

## 16<sup>th</sup> C.W. Lovell Distinguished Lecture

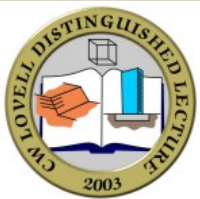
4:30 pm, Tuesday, October 30, 2018

Lawson Hall, Room 1142, Purdue University

**Professor Guy T. Houlsby**

# Geotechnical Engineering Challenges for Offshore Renewable Energy

The lecture will address the context of the development of offshore renewable energy and the challenges that this poses for a geotechnical engineer. This has led to an interest in design of very large diameter piles subjected to complex, cyclic lateral loading. The lecture will give an outline of the recently-completed PISA project, in which new methods for the design of monopiles were developed. The project was carried out by Oxford University, Imperial College and University College Dublin and sponsored by the Carbon Trust, Ørsted (previously DONG Energy) and a consortium of companies from the offshore wind industry. It involved field testing, finite element analysis and development of new design methods. The lecture will also look briefly at some other options for offshore renewables.



## C. W. LOVELL DISTINGUISHED LECTURE

Professor Emeritus C. W. "Bill" Lovell was a native of Louisville, Kentucky, and received his BCE from the University of Louisville. He served in the U.S. Navy Construction Battalions (SeaBees) during World War 2, and taught at the University of Louisville after the War. In 1948, he came to Purdue University, and he remained in that employment until 2012, receiving MSCE and Ph.D. degrees in the process. His service in Civil Engineering extended over 48 years, including major professorship for 60 theses and authorship for almost 200 papers. During his distinguished career at Purdue University, Prof. Lovell was major professor to 112 students, 60 of whom wrote research theses, and published in excess of 200 papers. His research interests were broad and varied including soft rocks (shales), compaction and compacted properties, soil fabric and pore size distribution, slope stability and erosion, cold regions, pavements, and uses of waste materials in geotechnical engineering. In 1994, Bill became a facilitator/coach in Human Resources Services at Purdue. He specialized in delivering a variety of FranklinCovey leadership/personal development seminars, and received a "Facilitator of the Year" award from FranklinCovey. Bill was active in community volunteer organizations, and continued to be an avid fly fisherman.



Detailed information on the 16th C. W. Lovell Distinguished Lecture can be found at the following website:  
<https://engineering.purdue.edu/CE/Academics/Groups/Geotechnical/Details/seminar/Lovell>



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**Geotechnical Engineering Challenges for  
Offshore Renewable Energy**



Guy Houlsby has been Professor of Civil Engineering at Oxford University since 1991, and was Head of the Department of Engineering Science from 2009-2014, leading the Department's REF2014 submission which achieved the highest quality score of any engineering department in the UK.

He is an internationally recognised expert on geotechnical engineering, where his main interest is in offshore foundations. Applications include structures for the oil and gas industry, but more particularly in recent years for offshore wind turbines. He also works in theoretical soil mechanics and plasticity theory, developing a rigorous thermodynamically-based approach to constitutive modelling. His current work brings together these two threads of work, developing models for cyclic loading of foundations for offshore wind turbines.

His interests in renewable energy also include work on tidal power. Analytical and numerical methods are used to understand tidal resources at scales from a single device through to a tidal basin. The patented "Transverse Horizontal Axis Water Turbine" (THAWT) for extracting tidal stream energy is currently being developed; and he is a Director of Kepler Energy, the spin-out company from Oxford University promoting THAWT.

His research is supported by government funding and co-operation with industry, especially in the offshore sector. He regularly lectures in the UK and abroad, and in 2014 gave the prestigious Rankine Lecture on "Interactions in Offshore Foundation Design", invited by the British Geotechnical Association. He acts as a consultant in civil, geotechnical and offshore engineering, including legal and arbitration cases.

His first degree and PhD are from Cambridge University. In 2003 he was awarded a DSc degree by Oxford University. He is a Fellow of the Institution of Civil Engineers and of the Royal Academy of Engineering.

Beginning in 2003, the C. W. Lovell Distinguished Lecture series was established through the generosity of Professor Bill and Mary Ellen Lovell, who expressed an interest in creating a lecture series at Purdue that will have staying power - one in which a track record of scholarship is clearly established. Thus, each year, lecturers with outstanding accomplishments in geotechnical engineering research are invited to Purdue University. The lecture series creates an excellent opportunity for our graduate students to meet and interact with some of the most important names in geotechnical engineering in person at Purdue.

**A dinner will be held at the Ross Ade Pavilion, Shively Media Center. Reservations to attend the dinner are required by 3:00 pm on October 26, 2018. For more information, please contact Carie Herbst (herbstc@purdue.edu); ph: 765-494-5025**

