

## Structural health monitoring – saving disruptive works on urban bridges

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## Summary

Monitoring of bridge structures has developed in a short period of time from the time-consuming, labour-intensive manual exercise it once was, to benefit from the technologies of the Information Age. Monitoring systems are now available which are highly automated, independent and versatile, and which can be tailored to provide almost any type of information that may be required on the condition of a bridge and the environment and loading to which it is subjected.

This paper describes some of the types of monitoring system available and the purposes they can serve, with a special focus on applications of such systems in urban environments. In particular, the remote controlled system recently installed to monitor crack widths on the Weyermannshaus Viaduct in Switzerland's capital city, used to confirm that major remedial works are not required, is presented.

**Keywords:** *structural health monitoring; bridges; buildings; remote-controlled; diagnosis.*

## 1. Introduction

Very often, automated remote structural health systems find their application in remote areas, where access for regular physical inspections by engineers is not practical. The advantages offered by the use of such a system in such a setting are self-evident. However, automated monitoring systems also have a lot to offer to those responsible for bridges in urban areas. Although access for manual inspections may be easier, the cost benefits resulting from reducing these can still be very significant. And the immediate notification and recording of the occurrence of any predefined "event" may in fact be more important in an urban setting than in a rural one. For example, where the safety of an old structure has been compromised through ground movements or otherwise suddenly reduced, the importance of immediate notification is even more important in a densely populated area where more traffic will be at risk from such an event.