Richard Okou

PERSONAL DATA

Name:	Richard Okou
Date of birth:	24th June 1980
Place of birth:	Entebbe, Uganda
Nationality:	Ugandan

- Public-private Partnerships training, Chicago, 2005
- Cisco Certified Network Associate (CCNA), Makerere University, ICS, 2003 Application to Associate Professor Under New Entrant

6. SCIENTIFIC CAREER AND PROFESSIONAL STAY ABROAD

Dec 2010 to date:	Lecturer, Dept of Electrical Eng, Makerere University
June 2011 to Aug 2011:	Consultant, Technology Innovations Agency, South Africa
June 2010 to Nov 2010:	Senior Research Officer, Department of Electrical Eng, UCT
Feb 2010 to May 2010:	Research Officer, Department of Electrical Eng, UCT
March 2009 to May 2009:	Visiting scholar, Concordia University, Montreal, Canada
March 2007 to Feb 2010:	Teaching assistant/PhD student, Department of Electrical Eng, UCT
Nov 2004 to Feb 2007:	IT Specialist, UNV/Cisco partnership, UNDP Uganda
April 2006 to Sept 2008:	(Part time project engineer)
Aug 2005 to Feb 2006:	Research Assistant, Centre for Research in Energy and Energy Conservation (CREEC), Faculty of Technology Makerere University

EDUCATION TASKS

UNDERGRADUATE PROGRAMME

- Electrical Energy Systems (EE 2202)
- Electrical Machines (EE 3207)
- Electrical machines and drives (EE4099F, University of Cape Town)
- Energy conversion (EE3057S, University of Cape Town)
- Renewable energy technologies (ELEC 498Z, Concordia University)

POSTGRADUATE PROGRAMME

- Introduction to electrical engineering (RET 7101)
- Power generation (ELE7208)
- Power generation and power system (ELE7201)
- Optimization of energy systems (RET7205)
- Renewable energy technologies (ELEC691Z, Concordia University)
- Energy and the environment (EE7104)

8. RESEARCH AREA

- Electrical machines
- Energy storage
- Renewable energy
- Smart grid systems

9. CONTRIBUTION TO COMMUNITY

- Daimler Crysler (Mondialogo) project for solar water heating in Langa township, 2007
- Teach out program, 2008 (teaching math to learners)
- Advisor: Wind energy systems for two schools in Cape Town, 2010-2011
- Advisor: Solar water heating for township learners, 2011

10. INDUSTRIAL PROJECTS TO DATE

- TIA, reviewing the technology innovations gaps in renewable energy in South Africa
- Feasibility studies for power generation; Pico/mini hydro, solar PV and wind energy
- Real-time tariff modeling for mini grid systems
- Smart grid possibilities for rural electricity networks, ESKOM South Africa
- Initial Single Wire Earth Return design project in Ntenjeru, GIZ/PSFU
- Design of mini grid systems and power lines, CSIR South Africa
- Design, installation of wind energy system for Urban school, Cape Town
- Electrical building services for South Sudan Insurance, Juba
- Coordinating grid integration studies on transmission line for renewable energy
- Solar water pumping design and installation
- Private-public partnership for UNV/ Cisco and partners, UNDP
- Engineering support on Energy for Rural Transformation Programme, Ministry of Education and Sports component, World Bank funded project.
- Design and installation of hybrid wind/solar system for rural island. Prototyping of Pico hydro system and design of low voltage distribution network

11. INVITED LECTURES GIVEN

- Stellenbosch University, lecture on flywheels systems for masters class, 2010
- Concordia University, Renewable energy technologies , 2009

12. SCIENTIFIC OUTPUT

12.1 ECHNICAL REPORTS

- Renewable Energy trends and technology innovation gaps in South Africa, TIA 2011
- Low Cost Design of High Speed Electromechanical Flywheel for Energy Storage for Rural Electrification, SANERI2009
- Investigating the Possibility of Pico Hydropower Development in Uganda, GTZ Uganda, 2006

- Technical Options for Electrifying Rural Areas: Case Study Masindi District, GTZ *Uganda, 2004*

12.1 PEER REVIEWED INTERNATIONAL ENGLISH SCIENTIFIC JOURNAL ORGANISED BY YEAR

- **R.Okou**, AB Sebitosi, P Pillay, Specification of a flywheel battery for a rural South African Village, Journal of Energy in Southern Africa, JESA (Accepted)
- A. Maclaurin, **R.Okou**, M.A. Khan, P. Barendse, A.B. Sebitosi, P. Pillay, Control of a flywheel energy storage system for rural applications using Split-Pi DC-DC converter, JEPE 12022702. (Corresponding author, to appear)
- **R. Okou**, A.B. Sebitosi, P. Pillay. Flywheel rotor manufacture for rural energy storage in sub-Saharan Africa, Energy, Volume 36, Issue 10, October 2011, Pages 6138-*6145*
- SJ Weyers, AB Sebitosi, **R Okou**. Phase change material selection for small-scale solar energy storage. Rwanda Journal, Volume 23, pages 42 -55 Nov 2011, ISSN 1014-4874
- **R.Okou**. AB. Sebitosi, M.A. Khan, P. Barense, P. Pillay, High Speed electromechanical flywheel design for rural electrification in sub-Saharan Africa, IEEE Transactions on *energy conversion, dec 2011, vol 26, pp. 1198-1209.*
- A. B. Sebitosi, **R. Okou**, Re-thinking the power transmission model for sub-Saharan Africa. Elsevier-Energy Policy, Volume 38, Issue 3, March 2010, Pages 1448—1454. ISSN 0301-4215
- **R. Okou**, A. B. Sebitosi, M. A. Khan, P. Pillay. The potential impact of small-scale flywheel energy storage technology on Uganda's energy sector. Journal of Energy in Southern Africa, volume 20, No.1 February 2009, Pages 14 - 19, ISSN 1021 447X.

12.3 PEER REVIEWED PAPERS AT INTERNATIONAL CONFERENCES, PUBLISHED IN FULL PROCEEDINGS

- R. Kimera, **R. Okou**, K. Awodele, AB Sebitosi, A concept of dynamic pricing for rural hybrid electric power mini-grid systems for sub-Saharan Africa, IEEE PES annual meeting, San jose, June 2012 (Corresponding author, Accepted)
- **Okou R.**, Sebitosi A., Pillay P. An opportunity to enhance rural electrification in sub- Saharan Africa through the manufacture of a flywheel energy storage system. Proceedings of the second international conference on advances in engineering and technology, organised by the Faculty of Technology, Makerere University, January 31 - February 1, 2011. Pages 537 - 543.ISBN 978-9970-214-00-7
- A. Maclaurin, **R.Okou**, M.A. Khan, P. Barendse, A.B. Sebitosi, P. Pillay, Control of a flywheel energy storage system for rural applications using Split-Pi DC-DC converter, IEMDC Niagara falh, 15-18 May 2011, Pages 265-270. E-ISBN 978-1-4577-0060-6 (Corresponding author)
- O.A.J. de Meyer, A.B. Sebitosi, **R. Okou**, P. Pillay. Photovoltaic thermal power (pv/t) generation electric and thermal modeling. Proceedings of the 20th Southern African Universities Power Engineering Conference. Cape Town 13 - 15 July 2011. ISBN 978-0-79922480-1
- Sebitosi A., **Okou R.**, The smart grid: Adopting new concepts for infrastructure to power Africa's industrial revolution. Proceedings of the second international conference on advances in engineering and technology, organised by the Faculty of Technology, Makerere University. 31 January - 1 February 2011. pages 135 - 141.ISBN 978-9970-214-00-7.

- **R.Okou**, M.A. Khan, P. Barendse, A.B. Sebitosi, P. Pillay, Analysis of an electromechanical battery for rural electrification in sub-Saharan Africa, IEEE ECCE 2010, Atlanta,,pages 4249-4256. E-ISBN 978-1-4244-5287-3
- **R Okou**, G Mwaba, AB Sebitosi, MA Khan, P Barendse and P Pillay" High speed electromechanical flywheel and brushles DC machine design. SAUPEC 2009, Stellenbosch University, Protea Hotel,, Stellenbosch, 28 - 29 January 2009, pages 41-46. ISBN 978-0-620-43170-5.
- G.Mwaba, **R.Okou**, M.A Khan, P. Pillay, Comparison of Permanent Magnet Topologies for High Speed Flywheels, SAUPEC09, Stellenbosch, 2009
- **R.Okou**, G.Mwaba, MA Khan, P. Barendse, P Pillay, High Speed Electromechanical Flywheel Design for Rural Electrification in Sub Saharan Africa, IEEE International Electrical Machines and Drives Conference (IEMDC) 3-6 May 2009, Miami, Florida, Pages 392-398. E-ISBN 978-1-4244-4252-2
- **R.Okou**, MA Khan, P. Barendse, P. Pillay, Test Rig for High Speed Electromechanical Flywheels in Sub Saharan Africa, IEEE International Electrical Machines and Drives Conference (IEMDC) 3-6 May 2009, Miami, Florida, pages 1072-1079. E-ISBN 978-1-42444252-2
- **R.Okou**, M.A. Khan, P. Barendse, P. Pillay, Considerations to high speed electromechanical flywheel design for sub-Saharan Africa, IEEE, Electrical Power and Energy Conference (EPEC) 22-23 October 2009, Montreal, Canada, pages 1-6. E-ISBN 978-14244-4509-7.
- **R.Okou**, MA Khan, P. Barendse, P Pillay, Thermal Analysis of flywheel with brushless DC machine, IEEE, Electrical Power and Energy Conference (EPEC) 22-23 October 2009, Montreal, Canada,pages 1-5. E-ISBN 978-1-4244-4509-7
- **R Okou**, MA Khan, A B Sebitosi, P Pillay, "A case for electro mechanical energy storage." Discussion Paper SAUPEC 2008, 24th -25th Jan 2008, Durban University of Technology. ISBN 0-9584901-9-8
- B.Nabacwa, G. Babangira, A. Ndemere, M.Okure, **R.Okou**, Modelling a novel combined heat and power cycle based on Bagasse, AET2006, Uganda...(Marked P13)

12.4 MEETING ABSTRACTS PRESENTED AT CONFERENCES

- R.Okou, AB Sebitosi, A. Khan, P. Barendse, P. Pillay. Design and Analysis of an Electromechanical Battery for Rural Electrification in sub-Saharan Africa. 2012 IEEE Power Engineering Society General Meeting.

13. STUDENT SUPERVISION

INGJAM002	James Inglis	Comparative study of ETC Collectors and vacuum tubes from high pressure systems
BSSMIC009	Michael Bissett	Development of SWH from redundant material
MDTPAT001	Patience Maditsi	Wind design for urban school

NTHSAA001	Saa_ima Natha	Real time pricing for mini grid systems

13.2 POSTGRADUATE AT UNIVERSITY OF CAPE TOWN, 2011

- Oelof DE Meyer, Msc (Solar Water Heating), 2nd year
- Raymond Kimera, Msc (Mini grids) Graduated Dec 2011

13.2 POSTGRADUATE AT Makerere University, 2012

Aruho Karugahi, Msc	(Short term load forecasting, 2010-2012)
Jackie Kwagala, Msc	(Smart grid,2010-2012)
Esther Nnakimera, Msc	(Bio energy, 2011-2012)
Winnie Onziru, Msc	(Solar resource modeling, 2011-2012)
Teddy Nalubega, Msc	(Dynamic performance of induction generators, 2010-2012)
Julius Taremwa, Msc	(Power line Communication,2011-2012)
Charles Ogwang, Msc	(Grid interconnection studies, 2011-2012)
Ruth Mbabazi, (PhD)	(Smart grid, 2010-2014)_Proposal under review
Peterson Mwesiga (PhD)	(Cognitive communication applications in smart grid, 2011-2014)_Proposal under review

OTHER RELEVANT INFORMATION

- IT Skills - Competent in Excel, MSWord, PowerPoint, AutoCad,.
- Software packages- ANSYS, Digsilent, Matlab Simulink (Knowledge of flux 2D & 3D)
- Teaching — Machine & Drives, Renewable energy, Energy Conversion, Network Theory