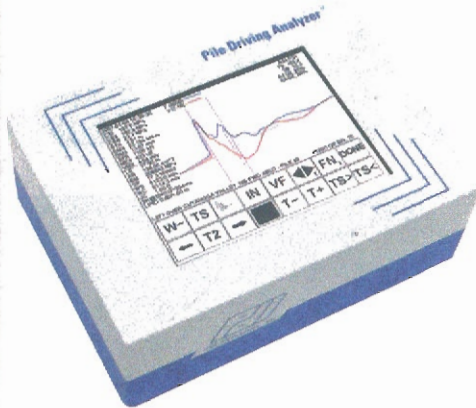


PDA testing in a wireless world



By Julian Seidel

Dynamic pile testing has been available for more than 40 years and is included in many worldwide codes and specifications, and results in greater quality assurance and reduced risk, thereby increasing the loads allowed on piles in standards such as the Piling Code, AS2159.

For the first few decades, the dynamic

test engineer was on site for the test, attaching sensors to the pile and interpreting the results.

Until recently the sensors were connected to the data acquisition unit, called a Pile Driving Analyzer (PDA), with a system cable. The most current PDA (PAX model) now transmits sensor data from the pile using Bluetooth data transmission to the PDA, eliminating the main signal transmission cable entirely.

Hard foam pads protect the sensors and transmitters, allowing instrumentation to be attached to the pile on the ground prior to lifting the pile into the leads, and thus reducing testing time and improving safety because climbing the leads to attach the sensors is eliminated.

In the past, the data collected on site was further analyzed by computer analysis (Capwap) and a report issued.

Depending on the travel distance and time from the site, more than a day

might elapse between test and analysis.

Here again, new technology results in significant beneficial changes to common practice. "Remote" testing was first enabled more than 10 years ago through serial data transmission on cell phone systems.

However, with the newest generation of PDA further improvement has resulted from transmission using broadband internet services.

The equipment is operated on site by an inspector or the piling crew, who attach the sensors to the pile. The engineer simply logs on to the PDA anywhere in the world to conduct and control the test live.

Data download is at the time of the test, allowing Capwap analysis to commence immediately. The typical turn around time from testing to final analysis can be less than an hour.

Getting the results sooner can be vital

to the project since this information is often on the project's critical path.

The installation criterion can be established sooner and production piles then installed with confidence. Further, elimination of all travel and its associated costs, and eliminating all on-site non-testing time, reduces overall testing costs.

In traditional on-site testing, the test was scheduled only when the test engineer was available, often resulting in project delays.

Last minute requests or tests for "emergencies", such as pile with an unusual installation record, could be resolved only days later. However, if the remote equipment is already on the site, a test can be arranged with the PDA engineer almost at a moments notice to diagnose the problem pile.

The wireless world has brought significant benefits to piling quality assurance. ■

Company built on firm foundations

Founded in May 2004, Civil Foundations is at the forefront of the foundation industry in Australia. It has and continues to invest heavily in state of the art equipment and technology from Europe to push the boundaries of the piling industry.

Civil Foundations has lent its skills to many projects. The Dee Why Hotel redevelopment saw the company install sheet piles up to 30 metres

depth and install 1500 anchors up to 12 metres in length.

The Ferrari showroom in Waterloo required the design of the first hybrid wall featuring triple rotary soil mix and sheet piles due to deferring geotechnical conditions.

Civil Foundations is also currently commissioning the tooling for the latest in retaining wall construction.

Perfect partner for equipment manufacturers

Hard Metal Industries (HMI) is Betek's partner in Australia for tungsten carbide picks and holders.

Applications include foundation drilling, trenching, rock sawing, and tunnelling. HMI also has its own hardfacing technology and machinery.

The company has supplied tools for road headers in the North South Bypass Tunnel and for many foundation machines working on the

Gateway Bridge Upgrade project.

Betek works closely with leading foundation equipment manufacturer, Bauer, and carries an unrivalled range of tools for this application.

Certain ground conditions in Australia may require tools not in the standard catalogue, so HMI partners Betek in designing tools ideal for different circumstances.