

Mohd Fadzil Abdul Rahim

Lecturer

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Biography

Mohd Fadzil is a lecturer at the Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang. He obtained a Doctor of Philosophy (Automotive engineering) from the Faculty of Mechatronics and Manufacturing Engineering Technology, UMP, in 2021. He completed a Master of Automotive Engineering from the Faculty of Mechanical Engineering, UMP, in 2009. Before the appointment, he was formerly Procurement and Vendor Development (PVD) Engineer in the Perusahaan Otomobil Nasional Kedua (Perodua). He completed his Bachelor of Engineering (Mechanical) from Universiti Teknologi Malaysia (UTM) in 2002. His research interest is in internal combustion engine testing and modelling, alternative fuels, hybrid and electric vehicles, computational fluid dynamics, control system modelling and optimization using artificial intelligence.

Education Background

2013 – 2021	Doctor of Philosophy (Automotive Engineering) <i>Faculty of Mechatronics and Manufacturing Engineering Technology, Universiti Malaysia Pahang, Malaysia</i>
2007 – 2009	Master of Automotive Engineering <i>Faculty of Mechanical Engineering, Universiti Malaysia Pahang, Malaysia</i>
1997 – 2002	Bachelor Of Engineering (Mechanical) <i>Universiti Teknologi Malaysia, Malaysia</i>

Career/Academic Appointments

2020 – present	Academic Coordinator, Bachelor of Automotive Technology (BVA) <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>
2020-Present	CEO Automotive Engineering Research Group <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>
2019	Final Year Project Coordinator, Bachelor of Automotive Technology (BVA) <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>
2017-2018	Industrial Training Coordinator, UMP-HsKA Dual Degree Program <i>Faculty of Mechanical Engineering, Universiti Malaysia Pahang</i>
2012	Deputy Director, Automotive Engineering Centre (AEC), <i>Universiti Malaysia Pahang</i>
2009-2011	Head of Technical, Faculty of Mechanical Engineering (FKM), <i>Universiti Malaysia Pahang.</i>

2009 - present	Lecturer <i>Faculty of Mechanical & Automotive Engineering Technology, Universiti Malaysia Pahang</i>
2005	Tutor <i>Faculty of Mechanical Engineering, Universiti Malaysia Pahang</i>
2005	PVD Engineer, <i>Perodua Manufacturing Sdn. Bhd. (PMSB), Rawang, Selangor.</i>
2002-2004	Research Officer, <i>Automotive Development Center (ADC), Universiti Teknologi Malaysia.</i>

Courses Taught

BVA2154	Vehicle Performance Analysis
BVA2034	Vehicle Service and Maintenance
BMA3563	Engine Design
BHA	Internship Reports
BHA	Internship
BHA	Internship preparation
BMM	Engineering Fluid Mechanics Laboratory
BMM	Engineering Thermodynamics Laboratory
DMM2563	Hydraulic and Pneumatic Technology
BMM4703	Hydraulic and Pneumatic
BMA	Introduction to Automotive Engineering
DMM2543	Thermodynamics
DMM2632	Industrial Design
DMM3653	Automotive Technology
BMA 4703	Automotive Technology
BMM 2543	Fluid Mechanics 2
BMM 2533	Fluid Mechanics 1
BMA4743	Road Vehicle Aerodynamics
BMM 3531	Engineering Thermodynamics Lab
BMM3912	Final Year Project 1
BMM4999	Industrial Training
BMA 4713	Internal Combustion Engine
BMM3923	Final Year Project 2

Professional Affiliation

Board of Engineers Malaysia (BEM)	Graduate Engineer (GEXXXXX)
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Research Interests

Internal combustion engine testing and modelling, alternative fuels, hybrid and electric vehicles, computational fluid dynamics, control system modelling and optimization using artificial intelligence.

Postgraduate Supervision

Level	Name	Title	Status	Role
MSc	Mohamad Hafidzul Rahman Bin Alias	Optimization of Solenoid Driver and Controller for Gaseous Fuel High-Pressure Direct Injector Using Model-Based Approach	Active (Pre-viva)	Main Supervisor

Research Grants

Title	Type of Grant	Role	Amount (RM)	Status
Syngas Enrichment of CNG Fuel Engine for Combustion Stability and performance Enhancement	Internal Grant	Leader (Replacement)	31500	Active
Optimisation Of Solenoid Driver And Controller For Gaseous Fuel High-Pressure Direct Injector Using A Model-Based Approach	National Grant (FRGS)	Leader	88,000	Ended
Optimization of solenoid driver of high-pressure direct injector For gaseous fuel	Internal Grant	Leader	20500	Ended
New Electronic Control System for High Pressure Direct Injected 4 Stroke Natural Gas Engine	Internal Grant	Member	20000	Ended
Cylinder Mixture Stratification Method using High Pressure Direct Injection of Compressed Natural Gas for 4 Stroke Engine	Internal Grant	Leader	20000	Ended
Conversion of 1.3L Proton Saga BLM to Fully Electric Vehicle	Internal Grant	Member	20000	Ended
Proton Green Mobility Challenge 2012 - conversion of Proton vehicle into BEV configuration	External Grant (Contract research by Proton)	Member	100000 (estimated)	Ended
Design and Development of High Pressure Fuel Injection System with Pre-Chamber Approach for Single Cylinder Spark Ignition Engine (June 2011-in progress).	Internal Grant	Member	20000	Ended
Performance and Emission Characteristics of a Diesel Engine Operating with Bio-fuel	Internal Grant	Member	26000	Ended
Investigation of Gasoline-ethanol Blends Spray Characterization and Mixing	Internal Grant	Member	40000	Ended
Design and Efficient Performance Appraisal of Hydrogen Fueled Automobile Engines Combustion Chamber and Port Injector	Internal Grant	Leader	40000	Ended
Engine Performance Characteristics Using Waste Cooking Oil (Coconut oil) in Single Cylinder Agricultural Diesel Engines	Internal Grant	Member	40000	Ended
Development of Heat Transfer Techniques for Hydrogen Fuelled Internal Combustion Engine,	Internal Grant	Member	40000	Ended
Series Hybrid Electric Vehicle Cost-Effective Power Train Components Development	Internal Grant	Member	40000	Ended
Design and Development of Auxiliary Components for New Two Stroke, Stratified Charge, Lean Burn, Gasoline Engine	National Grant (IRPA- MOSTI)	Research Officer	150,000	Ended

Consultation Projects

Project Title	Customer	Amount (RM)
Engineering Analysis Of Flow Pattern From Inlet Separator To Inlet Of Ionised Wet Scrubber	Project of Mecip Global Sdn. Bhd. prepared for Optimal Group Sdn. Bhd	20000
Computational Fluid Dynamic Analysis Of Combustion Air Supply From Forced Draft Fan Outlet To Boiler Intake System	Project of MMC Oil and Gas Engineering Sdn. Bhd. prepared for Shell Refinery F.O.M Bhd.	20000

Publications

- [1] Rahim, M. F. A., Rahman, M. M., & Bakar, R. A. (2012). Cycle Engine Modelling Of Spark Ignition Engine Processes during Wide-Open Throttle (WOT) Engine Operation Running By Gasoline Fuel. *IOP Conference Series: Materials Science and Engineering*, 36, 12041. <https://doi.org/10.1088/1757-899x/36/1/012041>
- [2] Taha, Z., Rahim, M. A., & Mamat, R. (2017). Injection characteristics study of high-pressure direct injector for Compressed Natural Gas (CNG) using experimental and analytical method. *IOP Conference Series: Materials Science and Engineering*, 257(1), 012057. <https://doi.org/10.1088/1757-899x/257/1/012057>
- [3] Alias, M. H. R., Rahim, M. F. A., Rodzi, M. H. M. I., & Bakar, R. A. (2018). Effect of Injection Pressure, Injection Duration, and Injection Frequency on Direct Injector's Mass Flow Rate for Compressed Natural Gas Fuel. *MATEC Web of Conferences*, 225, 02008. <https://doi.org/10.1051/mateconf/201822502008>
- [4] Rahim M.F.A., Jaafar A.A., Mamat R., Taha Z. (2020) Parametric Study of CNG-DI Engine Operational Parameters by Using Analytical Vehicle Model. In: Osman Zahid M., Abd. Aziz R., Yusoff A., Mat Yahya N., Abdul Aziz F., Yazid Abu M. (eds) iMEC-APCOMS 2019. iMEC-APCOMS 2019. Lecture Notes in Mechanical Engineering. Springer, Singapore
- [5] MFA Rahim, AA Jaafar, Z Taha, and R Mamat (2019) Study on the Effect of Fuel Injection and Air Intake Boundary Setup on the Brake Torque Response by Using Comprehensive Vehicle Model for Natural Gas Vehicle (NGV) in Speed-Sweep Simulation, In: UTP-UMP-UAF SYMPOSIUM ON ENERGY SYSTEMS 2019 (SES2019), 1-2 OCTOBER 2019 , Kuantan, Pahang, Malaysia. pp. 1-7.
- [6] MFA Rahim, AA Jaafar, R Mamat, Z Taha MHR Alias (2019) Performance assessment of HDPI-CNG vehicle using speed-sweep test method, In: 5th International Conference On Mechanical Engineering Research (ICMER 2019), 30-31 July 2019 , Kuantan, Pahang, Malaysia. pp. 1-7.
- [7] Experimental investigation and development of new correlation for thermal conductivity and viscosity of BioGlycol/water based SiO₂ nanofluids, M Kh Abdolbaqi, Nor Azwadi Che Sidik, Mohd Fadzil Abdul Rahim, Rizalman Mamat, WH Azmi, Mohammad Noor Afiq Witri Muhammad Yazid, G Najafi, *International Communications in Heat and Mass Transfer*, [Volume 77](#), October 2016, Pages 54–63
- [8] CFD Prediction of Heat and Fluid Flow Through U-Bends Using High Reynolds-Number EVM and DSM Models, *Procedia Engineering* 53 (2013) 600 – 606, Elsevier
- [9] Cycle Engine Modelling Of Spark Ignition Engine Processes during Wide-Open Throttle (WOT) Engine Operation Running By Gasoline Fuel, *IOP Conf. Series: Materials Science and Engineering* **36** (2012) 012041.
- [10] Assessment Of Thermodynamic Engine Model Of Spark Ignition Engine For Gaseous Direct Injection Fuelling Study, **M.F.A. Rahim** and M.M.G. Mohamed, (ICMER 2011)
- [11] Experimental Study And Modeling Of Spark Ignition Engine Combustion Using Computational Fluid Dynamic Approach Based On Turbulent Flame Speed Closure Model, **M.F.A. Rahim**, R.A. Bakar, M.M. Rahman (JMES 2011)

- [12] Analysis Of Swirling Flow In Waste Incinerator Plant For Flow Angle Determination, **M.F.A^a. Rahim**, A.S. Sulaiman^a, M.O. Yusof^b, M. N. M. Sakri^c(MUI CET 2011)
- [13] Convergence Study Of A 4 Stroke SI Engine Combustion Modelling Using Turbulent Flame Speed Closure Model, *National Conference in Mechanical Engineering Research and Postgraduate Students (2nd NCMER 2010)*, 3-5 Dec 2010
- [14] Heat Transfer Characteristics in Exhaust Port for Hydrogen Fueled Port Injection Engine: A Transient Approach, *Advanced Materials Research Vols. 152-153 (2011)* pp 1909-1914
- [15] Effect Of Engine Speed On Common Rail Injection System For Hydrogen Engine, *National Conference in Mechanical Engineering Research and Postgraduate Students (1st NCMER 2010)*, 26-27 MAY 2010
- [16] *Comparative Evaluation Of A Two Stroke Compressed Natural Gas Mixer Design Using Simulation And Experimental Techniques.*, D., Ramasamy and R. A., Bakar and Mohd Fadzil, Abdul Rahim and M. M., Noor, 2008, Proceedings of the 4th IASTED International Conference, Power And Energy Systems (AsiaPES 2008), 2-4 April 2008 , Langkawi, Malaysia. pp. 359-362
- [17] Overview of Classical and Modern Techniques for Combustion Diagnostic in IC Engine - Rosli Abu Bakar, **MohdFadzil Abdul Rahim**, National Conference On Engineering & Technology 2006 (MUCET2006) 19-20 December 2006, UTHM, BatuPahat, Johor, Malaysia
- [18] Computational Fluid Dynamic Model for Crankcase Flow Analysis Of New Two Stroke Diesel Engine – Rosli Abu Bakar, **MohdFadzil Abdul Rahim**, Wong Hong Mun, Chang Sik Lee, The 2nd International Conference of Solid State Science and Technology (ICSSST 2006), 4-6 September 2006, UMT, Kuala Terengganu, Terengganu, Malaysia
- [19] Design and Development of Hydraulic Dynamometer Engine Test-Rig for Multipurpose Usage of KolejUniversitiKejuruteraan danTeknologi Malaysia (KUKTEM) Automotive Laboratory, Rosli Abu Bakar, **MohdFadzil Abdul Rahim**, AwangIdris, The 2nd International Conference of Solid State Science and Technology (ICSSST 2006), 4-6 September 2006, UMT, Kuala Terengganu, Terengganu, Malaysia
- [20] Numerical Analysis of Flow and Combustion in Two Stroke Stepped-Piston Gasoline Engine (Part 1).- **MohdFadzil Abdul Rahim**, ZulkarnainAbLatiff, Azhar Abdul Aziz – Proceeding for The Joint International Conference on “Sustainable Energy and Environment (SEE)-1-3 December 2004, HuaHin, Thailand
- [21] Multi Dimensional Modeling of Premixed Combustion In New Water Cooled Two Stroke Engine - Rosli Abu Bakar, **MohdFadzil Abdul Rahim**, 2nd BSME-ASME International Conference on Thermal Engineering , 2-4 January 2004, Dhaka
- [22] Effect of Heat Transfer on Cylinder Wall During Cooling Process Using Computational Fluid Dynamic- Rosli Abu Bakar, **MohdFadzil Abdul Rahim**, Gan Leong Ming, Proceeding for Malaysian Science and Technology Congress (MSTC) 2004.
- [23] Swirl Device Characteristics in Intake Manifold-Rosli Abu Bakar, Chin Kok Leong, **MohdFadzil Abdul Rahim**, R Devarajan- Proceeding for International Conference on Advances of Strategic Technology (ICAST) in Kuala Lumpur 2003.
- [24] Flow Analysis of New Two Stroke Engine Design Using Computational Fluid Dynamics-Rosli Abu Bakar, Chin Kok Leong, **MohdFadzil Abdul Rahim**, Gan Leong Ming- Proceeding for Conference of Numerical Analysis in Engineering in Batam, Indonesia 2003.
- [25] Optimum Design of Internal Combustion Engine With Injection For Compressed Natural Gas (CNG), **MohdFadzil Abdul Rahim**- Thesis for Bachelor Degree of Engineering, UTM, 2002