

## M. Anusha Wijewardane

'Chandi', Wellabada, Boossa, Galle, Sri Lanka

Date of birth: 19/06/1983

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### Education

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- Ph.D. in Exhaust System Thermal Management of Internal Combustion Engines – May 2012  
Dept. of Aeronautical and Automotive Engineering, Loughborough University, UK
- B.Sc.(Hons) in Mechanical Engineering (Second Class Upper Division) – November 2007  
University of Moratuwa, Moratuwa, Sri Lanka
- G.C.E. Advance Level Examination (Physics – A; Mathematics – A; Chemistry - A ) – April 2002  
Sanghamitta Vidyalaya, Galle, Sri Lanka
- G.C.E. Ordinary Level Examination (Distinctions for all 10 subjects) – December 1999  
Sanghamitta Vidyalaya, Galle, Sri Lanka

### Publications

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#### Journal:

- D.M.C.M.K. Dasanayake, **M.A. Wijewardane**, and C.V.L. Jayasinghe. 'Estimation of embedded energy of some selected vegetables in the vegetable value chain, Sri Lanka'. Journal of Advanced Agricultural Technologies, (**JOAAT, ISSN:2301-3737**), 2019 – **Yet to be Published**
- Thurairaja, K., **Wijewardane, M.A.**, Jayasekara, J.G.A.S. and Ranasinghe, R.A.C.P. "Working Fluid Selection and Mathematical Modelling of Organic Rankine Cycle for Electricity Generation". Journal of Energy Procedia, Volume 156, pgs: 244-248, January 2019
- Thurairaja, K., **Wijewardane, M.A.**, Jayasekara, J.G.A.S. and Ranasinghe, R.A.C.P. "Performance Evaluation and Exergy Analysis of Different Working Fluids used in Organic Rankine Cycle for Power Generation Operates under Constant Temperature Heat Reservoirs.". IESL 112<sup>th</sup> Annual Sessions 2018, Colombo, Sri Lanka, 2018 (Proceedings of 112<sup>th</sup> IESL Conference Proceedings)
- **Wijewardane, M.A.**, Kumara, M.R.S.U, Sudasinghe, S.A.N.C, Punchihewa, H.K.G., Wickramathilake, W.K.D.L. and Philip, S.A. "Investigation on Illuminance Requirements and Associated Cost Saving Opportunities in Garment Factories". Journal of Energy Procedia, 2018 (SEB-18 – International Conference on Sustainability in Energy and Buildings, Gold Coast, Australia, 2018), Proceedings of 10<sup>th</sup> International Conference on Sustainability in Energy and Building 2018-2019
- Stobart, R., **Wijewardane, M.A.** and Yang, Z. 'Comprehensive analysis of thermoelectric generation systems for automotive applications'. Journal of Applied Thermal Engineering, Vol. 112, Pg. 1433-1444, 2017
- Dong, G., Stobart, R., **Wijewardane, A.** and Li, J. "Performance analysis of a thermoelectric generator through component in the loop simulation", Lecture Notes in Electrical Engineering, 190 LNEE(VOL. 2), pp.1179-1191, ISSN: 1876-1100. DOI:10.1007/978-3-642-33750-5-28, 2013.

#### Conference:

- Hewawasam, L.S., Jayasena, A.S, Afnan, M.M.M., Ranasinghe, R.A.C.P. and **Wijewardane, M.A.** 'Waste Heat Recovery from Thermo-Electric Generators (TEGs)'. The 6<sup>th</sup> International Conference on Power and Energy Systems (CPESE 2019), Okinawa, Japan, 2019, **Yet to be Published**
- Herath, H.M.D.P., Wickramasinghe, M.D.A., Polgolla, A.M.C.K., Ranasinghe, R.A.C.P. and **Wijewardane, M.A.** 'Investigating the Applicability of Rotary Thermal Wheels for Hot and Humid Climates'. 2020 ASHRAE Winter Conference, Orlando, FL, USA, 2020, **Yet to be Published**
- Tennakoon, N. and Wijewardane, M.A. 'Utilize waste heat of onsite electrical generators by recovery boilers in Sri Lankan upcountry hotels'. 113<sup>th</sup> Annual Sessions, Colombo Sri Lanka, 2019, **Yet to be Published**
- Gunathilake, W.A.D.N., Perera, M.S.M. and Wijewardane, M.A. 'Mathematical modelling and analysis of wear characteristics of vehicle brakes with TEGs'. 113<sup>th</sup> Annual Sessions, Colombo Sri Lanka, 2019, **Yet to be Published**
- D.M.C.M.K. Dasanayake, **M.A. Wijewardane**, and C.V.L. Jayasinghe. 'Estimation of embedded energy of some selected vegetables in the vegetable value chain, Sri Lanka'. 2019 9<sup>th</sup> International Conference on Asia Agriculture and Animal (ICAAA 2019), South Korea, 2019, **Yet to be Published**

- Herath, H.M.D.P., Wickramasinghe, M.D.A., Polgolla, A.M.C.K., Ranasinghe, R.A.C.P. and Wijewardane, M.A. 'Applicability of Rotary Thermal Wheels to Hot and Humid Climates'. SEB-19 – International Conference on Sustainability in Energy and Buildings, Budapest, Hungary, 2019, **Yet to be Published**
- Hewawasam, L., Jayasena, A., Marzook, A., Ranasinghe, R.A.C.P. and **Wijewardane, M.A.** 'A Review Paper on Thermo-electric Materials for Future Energy Harvesting in Automobile Sector'. 2018 8<sup>th</sup> IEEE International Conference on Power and Energy Systems (ICPES 2018), Colombo, Sri Lanka, 2018
- Rathnayake, A., Manthilake, I. and **Wijewardane, M.A.** 'Applicability of Thermo-Acoustic Generators (TAGs) for Low Grade Heat Recovery and Power Generation'. 2018 8<sup>th</sup> IEEE International Conference on Power and Energy Systems (ICPES 2018), Colombo, Sri Lanka, 2018
- Thurairaja, K., **Wijewardane, M.A.** and Ranasinghe, R.A.C.P. "Thermo-Economic Analysis of Organic Rankine Cycle for Power Generation". 2018 IEEE 7<sup>th</sup> International Conference on Power and Energy 2018 (PECon2018), Kuala Lumpur, Malaysia, 2018
- Thurairaja, K., **Wijewardane, M.A.**, Ranasinghe, R.A.C.P. and Jayasekara, J.G.A.S. "Modelling and experimental investigation of organic Rankine cycle for electricity generation using R134a and R600a". The International Conference on Sustainable Energy and Green Technology 2018 (SEGT 2018) in conjunction with the 4<sup>th</sup> Energy Engineering Alliance Forum (EEAF 2018), Kuala Lumpur, Malaysia, 2018
- Thurairaja, K., **Wijewardane, M.A.**, Jayasekara, J.G.A.S. and Ranasinghe, R.A.C.P. "Working Fluid Selection and Mathematical Modelling of Organic Rankine Cycle for Electricity Generation". 5<sup>th</sup> International Conference on Power and Energy Systems Engineering (CPESE 2018), Nagoya, Japan, 2018
- Thurairaja, K., **Wijewardane, M.A.**, Jayasekara, J.G.A.S. and Ranasinghe, R.A.C.P. "Performance Evaluation and Exergy Analysis of Different Working Fluids used in Organic Rankine Cycle for Power Generation Operates under Constant Temperature Heat Reservoirs.". IESL 112<sup>th</sup> Annual Sessions 2018, Colombo, Sri Lanka, 2018
- Madhushanka, C.K.I., Ranatunga, R.G.S.M., Thilakarathne, E.G.D.R., Ranasinghe, R.A.C.P. and **Wijewardane, M.A.** "Identify the Differences of AC Load Requirement with respect to the Floor Number in High Rise Buildings". MERCon 2018, 4<sup>th</sup> International Multidisciplinary Engineering Research Conference, Colombo, Sri Lanka, 2018
- **Wijewardane, M.A.**, Kumara, M.R.S.U, Sudasinghe, S.A.N.C, Punchihewa, H.K.G., Wickramathilake, W.K.D.L. and Philip, S.A. "Investigation on Illuminance Requirements and Associated Cost Saving Opportunities in Garment Factories". SEB-18 – International Conference on Sustainability in Energy and Buildings, Gold Coast, Australia, 2018
- **Wijewardane, M.A.**, Kumara, M.R.S.U, Sudasinghe, S.A.N.C, Punchihewa, H.K.G., Wickramathilake, W.K.D.L. and Philip, S.A. "Experimental Investigation of Visual Comfort Requirement in Garment Factories and Identify the Cost Saving Opportunities". ICEB 2018 – International Conference on Energy and Buildings, Vienna, Austria, 2018
- **Wijewardane, M.A.**, Figurado, S.A., Kajaharan, M., Weerasinghe, N.D.A.M. and Ranasinghe, R.A.C.P. 'Applicability of PCMs (Phase Change Materials) for Peak Load Shifting of Air Conditioning and Mechanical Ventilation (ACMV) Systems of Office Buildings in Tropical Climates'. The 06<sup>th</sup> World Construction Symposium 2017, Colombo, Sri Lanka, 2017
- Vaikunthan, T., Dasanayake, D.M.C.M.K., **Wijewardane, M.A.** and Jayasinghe, C.V.L. 'The postharvest losses of vegetables through the normal transportation method in Sri Lanka'. Proceedings of the 73<sup>rd</sup> Annual Sessions, Sri Lanka Association for the Advancement of Science, Sri Lanka, 2017
- Prakalathan, A., Prasath, K., Thavanees, S., Ranasinghe, R.A.C.P. and **Wijewardane, A.** "Analysis on the effects on the heat column temperature of outdoor air conditioning units in high risers". IESL Symposium – 2016, Colombo, Sri Lanka, 2016
- Sugathapala A.G.T., **Wijewardane M.A.**, De Silva S.Y.S., and Dahanayaka I.A. 'Development of Indoor Air Quality Guideline in Sri Lanka'. 17<sup>th</sup> IUAPPA World Clean Air Congress and 9<sup>th</sup> CAA Better Air Quality Conference, Busan, South Korea, 2016
- Dasanayaka, D.M.C.M.K., Jayasinghe, C.V.L., Prasadi, V.P.N., Wickramasinghe, H., Fernando, N. and **Wijewardane, A.** 'Estimation of postharvest losses and the renewable energy potential of the Dambulla Economic Center, Sri Lanka'. WinC 2016 International Conference, Wayamba University, Sri Lanka, 2016
- **Wijewardane, A.** and Stobart, R. "Performance comparison of energy recovery systems for internal combustion engine applications". National Energy Symposium – 2015, Colombo, Sri Lanka, 2015
- **Wijewardane, A.** and Stobart, R. "Addressing the heat exchange question for thermo-electric generators". SAE Technical Paper, 2013-01-0550, Detroit, MI, USA, 2013
- Dong, G., Stobart, R., **Wijewardane, A.** and Li, J. Performance analysis of a thermoelectric generator through component in the loop simulation. F2012-A07-006, FISITA 2012, Beijing, China, 2012

- **Wijewardane, A.** and Stobart, R. "Sensitivity analysis of TE power generation systems designed for energy recovery in automobiles". 31<sup>st</sup> International and 10<sup>th</sup> European Conference on Thermo-electrics, ICT/ECT 2012, Denmark, 2012
- Stobart, R., **Wijewardane, A.**, Li, J. and Dong, G. "The value of Component-in-the-Loop Approaches to Exhaust Energy Management for Hybrid Vehicles". SAE Technical Paper, 2012-01-1024, Detroit, MI, USA, 2012
- Dong, G., Stobart, R., Li, J. and **Wijewardane, A.** "Transient Performance Analysis of a Thermo-Electric Generator installed in EGR path of a Diesel Engine". ICACMV 2011, China, 2011
- Stobart, R., **Wijewardane, A.**, Dong, G. and Li, J. "Performance analysis of TEGs applied in the EGR path of a heavy duty engine for a Transient Drive Cycle". GT-Suite User Conference 2011, Frankfurt, Germany, 2011 (Only the abstract and the invited oral presentation)
- Powell, A.V., Kaltzoglou, A., Vaqueiro, P., Min, G., Garcia-Canadas, J., Stobart, R.K., Li, J., Dong, G. and **Wijewardane, A.** "Thermoelectric Exhaust-Gas Energy Recovery: An Integrated Approach". ECT 2011, Greece, 2011 (AIP Conference Proceedings 1449 (2011) 447-449)
- Stobart, R. and **Wijewardane, A.** "Exhaust System Heat Exchanger Design for Thermal Energy Recovery in Passenger Vehicle Applications". *IMechE, VTMS 10*, Vol. 2011, Vehicle Thermal Management System Conference, Warwick, UK, 2011
- Stobart, R., **Wijewardane, A.** and Allen, C. "The potential for thermo-electric devices in passenger vehicle applications". SAE Technical Paper, 2010-01-0833, Detroit, MI, USA, 2010

#### **News Paper Articles:**

- Jayasinghe, C.V.L., Dasanayake, D.M.C.M.K., Rimzan, M., Shyamali, D. and **Wijewardane, M.A.** "Applicability of Cleaner Production Concept of the Production of Vegetable and Fruit Value Chain of Sri Lanka", Awadanaya, Vidusara News Paper, 03<sup>rd</sup> Jan. 2018
- Jayasinghe, C.V.L., Dasanayake, D.M.C.M.K., Prasadi, N. and **Wijewardane, M.A.** "Post Harvest Losses in Sri Lanka", Vimarshana, Vidusara News Paper, 20<sup>th</sup> Sep. 2017

#### **Research Experience**

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- Thermo-acoustic Generation to recover low-grade energy
- Heat Island Effect in Urban Areas and associated cooling load increment and design and selecting of AC systems
- Energy Efficiency Improvement and Renewable Energy Potential in the Food Value Chains in Sri Lanka
- Optimizing the lighting system to minimize the energy consumption and maximizing the productivity in Garment Industry.
- Organic Rankine Cycles  
Description - Power generation from low-grade thermal systems i.e. solar energy, heat recovery
- Phase-Change Materials (PCMS) for Enhance the Performance of Building HVAC Applications  
Description - Modeling and testing of PCMs for building air conditioning application
- Exhaust System Energy Management of Internal Combustion Engines  
Description - Theoretical modeling and testing of thermo-electric generation systems for waste heat recovery of exhaust gas in internal combustion engines. Theoretical modeling of turbo-compounding systems and Rankine systems for Internal Combustion Engine Applications
- Design, Fabrication and Testing of a Solid Oxide Fuel Cell (SOFC), Fuel Quality Sensor  
Description - Designed a SOFC test-rig to develop a 'fuel quality sensor' based on SOFC technology (a novel concept), to implement in Internal Combustion Engines (ICEs) to improve the break specific fuel consumption (BSFC) of the engines.
- Design, Fabrication and Testing a Thermo-Electric Refrigerator  
Description - Fabricated a portable Thermo-Electric Refrigerator to be used as a Portable Vaccine Cooler to transport the vaccines to remote areas of Sri Lanka

- Modifying and Testing an Absorption Refrigerator for Energy Recovery in Automobiles  
Description - Existing absorption refrigeration was modified and tested to investigate its applicability to recover the exhaust waste heat of internal combustion engines

## **Current Research Grants**

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- SRC Grant 2016, University of Moratuwa, Sri Lanka  
Project - Modelling, Experimental Investigation and Economic Analysis of Solar Powered Organic Rankine Cycle for Electricity Generation  
Position - Principle Investigator  
Duration - August 2016 – Present  
Amount - Rs: 3.8 M

## **Professional Experience**

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- Department of Mechanical Engineering, University of Moratuwa, Sri Lanka  
Position - Senior Lecturer (Permanent) - Involving Teaching, Research and Outreach Programs  
Duration - April 2014 – Present
- Department of Mechanical Engineering, University of Moratuwa, Sri Lanka  
Position - Senior Lecturer (Contract) - Involving Teaching, Research and Outreach Programs  
Duration - April 2013 – March 2014
- Department of Aeronautical and Automotive Engineering, Loughborough University, UK  
Position - Research Associate in Experimental Thermodynamics  
Duration - November 2011 – March 2013
- Department of Aeronautical and Automotive Engineering, Loughborough University, UK  
Position - Research Associate in Experimental Thermodynamics  
Duration - January 2010 - October 2010
- Department of Aeronautical and Automotive Engineering, Loughborough University, UK  
Position - Teacher (Temporary) - Involving Teaching, Practical Coordination  
Duration - February 2009 – November 2011
- Department of Mechanical Engineering, University of Moratuwa, Sri Lanka  
Position - Lecturer (Temporary) - Involving Teaching, Research and Outreach Programs  
Duration - November 2007 – December 2008
- Loadstar (pvt) Ltd, Midigama, Sri Lanka.  
Position - Trainee Engineer  
Duration - February 2006 – July 2006
- Worked at Peoples' Bank, Hikkaduwa, Sri Lanka.  
Position - Trainee Executive (Temporary)  
Duration - December 2002- March 2003

## **Research Student Supervision**

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- Gunathilake, W.A.D.N. (SLIIT Campus, Malabe, SL)  
Project Title - Design and Development of a Thermo-Electric Regenerative System for Modern Vehicles  
Degree - M.Phil.(Engineering) – On going  
Duration - 2017 - Present
- Thurairaja K. (UoM, SL)

Project Title - Modelling, Experimental Investigation and Economic Analysis of Solar Powered Organic Rankine Cycle for Electricity Generation

Degree - M.Phil.(Engineering) – On going

Duration - 2016 – Present

- Dasanayake, D.M.C.M.K. (UoW, SL)

Project Title - A Study of energy efficiency improvement and renewable energy potentials in the fruits and vegetables value chains in Sri Lanka

Degree - M.Phil.(Engineering) – On going

Duration - 2015 – Present

- Rathnayake, R.K.A. (UoM, SL)

Project Title - Applicability of Thermo-Acoustic Generators (TAGs) for Low Grade Heat Recovery and Power Generation

Degree - M.Sc. in Energy Engineering

Duration - January 2016 – September 2018

- Kumara M.R.S.U. (UoM, SL)

Project Title - An Investigation on Lighting Levels to Suit Fabric Types and Colours during Sewing Operation in Garment Factories

Degree - M.Sc. (Engineering) - Completed

Duration - 2014 - 2016

## **Other Responsibilities**

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### **Administration:**

- Designation : Industrial Training Coordinator

Department : Mechanical Engineering

Duration : November 2018 - Present

- Designation : Semester 5 and Semester 6 Coordinator

Department : Mechanical Engineering

Duration : November 2018 – Present

- Designation : Program Coordinator, MSc/PG Diploma Programme in Building Services Engineering

Department : Mechanical Engineering

Duration : February 2015 – May 2016

- Designation : Undergraduate Mentoring Coordinator

Department : Mechanical Engineering

Duration : June 2015 – Present

### **Teaching Modules at undergraduate level:**

- Fundamentals of Engineering Thermodynamics
- Thermodynamics of Heat Engines and Work Transfer Devices
- Heat and Mass Transfer
- Refrigeration and Air Conditioning
- Energy Conservation
- Lighting and Visual Comfort

### **Teaching Modules at postgraduate level:**

- Heat Transfer and Applications
- Air Conditioning and Ventilation
- Energy and Controls
- Building Energy
- Heat and Mass Transfer
- Lighting and Visual Comfort

## **Computer Literacy**

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Engineering Softwares	EQuest, ANSYS Fluent and Gambit, Matlab/Simulink, Chemkin, GT-Power, Ricardo Wave, Star-CCM, AutoCAD, Solid Works (COSMOS), NI-LabVIEW, RefProp, Dialux
Programming Languages	C, Fortran
Other	MS Office Package, HTML

I declare that the particulars mentioned above are true and accurate.