

CURRICULUM VITAE DEAN LEE MILLAR

Qualifications

B. Eng (Hons) Mining Engineering, Imperial College, 2:1, 1989, Associate of the Royal School of Mines
Ph.D. Rock Mechanics, Imperial College, 2008, Diploma of Imperial College
Fellow of the Institution of Materials, Minerals & Mining

Research Interests

Renewable Energy (particularly Marine Renewables & Biofuels), Oxidation of dilute sources of methane as a climate mitigation technique and power generation, including Ventilating Air Methane and other fugitive methane releases. Design and development of floating arrays of photovoltaic panels in development of a new form of marine renewable energy. Energy management for mines, quarries and other industrial sites. On-site tri-generation, heat recovery, storage and distribution. Mobile microCHP. Design & development of new wind turbines with mechanical power-take-off systems and applications thereof. Design of hardware, software and firmware for an electrical power metering and actuation unit with wireless communications, compactly formatted as a wall plug.

Career Record

07/2010 – Present Laurentian University, Sudbury, Ontario, Canada.
Full Professor, Energy in Mining

07/2010 – Present Mining Innovation, Rehabilitation and Applied Research Corporation.
Director, Energy Renewables & Carbon Management

07/2010 – Present Honorary Visiting Professor, Camborne School of Mines, University of Exeter

01/2010 – Present ZigPlug Ltd
Founding partner / Director in University 'spin-out' company.

07/2009 – 07/2010 University of Exeter, Cornwall Campus
Head of the Peninsula Research Institute for Marine Renewable Energy (PRIMaRE) & Head of Renewable Energy Research within CSM

10/2005 – 11/2009 Community Energy Plus
Trustee

06/2005 – 01/2010 Sustain Cornwall Ltd
Director (& Trustee of parent charity from 2008)

01/1998 – 07/2010 University of Exeter, Cornwall Campus
Senior Lecturer, Renewable Energy & Mining Engineering.

09/1993 – 09/1997 Imperial College of Science Technology and Medicine, London.
Lecturer in Engineering Rock Mechanics.

01/1991 - 09/1993 Imperial College of Science Technology and Medicine, London.
Research Student within the Engineering Rock Mechanics Research Group.

07/1989 - 12/1990 G. Maunsell and Partners, Penge, South London.
Geotechnical Engineer

Research Funding / Research Funding

2011 ORF Research Excellence, Round 5, Smart Underground Monitoring and Integrated Technologies (SUMIT) for Deep Mining, PI for Package #6: Sustainable Operations – Energy Management and Ventilation-on-Demand. (\$330k)

2011 Center for Excellence in Mining Innovation (CEMI). CryoVent – Low carbon cryogenic ventilation for deep mines (\$206k), PhD studentship, 4 years.

2011 Canadian Foundation for Innovation (CFI) Leadership Opportunities Fund. CryoVent – Low carbon cryogenic ventilation for deep mines (\$43k). Equipment grant.

2010 Mining Innovation, Rehabilitation & Applied Research Corporation (MIRARCO) Large scale photovoltaic array deployment for lacustrine and marine environments. (\$113k), PhD Studentship for Miss Kim Trapani, 3 years.

2010 Start-up Grant. Laurentian University (\$40k).

2010 An Integrated Open Wi-Fi / ZigBee Sensor Network for Process Automation in Underground Mining. (\$357k). Co-applicant on behalf of MIRARCO / Laurentian University (funding for two Masters Students)

2009-10 As leader of PRIMaRE for the University of Exeter, oversaw (including internal peer review) the following successful research proposals submissions: Acoustic monitoring (£81.4k), Power Systems Lab Equipment (£107k), Dynamic Marine Component Test Rig (£642k), South West Moorings Test Facility – Phase II (£115k), Specialist Software (£62k), TSB Proposals with Fred Olsen Ltd, TSB Proposal with Ocean Power Technology Ltd, KTP Project with A&P Falmouth Ltd, KTP Project with J&S Ltd. DECC Offshore renewable research programme: provision of research and advice (max value £10M).

2009 WATES Family Enterprise Trust, Optimisation of building envelope and microgeneration. (~£60k), PhD Studentship for Mr Alfonso Ramallo, 3 years.

2009 MIRO. Underground Mining of Aggregates: Moving aggregate production closer to demand centres to save CO₂ emissions, (£85k) – 6 months, Principal Investigator.

2008 Procurement and installation of Beowulf high performance supercomputer – SW Regional Development Agency, (£200k) – 3 years, Principal Investigator.

- 2008 Fuel efficiency systems testing and fuel metering – Sea Fisheries Authority (~£35k) – 6 months. Principal investigator.
- 2006 – 08 Biofuels for fishing vessels - DEFRA via FIGG / Sea Fisheries Authority (~£324k), 2 years. Principal investigator.
- 2004 – 06 Renewable Energy Business Fellow, Knowledge Economy SW / Objective 1, (~£40k), 50% FTE, 2 years.
- 2004 – 07 CSM Trust, Ocean wave modelling in the SW approaches (~£50k), PhD studentship for Miss Helen Smith, 3 years.
- 2001 – 03 WaveShaft shoreline wave energy project - DTI / ETSU (~£120k), with Wardell Armstrong International.
- 2000 - 02 Pump energy efficiency determination for the mining industry – DTI TCS (~£88k), with Steve Luke & Yatesmeter Ltd.

Teaching Contributions

- 2010– Pres. Laurentian University. ENGR 3327 E Mine Ventilation. ENGR 5396 E Alternative Energy Sources & Technologies.
- 2006 –11 Occasional Lecturer at Technical University, Delft. Provide 3-4 week intensive mine design course to students on the European Mining Course.
- 2003 - 10 University of Exeter. Programme Director, B.Sc. Renewable Energy. Senior Lecturer, Renewable Energy & Mining Engineering. Specialist course on quantitative management techniques for Sandvik International Mining School MSC programme.
- 1998 – 02 University of Exeter. Lecturer, Mining Engineering & Rock Mechanics.

Supervisor of: 40+ final year projects for undergraduate students, 20+ masters projects, Supervisor of 5 PhD projects, PhD Examiner on 3 occasions. Currently: directly supervising 3 PhD students, 1 MAsc student; co-supervising 1 PhD student, and on advisory committee of 2 further MAsc students.

Other career highlights:

Reviewer of academic papers for following international journals: Ocean Engineering, Energy, International Journal of Rock Mechanics & Mining Sciences, Transactions of Institute of Materials, Minerals & Mining, Quarterly Journal of Engineering Geology; Reviewer of proposals for the UK Technology Strategy Board funding body. Member of REGENSW SeaPower Expert Panel; Member of the Society for Underwater Technology, Marine Renewables Group; Business Fellowship for Renewable Energy, 2004-06.

Selected Publications 2001 to 2011

- Millar, D.L., Levesque, M., Lyle, G., and Bullock, K. 2011. Enabling advanced energy management practice for minerals operations. Proc. Ann. CIM Conf. and Exhibition, Montreal, May 22nd – 25th, 2011. *In press*.
- Smith, H.C.M., Pearce, C. and Millar, D.L. 2011. Further analysis of change in nearshore wave climate due to offshore wave farms. Renewable Energy, *Accepted*
- Millar, D.L., Brown, T.J., Kruyswijk, J.B., Smith, N., Coggan, J.S., Foster, P.J., Steadman, E.J., Evans, D.J., Hewitt, J. 2011. Assessing the feasibility of underground mining of aggregates in southern and eastern England. Proc. Conf. Extractive Industry Geology, Portsmouth, UK, September 2010. *In press*
- Millar, D.L. and Parish, D.N., 2010. Electricity Generating Apparatus. GB Patent. Application number: GB0821160.9 / GB2465485A. Publication date: 26 May 2010
- Brown T.J., Coggan J.S., Evans D.J., Foster P.J., Hewitt J., Kryswijk J.B., Millar D.L., Smith N., Steadman E.J., 2010. Underground Mining of Aggregate. MIRO/ASRP Project 7 Final Report. MA/1/S/01, 316 pages.
- Greaves, D., Smith, G., Attrill, M., Belmont, M., Chadwick, A., Conley, D., Eccleston, A., Godley, B., Harrington, N., Hor, C.L., Hosegood, P., Johannings, L., Millar, D., Pan, S., Reeve, D., Williams, J., Wolfram, J., Xu, J., Zou, Q., 2009. Development of Marine Renewable Energy in the South West of England. Proc. Inst Civ. Eng., Maritime Engineering, MA4, pp 187-196. Millar, D.L., and Caslake, R., 2009. Fuel Flow Meters: Individual and Turnkey. Sea Fish Industry Authority Research and Development Fact Sheet FS25-03-09.
- Hor, C.L., Crossley, P., Watson, S., and Millar, D.L. 2009. Developing a Knowledge-Based System using Rough Set Theory and Genetic Algorithms for Substation Fault Diagnosis. Book chapter in: Rough Set Theory, A true landmark in data analysis. Studies in Computational Intelligence. Springer. ISBN: 978-3-540-89920-4
- Clifford, T., Millar, D.L., Parish, D. 2008. Fuel Systems Testing: Determinations of the effect of (electro-) magnetic installations, a fuel additive and a lubricant additive on diesel fuel consumption. Technical report prepared for the Sea Fish Industry Authority, Marine & Fisheries Agency, South West Regional Development Authority & The Scottish Government. 64 pages.
- Clifford, T.P., Millar, D.L., Parish, D., and Wood, N.A., 2007. Biofuels for the Fishing Industry, Report for DEFRA/Sea Fisheries Authority, pp263
- Millar, D.L. Wave and tidal energy technologies. 2007. Book chapter in: 'Energy ...Beyond Oil.', Oxford University Press. (Armstrong, F. and Blundell, K. eds). ISBN13: 9780199209965, ISBN10: 0199209960
- Millar, D.L., Smith, H.C.M., and Reeve, D.E., 2007. Modelling studies of the sensitivity of the shoreline wave climate to the proposed wave hub development off the north coast of Cornwall. Ocean Engineering, An International Journal. Vol. 34, pp 884-901.
- University of Exeter, 2005. Measurement of Seabed Wave Energy. Patent application number 0517498.2 filed on 26th August 2005.
- Scholes, H., Millar, D.L., Eyre, J., Dibley, R., Davey, G., Haywood, M. 2004. A study to investigate the possibility of utilising abandoned coastal mine shafts in Cornwall as oscillating water column (OWC) wave power generating devices. pp268. Report for Energy Technology Support Unit / Future Energy Solutions, DTI contract V/06/00196/OO/REP.
- Hutchinson, J.N., Millar, D.L., and Trewin, N.H. 2001. Coast erosion at a nuclear waste shaft, Dounreay, Scotland. *Quarterly Journal of Engineering Geology & Hydrogeology*, Vol 34, pp 245-268.