

**DR. MUHAMMAD FAIRUZ BIN REMELI**

Senior Lecturer  
Faculty of Mechanical Engineering,  
Universiti Teknologi Mara (UiTM)  
40450, Shah Alam, Malaysia  
Mobile Phone : +60165620014  
E-mail: [fairuz1299@uitm.edu.my](mailto:fairuz1299@uitm.edu.my)  
[fairuzremeli@gmail.com](mailto:fairuzremeli@gmail.com)



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**CURRENT POST:**

**Senior Lecturer and Researcher in Mechanical Engineering (Thermofluids)**

**STRENGTH**

Have initiative, curiosity; am creative and analytical  
Enthusiastic, engaging and persuasive  
Strong communication skills-fluent in English, German and Bahasa Malaysia  
Strong research abilities & persistence

**EDUCATION BACKGROUND**

1. RMIT University, Australia  
Ph.D (Mechanical Engineering)  
Year of study : July 2012 – July 2015  
PhD Thesis : Simultaneous Industrial Waste Heat Recovery and Power Generation using Heat Pipe Assisted Thermoelectric Generator.
2. Fachhochschule Offenburg (University of Applied Sciences, Offenburg, Germany)  
Msc. (Energy Conversion and Management)  
Year of study : October 2006 – October 2008  
Master Thesis : Dynamic Modelling and Simulation of an Adsorption Heat Pump  
Master practical training: Modelling of Finite Rate Chemistry Effect of Turbulent Non-Premixed Flamed
3. University Malaya-Kuala Lumpur  
Bachelor Degree of Eng. (Mechanical)  
Year of study : 2000 - August 2004

**RELEVANT WORKS**

Thermoelectric , Heat Pipe Heat Recovery System, PEM Fuel Cell, Adsorption Heat Pump, Power Plant Technology, Solar Technology, Energy Conversion ,Combustion, Fluids Mechanic, Thermodynamic, Design, Computer and Programming, CFD (Computational Fluid Dynamics), Refrigeration

## **SKILLS**

Computer Programming: Microsoft Office, SolidWorks Flowsimulation, CATIA , Math lab, Fluent ANSYS.

## **WORKING EXPERIENCES :**

**Senior lecturer – University of Technology MARA, Malaysia (Feb 2016 – current)**

**Junior lecturer – University of Technology MARA, Malaysia (December 2008 – Jan 2016)**

I worked as a senior lecturer in the department of thermofluids and energy of the faculty of mechanical engineering. Teaching several core subjects, including thermal engineering and fluid mechanic and supervise undergraduate and postgraduate students. For research, I explore a new method for heat recovery and power generation using waste heat.

**Engineer -Felda Palm Industries Sdn Bhd (2005)**

I worked as an assistant manager in a palm oil factory. The task was to make sure the operation of the palm oil ran smoothly without any interruption. The task included to daily monitor and report the production of crude palm oil and palm kernel. To monitor and report the malfunction and breakdown of the equipment/stations in the mill including boiler, steam turbine, sterilizer, thresher, presser, clarification device, nut and kernel separator, water and effluent treatment.

**Procurement Engineer - Sime Darby Engineering Sdn Bhd (2004)**

I worked as an engineer for an oil and gas rig fabricator in Pasir Gudang, Johor. The task was to expedite the procurement of various type of valves for the oil rig fabrication. It included to organize a meeting between the client and contractor, to prepare bidding documents for a new project, and to study valve specs prepared by mechanical/piping department.

## **CONSULTATION EXPERIENCES:**

1. Proposal Collaboration Between Faculties of Electrical Engineering and Bureau Veritas (M) Sdn Bhd for Project GDC-KLIA Joint Inspection Service (December 3 2018)

## **TEACHING EXPERIENCES :**

At Universiti Teknologi MARA (UiTM) :

Thermodynamics  
Thermal Engineering  
Fluid Mechanics  
Heat and Fluid  
Numerical Methods and Computer Applications  
Introduction to Engineering  
Computer Added Design (CAD)

## **RESEARCH EXPERIENCES :**

Research student/ tutor – RMIT University (2012 – 2015)  
Practical student - Energy Systems and Technology, Darmstadt University of Technology (2007)  
Thesis student - Viessmann GmbH, Allendorf, Germany (2008)

## **RESEARCH GRANT:**

### **Main Principle**

FRGS's grant - Investigation of turbulent flow temperature separation mechanism through Ranque-Hilsch vortex tube (Funding : RM 86000)  
Duration: July 1 2011 -January 16 2014 (Completed)

LESTARI's grant- Simultaneous heat recovery and power generation using heat pipe thermoelectric generator (Funding : RM 20000)  
Duration: July 1 2011 -September 23 2013 (Completed)

### **Co-researcher**

PRGS's grant – A modular Thermoelectric Generator System for Effective Energy Recovery of Industrial Waste Heat  
(Funding: RM 110000)  
Duration: July 1 2019 -December 30 2020 (On-Going)

RIG's grant- Automotive exhaust heat recovery using thermoelectric generators (Funding: RM 32000)  
Duration: February 1 2018 – January 31 2020

FRGS grant - Structural Modification Of Polymeric Electrospun/Microporous Zeolite Membrane  
(Funding: RM 48000)  
Duration: July 1 2011 -September 23 2013 (Completed)

FRGS's grant –New Technique in Micro Channel Geometry Optimization of An Air-Cooled Polymer Electrolyte Membrane Fuel Cell Bipolar Plate (Funding: RM 48000)  
Duration: 1 March 2010 – 7 Feb 2013 (Completed)

## **SUPERVISING EXPERIENCES:**

### **Post Grad:**

1. Thermoelectric Power Generation using Vehicle Exhaust Gas with Nanofluid Cooling (Main Supervisor)  
Student Name: Mohd Noor Hariz Bin Mohd Hilmin (Student No.: 2017305635)  
Program: Master of Science in Mechanical Engineering
2. Waste Heat Recovery from an Electronic Device (Main Supervisor)  
Student Name: Dhiyauddin Asyraf Bin Laili (Student No.: 2017437702)  
Program: Master of Science in Mechanical Engineering
3. The impact of copper foam on performance of solar thermoelectric generator  
Student Name: – Raihan Bin Abu Bakar (Student No.: 2017169757) (Co-Supervisor)  
Program: Master of Science in Mechanical Engineering
4. Power Generation From Salinity Gradient Solar Pond Using Thermoelectric Generators  
Student Name: – Nuraida 'Aadilia Binti Baharin (Student No. : 2015508235) (Co-Supervisor)  
Program: Master of Science in Mechanical Engineering

### SELECTED PUBLICATIONS:

1. Thermoelectric Power Generations from Vehicle Exhaust Gas with TiO<sub>2</sub> Nanofluid Cooling  
MNHM Hilmin, MF Remeli, B Singh, NDN Affandi  
Thermal Science and Engineering Progress, (2020)
2. Experimental Electrical Characterisation of Thermoelectric Generator using Forced Convection Water Cooling.  
Raihan Abu Bakar, Baljit Singh, Muhammad Fairuz Remeli  
Journal of Mechanical Engineering Vol 17(1), 1-16, (2020)
3. Motorcycle Waste Heat Energy Harvesting Using Thermoelectric Generators  
MS Omar, B Singh, MF Remeli  
Journal of Electronic Materials, 1-8, (2019)
4. Evaluation Of Evaporator Performance For Solar Adsorption Cooling System  
Muhammad Azman Ramli, Fauziah Jerai, Muhammad Fairuz Remeli, Nor Afifah Yahaya  
International Journal of Advanced Research in Engineering Innovation 1(2),42-50 (2019).
5. Feasibility of electrical power generation using thermoelectric modules via solar pond heat extraction  
LC Ding, A Akbarzadeh, B Singh, MF Remeli  
Energy Conversion and Management 135, 74-83 (2017)
6. Investigation of Counter-Flow in a Heat Pipe–Thermoelectric Generator (HPTEG)  
MF Remeli, B Singh, NDN Affandi, LC Ding, A Date, A Akbarzadeh  
Journal of Electronic Materials 46 (5), 3115-3123 (2017)
7. Experimental Analysis of Thermoelectric Heat Exchanger for Power Generation from Salinity Gradient Solar Pond Using Low-Grade Heat  
B Singh, NA Baharin, MF Remeli, A Oberoi, A Date, A Akbarzadeh  
Journal of Electronic Materials 46 (5), 2854-2859 (2017)
8. Activated carbon: A potential applicant for solid-state hydrogen storage  
AS Oberoi, B Singh, MF Remeli, N Singh  
Activated Carbon: Synthesis, Properties and Uses (2017)
9. A Study on the Formation of PVA/Kenaf Nanofibres via Electrospinning  
NDN Affandi, MR Ahmad, SH Saleh, MF Remeli, NHHNI Teo, NF Amran  
Pertanika Journal Of Science And Technology 25, 85-92 (2017)
10. Passive flow heat exchanger simulation for power generation from solar pond using thermoelectric generators  
NA Baharin, AA Arzami, B Singh, MF Remeli, L Tan, A Oberoi  
AIP Conference Proceedings 1828 (1), 020021 (2017)
11. Concentrated Solar Thermal Thermoelectric Power Generation under Natural and Forced Convection Cooling  
S Dee, B Singh, MF Remeli, L Tan, A Oberoi  
Pertanika Journal Of Science And Technology 25, 123-132 (2017)
12. Experimental investigation of combined heat recovery and power generation using a heat pipe assisted thermoelectric generator system  
MF Remeli, A Date, B Orr, LC Ding, B Singh, NDN Affandi, A Akbarzadeh

Energy Conversion and Management 111, 147-157 (2016)

13. Design and construction of a simple thermoelectric generator heat exchanger for power generation from salinity gradient solar pond  
B Singh, A Saoud, MF Remeli, LC Ding, A Date, A Akbarzadeh  
Jurnal Teknologi 76 (5) (2015)
14. Passive Heat Recovery System using Combination of Heat Pipe and Thermoelectric Generator  
MF Remeli, K Verojporn, B Singh, L Kiatbodin, A Date, A Akbarzadeh  
Energy Procedia 75, 608-614 (2015)
15. Thermal Heat Storage Gain of Salinity Gradient Solar Pond using Evacuated Tube Solar Collectors  
B Singh, MF Remeli, A Pedemont, A Oberoi, A Akbarzadeh  
Advanced Materials Research 1113, 800-805 (2015)
16. Passive Power Generation and Heat Recovery from Waste Heat  
MF Remeli, B Singh, A Akbarzadeh  
Advanced Materials Research 1113 (2015)
17. Prospects of Power Generation from Geothermal Energy Using Thermoelectric Modules  
DL Chet, B Singh, MF Remeli, A Date, R Singh, A Akbarzadeh  
Prospects 19, 25 (2015)
18. Simultaneous power generation and heat recovery using a heat pipe assisted thermoelectric generator system  
MF Remeli, L Tan, A Date, B Singh, A Akbarzadeh  
Energy Conversion and Management 91, 110-119 (2015)
19. Experimental Investigation on Effect of Adhesives on Thermoelectric Generator Performance  
B Singh, MF Remeli, DL Chet, A Oberoi, A Date, A Akbarzadeh  
Journal of Electronic Materials, 1-6 (2015)
20. Power generation from waste heat using pipe and thermoelectric generator  
M Remeli, L Kiatbodin, B Singh, K Verojporn, A Date, A Akbarzadeh  
The 7th International Conference on Applied Energy (ICAE2015), 645-650 (2015)
21. Experimental Investigation of Orifice Diameter, Swirl Generator and Conical Valve Shape to the Cooling Performance of Ranque-Hilsch Vortex Tube  
N Ismail, W Wisnoe, MF Remeli  
Applied Mechanics and Materials 510, 174-178 (2014)
22. Electrical Power Generation from Low Grade Heat of Salinity Gradient Solar Pond Using Thermoelectric Generators.  
B Singh, F Remeli, A Oberoi, L Tan, A Date, A Akbarzadeh  
Proceedings of the 52nd Annual Conference, Australian Solar Energy Society (2014)
23. Power Generation and Heat Recovery Using Heat Pipe Thermoelectric Generator (HPTEG)  
MF Remeli, A Date, B Singh, L Tan, A Akbarzadeh  
Proceedings of the 52nd Annual Conference, Australian Solar Energy Society (2014)

24. Experimental Investigation on the Effect of Orifice Diameter and Inlet Pressure to the Ranque-Hilsch Vortex Tube Performance  
N Ismail, W Wirachman, MF Remeli  
Applied Mechanics and Materials 465, 515-519 (2014)
25. Experimental investigation of power generation from salinity gradient solar pond using thermoelectric generators for renewable energy application  
B Singh, J Varthani, MF Remeli, L Tan, A Akbarzadeh  
Applied Mechanics and Materials 393, 809-814 (2013)
26. Combined Thermosyphon Thermoelectric Model (TTM) for Waste Heat Recovery And Power Generation  
MF Remeli, A Date, B Singh, L Tan, A Akbarzadeh  
The 11th International Heat Pipe Symposium (11IHPS) (2013)
27. Power Production By Thermoelectric Cells Using Engine Exhaust Gas  
B Singh, B Orr, MF Remeli, L Tan, A Date, A Akbarzadeh  
The 11th International Heat Pipe Symposium (11IHPS) (2013)
28. Experimental investigation on the effect of conical valve shape and swirl generator to the performance of Ranque-Hilsch Vortex Tube  
W Wisnoe, N Ismail, MF Remeli, MF Zakaria  
Business Engineering and Industrial Applications Colloquium (BEIAC), (2013)
29. Improving tensile properties of kenaf fibers treated with sodium hydroxide  
MS Meon, MF Othman, H Husain, MF Remeli, MSM Syawal  
Procedia Engineering 41, 1587-1592 (2012)
30. Thermal and coolant flow computational analysis of cooling channels for an air-cooled PEM fuel cell  
W Mohamed, MF Remeli, AHA Hamid, R Atan  
Applied Mechanics and Materials 110, 2746-2753 (2012)
31. Effect of cross-head velocity and tube length on the rate of energy absorption under concertina collapse mode  
H Hazran, M Suhairil, M Syahar, M Fairuz, M Fauzi  
Business, Engineering and Industrial Applications (ISBEIA), 2011 IEEE (2011)
32. The effect of cross-head velocity and length of tube on energy absorption of aluminium tube  
MS Meon, H Husain, MF Othman, MF Remeli, MSM Syawal  
Business, Engineering and Industrial Applications (ISBEIA), 2011 IEEE (2010)
33. Cooling Mechanisms and Contribution Analysis of an Experimental Polymer Electrolyte Membrane Fuel Cell System  
MF Remeli, WANW Mohamed, R Atan  
Proceedings of EnCon2010 3rd Engineering Conference on Advancement (2010)
34. Thermal Engineering Performance Evaluation of a Polymer Electrolyte Membrane Fuel Cell Stack at Partial Load  
WANW Mohamed, R Atan, MF Remeli  
Regional Conference on Mechanical and Aerospace Technology Bali, February 9 (2010)