

# Summarised CV – Prof Russell Phillips

## Qualifications:

1995 P.E. Technikon	Masters Diploma Technology (Mech Eng) <i>Title of dissertation: Development of a power plant for a light aircraft</i>
2009 NMMU	Doctor Technologiae: Engineering Mechanical <i>Title of thesis: Development of a reciprocating aerofoil wind energy harvester</i>

## Awards:

2010/2011	Golden key lecturer of year awards
2010	Teacher of year award EBEIT
2011	Faculty excellent teacher award
2013	NMMU Innovation award
2019	DST Top IP Creator award for NMU

## Professional registration:

Engineering Council of S.A (Reg Eng Tech)

## Employment career

1983-1986	Ford Motor Company (Port Elizabeth) (Trainee Technician)
1987	Samcor (Pretoria) (Facilities and Equipment Engineer)
1988-1989	National Service (South African Air Force) One year seconded to C.S.I.R working on the development of a prototype composite turboprop 2 seat training aircraft (OVID).
1989	Celair (Ermelo) Manager - Eagle Development Programme Completed the systems design of a 6 seat composite aircraft and supervised a team of technicians during the construction thereof. Oversaw the first phase of certification testing of the aircraft to FAR23 standards. Work involved management and liaison with the aviation regulating body (Civil Aviation Authority).
1991-1996	Port Elizabeth Technikon (Now Nelson Mandela University) Lecturer in Mechanical Engineering
1996	Promoted to Senior Lecturer
2014-2019	Associate Professor
2020-Present	Professor

## Current activities:

- Lecturing of most Mechanical Engineering subjects
- Compilation of study material – most recently the content for the Mechanotechnology modules for the Higher Certificate in Mechatronic Engineering.
- Preparation of study/ syllabus guides
- Development of student practicals
- Co-ordination and planning of staff timetable for Mechanical, Marine and H Cert Mechatronic Engineering

- Development of laboratories – CAD/CNC, Mechanics, Mechatronics, Renewable Energy and Autonomous vehicles.
- Administration
- Research – (Manage the renewable energy research group (RERG))  
<https://www.facebook.com/nelsonmandelaunigreen/> and the Mandela Autonomous Operations (MAO) groups.
- International collaboration – partner in Academic Initiative for Renewables initiative involving European and African universities working towards common RE educational offerings.  
<https://www.air-project.org/>
- Aviation specialist overseeing Remote Operating Certificate (ROC) application to SACAA for legal compliance of all NMU Autonomous vehicles (drones). Licensed Commercial pilot for full scale aircraft and RPAS (remotely piloted aerial systems) as required for the ROC. Operations to include remotely piloted marine surface and underwater craft as required for Marine Robotics initiatives currently being developed at NMU. Lead various research projects in MAO.
- Manage MerSeta action research industry projects in Composites / Renewable Energy / Engineering Innovation. Five patents, 2013 NMMU Innovation award. Manage a lab of 13 Staff / Interns conducting above. Currently commercialising a Solar Air Heater for industrial process heat and patented high yield wind turbine.
- Member of AMTC management committee.
- Consulting - aircraft structures, aircraft systems, aircraft certification procedures, composites and renewable energy. Developer of two commercial aviation manufacturing operations;  
[www.whisperaircraft.com](http://www.whisperaircraft.com) and [www.whisperRD.wordpress.com](http://www.whisperRD.wordpress.com)

#### Patents:

- 1) 2007/00927 – Reciprocating Aerofoil Wind Energy Harvester
- 2) PA156032/P - SA Provisional Patent Application No. 2012/05038 entitled Turbine arrangement
- 3) PCT/IB2013/055239 – Turbine arrangement
- 4) Powerplant assembly for harnessing renewable energy 2014/05331
- 5) Energy storage and power supply system PA167203/P
- 6) United Kingdom Patent Application No. 2007673.3 – “VTOL AIRCRAFT”; Our Ref: P86715GB00 VIP/jbg

#### Post Grad students (graduated)

2013: Newey, K , Optimising performance of small HAWT's through improved rotor/alternator matching  
 2014: Opperman A, Analysis of Factors Influencing the Performance of a Hydrokinetic Energy Harvester  
 2014: Maidadi M, Packed-Bed rock thermal energy storage for concentrated solar power: Enhancement of storage time and system efficiency  
 2014: Poole S, The development of a segmented variable pitch small horizontal axis wind turbine with active pitch control.  
 2015: Kleyn G, A comparative study of performance and efficiency of a tube and fin type domestic solar water heat collector.  
 2015: Humm J, An organic rankine cycle heat engine using a rock thermal battery as the heat source.  
 2017: Poole S, Optimisation of a mini horizontal axis wind turbine to increase energy yield during short duration wind variations. (PhD)  
 2017: Kalua T, Analysis of factors affecting performance of a low temperature organic rankine cycle heat engine.  
 2017: Momsen T, Hybrid additive manufacturing platform for the production of composite wind turbine blade moulds.  
 2017: Badenhorst M, Strain behavior of an eco-car wheel rim designed through topology and composite layup optimization  
 2018: Van Tonder, The development of an optimized low cost solar air heating system using evacuated tubes for industrial process heat  
 2018: Sewell J, Vision-Based Autonomous Aircraft Payload Delivery System  
 2018: Dyason W, Integration of a fly by wire control system for landing remotely piloted aircraft systems  
 2020: Cawood, Sewell, Liebenberg,

Hobbies/Extra murals:

- Aviation - Commercial Pilots Licence with Instrument, Instructor, Aerobatic, Glider, RPAS (drone) and Test Pilot ratings (3600hrs over past 39 years)
- Design, development and building of amateur built aircraft