

Application of SOFO System in the City of Moscow

Visible signs of degradation of Bolshoj Moskvoretsky Bridge required new decisions in Structural Health Monitoring.

To increase knowledge of the structural behaviour of this traffic loaded bridge, which is one of the main lines of the city to the Red Square, it had been decided to observe the bridge curvature in both horizontal and vertical direction using the innovative SOFO Fibre Optic Monitoring System designed by Smartec SA.

Bolshoj Moskvoretsky Bridge consists of 3 spans (43/92/43 m) and is structured as follows: the bridge consists of three parallel arches. The cross-section of each arch contains three boxes separated by partitions 350-450 mm thick (along the axis of the bridge) and diaphragms with openings for maintenance purposes. The superstructure consists of the bridge deck supported by columns that rest on the above-mentioned separating partitions.

The bridge is being monitored since 2003 by ZAO “Triada-Holding” Moscow using 16 SOFO Standard Sensors and 6 Thermocouples. The data showed that linear deformations of the bridge structure were due to changes of structural concrete temperature. This results prove that in general the state of the bridge structure can be estimated as stable.

The SOFO System is exclusively produced by SMARTEC SA Switzerland (www.smartec.ch). It is a state-of-the-art structural monitoring system that has proved to be effective in different applications.