Project proposal template – Faculty studentships Summer 2014

Project title	Magnetic levitation and power generation for a vertical axis wind turbine	*Director of Study*	M.N. Sahinkaya
Second Supervisor	Demetrios Venetsanos	*School*	Mechanical and Aut
Other members of supervisory team	Jian Wang	*Any requirements from applicant (eg degree in specific subject area)*	Meng/MSc in Mechanical and/or Electrical Engineering (or

Project summary

(max 1,000 characters)

There are great benefits to be achieved through designs of wind turbine-generator systems that could function through contactless technologies. The stator and turbine structures could contain magnetic elements to enable the turbine to float under active control in radial and axial axes. Magnetic gear technology may be used to enable the turbines to drive multiple high speed generators efficiently by contactless means. The project will involve design optimization, integration of magnetic levitation sub-system, integration of magnetic gear/generator sub-system, the use of new materials for robust lightweight structures, optimal active control of clearance gaps for the most efficient aerodynamic performance in association with maximal power take-off. The work will concentrate on vertical axis wind turbines, and will include wind tunnel testing of a small scale prototype.