

# international construction

**The foundations sector recorded good growth in 2005 and the gains are expected to continue this year. Equipment manufacturers are helping foundations contractors to meet the growing demand by boosting efficiency and productivity through development of new techniques. Claire Symes reports on the latest innovations in the ground engineering sector.**

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## Wind power

One sector that is helping to boost the foundations sector is the worldwide move towards wind power to provide electricity generation. Many of wind farm sites are in remote locations – both on land and offshore – and often have difficult ground conditions, both of which are providing the foundations industry with new challenges.



# Solid growth



**Use of Pile Dynamic's Pile Integrity Tester (PIT) at a wind farm project in Brazil is helping to speed up the checking process and allow turbine erection to progress.**

Experience gained by Wirth on the Elm Road off-shore wind farm in Wisconsin, US, for which Keller carried out the foundation work, has been put to good use for developing foundation equipment for construction of the UK's largest offshore wind farm. Work on the 10 km<sup>2</sup> Burbo Offshore Wind Farm in the Irish Sea is about to get underway and, when complete, the 30 turbines will generate 90 MW – enough power for over 72500 homes.

Each of the 3 MW turbines, which will be fitted with three 45 m fibreglass blades, will be mounted on an 80 m tall tower supported by a steel tube monopile foundation driven 30 m into the seabed. A joint venture of Dutch Drilling Consultant and Mammoet van Oord will use a Wirth PBA 933 pile top drilling rig to carry out reverse circulation drilling. The 60 m long drill stem is fitted with a bespoke Wirth drill bit to construct the 4.4 m diameter foundations. The bit plate was fitted with 25 tungsten carbide disc cutters with button bit inserts.

The demand from wind turbine projects extends beyond the need for hi-tech drilling rigs. Use of Pile Dynamic's Pile Integrity Tester (PIT) at a wind farm project in Brazil is helping to speed up the checking process and allow turbine erection to progress. Foundations for the Sangradouro Wind Farm, which is being built by Ventos do Sul Energia, will be completed in July this year and the farm's 75, 2 MW turbines are due to be operating by the end of 2006.

Each turbine is supported by a 98 m tall pre-cast concrete tower mounted on 32 cast in-situ augered piles which are 0.5 m in diameter and 22 m long. Automated monitoring is carried out during installation but post installation verification is also needed by the client.

Ventos do Sul Energia is using the battery operated PIT to carry out Pulse Echo Method testing on the piles. According to Pile Dynamics, the PIT was ideally suited to the contractor's need to test a large number of piles each day.



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