

CASE STUDY: National Physical Laboratory

MAY 2009



Bridge structural health monitoring

The challenge

As part of their ongoing research into structural health monitoring techniques, the Materials Division at The National Physical Laboratory (NPL) are measuring the condition of a 20m footbridge during the intentional application of load and controlled damage.

To complement their existing wired strain, displacement and acoustic emission sensors and expand the capability of their overall measurement system, NPL required an out of the box wireless tilt meter solution which could be installed easily in awkward positions which would normally be difficult with a wired solution.

The aim of the overall project is to determine the most effective measurements required to build a profile of how a bridge's structure changes under certain conditions which could shorten its lifetime or eventually lead to its collapse.



The Senceive Solution

We provided a dense cluster of nodes to monitor many parts of the structure simultaneously and in real time. A wireless solution was an obvious choice as having many cables on a wired deployment would require a complicated installation.

Our nodes were fitted with metal brackets to the bridge, and it took an afternoon to install and commission a network of 10 nodes.

The nodes are connected to Senceive's web monitor interface so that the results can be monitored live and remotely as experiments take place on the bridge.



Our Findings

NPL is delighted and the data has allowed them to create detailed profiles of how certain points on the footbridge move when specific loads are applied to different areas of the bridge.

The project is currently under way and detailed analysis will start in September, once all the data has been collected.

