



Research Topics in Renewable Energy for 2021

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Fakulteit / Faculty: Engineering		Department / Department: Electrical and Electronic Engineering		
Navorsingsarea / Area of Research: Wind Energy Technology				
Algemene beskrywing van navorsingsveld / General description of research area: The research focuses on wind energy technologies from turbine to grid connection. The main focus currently is on innovative wind generator drive-train technologies and grid integration. The focus is more on small-scale wind energy systems for utility or remote mini grid connection or for stand-alone battery charging. The research includes the design of generator systems and the laboratory-and-field-testing of these systems at a power level of 2 to 15 kW.				
Lys van onderwerpe/List of topics:		M.Eng. (Research)	Ph.D.	Funding
Development of a power converter drive for a linear dry gravity storage system: practical testing and evaluation of a developed 3 m laboratory prototype		X		?
Control and performance evaluation of robust split-pole synchronous reluctance wind generator drive [this generator has no windings, brushes, slip rings or permanent magnets, but only iron on its rotor]		X		?
DC-VRM synchronous condenser technology for grid strength: design and evaluation of this technology by means of laboratory prototype.		X		?
DC-grid wind generator systems: an investigation into direct DC-grid connected wind generators with variable DC-grid-voltage control		X		?
Hybrid excited permanent magnet generator control for grid compliancy of slip-synchronous wind generators		X		?
Development and evaluation of axial-flux slip couplers for slip-synchronous wind generator technology.		X		?
Spesifieke voorvereistes / Specific requirements: A Master degree in the relevant scientific field of study is required to enrol for a PhD and a BEng degree in the relevant field is required to enrol for a Masters. Requirement for Masters study: BEng degree in Electrical or Mechatronic Engineering				
Befondsing beskikbaar / Funding available: Application for bursaries at CRSES (check on their web site) and Stellenbosch University (contact Prof Kamper)				