Bridges Monitoring

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WSD12T-EX2M3

Background

There were many objectives - measure existing compression on the bridge beams in question, check maximum beam deflection under load, and subsequently monitor the stress conditions continually.

The solution

Tensile testing was chosen to measure current residual prestress conditions, however not by taking the usual core sample of concrete, but rather by using a truncated pyramid sample appropriately set up by means of strain gauges connected to CAPETTI WineCap™ dataloggers. The graphs produced during the strain caused/applied when taking the sample and the με value measured after taking the sample enabled a fairly precise evaluation of beam compression. Static strain gauge testing was then carried out, by measuring deformation with three sensors positioned at the centre and edges of the beam, and applying the weight of lorries, first one and then two (load test). Therefore the calculation did not focus on strain in terms of σ, but on deformation in terms of ε (to understand the compression limit for the part under strain with a certain accuracy).

The result

In order to monitor the condition of the structure over time, values on the three strategic points are now captured regularly, so that the data can be viewed remotely with automatic alerts. The deterioration of a reinforced concrete bridge is never a sudden phenomenon (sagging cables, corrosion etc.). Techniques such as the one described above are long-term solutions that can avoid costly tomographic investigations.

The winning choice Wine cap

- ✓ WSD12T-EX2M3 (strain gauge datalogger)
- ✓ MWDG-GSM-M3 (load tests gateway)

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