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## 1. EDUCATION

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05/2011 – 02/2015 PhD (Mechanical Engineering), University of Pretoria, Pretoria, South Africa. **Advisors:** Prof. Tunde Bello-Ochende and Prof. Josua P Meyer

08/2006 – 12/2008 Master of Science in Mechanical Engineering (Sustainable Energy Engineering Specialization), Royal Institute of Technology, Stockholm, Sweden.

09/2001 – 07/2005 Bachelor of Science (Mechanical Engineering), *summa cum laude*, Makerere University, Kampala, Uganda.

## 2. ACADEMIC POSITIONS

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2021 - Present **Assistant Professor**, Department of Mechanical and Manufacturing Engineering, University of Calgary, Calgary, Alberta, Canada

2020 – 2021 **Assistant Professor**, Department of Mechanical and Industrial Engineering, University of Minnesota Duluth, USA.

2018 – 2019: **Postdoctoral Research Fellow** in Sustainable Energy Systems, Mechanical and Industrial Engineering, Ryerson University, Canada. **Advisor:** Prof. Seth B Dworkin

2015 – 2017: **Senior Lecturer**, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg, South Africa.

2014 – 2015: **Lecturer**, Department of Mechanical Engineering, Mechatronics and Industrial Design, Tshwane University of Technology, Pretoria, South Africa.

2011 – 2015: **Research Assistant and PhD Student**, Department of Mechanical and Aeronautical Engineering, University of Pretoria, Pretoria, South Africa.

2009 – 2011: **Assistant Lecturer**, Department of Mechanical Engineering, Makerere University, Kampala, Uganda.

2005 – 2009: **Teaching Assistant**, Department of Mechanical Engineering, Makerere University, Kampala, Uganda.

## 3. HONORS

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### 3.1 Awards

- i. **Fall 2020 Award for Dedication to Student Learning** - Thank a Teacher Program, Center for Educational Innovation, University of Minnesota
- ii. **2018 Highly Cited Review Paper in Applied Energy**, Awarded by Applied Energy, Elsevier (Measured on 20th August 2020), [Applied Energy Highly Cited Paper Awards 2020](#)

- iii. **Most Highly Cited Researcher** in the Faculty Engineering and the Built Environment at the University of the Witwatersrand (2017-2018). See [Wiits celebrates its rated researchers](#)
- iv. **Most Valued Reviewer Award** for 2016, Renewable Energy - An International Journal
- v. **Outstanding Contribution in Reviewing**, Energy Conversion and Management - An International Journal, August 2016
- vi. **Institutional Researcher in Training of the Year**, Tshwane University of Technology, Senate Committee for Research and Innovation (2015-2016)  
<https://www.tut.ac.za/s-Rnl/FactsStats/2016/files/basic-html/page31.html>
- vii. **Outstanding Contribution in Reviewing**, Renewable Energy - An International Journal, November 2015.
- viii. **Best Paper Award, Applied Energy** ICAE2013, 5<sup>th</sup> International conference on Applied Energy, July 1-4, 2013, Pretoria, South Africa (Awarded by Applied Energy, Elsevier).
- ix. **Best Graduating Student Award** in Mechanical Engineering at Makerere University by the Uganda Institute of Professional Engineers (UIPE), **highest ever GPA (4.86/5.0)** 2004/2005.
- x. **Best Student Awards in BSc. Mechanical Engineering** for all semesters in academic years 2001/2002, 2002/2003, 2003/2004, 2004/2005, Makerere University, Kampala, Uganda.

### 3.2 Fellowships/Scholarships

- i. Postdoctoral Research Fellowship, Dworkin research group, Ryerson University, Jan – June 2018.
- ii. Nominated by Ryerson University for the Banting Postdoctoral Fellowships program, 2017-2018 (Application not successful, Overall score 6.47).
- iii. University of Pretoria, Postgraduate Research Support Bursary (2011- 2013).
- iv. University of Pretoria, Department of Mechanical and Aeronautical Engineering Research Bursary (2011 – 2013).
- v. Government of Uganda merit scholarship for BSc. Mechanical Engineering at Makerere University (2001-2005).

### 3.3 Research Funding Awarded

#### 3.3.1 Research grants

- i. Schulich School of Engineering, University of Calgary, Start-up grant, 2021: CAD 100,000
- ii. Schulich School of Engineering Catalyst for 1 Doctoral student 2021: CAD 15,000 first year, CAD 10,000 second year, and CAD 5,000 third year.
- iii. Fall 2020 Swenson College of Science and Engineering Chancellor's Faculty Small Grant, University of Minnesota Duluth (US\$ 3,000 with US\$ 1,000 Departmental Matching).
- iv. LEGISLATIVE-CITIZEN COMMISSION ON MN RES, "Enhanced Thermo-Active Foundations for Space Heating in Minnesota". Principal Investigator, Submitted, Requested Amount for the Entire Grant Period: US\$312,000. Transfer of USD 30,000 to the University of Calgary following my departure.

- v. Thuthuka research funding, 2017 (Renewal), “Design, Optimization and Performance Analysis of Solar Cooling and Heating Systems in South Africa”, National Research Foundation (NRF) – (ZAR 416,000).
- vi. MerSETA and University of the Witwatersrand funding for student bursaries in solar assisted heating and cooling – 4 Masters bursaries worth R440,000 and one PhD bursary worth R140,000 (2016 - 2017 ).
- vii. Knowledge Interchange and Collaboration (KIC) grant, October 2016, National Research Foundation (NRF) - (ZAR 35,000).
- viii. Thuthuka research funding, 2016, “Design, Optimization and Performance Analysis of Solar Cooling and Heating Systems in South Africa”, National Research Foundation (NRF) - (ZAR 288,000).
- ix. Knowledge Interchange and Collaboration (KIC) grant, October 2015, National Research Foundation (NRF) - (ZAR 25,000).
- x. Tshwane University of Technology, Faculty of Engineering and Built Environment Research Start-up funding, June 2015, - (ZAR 100,000).
- xi. Knowledge Interchange and Collaboration (KIC) grant, November 2014, National Research Foundation (NRF) – (ZAR 30,000).

### 3.3.1 Supervised Student Awards

- i. **Gloria Wamuo Tom** - University of Minnesota Duluth, Undergraduate Research Opportunity (Summer 2021) \$ 1750
- ii. **Andrew Walz** - University of Minnesota Duluth, Undergraduate Research Opportunity (Fall 2021) \$ 1750
- iii. **Cadin Wendland** - University of Minnesota Duluth, Undergraduate Research Opportunity (Fall 2021) \$1750

## 4. STUDENT SUPERVISION AND MENTORING

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### 4.1 Postgraduate

- i. **Prem Agarwala: Title:** *Enhanced thermo-active foundations for space heating and cooling in cold climates*, MSME Program, Department of Mechanical and Industrial Engineering, University of Minnesota Duluth (Advisor), Spring 2021 - Present
- ii. **Sarah Nicholson: Title:** *Modeling of sustainable building energy systems incorporating energy piles*, MSc. Mech, Department of Mechanical and Industrial Engineering, Ryerson University (Co-Advising with Prof. Seth Dworkin), 2018-2019 (Completed).
- iii. **Mathew Siby George: Title:** *Optimization of a variable capacity direct expansion Solar-assisted heat pump system*, MSc. School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, 2017
- iv. **Nkosinathi Shongwe: Title:** *Performance optimization of a Solar-Thermal driven Ejector refrigeration system under South African Conditions*, MSc. Mech, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, 2017 (Completed)

- v. **Brighton P Mawasa:** Title: *Performance enhancement and thermo-economic optimization of a micro trigeneration system*, MSc. Mech, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, 2017
- vi. **Rigardt Coetzee:** Title: *The design and optimization of a multi-purpose solar thermal system for residential use*, MTech, Tshwane University of Technology, 2014-2016 (Completed with distinction) – Co-supervisor
- vii. **Lazarus Ramathe:** Title: *Experimental study on the thermal performance of R600a, R290 and R600a/R290 mixtures in a retrofit R134a refrigeration system*, MTech, Tshwane University of Technology, 2014-2015 (Completed) - Co-supervisor

## 4.2 Undergraduate

### University of Calgary

#### Capstone Projects

- i. **Cody Lassiter, Kyle Li, Matthew Henderson, Meghdad Ghias:** Structural Review and Design of a Solar Thermal Outdoor Furniture (Fall 2021)
- ii. **Charuka Marasinghe, Dhruvi Patel, Jessica Sambhi, Nadia Elgamal, Edwin Pulikkottil, Kerwin Virtusio:** Design and construction of a novel solar assisted direct expansion heat pump (DX-SAHP) for cold climates (Fall 2021)

### University of Minnesota Duluth

- i. **Ethan Shingledecker** - Undergraduate Research Assistant, Department of Mechanical and Industrial Engineering (Spring 2021 -Summer 2021 )
- ii. **Cadin Wendland** - Undergraduate Research Assistant, Department of Mechanical and Industrial Engineering (Fall 2020 - Summer 2021)
- iii. **Andrew Walz** - Undergraduate Research Assistant, Department of Mechanical and Industrial Engineering (Fall 2020 - Summer 2021 )
- iv. **Ethan Kopiecki** - Undergraduate Research Assistant, Department of Mechanical and Industrial Engineering (Fall 2020 - Spring 2021)

### Ryerson University

- v. **Amir Kiamari** - Summer student. Optimization of the performance of ejector refrigeration systems working with alternative working fluids. Co-supervised with Prof. Seth Dworkin at Ryerson University, June – August 2018.
- vi. **Leya R. Kober** - Undergraduate Research Assistant. Performance of helical steel piles for space heating and cooling, June - August 2019

### University of the Witwatersrand

#### 2017

- vii. **Makuru Tshepiso - 4<sup>th</sup> year Research Project:** Numerical simulation of the performance of an underground heat exchanger for a geothermal heat pump system
- viii. **Sibisi Themba - 4<sup>th</sup> year Design Project:** A compact solar powered heating and cooling system
- ix. **Joubert Margaretha - 4<sup>th</sup> year Design Project:** Solar powered organic Rankine cycle for a rural home
- x. **Shabalala Siyabonga - 4<sup>th</sup> year Research Project:** Energy and exergy analysis of a 100 kW solar powered organic Rankine cycle

- xi. **Mlotya Thabile - 4<sup>th</sup> year Research Project:** Thermodynamic performance of a commercial cascade refrigeration system using R744a with either R1234yf, R1234Ze, R152a or R600a
- xii. **Ramulongo Livhuwani - 4<sup>th</sup> year Research Project:** Performance analysis of a low temperature Organic Rankine cycle using R1234yf and R1234ze isomers as alternative working fluids
- xiii. **Mbau Lufuno - 4<sup>th</sup> year Design Project:** Solar powered organic Rankine cycle trigeneration system
- xiv. **Bhaiyat Taahir - 4<sup>th</sup> year Design Project:** Solar pumped hydro energy storage system
- xv. **Ndlovu Michael - 4<sup>th</sup> year Research Project:** Performance of a solar assisted direct expansion heat pump system using hydrocarbon refrigerant mixtures

## **2016**

- xvi. **Mlilo Mduduzi - 4<sup>th</sup> year Research Project:** Performance and operational strategies of a solar thermal-biogas hybrid energy system
- xvii. **Lebea Thabang - 4<sup>th</sup> year Research Project:** Energy recovery potential from supermarket refrigeration systems
- xviii. **Tsheng Tshepo - 4<sup>th</sup> year Research Project:** Performance evaluation of a solar chimney at different angles of orientation
- xix. **Moyo Jabulani - 4<sup>th</sup> year Research Project:** Thermodynamic performance of a refrigeration system using mixtures of R134a, R600a and R290
- xx. **Rupere Takudzwanashe - 4<sup>th</sup> year Design Project:** A heat exchanger for a combined waste heat and solar thermally driven organic Rankine cycle
- xxi. **Mlilo Mduduzi - 4<sup>th</sup> year Design Project:** Design of a solar thermally powered water pump
- xxii. **Chokoe Radiphoko - 4<sup>th</sup> year Design Project:** Design of heat exchanger for a combined waste heat and solar thermally driven organic Rankine cycle
- xxiii. **Qhola Qetelo - 4<sup>th</sup> year Design Project:** Design of a sand by-pass system for the Port of Ngqura
- xxiv. **Chettiar Seshan - 4<sup>th</sup> year Design Project:** A 500 kW solar thermally powered pumped hydro energy storage system

## **Tshwane University of Technology**

- xxv. **5 Capstone projects supervised** at Tshwane University of Technology from January 2014 - December 2015.

## **5. TEACHING**

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### **5.1 University of Minnesota Duluth**

#### **Department of Mechanical and Industrial Engineering**

- Heat Transfer, Thermodynamics and Fluid Mechanics Laboratory (ME 4122) Spring 2020, Fall 2020, Spring 2021

## 5.2 Ryerson University

### Department of Mechanical and Industrial Engineering

March 2018, Solar power guest lecture (Ch 13 – in *Power Plant Technology*; M.M. El-Wakil; McGraw-Hill, 2002) as part of the Thermal Power Generation (MEC810) in the at Ryerson University

## 5.3 University of the Witwatersrand, 2015 - 2017

### School of Mechanical, Industrial and Aeronautical Engineering

- Thermodynamics I (MECN2006), Mechanical, Industrial and Aeronautical Engineering
- Thermodynamics II (MECN3017), Mechanical Engineering
- Thermal Systems (MECN4013), Mechanical Engineering
- Propulsion (MECN4024), Aeronautical Engineering
- Boundary Layer Laboratory (MECN3003, MECN3007), Mechanical Engineering
- Gas Turbines Laboratory (MECN3003, MECN3007), Mechanical and Aeronautical Engineering

## 5.4 Tshwane University of Technology, 2014-2015

### Department of Mechanical Engineering, Industrial Design and Mechatronics

- Thermodynamics II (TDN201T), Mechanical Engineering
- Thermodynamics III (TDN321T), Mechanical Engineering

## 5.5 Makerere University, 2005-2011

### Department of Mechanical Engineering

- Applied Thermodynamics (MEC4102)
- Air Conditioning and Refrigeration (MEC4205)
- Renewable Energy Technologies (MEC4105)
- Mechanics of Materials (MEC1204)
- Engineering Mechanics-Statics and Dynamics (MEC1102)
- Computer Aided Design (MEC2103)

## 6. MEMBERSHIP TO PROFESSIONAL BODIES

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- Professional Engineers Ontario, P.Eng. member (December 2019 – To date)
- Professional Engineers Ontario, EIT member (May 2018 – December 2019)
- American Society of Mechanical Engineers (ASME), Member (2007 – Present)
- South African Institution of Mechanical Engineering (SAIMechE), Member (2015– 2017)
- Uganda Institution of Professional Engineers (UIPE), Graduate Member (2007 – 2013)
- Institute of Energy Professionals (PEM), Member (2013 – 2016)

## 7. PUBLICATIONS

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### 7.1 Summary

Google Scholar <i>h-index</i> and <i>i10-index</i>	16 and 21, respectively
Scopus <i>h-index</i>	16

Guest Editorials	2
Peer-reviewed journal articles:	23 published/accepted, 3 Under review
Keynote papers	1
Refereed conference papers with oral presentations:	29
Presentations at conferences without full papers	5
Other significant outputs:	5

## 7.2 Editorships

- i. **Guest Editor:** Special Issue "Development, Analysis and Optimization of Sustainable Thermal Energy Systems and Technologies" **Processes (ISSN 2227-9717)-MDPI**. This special issue belongs to the section "Energy Systems"
- ii. **Associate Editor: Mwesigye A.**, and Meyer J.P. Guest Editorial, Special Issue of the 13<sup>th</sup> International Heat Transfer, Fluid Mechanics and Thermodynamics Conference – HEFAT2017, **Heat Transfer Engineering, 41(15-16) (2020), 1303-1304**  
<https://doi.org/10.1080/01457632.2019.1624412>
- iii. **Associate Editor: Mwesigye A.**, and Meyer J.P. Guest Editorial, Special Issue of the 12<sup>th</sup> International Heat Transfer, Fluid Mechanics and Thermodynamics Conference – HEFAT2016, **Heat Transfer Engineering, 40(13-14) (2019), 1073-1075**  
<https://doi.org/10.1080/01457632.2018.1457205>

## 7.3 Refereed Journal Papers

- i. Bahiraei M., Daneshyar M.R., **Mwesigye A.**, Mazaheri N. Two-phase simulation of irreversibilities for nanofluid flow inside an elliptical pin-fin heat sink: Entropy generation and exergy considerations. **Powder Technology** (Under Review)
- ii. Olakoyejo O.T., Adelaja A.O., Adewumi O.O., Oyekeye M.O., Oluwo A.A., Oluwatusin O., **Mwesigye A.**, and Meyer J.P. Numerical heat transfer, fluid flow and entropy generation analysis of forced convection in elliptical cooling channels using Al<sub>2</sub>O<sub>3</sub>-water nanofluid, **Heat Transfer Engineering** (Under Review)
- iii. **Mwesigye A.**, and Yilmaz İ.H. Thermal and thermodynamic optimization of the performance of a large aperture width parabolic trough solar collector using gaseous and supercritical CO<sub>2</sub> as a heat transfer fluid, **Therm. Sci. Eng. Prog** (Under Review)
- iv. **Nguyen H.V.**, Daneshazarian R., **Mwesigye A.**, Atefrad P., Gonzelez-Ferras A., Salt D., and Dworkin S.B. Experimental and numerical investigation of a concrete-based thermal storage medium for ground-source heat pumps, **Renew Energy** (Under Review)
- v. **Shukla S.**, Antoun S., Bayomy A.M., **Mwesigye A.**, Wey H.L., and Dworkin S.B. Performance characterization of novel caisson-based thermal storage for ground source heat pumps, **Renew Energy 174 (2021), 43-54 (5-year impact factor: 4.981)**
- vi. Nicholson S.R., Kober L.R., Pedram Atefrad, **Mwesigye A.**, and Dworkin S.B. The Influence of geometry on the performance of a helical steel pile as a geo-exchange system, **Renew Energy 172 (2021), 714-727** <https://doi.org/10.1016/j.renene.2021.03.067>
- vii. **Mwesigye A.**, and Yilmaz İ.H. Thermal and thermodynamic benchmarking of liquid heat transfer fluids in high concentration ratio parabolic trough solar collector systems, **J. Mol. Liq 318 (2020)114151 (5-year impact factor: 5.065)**

- <https://doi.org/10.1016/j.molliq.2020.114151>
- viii. Yılmaz İ.H., **Mwesigye A.**, and Goksu T.T. Enhancing the overall thermal performance of a large aperture parabolic trough solar collector using wire coil inserts, ***Sustain Energy Techn* 39 (2020) 100696 (5-year impact factor: 3.427)**.  
<https://doi.org/10.1016/j.seta.2020.100696>
- ix. Shukla S., Daneshazarian R., **Mwesigye A.**, Wey H.L., and Dworkin S.B. A novel radiant floor system: Detailed characterization and comparison with traditional radiant systems, ***Int J Green Energy* 17(2) (2020), 137-148. (5-year impact factor: 1.498)**  
<https://doi.org/10.1080/15435075.2019.1708366>
- x. **Mwesigye A.**, Kiamari A., and Dworkin S.B. Energetic Optimization and exergetic performance investigation of an ejector system using HFO-1233zd(E) as a refrigerant, ***Int J Refrig* 112 (2020), 155 – 171 (5-year impact factor: 3.382)**  
<https://doi.org/10.1016/j.jirefrig.2019.12.013>
- xi. **Mwesigye A.**, and Dworkin S.B. Performance analysis and optimization of an ejector refrigeration system using alternative working fluids under critical and subcritical operation modes, ***Energy Convers Manage* 176(2018), 209-226. (5-year impact factor: 6.161)**
- xii. Coetzee R.A.M., **Mwesigye A.**, and Huan Z. A numerical analysis and optimization of the dynamic performance of a multi-purpose solar thermal system for residential applications, ***Sci Technol Built Environ* 24 (10) (2018), 1156-1173. (5-year impact factor: 1.486)**
- xiii. **Mwesigye A.**, and Yılmaz İ.H. Modeling, simulation and performance analysis of parabolic trough solar collectors: A systematic review, ***Appl Energ* 225(2018),137-174. (5-year impact factor: 7.888)**
- xiv. **Mwesigye A.**, Yılmaz İ.H., and Meyer J.P. Numerical analysis of the thermal and thermodynamic performance of a parabolic trough solar collector using SWCNTs-Therminol®VP-1 nanofluid, ***Renew Energy* 119 (2018), 844-862. (5-year impact factor: 4.981)**
- xv. Coetzee R.A.M., **Mwesigye A.**, and Huan Z. A numerical model for optimal receiver array and mass flow rate in residential solar water heating systems, ***Int J Sustain Energy* 37 (2017), 902-918. (5-year impact factor: 0.401)**
- xvi. Coetzee R.A.M., **Mwesigye A.**, and Huan Z. Optimal slope angle selection of an evacuated tube collector for domestic solar water heating, ***J Energy South Afr* 28(1) 2017, 104-119. (5-year impact factor: 0.220)**
- xvii. **Mwesigye A.**, and Meyer J.P. Optimal thermal and thermodynamic performance of a solar parabolic trough receiver with different nanofluids and at different concentration ratios, ***Appl Energy* 193(2017) 393-413. (5-year impact factor: 7.888)**
- xviii. **Mwesigye A.**, Huan Z., Bello-Ochende T., and Meyer J. P. Influence of optical errors on the thermal and thermodynamic performance of a solar parabolic trough receiver, ***Sol Energy* 135 (2016) 703–718. (5-year impact factor: 4.831)**
- xix. **Mwesigye A.**, Huan Z., and Meyer J. P. Thermal performance and entropy generation analysis of a high concentration ratio parabolic trough solar collector with Cu-Therminol®VP-1 nanofluid, ***Energy Convers Manage* 120 (2016) 449-465. (5-year impact factor: 6.161)**



- xx. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Heat transfer and entropy generation in a parabolic trough receiver with wall-detached twisted tape inserts, *Int J Therm Sci* **99** (2016) 238-257. (5-year impact factor: 3.707)
- xxi. **Mwesigye A.**, and Huan Z. Thermal and thermodynamic performance of a parabolic trough receiver with Syltherm800-Al<sub>2</sub>O<sub>3</sub> nanofluid as the heat transfer fluid, *Energy Procedia* **75** (2015) 394-402. (5-year impact factor: 0.799)
- xxii. **Mwesigye A.**, Huan Z., and Meyer J. P. Thermodynamic optimisation of the performance of a parabolic trough receiver using synthetic oil-Al<sub>2</sub>O<sub>3</sub> nanofluid, *Appl Energy* **156** (2015) 398-412. (5-year impact factor: 7.888)
- xxiii. **Mwesigye A.**, and Huan Z. Thermodynamic analysis and optimisation of fully developed turbulent forced convection in a circular tube with water-Al<sub>2</sub>O<sub>3</sub> nanofluid, *Int J Heat Mass Tran* **89** (2015) 694-706. (5-year impact factor: 3.950)
- xxiv. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Multi-objective and thermodynamic optimisation of a parabolic trough receiver with perforated plate inserts, *App Therm Eng* **77** (2015) 42-56. (5-year impact factor: 3.929)
- xxv. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Minimum entropy generation due to heat transfer and fluid friction in a parabolic trough receiver with non-uniform heat flux at different rim angles and concentration ratios, *Energy* **73** (2014), 606-617. (5-year impact factor: 5.582)
- xxvi. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Thermodynamic performance of a parabolic trough receiver with centrally placed perforated plate inserts, *Appl Energy* **136** (2014), 989 – 1003. (5-year impact factor: 7.888)
- xxvii. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Numerical investigation of entropy generation in a parabolic trough receiver at different concentration ratios, *Energy* **53** (2013), 114-127. (5-year impact factor: 5.582)

#### 7.4 Keynote Papers

- i. Bello-Ochende T., **Mwesigye A.**, and Meyer J.P. Heat transfer enhancement, thermodynamic and numerical optimisation of complex solar energy systems-parabolic trough collector systems: *In Conference Proceedings of the 16<sup>th</sup> International Heat Transfer Conference (IHTC16)*, Beijing, China, August 10-15, 2018.

#### 7.5 Full Length Peer Reviewed Conference Papers

- i. **Mwesigye A.**, Shingledecker E., Walz A., and Dworkin S.B. Thermal performance of a helical steel energy pile incorporating latent thermal energy storage for ground source heat pump applications. In Conference Proceedings of the ASME2021 International Mechanical Engineering Congress and Exposition (IMECE2021), November 1-5, 2021 (Virtual)
- ii. Shongwe N., **Mwesigye A.**, and Roohani H. Performance analysis and optimization of a solar driven R134a Ejector refrigeration system. In Conference Proceedings of the 6<sup>th</sup> Southern African Solar Energy Conference (SASEC2019), ISBN 978-0-7972-1825-3 November 25-27, 2019, East London, South Africa.
- iii. Huan Z., Coetzee R.A.A, and **Mwesigye A.** Dynamic performance of a multi-purpose solar thermal system for residential applications. In Conference Proceedings of the 6<sup>th</sup> Southern

African Solar Energy Conference (SASEC2019), ISBN 978-0-7972-1825-3 November 25-27, 2019, East London, South Africa.

- iv. **Mwesigye A.**, Nguyen H.V., Atefrad P., Daneshazarian R., Bayomy A.M., and Dworkin S.B. Transient thermal performance and ground temperature variation for a heat pump system using high thermal conductivity energy piles, ID IMECE2019-12005. In Conference Proceedings of the ASME 2019 International Mechanical Engineering Congress and Exposition (IMECE2019), November 11-14, 2019, Salt Lake City, UT, USA.
- v. **Mwesigye A.**, and Dworkin S.B. Energetic and exergetic performance comparison of an ejector refrigeration system using modern low GWP refrigerants. In Conference Proceedings the ASME 2019 International Mechanical Engineering Congress and Exposition (IMECE2019), November 11-14, 2019, Salt Lake City, UT, USA.
- vi. Yılmaz İ.H., **Mwesigye A.**, and Goksu T.T. Thermal performance analysis of a large aperture width parabolic trough solar collector using computational fluid dynamics. In Conference Proceedings of the ULIBTK'19 22nd Congress of Thermal Sciences and Technology, 11-14 September 2019, KOCAELİ, Turkey.
- vii. Shukla S., Daneshazarian R., **Mwesigye A.**, Dworkin S.B and Swift J. Detailed characterization of novel Radiant floor heating and cooling systems. In Conference Proceedings of the 2019 CSME International Congress, June 2-5, 2019, Western University, London, Ontario, Canada.
- viii. Nicholson SR., **Mwesigye A.**, and Dworkin S.B. Modelling and optimization of helical steel piles as in-ground heat exchangers for ground-source heat pumps. In Conference Proceedings of the 10th International Conference on Indoor Air quality, Ventilation and Energy Conservation in Buildings (IAQVEC2019), September 5,7, 2019, Bari, Italy
- ix. **Mwesigye A.**, Nguyen H.V., Salt D., and Dworkin S.B. Experimental and numerical investigation of a thermal storage medium for ground source heat pump applications. In Conference Proceedings of the 10th International Conference on Indoor Air quality, Ventilation and Energy Conservation in Buildings (IAQVEC2019), September 5,7, 2019, Bari, Italy.
- x. **Mwesigye A.**, Kiamari A., and Dworkin S.B. A thermodynamic investigation and optimization of an ejector refrigeration system using R1233zd as a working fluid. In Conference Proceedings of the 10th International Conference on Indoor Air quality, Ventilation and Energy Conservation in Buildings (IAQVEC2019), September 5,7, 2019, Bari, Italy.
- xi. Yılmaz İ.H., **Mwesigye A.**, and Goksu T.T. Enhancement of the thermal performance of a parabolic trough solar collector using wire coil inserts. In Conference Proceedings of the SolarTR2018, Solar Conference and Exhibition, Istanbul, Turkey, November 29-30, 2018, p. 143-154.
- xii. **Mwesigye A.**, and Meyer J.P. Heat transfer performance of a parabolic trough receiver using SWCNTs-Therminol@VP-1 nanofluids. Conference Proceedings ASME 2017 International Mechanical Engineering Congress and Exposition (IMECE2017) Volume 8: Heat Transfer and Thermal Engineering, Tampa, Florida, USA, November 3-9, 2017.
- xiii. Coetzee R.A.M., **Mwesigye A.**, and Huan Z. A numerical analysis for the dynamic performance of a multi-purpose solar thermal system for residential applications. In

- Conference Proceedings of the 13th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2017, 17 – 19 July 2017, Portorož, Slovenia.
- xiv. **Mwesigye A.**, Huan Z., and Meyer J.P. Comparative thermal performance of a parabolic trough receiver with Cu-Therminol®Vp-1, Ag-Therminol®Vp-1 and Al<sub>2</sub>O<sub>3</sub>-Therminol®Vp-1 nanofluids. In Conference Proceedings of the ASME2016 International Mechanical Engineering Congress and Exposition (IMECE2016), Phoenix, Arizona, November 11-17, 2016.
  - xv. **Mwesigye A.**, Huan Z., and Meyer J.P. Improving the thermal and thermodynamic performance of parabolic trough receivers using Cu-Therminol®VP-1 nanofluid – performance at different concentration ratios. In Conference Proceedings of the 4th Southern African Solar Energy Conference (SASEC 2016), 31st October – 2nd November 2016, Stellenbosch, South Africa, Paper ID 41. ISBN: 978-0-7972-1658-7.
  - xvi. **Mwesigye A.**, Huan Z., Bello-Ochende T., and Meyer J. P. Thermal efficiency and entropy generation for a parabolic trough receiver at different concentration ratios. In Conference Proceedings of the 12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2016, 11 – 13 July 2016, Costa del Sol, Spain.
  - xvii. **Mwesigye A.**, Huan Z., and Meyer J. P. Thermal performance of a receiver tube for a high concentration ratio parabolic trough system and potential for improved performance with syltherm800-CuO nanofluid. In Conference Proceedings of the ASME2015 International Mechanical Engineering Congress and Exposition (IMECE2015), Houston, Texas, November 13-19, 2015.
  - xviii. Ramathe T., Huan Z., and **Mwesigye A.** Experimental study on the thermal performance of R600a, R290 and R600a/R290 mixtures in a retrofit R134a refrigeration system, In Conference Proceedings of the Industrial and Commercial Use of Energy conference (ICUE2015), 17-19 August 2015, Cape Town, South Africa.
  - xix. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Numerical investigation of the effect of slope errors and specular errors on the thermal performance of a solar parabolic trough collector system, In Conference Proceedings of the 3rd Southern African Solar Energy Conference (SASEC 2015), 11-13 May 2015, Skukuza, Kruger National Park, South Africa, Paper ID 1570019707.
  - xx. **Mwesigye A.**, and Huan Z. Thermal and thermodynamic performance of a parabolic trough receiver with Syltherm800-Al<sub>2</sub>O<sub>3</sub> nanofluid as the heat transfer fluid, In Conference Proceedings of the 7th International Conference on Applied Energy, ICAE2015, March 28-31, Abu Dhabi, UAE, Paper ID-ICAE2015-34.
  - xxi. **Mwesigye A.**, Bello-Ochende T., and Meyer J.P. Thermal performance of a parabolic trough receiver with perforated conical inserts for heat transfer enhancement, In Conference Proceedings of the ASME 2014 International Mechanical Engineering Congress and Exposition, IMECE2014, Nov 14-20, 2014, Montreal, Quebec, Canada, Paper ID: IMECE2014-39849.
  - xxii. **Mwesigye A.**, le Roux W.G., Bello-Ochende T., and Meyer J. P. Thermal and thermodynamic analysis of a parabolic trough receiver at different concentration ratios and rim angles, In Conference Proceedings of the 10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2014, 14 – 26 July 2014, Orlando, Florida.

- xxiii. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Heat transfer enhancement in a parabolic trough receiver using perforated conical inserts, In Conference Proceedings of the 15th International Heat Transfer Conference, IHTC-15, August 10-15, 2014, Kyoto, Japan. Paper I.D. IHTC15-9150.
- xxiv. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Determination of heat flux and temperature distribution in a parabolic trough receiver at different rim angles and concentration ratios, In Conference Proceedings of the 2nd Southern African Solar Energy Conference, SASEC 2014, January 27-29, 2014, Pine Lodge Resort, Nelson Mandela Bay, South Africa. Paper ID. 27.
- xxv. le Roux W.G., **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Tracker and collector for an experimental setup of a small-scale solar thermal Brayton cycle, In Conference Proceedings of the 2nd Southern African Solar Energy Conference (SASEC 2014), January 27-29, 2014, Pine Lodge Resort, Nelson Mandela Bay, South Africa. Paper ID. 28.
- xxvi. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Heat transfer enhancement in a parabolic trough receiver using wall detached twisted tape inserts. Proceedings of ASME 2013 International Mechanical Engineering Congress and Exposition, IMECE2013, Nov 15-21, 2013, San Diego CA, USA. Paper ID: IMECE2013-62745.
- xxvii. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Thermodynamic performance of a parabolic trough receiver with centrally placed perforated plate inserts. Proceedings of the International Conference on Applied Energy, ICAE2013, Jul 1-4, 2013, Pretoria, South Africa. Paper ID: ICAE2013-258.
- xxviii. **Mwesigye A.**, Bello-Ochende T., and Meyer J. P. Numerical analysis of thermal performance of an externally longitudinally finned receiver for parabolic trough solar collector, In Conference Proceedings of the 9th International conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT 2012, pp. 159 – 168, Malta, 16-18th July 2012.
- xxix. Kariko B., **Mwesigye A.**, Arineitwe J., and Colonna P. Challenges to the sustainability of small-scale biogas technologies in Uganda. In Conference Proceedings of the 2nd International Conference on Advances in Engineering and Technology, pp. 499-504, January 2011, Entebbe, Uganda.
- xxx. **Mwesigye A.**, Kucel S.B., and Sebbit A. Opportunities for generating electricity from municipal solid waste: Case of Kampala City Council Landfill. In Conference Proceedings of the 2nd International Conference on Advances in Engineering and Technology, pp. 523-529, January 2011, Entebbe, Uganda.

## 7.6 Conference Presentations Without Full Papers

- i. Shukla S., Antoun S., **Mwesigye A.**, Alavy M., Leong W.H., Dworkin S.B., Experimental study of a novel Caisson based thermal energy storage system for ground source heat pumps. In Conference Proceedings of the 2020 CSME International Congress, June 21-24, 2020, University of Prince Edward Island, Charlottetown, PEI, Canada.
- ii. Shukla S., **Mwesigye A.**, Leong W.H., Dworkin S.B., Development of a novel radiant floor system: energy simulation and comparison with traditional radiant systems. In Conference

*Proceedings of the 2020 CSME International Congress*, June 21-24, 2020, University of Prince Edward Island, Charlottetown, PEI, Canada.

- iii. Nicholson SR., **Mwesigye A.**, and Dworkin S.B. Numerical modeling of helical steel piles as in-ground heat exchangers for ground source heat pumps. *In Conference Proceedings of the 2019 CSME International Congress*, June 2-5, 2019, Western University, London, Ontario, Canada.
- iv. Nguyen H.V., **Mwesigye A.**, Atefrad P., Daneshazarian R., Dworkin S.B., and Salt D. Numerical modeling of a thermal energy storage system for ground source heat pump applications. *In Conference Proceedings of the 2019 CSME International Congress*, June 2-5, 2019, Western University, London, Ontario, Canada.
- v. **Mwesigye A.**, Kiamari A., and Dworkin S.B. Thermodynamic modeling and optimization of ejector refrigeration systems using alternative working fluids. Presented at *the 2019 CSME International Congress*, June 2-5, 2019, Western University, London, Ontario, Canada.

### 7.7 Other Presentations, Papers and Reports

- i. **Mwesigye A.**, Kiamari A., and Dworkin S.B. Optimization of an ejector Refrigeration system for space heating and cooling, *University Wide Sustainable Building Energy Micro Symposium at Ryerson University*, 18<sup>th</sup> June 2018.
- ii. **Mwesigye A.**, 2018. Thermal performance of parabolic trough solar collector systems. *Presentation to the Dworkin Research Group, Ryerson University*. February 5<sup>th</sup>, 2018.
- iii. **Mwesigye A.**, Bubendofer A., and Kucel S.B. Sustainability of Small-Scale Hydropower Plants: A Case study of a 1-MW Maziba gorge hydropower station in South Western Uganda. *Conference on Collaborative Research for Technological Development*, Speke Resort and Conference Center, Kampala Uganda, 17<sup>th</sup> –December 21<sup>st</sup>, 2007.
- iv. **Mwesigye A.**, and Bubendofer A. Potential bio-energy options in developing countries and their impacts: Case study Uganda. *Report submitted to the Department of Energy Technology, Royal Institute of Technology, and Stockholm, Sweden*, 2007.

### 7.8 Technical Reports

- i. **Mwesigye A.**, Bayomy A.M., Alavy M., Nguyen V.H., Gonzalez-Ferras A., and Dworkin S.B. Development of a Novel Caisson Based Thermal Energy Storage System for Ground Source Heat Pumps – Progress Report, *Prepared for Prepared for Capture Technologies and McClymont and Rak Engineers, Inc.*, October 2019, **1-9**.
- ii. Daneshazarian R., McMilan R., **Mwesigye A.**, and Dworkin S.B. Phase Change Materials for Energy Storage in Ground Source Heat Pump Systems – Literature Review and Toxicology Tests. *Prepared for Capture Technologies and McClymont and Rak Engineers, Inc.*, October 2019, **1-9**.
- iii. **Mwesigye A.**, **Bayomy A.M.**, **Dworkin S.B.** Determination of the mass of the proposed Caisson based Thermal Energy Storage Installation, Prepared for *Keller Foundations LtdMcClymont and Rak Engineers, Inc.*, June 2019.
- iv. **Mwesigye A.**, Bayomy A.M., Alavy M., Nguyen H.V. and Dworkin S.B. Combining a Caisson with Thermal Energy Storage - Summary for Internal Use. *Prepared for Keller Foundations Ltd. and McClymont and Rak Engineers, Inc.*, February 2019, **1-9**.

## 7.9 Invited Presentations/Seminars

- i. **Mwesigye A.** Modeling and optimization of alternative energy systems for space heating and cooling – Ground coupled heat pump systems, Graduate seminar, Department of Mechanical Engineering, University of Alabama, March 2021.

## 7.10 Posters

- i. Shingledecker E., Walz A., and **Mwesigye A.** Numerical investigation of a helical steel pile ground heat exchanger under different operating conditions for space heating and cooling applications. Accepted for presentation at the ASME2021 International Mechanical Engineering Congress and Exposition (IMECE2021), November 1-5, 2021 (Virtual)
- ii. Wendland C., and **Mwesigye A.** Thermodynamic performance of a compressed heat energy storage (CHEST) system using alternative working fluids. Accepted for presentation at the ASME2021 International Mechanical Engineering Congress and Exposition (IMECE2021), November 1-5, 2021 (Virtual)

## 7.11 Patents

- i. Dworkin S.B., Bayomy A.M., Wang J., Salt D., Alavy M., Nguyen V.H., and **Mwesigye A.** Thermal caisson energy system for ground source heat pump Applications

## 8. PROFESSIONAL TRAINING/QUALIFICATIONS

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- i. Preventing Sexual Misconduct, Discrimination and Retaliation for Employees, President's Initiative to Prevent Sexual Misconduct (PIPSM), University of Minnesota
- ii. Responsible Conduct of Research (RCR) – Basic, OVPR University of Minnesota VIA Collaborative Institutional Training Initiative (CITI Program), Completed 11-May-2020.
- iii. Workplace Violence Prevention and Response, HR Program at Ryerson University, Completed 5<sup>th</sup> February 2018.
- iv. Training on Accessibility for Ontarians with Disabilities Act (AODA), Customer Service Standard – Completed at Ryerson University on 18<sup>th</sup> January 2018.
- v. Specialized Course for Professionals on Solar Heat for Industrial Applications, Stellenbosch, 2<sup>nd</sup> - 4<sup>th</sup> November 2016. Centre for Renewable Energy Studies at Stellenbosch University and the Austrian Development Agency.
- vi. Energy 101, Energy Technology and Policy, University of Texas at Austin and Edx, completed November 2013.
- vii. 132-Hour Occupational Safety and Health Professional Program, completed 2013. OSHA Academy, USA.
- viii. ANSYS CFD Introductory Course, Qfinsoft, Centurion - South Africa, October 2011.
- ix. Certificate in Bioenergy, University of Stellenbosch, South Africa, September 2010.
- x. International Biogas Training Course, International Biogas and Bioenergy Competence Center (IBBK) and University of Hohenheim, Germany, September – October 2009.
- xi. International Workshop on Total Energy Management, Islamic Development Bank and Ghulam Ishaq Khan (GIK), Pakistan, March 2008.
- xii. Proposal Development Training Workshop, Uganda National Council of Science and Technology, January 2008.

- xiii. Certificate in Energy Systems for Developing Countries, Norwegian University of Science and Technology and Makerere University, July – August 2006.
- xiv. Certificate in Design Modeling with Unigraphics NX and Solid Edge, Boeing and Makerere University, July 2004.

## 9. COMPUTER SKILLS

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- i. General: Windows OS, Microsoft office packages (Word, Excel, PowerPoint, Outlook and Visio), and XLSTAT.
- ii. Engineering: **Engineering Equation Solver (EES); LabView**, REFPROP; **ANSYS CFD (Fluent)**, ANSYS Design Exploration; C++; Python; MATLAB; Homer Computer aided drawing (Solid Edge, SolidWorks, ANSYS design modeler and Unigraphics); LandGEM; **TRNSYS; COMSOL Multiphysics®**.
- iii. E-Learning: Blackboard, Moodle, Canvas

## 10. REFEREE DUTIES, EDITORSHIPS AND CONFERENCE PARTICIPATION

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### 10.1 Journal Reviewing

Regular reviewer for:

- i. Applied Energy, Elsevier
- ii. Applied Sciences, MDPI
- iii. AIMS Energy, AIMS Press
- iv. Case Studies in Thermal Engineering, Elsevier: **Assignments:** June 2020
- v. Computational Design and Engineering, Elsevier: **Assignments:** Aug 2016 (2)
- vi. Energy, Elsevier
- vii. Energy Conversion and Management, Elsevier
- viii. Energy Science and Engineering, John Wiley and Sons
- ix. Energy Reports, Elsevier: **Assignments:** July 2019(1), Sep 2019(1), Oct 2019(1)
- x. Entropy, MDPI
- xi. International Journal of Heat and Mass Transfer, Elsevier
- xii. International Journal of Mechanical Sciences, Elsevier: Assignments: Mar 2020 (1)
- xiii. International Journal of Refrigeration, Elsevier
- xiv. Journal of Energy Engineering, ASCE
- xv. Light: Science & Application, Springer Nature: Assignments Aug 2020 (1)
- xvi. Renewable Energy, Elsevier: **Assignments:** > 121 since 2015
- xvii. Science Progress, Sage Publishers
- xviii. Solar Energy, Elsevier:
- xix. Sustainable Energy Technologies and Assessments, Elsevier: Assignments June 2020 (2), Nov 2019 (1), Dec 2019 (1), Mar 2020(2), April 2020(1), May 2020(1), Jun 2020(1).
- xx. The Open Fuels and Energy Science, Bentham Open
- xxi. Urban Climate, Elsevier: **Assignments:** June 2019(1)

- xxii. International Journal of Ambient Energy, Taylor and Francis: **Assignments:** Oct 2021 (1)
- xxiii. Journal of Energy, Hindawi Publishing, **Assignments:** Nov 2021 (1), Jan 2022(1)
- xxiv. Electronics, MDPI, Assignments: Nov 2021 (1)

## 10.2 Conference Reviewing

- i. South African Institute of Physics, SAIP2021, University of North-West
- ii. ASME International Mechanical Engineering Congress & Exposition (IMECE): IMECE2021, IMECE 2020, IMECE2019, IMECE2018, IMECE2017, IMECE2016
- iii. International Conferences on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT): HEFAT2012, HEFAT2014, HEFAT2015, HEFAT 2016, HEFAT 2017
- iv. The 3<sup>rd</sup> Southern African Solar Energy Conference (SASEC2015)

## 10.3 Conference Organization

- i. Track Organizer, Track 12: Distributed Energy Systems, ASME Energy Sustainability Conference, 2022
- ii. Member of the Local Organizing Committee of the Spring Technical Meeting of the Combustion Institute, Canadian Section at Ryerson University, May 14 -17, 2018
- iii. Member Technical Program Committee the 13<sup>th</sup> International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2017, 17 to 19 July 2017, Portorož, Slovenia.
- iv. Session Chair at the 12<sup>th</sup> International conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2016, 11-13<sup>th</sup> July 2016, Costa del Sol, Spain.
- v. Member Technical Program Committee the 12<sup>th</sup> International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT2016, 11-13<sup>th</sup> July 2016, Costa del Sol, Spain.
- vi. Session Chair at the 3<sup>rd</sup> Southern African Solar Energy Conference (SASEC 2015), 11-13 May 2015, Skukuza, Kruger National Park, South Africa.
- vii. Session Co-chair at the 9<sup>th</sup> International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics, HEFAT 2012, 16-18<sup>th</sup> July 2012, Malta.

## 10.4 Editorships

- i. **Guest Editor**, Special Issue of the 13<sup>th</sup> International Heat Transfer, Fluid Mechanics and Thermodynamics Conference (HEFAT2017) published in Heat Transfer Engineering (Taylor and Francis): Responsible for the selection of papers to include in the special issue, managing the peer review process, and recommendation of the accepted papers to the Editor-In-Chief.
- ii. **Guest Editor**, Special Issue of the 12<sup>th</sup> International Heat Transfer, Fluid Mechanics and Thermodynamics Conference (HEFAT2016) in Heat Transfer Engineering (Taylor and Francis): Responsible for the selection of papers to include in the special issue, managing the peer review process, and recommendation of the accepted papers to the Editor-In-Chief.



## 11. COMMITTEES/ADMINISTRATION/SERVICE

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### 11.1 Grant Proposal Review Panels

- i. National Science Foundation Reviewer, December - January 2021; December - January 2022
- ii. Reviewer of the 2021 Fulbright Visiting Student Researcher (VSR) Programme in Energy Engineering - Fulbright Program and NRF South Africa, August 2021
- iii. Moderator of the 2021 Black Academics Advancement Programme (BAAP) PhD Track Panel Applications, National Research Foundation, South Africa, August 2021.
- iv. Panel Member of the South Africa/ France Science and Technology Research Collaboration (PROTEA) 2021 Grant Applications, National Research Foundation, South Africa, July 2021.
- v. Moderator of the DST-NRF Conference Fund 2020 Applications, National Research Foundation, South Africa, June 2020.
- vi. Moderator of the 2021 DST-NRF Free Standing Innovations and Scarce Skills Postdoctoral Fellowships, National Research Foundation, South Africa, June 2020.
- vii. Editing of the 2019 DST-NRF Free Standing Innovations and Scarce Skills (FISS) Postdoctoral Feedback Reports, Department of Science and Technology, National Research Foundation, South Africa, March 2020.
- viii. Moderator for the DST-NRF Free Standing Innovations and Scarce Skills (FISS) 2020 Funding Postdoctoral Review Panel, Department of Science and Technology - National Research Foundation, South Africa, 2019.
- ix. Member of the Joint Institute for Nuclear Research (JINR) Research Grant Panel, National Research Foundation, South Africa, June 2019.
- x. Moderator for The World Academy of Sciences (TWAS) Doctoral Scholarship Program, National Research Foundation, South Africa, September 2018.
- xi. Reviewer for the National Research Foundation and Japan Society for the Promotion of Science 9<sup>th</sup> HOPE Meeting with Nobel Laureates Review Committee, October 2016.
- xii. Member of the NRF Virtual Review Committee as a moderator for the Free-Standing Innovation and Scarce Skills Doctoral Scholarships 2016 Call, Engineering Physics Maths ICT Stats Panel, September – October 2016.
- xiii. Member of the NRF Virtual Review Committee for the Extended Support for Completion of Masters and Doctoral Scholarships, September 2016.
- xiv. Panel member, FISS & TWAS Postdoctoral Scholarship Advisory Panel Meeting, National Research Foundation (NRF), September 2016.
- xv. Panel member, NRF Freestanding, Innovation and Scarce Skills Masters scholarships 2016 applications for Chem-Phy-Engr, December 2015.

### 11.2 University Service

- i. Member, Graduate Studies Committee, Department of Mechanical and Manufacturing Engineering, University of Calgary, Fall 2021 - To date
- ii. Member, Graduate Admissions Committee, Department of Mechanical and Industrial Engineering, University of Minnesota Duluth, Spring 2021

- iii. Member, Curriculum Committee, Department of Mechanical and Industrial Engineering, University of Minnesota Duluth, Spring 2021
- iv. Member, Equipment Committee, Department of Mechanical and Industrial Engineering, University of Minnesota Duluth, Spring 2021
- v. Advisor, (YOS3, 2016; YOS3 2017), School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg.
- vi. Evacuation coordinator, School of Mechanical, Industrial and Aeronautical Engineering, South West Engineering Building, University of the Witwatersrand, Johannesburg, 2016-2017.
- vii. Course coordinator 3<sup>rd</sup> year Mechanical Engineering Laboratories, School of Mechanical, Industrial and Aeronautical Engineering, 2017.
- viii. Member of the Mechanical Engineering, Mechatronics and Industrial Design committee for research and innovation at Tshwane University of Technology, South Africa (2015).
- ix. Mechanical Engineering, Mechatronics and Industrial Design Departmental representative on the Faculty Research Ethics committee at Tshwane University of Technology, South Africa (2015).

### 11.3 Other External Service

- i. ASME Advanced Energy Systems Division (AESD), Renewable Energy and Energy Conversion (REEC) Technical Committee (2019 - Present)
- ii. Judge for the 2021 Minnesota State Science & Engineering Fair organized by the Minnesota Academy of Science, 7 projects, March 2021

## 12. EXTERNAL EXAMINER APPOINTMENTS

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### 12.1 Courses

- i. **MHM 301 - Hydraulic Machines III**, Department of Mechanical and Industrial Engineering Technology, University of Johannesburg, South Africa, 2014.
- ii. **MECN 2006 PT - Thermodynamics I part time course**, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg, October 2016
- iii. **MEC 4113F - Heat Transfer and Psychrometry**, Department of Mechanical Engineering, University of Cape Town, South Africa, 2017
- iv. **MECN 5013A - Thermal Systems, Postgraduate diploma program**, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg, October 2017.
- v. **MHM 420/780 - Heat and Mass Transfer**, Department of Mechanical and Aeronautical Engineering, University of Pretoria, November 2017, 2018, 2019, 2020, 2021.

### 12.2 External Examinations

#### PhD.

- i. **Rohit Gupta: PhD Mechanical Engineering, McMaster University, Ontario, Canada**  
**Title:** Thermodynamic and Workload Optimization of Data Center Cooling Infrastructures

**Supervisor:** Prof. Ishwar K. Puri

**MSc.**

- ii. **Simelane SM: MSc. Master of Science in Physics, North-West University, South Africa**  
**Title:** Performance Evaluation of Three Different Solar Cookers in Mahikeng  
**Supervisor:** Prof. Ashmore Mawire
- iii. **Maharaj, N: MSc. Mechanical Engineering, University of Cape Town.**  
**Title:** A Thermodynamic Analysis and Optimisation of a Tubular Cavity Solar Receiver: Heteroconical Tubular Cavity Receiver. 2018  
**Supervisors:** Prof. Tunde Bello-Ochende.

**BSc.**

- iv. **Ngele M: BSc. Mechanical Engineering, University of the Witwatersrand**  
**Design Project:** An Alternative to the Vapor Compression Refrigeration in Long Distance Transportation Using Vapour Absorption Refrigeration System, 2019  
**Supervisor:** Michael D Atkins
- v. **Michael C. Vincent: BSc. Mechanical Engineering, University of the Witwatersrand**  
**Design Project:** Off Grid Heating System for RDP Housing, 2018  
**Supervisor:** Michael D Atkins

### 13. REFEREES

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- i. Professor Seth B Dworkin, P.Eng. FCSME. Professor and Canada Research Chair Mechanical and Industrial Engineering, Ryerson University. Tel: 1-416-979-5000 ex7311 Fax: 1-416-979-5265, email: [seth.dworkin@ryerson.ca](mailto:seth.dworkin@ryerson.ca)
- ii. Professor Josua P. Meyer, Chair: School of Engineering, Head: Department of Mechanical and Aeronautical Engineering, University of Pretoria, Tel: + 27 12 420 3104, Fax: +27 12 420 2451, email: [josua.meyer@up.ac.za](mailto:josua.meyer@up.ac.za)
- iii. Professor Jacob Muthu, former Head, Undergraduate affairs, School of Mechanical, Industrial and Aeronautical Engineering, University of the Witwatersrand, Johannesburg. Now Assistant Professor, Petroleum Systems Engineering at the University of Regina, Tel: +1 306 337 8125, [Jacob.Muthu@uregina.ca](mailto:Jacob.Muthu@uregina.ca)
- iv. Professor Zhongjie Huan, Tshwane University of Technology, Department of Mechanical Engineering, Mechatronics and Industrial Design, Private Bag X680, Pretoria, 0001, South Africa. Tel: +27 12 382 5286, Fax +27 86 543 0698, email: [huanz@tut.ac.za](mailto:huanz@tut.ac.za)
- v. Professor Tunde Bello-Ochende, Department of Mechanical Engineering, University of Cape Town, Tel: +27 21 650 3673, Fax: +27 21 650 3240, email: [tunde.bello-ochende@uct.ac.za](mailto:tunde.bello-ochende@uct.ac.za)