

## BRIEF CV



### **Mohd Fairusham Bin Ghazali**

Senior Lecturer

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### Academic Qualifications

1. PhD Mechanical Engineering, The University of Sheffield, 2012
2. MSc Thermal Power Fluid Engineering, The University of Manchester, 2005.
3. B.Eng. (Hons) Mechanical Engineering, UiTM, 2002.

### Brief Profile

Currently, Mohd Fairusham is a senior lecturer, researcher and head of program at Faculty of Mechanical Engineering in Universiti Malaysia Pahang. He graduated from The University of Sheffield, UK with a PhD in Mechanical Engineering on 2012. After his first degree in 2002, he works at Gas Malaysia Sdn. Bhd. for about 2 years as Project Engineer before he has joined Universiti Malaysia Pahang as a lecturer. He has shown vast interest in Vibration Control and Thermofluid research area. At present, he actively involves in Vibration Control, Automatic control engineering, Modal analysis, Advanced signal processing and Computational Fluid Dynamics (CFD) research activities. He also registered as corporate member of IEM.

### Working Experiences / Appointment

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|-----------------------|---|
| 1. Jul 2012~Current   | Senior Lecturer, Universiti Malaysia Pahang |
| 2. Jan 2006~Jun 2012  | Lecturer, Universiti Malaysia Pahang        |
| 3. Sept 2004~Dec 2005 | Tutor, Universiti Malaysia Pahang           |
| 4. Aug 2002~Aug 2004  | Project Engineer, Gas Malaysia Sdn Bhd.     |

### Expert Area

- Leak detection using advanced signal processing analysis
- Advanced signal processing – time-frequency analysis, wavelets, empirical mode decomposition, combinatorial optimisation
- Application of virtual instrumentation for structural damage detection

### Research Area / Research Interest

Research activities in Structural Health Monitoring, Engineering Dynamics, Vibration and Advanced Signal Processing include:

- Piezoelectric sensors and actuators
- Acousto-ultrasonic wave propagation in complex media

- Damage detection methods – time and frequency domain analysis, transient and non-stationary data analysis
- Analysis and modelling of vibration processes and fault/damage in machinery and structures

### Professional Certificate / Professional Membership.

1. Graduate Engineer, Board of Engineer, Malaysia (BEM) (40780A- member since 2003)
2. Corporate Engineer, Institute of Engineer, Malaysia (IEM) (21537-member since 2015)

### Subject Taught (For Current Academic Year – (2010~2013))

2005	DMM 2543(Diploma Level)	Thermodynamics	67 students
2006	BMM 2513(Degree Level)	Thermodynamics 1	40 students
2007	BMM 2513(Degree Level)	Thermodynamics 1	220 students
2008	BMM2513(Degree Level)	Thermodynamics 1	180 students
	BMM3513(Degree Level)	Heat Transfer	180 students
2012	BMM1513(Degree Level)	Computer Aided Design	30 students
	BMM4022(Degree Level)	Project Management	100 students
	BMM2523(Degree Level)	Thermodynamics 2	90 students
2013	BMM1553(Degree Level)	Dynamics	60 students
	BMM3532(Degree Level)	Measurement and Instrumentation	75 students
	BMM4723(Degree Level)	Mechanism Design (Elective)	30 students
	MKM1133(Masters Level)	Instrumentation & Control System	6 students
2014	BMM4723(Degree Level)	Mechanism Design (Elective)	65 students
	MKM1133(Masters Level)	Instrumentation & Control System	15 students
2015	BMM4723(Degree Level)	Mechanism Design (Elective)	57 students
	MME6143(Masters Level)	Mechanical Engineering Design	17 students

## Post Graduate Supervision

1. Makeen Amin (MEng) : 2013-
2. Nurul Fatiehah Adnan (MEng): 2013-
3. Ab Malik Awang Hamat @ Mohamed (PhD): 2013-
4. Wan Sofian Bin Wan Hamat @ Wan Safie (MEng): 2014-
5. Che Ku Eddy Nizwan Che Ku Husin (PhD): 2014-
6. Mohd Zubir Md Zin (MEng): 2014-
7. Mohd Hazwan Syafiq Harun (PhD)-Co Supervisor: 2015-

## Degree Final Year Project Supervision (2006~2013)

- 1 Muhamad Faredzuan Kamarul Zaman, 2013- Leakage detection in steel pipelines using ensemble empirical mode decomposition (EEMD), Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 2 Najwa Mohamad Shariff, 2013- Leak detection in gas pipelines using wavelet-based filtering, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 3 Akmal Ariffin Rukijan, 2013- Leakage detection in pipelines using nonlinear acoustic, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 4 Nur Syawanie Manam, 2013- Onset detection of transient waves using a novel experimental data analysis, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 5 Abdul Hadi Che Hussin, 2012 -Leakage detection in pipelines using synchrosqueeze wavelet transform, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 6 Abdul Kadir Samta, 2012 -Leakage detection in pipelines using wavelet and cepstrum analysis, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 7 Mohd Firdhaus Ahmad, 2012 -Leakage detection in pipelines using empirical mode decomposition (EMD), Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 8 Mohd Erman Fairuz Zaidi, 2012 -Leakage detection in pipelines using ensemble empirical mode decomposition (EEMD), Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 9 Zulhilmi Jusoh, 2012 -Leakage detection in pipelines using instantaneous frequency, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia
- 10 Mohd Fauzani Mohd Naw, 2007 -CFD Simulation and Validation of the In-Cylinder within a Motored Two Stroke SI Engine, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Co-supervisor)
- 11 Shahly Aizuddin Hashim, 2007 -Design of a Mechanical Type Adjustable Boost Controller for Turbo Engine Applications, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Co-supervisor)
- 12 Mohd Fadhli Mohd Nasir, 2007 -Design of Blow-off Valve and External Wastegate for Turbo Engine Applications, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Co-supervisor)
- 13 Siti Qhadijah Abdul Rashid, 2007 -Modelling and Simulation of an Asymmetric Plane Diffuser using Fluent, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)

- 14 NurFhaizatul Aqma Chik Aik, 2007 -Computation of Airfoil Boundary Layer using Fluent, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 15 Nor Faezah Hamzah, 2007 –Two Dimensional Modelling for Catalytically Combustion using Fluent, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 16 Ainatul Mardiah Ibrahim, 2007 –The Design of an adaptive Tuned Vibration Absorber, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 17 Dzul Azlan Bachok/Tunderang, 2006 - Design, Fabricate and Analysis Small open Loop Low Speed Wind Tunnel, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 18 Wan Mohd Zafrulizan Wan Draman, 2006 – Design and Development of Ignition System For Low Cost Gas Turbine Engine, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 19 Ahmad Norazli Abd Aziz, 2006 – Fabrication of Low Gas Turbine Engine-Mechanical System, Degree Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)

### Diploma Final Year Project Supervision (2006)

- 1 Nurul Husna Shariff, 2006 – Computation of Airfoil Boundary Layer Diploma Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)
- 2 Mohd Yusuf Shahabuddin, 2006 – Fabrication of Surface Gauge, Diploma Project Report, Faculty of Mechanical Engineering, Faculty of Mechanical Engineering, University Malaysia Pahang (UMP) Pahang, Malaysia (Supervisor)

### List of Publications (2006~2014)

1. M. Amin, **M.F.Ghazali**, A.M.A.Hamat, N.F. Adnan, Leak Detection in Pipeline Using Wavelet and Ceptrum Analysis, Australian Journal of Basic and Applied Sciences, 8(15) Special 2014, Pages: 352-355.
2. M. Amin, **M.F.Ghazali** , Leakage Detection in Galvanized Iron (GI) Pipelines Using Ensemble Empirical Mode Decomposition Analysis (EEMD), International Conference on Mathematics, Engineering & Industrial Applications 2014 (ICoMEIA 2014), Unimap
3. N.F. Adnan, **M.F. Ghazali**, M. Amin, A. M. A. Hamat, A. Ariffin, Leak Detection in MDPE Gas Pipeline using Dual-Tree Complex Wavelet Transform ,Australian Journal of Basic and Applied Sciences, 8(15) Special 2014, Pages: 356-360

4. N.F. Adnan and **M.F. Ghazali** Detecting Leak in Gas Pipeline using Continuous Wavelet Transform and Kurtosis, 8th MUCET 2014, 10-11 November 2014, Melaka, Malaysia
5. **M.F. Ghazali**, G. Priyandoko, W.S.W. Hamat, T.W. Ching (2014) Plastic Pipe Crack Detection Using Ultrasonic Guided Wave Method, 8th MUCET 2014, 10-11 November 2014, Melaka, Malaysia
6. M. Amin, A. Hadi and **M. F. Ghazali** (2014), Leakage Detection in Pipeline using Synchrosqueeze Wavelet Transform, Applied Mechanics and Materials Vols. 465-466 pp 467-471 DOI:10.4028/www.scientific.net/AMM.465-466.467
7. M.F.M. Yusof, M. Ishak, **M.F. Ghazali** and M. R. Islam (2014) Analysis of an Air Borne Acoustic Signatures from Welding Process Using Empirical Mode Decomposition Advanced Materials Research Vols. 889-890 pp 770-775 DOI:10.4028/www.scientific.net/AMR.889-890.770
8. M. Amin and **M. F. Ghazali** (2013) Leakage Detection in pipelines using ensemble empirical mode decomposition analysis, 2nd International Conference on Advanced Manufacturing, Ayodya Resort, Bali, Indonesia, 12-13 December 2013.
9. **M.F. Ghazali** and M.F. A. Rahim (2013) CFD Prediction of Heat and Fluid Flow Through U-Bends Using High Reynolds-Number EVM and DSM Models, Procedia Engineering, 53, pp 600 – 606
10. **Ghazali, MF**, Beck, SBM, Shucksmith, JD, Boxall, JB and Staszewski, WJ (2011) Comparative study of instantaneous frequency based methods for leak detection in pipeline networks Mechanical Systems and Signal Processing. Article in Press. DOI 10.1016/j.ymssp.2011.10.011
11. **Ghazali, MF**, Staszewski WJ, Shucksmith JD, Boxall JB and Beck SBM (2010) Instantaneous Phase and Frequency for the Detection of Leaks and Features in a Pipeline System. Structural Health Monitoring, 9, ISSN 1475-9217. DOI 10.1177/1475921710373958
12. **Ghazali, MF**, Beck SBM, Staszewski WJ, Shucksmith JD and Boxall JB (2010), Leakage detection in pipelines using ensemble empirical mode decomposition. Proc. Of the Fifth European Workshop on Structural Health Monitoring, Sorrento, Naples, Italy, pp 203-208.
13. M.M. Noor, A. Sulaiman, K. Kadirgama, M.R.M. Rejab, M.S.M. Sani, F.R.M Romlay, R. Daud. Z. Ghazalli, R. Devarajan, **M.F. Ghazali**, W.S.W. Harun, M.Y. Taib (2008), Technique at the crane with finite element analysis, Proceedings of EnCon2008, Kuching, Sarawak.
14. M Z Salleh, **M. F. Ghazali**, A R Yusoff. Development of Numerical Solution for Boudary Layer Flow Using Keller-Box Method (SKSK 2006,19-21 December, Langkawi).

#### List of Book

-Nil-

#### List of Consultancy (2008)

1. Modelling and analysis of Angsi Crane (Petronas)
2. Establishing standard procedure for the gas distribution pipeline (SIRIM, Gas Malaysia, Petronas)

### List of Research / Project (2006~current)

1. Development of HEV (Hybrid Electrical Vehicle) -Short term Grant UMP-Amount RM36,000.00 (Researcher)-2006
2. Leaks detection and location in water distribution systems based on pressure transients analysis-RAGS –Amount RM50,000 (Researcher+Leader)-2012
3. A new technique of leak detection in gas pipeline network based on time reversal method and non-linear acoustic-FRGS-Amount RM 109,500 (Leader)-2013
4. Leak detection in a steel pipeline system by empirical mode decomposition (EMD) analysis of a pressure transient- UMP Grant-Amount RM 22,120 (Leader)- 2013
5. Low frequency modulation of ultrasonic guided wave method for small crack pipeline detection- UMP Grant-Amount RM 28,400 (Researcher) – 2013
6. Development of Quality Monitoring System for Dissimilar Metals Welding using and Air Borne Acoustic Wave- UMP Grant-Amount RM 34, 500 (Researcher) -2013
7. A new algorithm to identify nonlinear vibration of car body in white (biw) structure- FRGS-Amount RM120,800.00 (Researcher)-2013
8. Development of Bearing Fault Detection System based on Vibration Signal- UMP Grant-Amount RM 21,860 (Researcher) -2014
9. Model Acoustic Emission System with Time-Frequency Analysis for Thickness Monitoring- UMP Grant-Amount RM 31,900 (Researcher) -2014
10. Deep Twist Drilling Technique for Increasing Cooling Channel Length in Hot Forming Die- Science Fund-Amount RM 274,153 (Researcher) -2014
11. The Application of Dynamic Pressure Sensor Based on FBGs for Monitoring of Water Supply System- UMP Grant-Amount RM 27,000 (Researcher) -2014
12. Empirical Mode Decomposition (EMD)-Based Signal Analysis of a Diesel Engine using Biodiesel- UMP Grant-Amount RM 20,000 (Leader) -2014

### Research/ Achievements / Awards

1. Dean List Award (student GPA > 3.5) 1999,2000
2. Government Scholarship for Bachelor Engineering in Mechanical Engineering (including A-Level programme) 1996-2001
3. Excellent Student Scholarship for Master Degree in Mechanical Engineering 2004-2005
4. Excellent Student Award from Malaysia Government for Master Degree-2006
5. Outstanding Service Award, Universiti Malaysia Pahang-2008

### List of Course Attended

No	Course/Workshop
1	Piping Problems Aug 2002
2	Odorization Sept 2002
3	Regulator Overhaul and Troubleshooting Sept 2002
4	Induction Course for Safety and Health Oct 2002
5	Enhance Gas Malaysia's Service Standard Dec 2002
6	Chemical Management and Hazard Communication May 2003
7	Fluid Properties, Centrifugal Force and Governor Nov 2005
8	Pressure loss, Bernoulli Theorem and Tabular Heat Exchanger Nov 2005
9	Research Methodology Dec 2005
10	Bomb Calorimeter Training (Lab Purpose) Jan 2006
11	Air Conditioning Unit, Marcet Boiler and Heat Conduction Training(Lab Purpose) Feb 2006

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| 12 | Gas Turbine Training(Lab Purpose)  | March 2006  |           |
| 13 | Mini Power Plant Training(Lab Purpose)                                   | April 2006  |           |
| 14 | Superflow Training(Lab Purpose)  | Feb 2007    |           |
| 15 | Star-CD Training   | Dec 2006    |           |
| 16 | Scientific Writing Skill   | Dec 2006    |           |
| 17 | Outcome Base Education(OBE)  | April 2007  |           |
| 18 | Course on Postgraduate supervision                                       | April 2012  |           |
| 19 | One day workshop on OBE and preparing exam questions per Blooms Taxonomy |             | June 2012 |
| 20 | Signal Analysis Course   | July 2012   |           |
| 21 | Oil and Gas Safety Passport  | August 2012 |           |
| 23 | EAC Assessment   | Nov 2014    |           |