**Optical SHM System**

- **Sensors**
  - Temperature Sensor (Embedded & Surface mounted)
  - Strain Sensor (Embedded & Surface mounted)
  - Settlement Sensor
- **Signal Transmission Network**
  - Integration to existing fibre network (for Internet and Telephony)
- **Monitoring Dashboard**
  - Signal Modules and Monitoring Software
  - Data Storage

**Our Sensors**

We have designed and fabricated three different FBG sensors for temperature, strain and settlement measurements, which are used in and on the surface of the reinforced concrete beams and pillars:

- Resistance the alkaline environments in the reinforced concrete
- Durable casing to protect against sand and water ingress and to withstand the impact and stresses during the cement curing process
- Strain relief connectors and Protective sleeves to ensure long term stability

**Example: Optical SHM System**

**Installation: FBG Temperature Sensor**

<table>
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<th>Embedded Sensor (a)</th>
<th>Surface Mounted Sensor (b)</th>
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![Optical Settlement Sensors](image1.png)

![Monitoring Dashboard](image2.png)
Installation: FBG Strain Sensor

Monitoring Dashboard

- “Traffic-Light” indicators to demonstrate structural health
- Easy-to-Interpret Indicators:
  - Factor of Safety
  - Temperature
  - Settlement

Example: