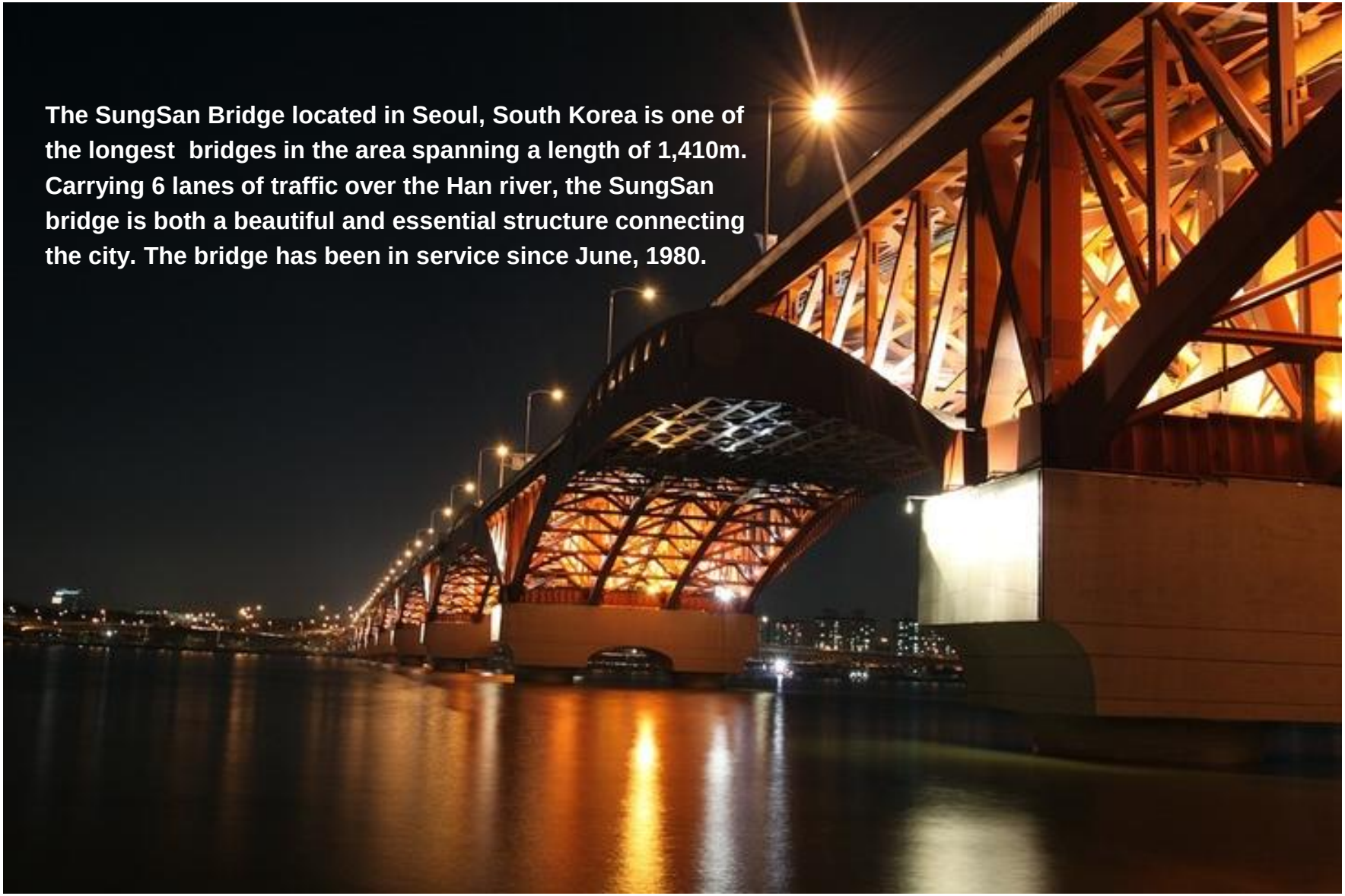
SungSan Bridge

Seoul, Korea, 2009

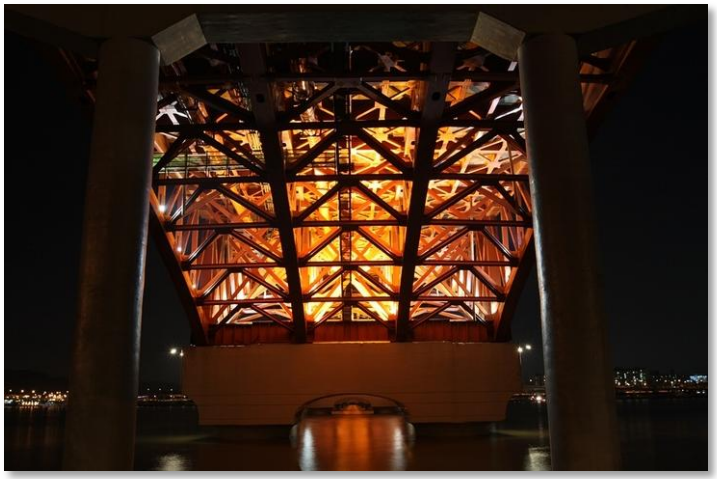
SungSan Bridge- General Characteristics



The SungSan Bridge located in Seoul, South Korea is one of the longest bridges in the area spanning a length of 1,410m. Carrying 6 lanes of traffic over the Han river, the SungSan bridge is both a beautiful and essential structure connecting the city. The bridge has been in service since June, 1980.

SungSan Bridge – Structural Monitoring System Overview

Aim	**Provide a sensing system monitoring changes in existing damage & fatigue stress at hinge sections of the Gerber bridge.**
Location	**Seoul, Korea**
System integrator	**GMG (Geotechnical Monitoring Group)** http://www.gmgnow.com
System supply & technical support	**KAISEN (Korea Advanced & Innovative Sensing Technology), Inc.** http://www.kaisen.co.kr
Customer	**Seoul City**
Date	**2009**
Instrumentation	**(1) Micron Optics sm130**
Sensors	**(36) Micron Optics os3100 Spot-Weld Strain Gage** **(13) Micron Optics os4100 Temperature Comp. Sensors**
Project Scope	• **Long-term monitoring of strain at 14 different locations.** • **On-site and remote data retrieval.**

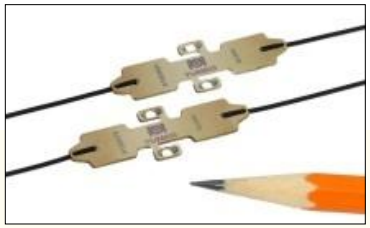


SungSan Bridge: Cross-Section and Sensor Locations

sm130 Sensor Interrogator

Strain Sensors, os3100

Temperature Sensors,os4100



Sm130 Series Optical Sensing Interrogator

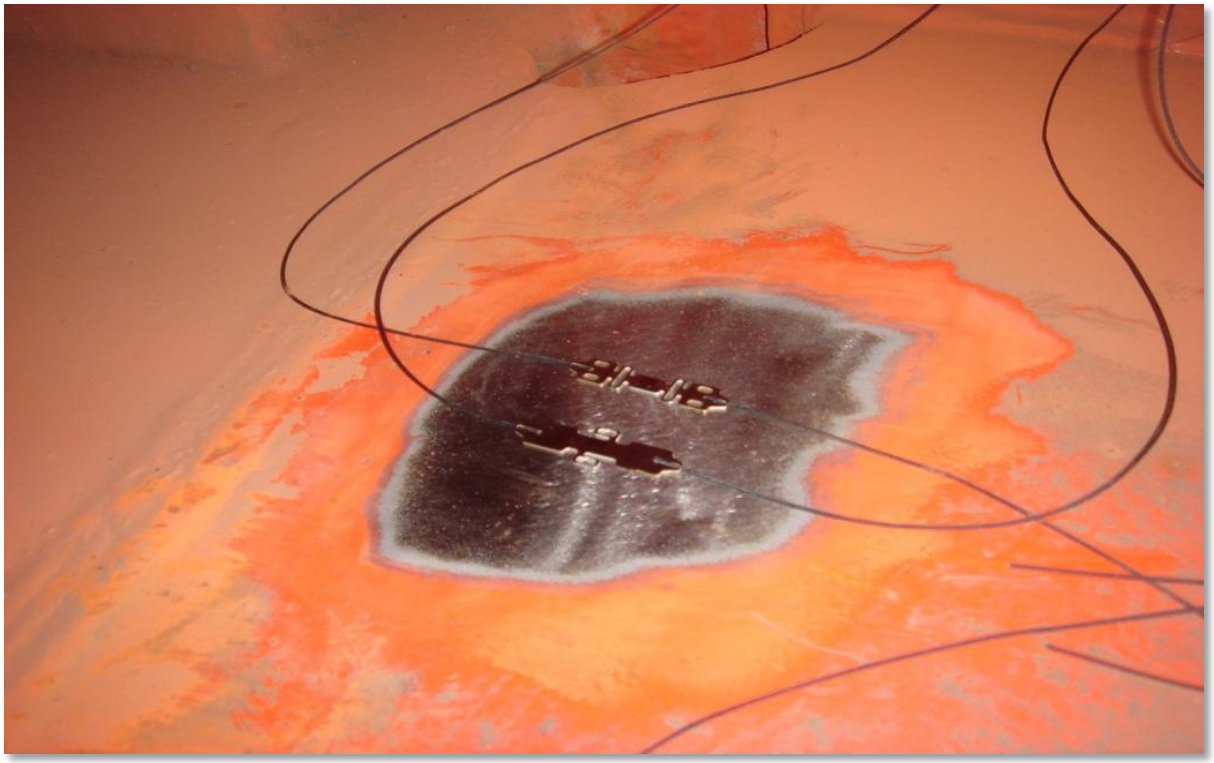
The SungSan Bridge utilizes the high power, high speed swept wavelength laser of the sm130 Optical Sensing Interrogator. The combination of both x30 technology and optical sensors allow users to monitor dynamic sensors and measure static sensors. This rugged yet robust module is deployed in a variety of markets to provide accurate information for long-term field operations.

- Provide Measurement of:
  - FBG strain gages,
  - Temperature probes
  - Accelerometers
  - Pressure
  - Displacement
  - Other FBG Sensors

SungSan Bridge – Installation

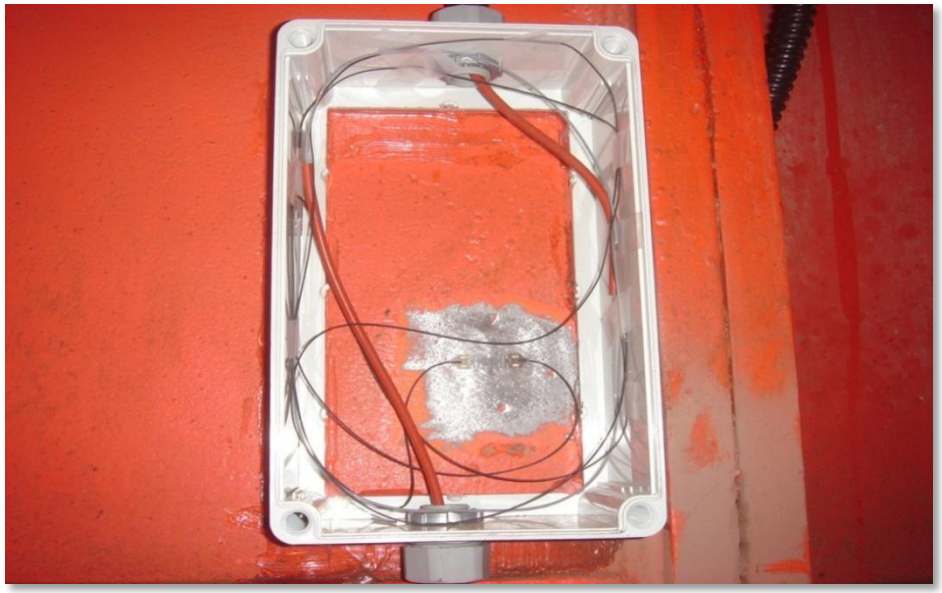
Cable preparation : fiber optic cable with protective tube

SungSan Bridge – Installation



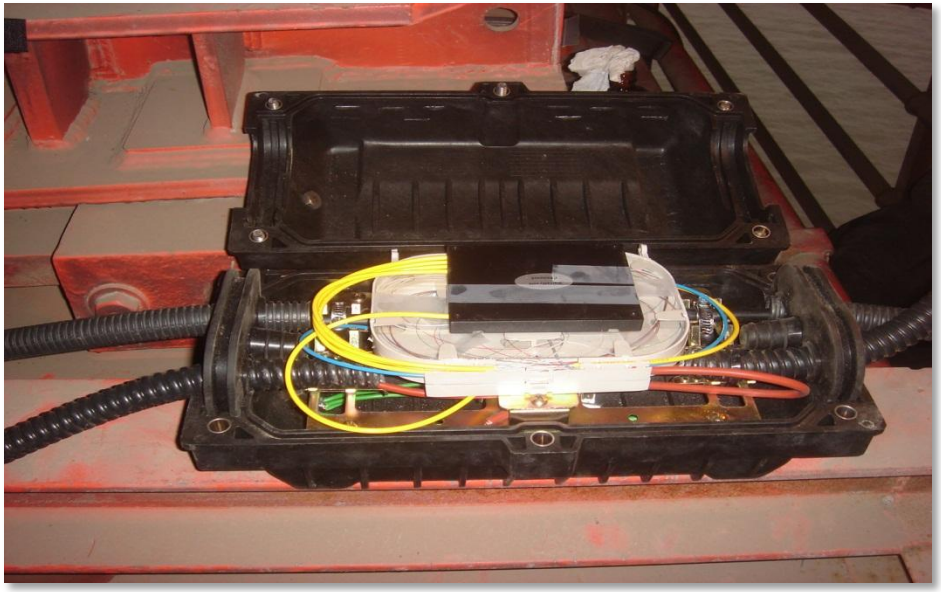
Sensor installation : spot welding

SungSan Bridge – Installation



Protective box installation

SungSan Bridge – Installation



Splicing

KAISEN (Korean Advanced & Innovative Sensing Technology)

KAISEN is an authorized systems integrator located in South Korea who utilizes their own and that of Micron Optics, Inc. sensing technology for innovative solutions in Civil Engineering.

www.kaisen.co.kr

KAISEN's sensing products include:

- FBG Crack Meter
- FBG Tilt Meter
- FBG Rail Sensor
- FBG Accelerometer
- FRP-FBG concrete embedded strain sensor
- FBG long range displacement strain sensor

SungSan Bridge – Results and Acknowledgements

- Results
  - The customer is currently monitoring 14 sensing sites along the SungSan bridge using Micron Optics sm130 module and retrieves data both on-site and remotely.
  - The installation process was efficient and future upgrades will be easy due to the simple, bus-type signal cable architecture of the monitoring system as well as it's clear wavelength allocation.

- Acknowledgements
  - End customer: Seoul City.
  - System Integrator: GMG (Geotechnical Monitoring Group)
  - System supplier & technical support: KAISEN, Inc.

    (Name: Kyuwan Lee, e-mail : ceo@kaisen.co.kr, www.kaisen.co.kr)
  - Micron Optics, Inc, USA

    (Tel : 404-325-0005, www.micronoptics.com)