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# Announcement: Award-winning paper in 2010

Papers published in *Géotechnique* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Monday 24 October 2011, ICE president Peter Hansford presented an award to the following paper published in *Géotechnique* in 2010. The editorial panel nominated their best papers and an awards committee chaired by Barry Clarke allocated the awards.

The T K Hsieh Award, presented for the best paper on structural and soil vibration caused by mechanical plant, waves or seismic effects, was awarded to: LeBlanc, C., Houlsby, G. T. & Byrne, B. W. (2010). Response of stiff piles in sand to long-term cyclic lateral loading. *Géotechnique* **60**, No. 2, 79–90, http://dx.doi.org/10.1680/geot.7.00196.


**T K Hsieh award winners Christian LeBlanc Thilsted and Byron Byrne with ICE President Peter Hansford**

ABSTRACT

The driven monopile is currently the preferred foundation type for most offshore wind farms. While the static capacity of the monopile is important, a safe design must also address issues of accumulated rotation and changes in stiffness after long-term cyclic loading. Design guidance on this issue is limited. To address this, a series of laboratory tests were conducted where a stiff pile in drained sand was subjected to between 8000 and 60 000 cycles of combined moment and horizontal loading. A typical design for an offshore wind turbine monopile was used as a basis for the study, to ensure that pile dimensions and loading ranges were realistic. A complete non-dimensional framework for stiff piles in sand is presented, and applied to interpret the test results. The accumulated rotation was found to be dependent on relative density, and was strongly affected by the characteristics of the applied cyclic load. Particular loading characteristics were found to cause a significant increase in the accumulated rotation. The pile stiffness increased with number of cycles, which contrasts with the current methodology where static load–displacement curves are degraded to account for cyclic loading. Methods are presented to predict the change in stiffness and the accumulated rotation of a stiff pile due to long-term cyclic loading. The use of the methods developed is demonstrated for a typical full-scale monopile.