A NEW APPROACH TO ASSET PROTECTION

The Metrom Rail SafeStructure system can assist in monitoring and failure prediction of critical parameters of bridges, rail trackbeds and other critical structures using several unique sensor technologies.

When a sensor input exceeds its pre-set value, or exceeds pre-set trend limits over time, an alarm is broadcast either locally using a radio, or through a cell or satellite modem. This information can also be broadcast as a text message and also stored and analyzed in a database format either locally or remotely.

FEATURES

• Cost-effective sensors are specialized for installation on specific areas of any railway structure.
• A robust control system which can provide simple non-conformance alerts to real-time data sets for instant analysis.
SafeStructure Monitoring System

BRIDGE INSPECTION REQUIREMENTS

Current Bridge Inspection Processes:
- Different inspection methods are required for timber, concrete, and steel rail bridges.
- Typical defect testing looks for washed-out bents, broken bridge members, rotten timber, fatigue cracks, and underwater structure deformities.
- Most defects are due to heavy freight loads, vehicle volume, and bridge wear associated with age.

Bridge Inspection Deficiencies:
- Throughout North America, transportation inspectors are frequently found to be under-trained and without the resources required to adequately perform all required inspection processes on a year-to-year basis.
- As freight / tanker volume increases throughout North America, not only do current railway bridges see more traffic, but older, out-of-commission bridges are being targeted for re-establishment to account for traffic. These additional structures add to the already large quantity of assets scheduled for yearly inspection.

THE SAFESTRUCTURE DIFFERENCE

- By providing a cost-effective measure of monitoring virtually any structure in any location, inspection resources can be allocated to areas needing them most.
- The ability of the SafeStructure system to detect and interpret changes in structure integrity ensures that railways will be alerted in real-time to potentially dangerous track conditions.
- Data collected from each SafeStructure system is automatically analyzed and stored. This data can be used to form preventive maintenance schedules or long-term structure integrity profiles.

FEATURES

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855.953.8726  www.metrom-rail.com
### SENSOR TECHNOLOGY

![Linear Sensor](image)

**LINEAR SENSOR**

**NODE CONTROL MODULE**

### Specifications - General

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Node Capacity</td>
<td>1 - 20 Inputs</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-40° to +85° C</td>
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<tr>
<td>Sealing</td>
<td>IP-68</td>
</tr>
<tr>
<td>Shock</td>
<td>1,000 g, 11ms</td>
</tr>
<tr>
<td>Sensor Interface</td>
<td>TIA-485-A</td>
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</table>

### Specifications - Linear Sensor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Range</td>
<td>+/- 3.00&quot;</td>
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<tr>
<td>Linearity</td>
<td>+/- .25% of full span output</td>
</tr>
<tr>
<td>Resolution</td>
<td>+/- .10% of full span output</td>
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### Specifications - Accelerometer

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<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Accuracy</td>
<td>+/- .18 g</td>
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<tr>
<td>Range</td>
<td>0-8 g</td>
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</table>

### Specifications - Temperature Sensor

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Resolution</td>
<td>+/- 1° C</td>
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</tbody>
</table>

### Optional Sensors Include:

- Derailment Sensors
- Wheel Detector Sensors
- Wind Speed / Direction Sensors
- Water Level Monitoring Sensors
SAFESTRUCTURE MONITORING SYSTEM

SENTRACK™ SYSTEM INTEGRATION

As a major contributor of structure damage can be a derailed vehicle, SenTrack™ can be integrated into the SafeStructure System to monitor for derailed vehicles prior to reaching critical areas.

The system combines critical rail-mouted sensor technology with an advanced control system which monitors all systems and broadcasts customized warnings over a local radio channel or by wireless modem.

LOCAL AREA WARNING SYSTEM

The LRW serves as both the command center and communications suite for all sensors integrated into the STS system. An interface board allows operators in the field to easily program basic parameters of operation for the suite. Emergency signals are broadcast over a 5-mile radius in the case of sensor activation.

DERAILMENT SENSOR

A Metrom Rail DRS is designed to detect derailments by fracturing under the weight of a misaligned wheel. The fracture will open an electrical circuit which is interpreted by the LRW. The DRS is available in a rail-mount or tie-mount configuration.