

WATCHLOG KEEPS AN EYE ON THE THAMES

OVERVIEW

A market leader in the application of jacking and lowering large structures approach Hydrotechnik requesting expertise in a wireless pressure monitoring solution.

The purpose of the system was to measure the pressure in hydraulic rams supporting the walls and foundations against the River Thames. The pressure was to be logged over time and an alarm facility was required for on-site safety.

KEY PRODUCT REQUIREMENTS

- Self-powered (no power available on-site)
- Self-contained (no cables possible on-site)
- Continuous data logging and updates
- Alarms for site safety, especially during the excavation

APPLICATION

A specialist company installed ten hydraulic rams at strategic points along the inside wall of an old building that was being renovated. The site was in close proximity to the River Thames for the construction of a large shopping centre in London.

A wireless system needed to be integrated so that hydraulic pressure in the rams cylinders could be monitored continuously. Data-recording and alarms were especially vital during high tide, as the

force applied against the wall increased. Similarly, during excavation on the site, the integrity of the wall and the foundations could be at risk.

Not only would the system highlight any structural issues, it would also be an early safety warning system for all personnel on-site. In the case of structural damage, the alarms set for the sensors would provide sufficient time for the workforce to be evacuated safely.

CHALLENGES

The hydraulic rams were already installed on a working construction site and the environment was changing constantly.



We had to consider there being a continuous flow of moving vehicles and materials plus the fact new walls and floors etc. were being erected, which could affect the wireless transmission of the data.



The base station and PC were to be located in the main site office, easily-accessible for the main operators, situated on the outside of the building's main walls.

Distance – In this example the transmitter to the receiver was roughly 150-200 meters, however it was going through an extender due to the environment having many obstacles so the signal was continuous and avoided dropouts.



The construction company also had a legal requirement to provide the history of the forces applied to the wall during construction, as part of the site sign-off.

THE SOLUTION

The Hydrotechnik Watchlog system was deemed the correct solution, comprising of the following:

- 10 x HT-WLP-0600 wireless sensors
- 1 x HT-AR wireless range extender
- 1 x HT-PPI power pack
- 1 x HT-SPI solar panel
- 1 x HT-BSi base station
- 1 x Watchlog software package
- 1 x free setup tool kit



The wireless pressure sensors were mounted directly into a port on the hydraulic rams, which also came with Minimes® test point fittings for hand tight assembly simple removal should a sensor ever need replacing.

The HT-AR wireless range extender was selected to be mounted high in the middle of the site, on some scaffolding, to avoid any connection issues between the sensors and the base station. As power was an issue for the extender due to its location, it was supplied with a waterproof battery pack and accompanying solar charging system.

(Extender capability) - an extender is used when the distance is too great or there are too many obstacles in the way to get a good signal from a transmitter to a receiver/base station. It is difficult to state the exact capability, as it is dependent on settings and the environment it is in. In the perfect environment it will extend/repeat the signal another 800m.

Hydrotechnik offered the initial setup and on-going site support for the system, including setting the required alarms and the data logging function. In providing the Watchlog and future technical assistance, be it product or software related, Hydrotechnik ensured a sustainable process for accurate, in-depth and safe hydraulic pressure management.

FIND OUT MORE:

If you would like to discover our complete range of test and measurement solutions, please visit our website – www.hydrotechnik.co.uk. Alternatively, do not hesitate to contact our experienced team of engineers – on **0115 9003 550** – for immediate help in finding a resolution for any testing need.