



# The Institution of Engineers, Malaysia

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## 54<sup>th</sup> Rankine Lecture - Interactions in Offshore Foundation Design

Organised by the Geotechnical Engineering Technical Division, IEM

BEM Approved CPD/PDP Hours: 2 Ref No: IEM14/HQ/379/L

Date : 4 December 2014 (Thursday)  
Time : 5.30 pm – 7.30 pm (Refreshments will be served at 5.00 pm)  
Venue : Tan Sri Prof. Chin Fung Kee Auditorium, 3rd Floor  
Wisma IEM, Petaling Jaya  
Speaker : Professor Guy Housby

### SYNOPSIS

Offshore foundation design has been a research topic with direct practical applications for a number of decades, with the increasing need to generate power by harvesting offshore wind presenting new challenges. The lecture will use examples from offshore foundation design to illustrate important areas: (a) where geotechnical engineers need to address engineering problems in which phenomena interact in a way that cannot be separated, and (b) where their interactions with other disciplines are important.

The first example is drawn from the assessment of the safety of installation of jack-up units (large mobile offshore drilling rigs). It will illustrate how more rational approaches can be achieved through a deeper use of probabilistic methods in both the prediction of performance and the assessment of field observations. The second example also comes from jack-up practice, but has very wide application: it will address the classical problem of the performance of foundations under combined loading, and how this can be understood in a simple theoretical and practical framework. The final example comes from the renewables sector, where the rapidly expanding offshore wind industry poses new foundation challenges for geotechnical engineers. Practical and economic foundation solutions are required if the UK is to meet its ambitious plans to exploit larger turbines in deeper waters. Both conventional and novel solutions to the foundation problem will be discussed. The lecture will demonstrate how interactions with other disciplines can enrich geotechnical engineering, illustrated by specific practical examples from the author's experience.

### PROFILE OF SPEAKER



**Guy Housby** has been Professor of Civil Engineering at the University of Oxford since 1991, and was Head of the Department of Engineering Science from 2009 to 2014. His main research is in geotechnical engineering, and he is an internationally recognised expert on offshore foundations, where he has a particular interest in the understanding of

the behaviour of shallow foundations. Much of his recent work has been applied to foundations for offshore wind turbines. He has also carried out extensive work in theoretical soil mechanics and plasticity theory. He has published over 200 scientific papers and is a past Editor of the ICE's journal "Géotechnique". Recently he has developed a particular interest in renewable energy, and has a rapidly expanding research group working on tidal power. He is a Director of the spinout company Kepler Energy Ltd, developing tidal power systems using the novel "Transverse Horizontal Axis Water Turbine" (THAWT). He regularly lectures in the UK and abroad, and has acted as a specialist consultant in civil, geotechnical and offshore engineering on many projects. He is a Fellow of the Institution of Civil Engineers and of the Royal Academy of Engineering.

**Ir. Yee Thien Seng**

Chairman

Geotechnical Engineering Technical Division, IEM

### ANNOUNCEMENTS TO NOTE:

- Preferential admission to talk shall be accorded to IEM members (**pre-registration and online registration are NOT required**). (**telephone and/or fax reservation will NOT be entertained**)
- **Non members** may also attend the talk but will be charged a registration fee of **RM50** and an administrative fee of **RM10**.
- For affiliate members, there will be no registration fee. However, they are requested to produce their membership card as proof of membership. For the list of affiliates, please refer **[www.myiem.org.my/content/memorandum\\_of\\_understanding-469.aspx](http://www.myiem.org.my/content/memorandum_of_understanding-469.aspx)**.
- Limited seats are available on a "first come first served" basis (maximum 110 participants).
- IEM members are required to produce your membership cards for confirmation of attendance (CPD purpose).
- Latecomers will not be allowed to enter if the lecture hall is full nor be entitled to CPD.  
***IEM members who fail to produce their membership cards will be charged a fee of RM20.00.***

### FUNDS FOR IEM BUILDING FUND (WISMA IEM)

- Kindly be informed that IEM will be charging participants **RM10** as administrative fee for talks organized by IEM.
- The fee would be used to cover overhead costs, building maintenance expenses as well as to support the purchase of the new building.
- All contributions will be deeply appreciated by IEM
- Students are however exempted.  
Your understanding is greatly appreciated.

### CPD/PDP HOURS CONFIRMATION

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Membership No: .....

Signature: .....