatong University, China who presented 'Health Monitoring and Early Warning of High-Speed Rail Based on Vibration and Temperature'. He explained that through the high-speed rail operating parameters of real-time detection and accurate measurement, a comprehensive operating status can be captured to achieve the comprehensive safety assessment of high-speed rail operation. He emphasised that the use of real-time online tracking, wireless sensor networks, intelligent networking, distributed modularisation and other relevant technologies are analysed and diagnosed by a variety of data platforms to enhance the safety of high-speed rail operations.



*Figure 3: Group photo*

## Afternoon Session:

According to Mr. Lee McFarlane, the Director of Asset Management Division for AV Technology Ltd, vibration monitoring has evolved with the technology in the last 25 years to improve plant reliability and availability. His paper described how the evolution of this technology over 25 years has resulted in diagnostics and prognostics becoming more accurate due to processing power, digital electronics, web-based systems, WiFi and bluetooth.

Furthermore, Dr. Bazil, a Senior Engineer from the Dynamic Engineering Department of Doosan Babcock, UK shared two case studies in pipework vibration from modelling to site investigations. The first case study is about flow induced vibration of a production header while the second one is about reciprocating compressor vibration mitigation.

Mr. Ahmad Fadzli, Staff Engineer from Malaysia LNG then presented "Centrifugal Compressor Sub-Synchronous Vibration" which focuses on identifying root causes for effective solutions. He also explained vibration plots, elimination of causes, and fault tree analysis, solution and verification run. He concluded that bearing housing misalignment due to loose taper has caused eccentric shaft labyrinth and increased destabilisation force, while parts rubbing during rotor flexing can lead to destabilising factors resulting in decision for impeller trimming.

Prof. Zaidi from Universiti Sains Malaysia presented 'Overcoming Machine Vibration Problem Using Structural Dynamics Modification (SDM) Technique'. He highlighted a

case study of the application of SDM where a mass-damper unit is added to a frame of high speed vision inspection system used for the electronic manufacturing to reduce the vibration due to the fast-moving tray. He concluded that not only SDM can be used as a predicting tool for vibration attenuation in machineries but also for simulation work to determine the effective location, secondary mass, damping and stiffness of the DVA on the primary system.

Finally, Lieutenant Commander Dr. Ir. Arman from the Royal Malaysian Navy shared his experiences in vibration analysis onboard Royal Malaysian Navy ships and submarines. He presented new generation patrol vessel overview and ship control and management system followed by vibration analysis onboard and onsite measurement.



Figure 4: Question and answer session

## Memorandum of Understanding Signing Ceremony Between IMM and South West JiaTong University



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One of the main activities of IMM Vibration Committee in 2017 is to collaborate with international strategic partner for mutual benefit and win-win situation. The MOU signing ceremony between IMM and Qingdao Research Institute (QRI), was successfully carried out by IMM Vibration Committee. En. Mohd Azmi Mohd Noor, President of IMM signed the MOU in the presence of Dato' Dr. Ir. Mohd Abdul Karim Abdullah, the Chairman of IMM Vibration Committee while Prof. Lin Jianhui, President of Qingdao Research Institute, Southwest Jiaotong University, China signed it in the presence of Prof. Chen Chunjun, Professor of Southwest Jiaotong University.

This MOU is intended to establish the following objectives as part of the international collaboration programmes:

1. To carry out rail transit related training courses offered by both parties.
2. To utilise training facilities available at IMM and QRI.
3. To organise and participate in joint academic activities such as conferences, workshops, publications, seminars and showcase the vibration technology related to railway transit.

This MOU signing ceremony was also witnessed by the delegates of Southwest Jiaotong University, IMM Council Members, and IMM Vibration Committee Members.



Figure 1: Prof. Chen signed the MOU as a witness



Figure 2: Dato' Dr. Ir. Mohd Abdul Karim signed the MOU as a witness



Figure 3: Mr. Mohd Azmi Mohd Noor, the President of IMM exchanged MOU document with Prof. Lin Jianhui, President of QRI, Southwest Jiaotong University