

In-situ stress measurement in concrete - a component for the geolocation of the destruction with earthquakes

So the in-situ stress sensors in the concrete could measure the load changes and stress changes with a building damage after an earthquake immediately on-line. The alert with GPS item data is spread world-wide over the Internet. The combination also for everyone accessible maps of the world can facilitate the management after disasters substantially. So fast data are available over destroyed journeys in the case of seriousness.

With the new acousto elasticity sensors of IBJ Technology can be measured for the first time the concrete tension on-line permanently directly. No sensors are needed for the measurement of the stretch. The acousto elasticity effect seizes directly the influence of the concrete tension on the wave velocity of ultrasonic. This speed change of the ultrasonic waves directly in the sensor are measured. The sensors consist of a small measuring body, which is embedded in the concrete. The pressure strength of the sensors is so large, which is practically indestructible them. In practical attempts concrete inspection pieces were completely destroyed. The tension sensors get over this crashtests without prejudice to and remain in function. The concrete case of application of these new sensors of IBJ Technology for stress measurement in concrete are on-line measuring procedures for building security.

The sensors are characterised by their special suitability for the remote monitoring of buildings of all kinds.

The instrumentation use of the acousto elasticity effect makes qualitatively and quantitatively new measuring and safeguards methods possible in buildings and in the mountains. As example of possible applications the monitoring of local tensile states in buildings can be enough over Period to be called. Further new and at the same time economical applications result, like on-line monitoring of the answer spectrum of buildings of any kind in seismically active areas. Already during the building phase measurements are possible in foundations and stakes. Also tunnel-build with high overlays and/or large ground pressure features can so on-line be supervised. The measuring bodies can be brought in already in the phase of the building production, i.e. concreting. Also an additional installation into boreholes (method of the hard inclusion) or the spanning in expansion joints of buildings is possible. Innovative applications know a world-wide disaster net (disasters net).

The availability of means of transport and traffic center (roads, bridges, airports, tunnels) can within seconds be determined on-line. The representation of the destruction takes place with the geo location (Disasters Geolocation). The activity of relief organizations can be arranged so efficient. The administration and authorities of the states receive such an aid to the maintenance of public security. Seismic data describe only the geographical place and the strength. Reliable on-line data are missing for the degree of the destruction. Seismic sensors bring only measured values to acceleration. Data for the degree of the destruction must come objectively from the building (object). The data necessary for it are determined with acousto elastic sensors by IBJ Technology.

