Stress & Strain Monitoring

Typical applications include:
- Structural Monitoring
- Bridge Monitoring
- Dam Monitoring
- Pipeline Stress Analysis
- Excavation Propping Monitoring
- Component Stress Analysis
- Material Stress Analysis

Commonly used instrumentation detailed below:
- Foil Strain Gauge
- Concrete Mounted Vibrating Wire Strain Gauge
- Spot Weldable Vibrating Wire Strain Gauge
- Arc Weldable Vibrating Wire Strain Gauge
- Optical Strain Gauge

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Foil Strain Gauge

Variables measured | Strain (µƐ)
Range | up to ±50,000µƐ
Accuracy | ±3µƐ (1% full scale)
Resolution | 1µƐ
System operation | Automated
Data access | Remotely or on site
Reading frequency | Sub second

Additional Information:
- Suited for use on short to long term projects.
- Highly accurate.
- Can be bonded to almost any material.
- Numerous types of foil gauges available for different requirements (i.e. uniaxial, biaxial, triaxial, torsion, shear etc.)
- Foil strain gauges consist of a thin wire filament in a grid formation, which acts as a resistor. As the material monitored elongates or contracts the shape of the measurement grid changes which alters the resistance across the strain gauge.
# Vibrating Wire Strain Gauge

<table>
<thead>
<tr>
<th>Variables measured</th>
<th>Strain (µƐ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>3000 µƐ</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±3µƐ (±0.1% full scale)</td>
</tr>
<tr>
<td>Resolution</td>
<td>1µƐ (0.033% full scale)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±2µƐ (±0.067% full scale)</td>
</tr>
<tr>
<td>System operation</td>
<td>Automated</td>
</tr>
<tr>
<td>Data access</td>
<td>Remotely or on site</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>&gt; 10 seconds</td>
</tr>
</tbody>
</table>

**Additional Information:**
- Suited for use on short to long term projects.
- Cheap, simple & reliable.
- Good long term electrical stability (long lead length).
- Mount to concrete with anchors & spot or arc weld to metal.
- Within the sensor, a high carbon steel wire is held between a fixed point and a moveable point. The wire is plucked / excited via a magnetic coil adjacent to the wire and the resulting frequency is measured by the coil. Changes to the strain in the wire relate to a change in the frequency readings taken.
More detail available if required:

- Optical strain gauges

Please get in touch if you would like more information.