Customized modular sensors for tensile stresses in the concrete

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MARKKLEEBERG, Germany -- After the patent-pending process of IBJ Technology sensors for strain and compressive stresses can be manufactured in almost all imaginable sizes. The area includes a few inches to several 10 foot length. The diameter of the measuring element can be adjusted to the diameter of the reinforcement in the concrete.

The sensor detects the strain or deformation of a metal rod. This metal rod can be arranged in the iron braid of reinforcement.

Elongation are measured with ultrasonic pulse-echo method. In the connecting head of the concrete voltage sensor, an ultrasonic sensor is included. The runtime in the measuring element is measured in high resolution.

The run-time increases linearly with the stretch in the elastic range.

The concrete surrounding the tension sensor the measuring element under load imposes a strain, or extension. The change in the length of the measuring element is not only load or stress, but also on the temperature. Therefore, a permanent temperature measurement is integrated into the tensile stress sensor.

The monitor to measure the elongation takes into account both factors.

The term due to the change in length and acoustoelastical effect has grown due to the action of the surrounding concrete to the measuring element.

The monitor is equipped with a microprocessor determines the respective difference to the reference measurement without load or acting a stress and calculates the length change in stress or load to.

The absolute resolution of the sensors is regardless of its length and better than 0.00001 inch.

An important application is the use of sensors to measure the steel strain of reinforcement. The cross sections and the diameter of the measuring elements equal to or less than selects the reinforcement, exceeding the maximum yield strength of reinforcement elements can be avoided.

The monitoring of the structure on load deformation can be integrated in a monitoring system for building monitoring thus. It listens on exceeding the critical strain of steel reinforcement.

With the new strain sensors from IBJ Technology can critical operating States under previously incorrectly estimated or calculated

Combinations led to an undersized reinforcement, in good time, before the failure of the building, are recognized.

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