DIMETIX APPLICATION EXAMPLE

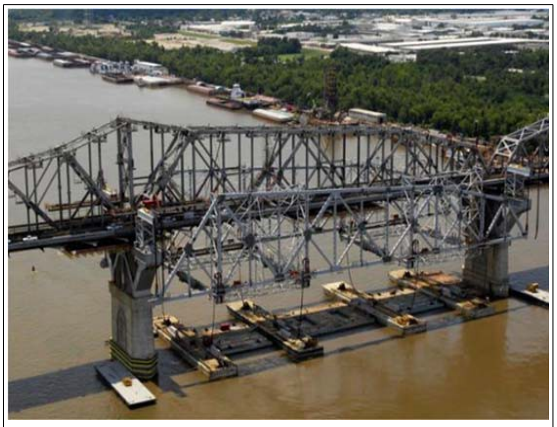
AE-0510

BRIDGE STRUCTURAL MONITORING

Industry: Geodesy / Construction

Application type: Monitoring

Brief description



Pic 1: Huey P. Long Bridge, Mississippi River

As part of a historic bridge widening project, two steel bridge truss sections measuring 528 feet in length and weighing in at 2700 tons, were built on shore, transported on barges, and simultaneously lifted 130 feet and set in place on the Huey P. Long bridge in New Orleans. HNTB Corporation, the infrastructure solutions firm responsible for the project, required a real-time, remote monitoring system to measure truss distortions and to eliminate overstressing or buckling of the truss during the transport, lift, and setting operation. That remote monitoring system was developed through collaboration between collaborating between Applied Geomechanics, Inc. and DIMETIX USA.

A total of ten lasers distance sensors (five on each truss) were used to measure out-of-plane truss distortion. All sensors were hard wired to a data logger and transmitted to a laptop computer with multiple display panels under the bridge deck. Data were continuously transmitted and updated approximately every 5 seconds and were under constant review. Decisions for controlling lift were based on a graphical representation of truss tilt and deformation was developed to monitor these real-time truss tilt / deflection measurements.

Pic 2: Mounted Sensor

The laser-based monitoring system was vital to the lift operation. The project engineers were able to use it in real time to know exactly what was happening with the lift, making it possible to make "on the fly" adjustments to the attitude of the truss without slowing down the operation. According to John Brestin, Vice President and Bridge Group Director at HNTB, the system also allowed monitoring of the truss while it was sliding laterally into position over the bearings, which was as critical if not more critical to monitor than the lift itself.

Customers advantages

- Easy alignment thanks to the visible laser beam
- Rugged aluminum housing suitable for harsh industry environment
- Maintenance free
- Accuracy +/- 1 mm

Products used

DLS-C series

The DLS-C distance measuring device measures absolute distances up to 500 meters on reflective foil without contact. Due to most innovative laser technology the DLS-C has a unique accuracy of ±1.5 mm. A further advantage of the DLS-C is the quick determination of the positions of moving objects.

The DLS-C is an optical distance measuring device. It measures, maintenance-free, distances up to 65m on natural surfaces. It determines positions of objects that are difficult to access or may have very high surface temperatures. Just as easily, it accurately measures distances in hazardous environments.

The DLS-C is designed to be suitable for both, heavy industrial and outdoor applications. It is constructed of a solid metal case and provides class IP65 environmental protection. **It represents a cost efficient solution even at extreme environment temperatures as high as +50° C**. Furthermore, various features make it flexible for multiple applications in numerous industries such as automotive, paper, metal and textile.

Specification

- Measuring range 0.05 up to 500m
- Accuracy ±1.5 mm
- Repeatability ±0.4 – ±1.5 mm
- Extended operating temperature
- Solid metal case IP65
- Supply voltage

For new projects we recommend our **D-Series**. Further information can be found here.

For more information please contact us on application@dimetix.com