Dr. Renique J. Murray

BSc, MPhil, PhD, MAPETT

Name: Dr. Renique J. Murray

Position: Development Engineer

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Bio

Dr. Renique J. Murray has been lecturing and conducting postgraduate research in various aspects of mechanical engineering over the past twelve years. He holds both a BSc. and an MPhil degree in Mechanical Engineering from the University of the West Indies, with the latter focusing on vibration analysis of rotating machines. He also holds a PhD. in Process and Utilities Engineering from the University of Trinidad and Tobago, in the area of renewable fuel technology and power generation.

Dr. Murray has lectured undergraduate courses in the fields of Applied Mechanics and Thermodynamics, including Engineering Dynamics, Mechanical Vibrations and Thermodynamics. His early research work has focused primarily on rotating machines, examining alternative signal processing approaches to fault diagnosis in power generating equipment. Since then, he has developed a keen interest in the use of engineering technologies for empowering developing communities. Accordingly, his research emphases have grown to include renewable energy technologies and the design and development of machines for agri-processing and related applications. A core element of his ongoing research is the development and optimization of alternative fuels for use in conventional power generation machinery. He has also recently participated in the BRIDGE solar energy training programme, hosted by TNO and Arizona State University and has successfully completed the NABCEP exam. He currently serves as a development engineer in the department's MMERC, where he facilitates the development of industry-academia partnerships, manages projects and continues to further his research interests.

A strong advocate for ethical standards in professionalism, Dr. Murray is a member of the Global Leadership Interlink (GLI), a professional network of values-based leaders, with several chapters around the world. He currently serves on the global strategic leadership team and has been appointed a Director for campus operations. In this capacity he mentors and facilitates the development of students and young professionals. He is also a member of the Association of Professional Engineers of Trinidad and Tobago and serves as an interim committee member of the mechanical division.

Degrees Earned

- BSc. (UWI) – 2003

- MPhil. (UWI) – 2007
- Ph.D (UTT) – 2012

Professional Training:

- Gas Turbine Technology: The University of Trinidad and Tobago – Professional Series, January 2009.
- Petroleum Risk & Decision Making: The University of Trinidad and Tobago – PetroSkills , March 2009.
- Solar Power Generation Systems: Arizona State University – The BRIDGE Programme, January 2015

Institutional Memberships:

- Member, Association of Professional Engineers of Trinidad and Tobago

University Teaching Experience:

- Graduate Research Assistant, (UWI) : 2003 – 2007
- Part-time lecturer, (UWI): 2008
- Research Assistant, (UTT): 2007 – 2012

Research Interests:

- Alternative fuels & renewable fuels (Methanol-Biofuel Diesel Substitution Project)
- Solar energy applications
- Combustion analysis in reciprocating engines

- Agri-processing machinery

Courses Taught:

- MENG 2003 Mechanical Vibrations
- MENG 2014 Communication & Ethics

Projects Supervised:

Undergraduate

- S. Jagmohan (2014). Design, build and test a machine to extract textile grade fibres safely and efficiently from the stems of banana plants. BSc. Mechanical Engineering Project (UWI)
- K. Modeste (2014). Investigation into the use of a waste oil/methanol/biodiesel blend as a fuel substitute for a diesel engine. BSc. Mechanical Engineering Project (UWI)
- Q. Bess (2014). Design and build of a tri-fuel blending system. BSc. Mechanical Engineering Project (UWI)
- T. Cardinez (2014). Investigation into the use of a vegetable oil/ethanol/biodiesel blend as a fuel substitute for a diesel engine. BSc. Mechanical Engineering Project (UWI)
- R. Sandiford (2014). Investigation via software simulation of foreign particulate build-up in an offshore condensate pipeline.
- D. Ramoutar (2015). Design and build of a vibration based fuel agitator for use with reciprocating machinery. BSc. Mechanical Engineering Project (UWI)
- N. Baptiste (2015). Modelling of fuel blend combustion in single cylinder diesel engines using COMSOL. BSc. Mechanical Engineering Project (UWI)

- K. Alfred (2015). Design and optimization of an integrated self-contained fuel blend delivery system. BSc. Mechanical Engineering Project (UWI)
- S. Khan (2015). Design and build of a wind energy harvesting machine. BSc. Mechanical Engineering Project (UWI)
- D. Ali (2015). Assessment of combustion performance of fuel blends in diesel engines using a vibration analysis approach.
- V. Roopnarine (2015). Modelling and assessment of combustion induced vibration in diesel engines. BSc. Mechanical Engineering Project (UWI)
- A. Balroop (2015). Design and build of a vibration energy scavenging machine utilizing vibrations derived from reciprocating machinery.
- D. Chairman (2015). Design and build of a device that converts vibrational motion to rotational motion for energy output applications. BSc. Mechanical Engineering Project (UWI)
- D. Griffith (2015). Design and build of a tempering machine with a metered depositor for chocolate production. BSc. Mechanical Engineering Project (UWI)
- C. Seedhan (2015). Design and build of an adjustable Jawari to effectively control the sounds produced from a sitar. BSc. Mechanical Engineering Project (UWI)

Publications

- **Murray, R.J** and King, G.S. (2014). *"Breaking the Caribbean Power Generation Diesel Fuel Dependency.*" CARILEC Industry Journal. Vol 13, pp. 7-13.
- **Murray, R.J**. (2012), "*An investigation into the use of methanol for power generation in the Caribbean.*" The Association of Professional Engineers of Trinidad and Tobago Chemical Division – Newsletter. No. 1, February, pp. 5-6.
- **Murray, R.J**, Hosein, S and Kelly, S. (2012). "*An investigation of methanol-coconut oil fuel blends in diesel engines for Caribbean power generation using bio-diesel as a co-solvent.*" The West Indian Journal of Engineering, Vol. 34, No. 1/2, pp. 52-58.

- Cheddie, D. F and **Murray, R.J** (2010). "*Thermo-economic modeling of an indirectly coupled solid oxide fuel cell/gas turbine hybrid power plant*". Journal of Power Sources, Vol. 195, No. 24, pp. 8134-8140.
- Cheddie, D. F and **Murray, R.J** (2010). "*Thermo-economic modeling of a solid oxide fuel cell/gas turbine power plant with semi-direct coupling and anode recycling*". The International Journal of Hydrogen Energy, Vol. 35, No. 20, pp. 11208-11215.
- Cheddie, D.F and **Murray, R.J** (2010). "*Thermo-Economic Optimization of a solid Oxide Fuel Cell/Gas Turbine Hybrid Power Plant with Semi-Direct Coupling*". Conference proceedings of The Second Industrial Engineering & Management Conference, St. Augustine, Trinidad. October 7 – 8, 2010.
- **Murray, R.J**. and Furlonge, H.I. (2009), "*Market and economic assessment of using methanol for power generation in the Caribbean region*", The Journal of The Associations of Professional Engineers of Trinidad and Tobago, Vol.38, No.1, October, pp.88-99.
- **Murray, R.J**, S. Hosein and H.I. Furlonge. (2008). "Investigation of the Potential for Methanol's Use as a Power Generation Fuel for Caribbean Niche Markets." Conference proceedings of the Tobago Gas Technology Conference 2008, Lowlands, Tobago, October 7 – 10, 2008