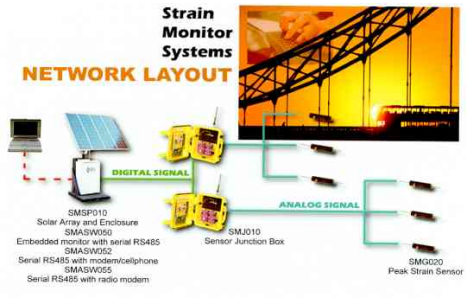
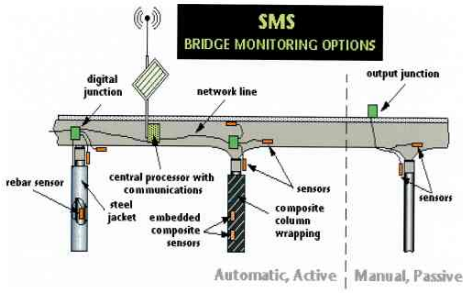
Strain Memory Alloy Passive Sensors for Civil Structures





IntelliSenseTM devices are a line of strain memory alloy-based passive sensors for use in civil structures and other applications. At their core are metal alloys that remember strain. Strain can range from as little as 20 micro-strains (or .002% of elongation) to that causing complete fracture of the structure. When strained, the alloy instantly and irreversibly transforms from a non-magnetic to a magnetic state. This transformation to ferromagnetism precisely and proportionally correlates with the strain. Upon repeated strain, the alloy remembers its maximum strain. The degree of strain is permanently recorded in the metal's properties and is easily readable with magnetometers.

These devices are non-destructive and passive, and are intended for use in strategically high-stress (high-strain) areas of a structure. A human operator can periodically visit the site with an inexpensive, hand-held magnetometer to read the sensor's memory, or operators can remain off-site and interrogate the sensor remotely by phone. Data can be conveyed to a computer either at pre-set intervals or only when a strain exceeding a pre-set limit occurs.

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