

R. HEIKKILÄ, J. HOVILA, P. KILPELÄINEN, E. VIJAMAA, J. TÖRNQVIST, K. NEVALA, T. MAKKONEN. **Automated-driven concrete piling: Latest developments and experiments in Finland.** *Gerontechnology* 2012;11(2):86; doi:10.4017/gt.2012.11.02.340.00 **Purpose** POHVAIL is a large research project carried out in Finland between 2007 and 2011 to develop and test a new automated process for concrete driven piling (*Figure 1*). We also describe recent developments in the Finnish industry and evaluate the technology worldwide. **Method** Design, modeling, and an XML-based information transferring tool for structure designer (Tekla Structures) were newly developed, as well as a new 3-D guided piling machine using two GNSS antennas for positioning tasks and a graphical user-interface for the operator. Furthermore we developed a wireless monitoring system of environmental effects such as piling-related shakings and vibrations that could affect other nearby structures, and a system to measure real-time geotechnical bearing capacity of piles during hitting work. In the automated working process the main aim was to design, measure, save, transfer, and utilize all the different useful data using 3D-information models throughout the whole working process of the driven piling. **Results & Discussion** Several practical tests and experiments were carried out during the POHVAIL-project. We will give a short introduction to the most important results of our 3D-guidance testing: the monitoring system for generated vibrations and the geotechnical bearing capacity measurements. We analyze the new automated piling process and compare it with the traditional process used in most developed countries. Great economical saving and environmental benefit potentials are reported and evaluated.

References

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Keywords: driven piling, machine guidance, environmental monitoring

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Full paper: No

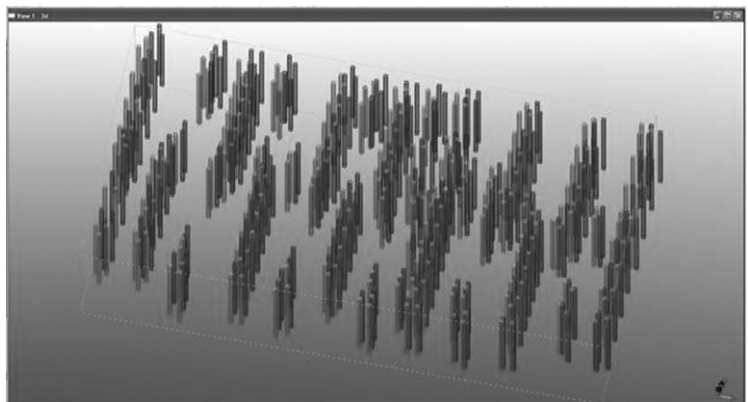


Figure 1. As-design and as-built models together