ADVENTUM TECH

Adventum Tech Monitoring Systems: Digital Bridge

OVERDESIGN

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Product Overview

Digital Bridge by Adventum Tech is a complete and modular real-time structural health monitoring (SHM) system designed specifically for bridge infrastructure. The system enables continuous insight into the bridge's dynamic behavior and load distribution, enhancing both safety and long-term durability. Built with industrial-grade precision sensors and integrated via the **Liveload.app** analytics platform, Digital Bridge is suitable for all bridge types and operational environments.

Core Components

LiveLoad: Real-time load-bearing monitoring system deployed on bridge bearing elements (fixed and expansion supports).

- Purpose: Measures axial loads transmitted through bridge supports.
- Use Case: Early detection of overload or uneven load distribution.
- Benefits: Optimizes maintenance cycles, ensures structural balance, reduces risk of deformation or fatigue failure.
- Sensor Type: Pressure-based force sensors with wireless data transmission.

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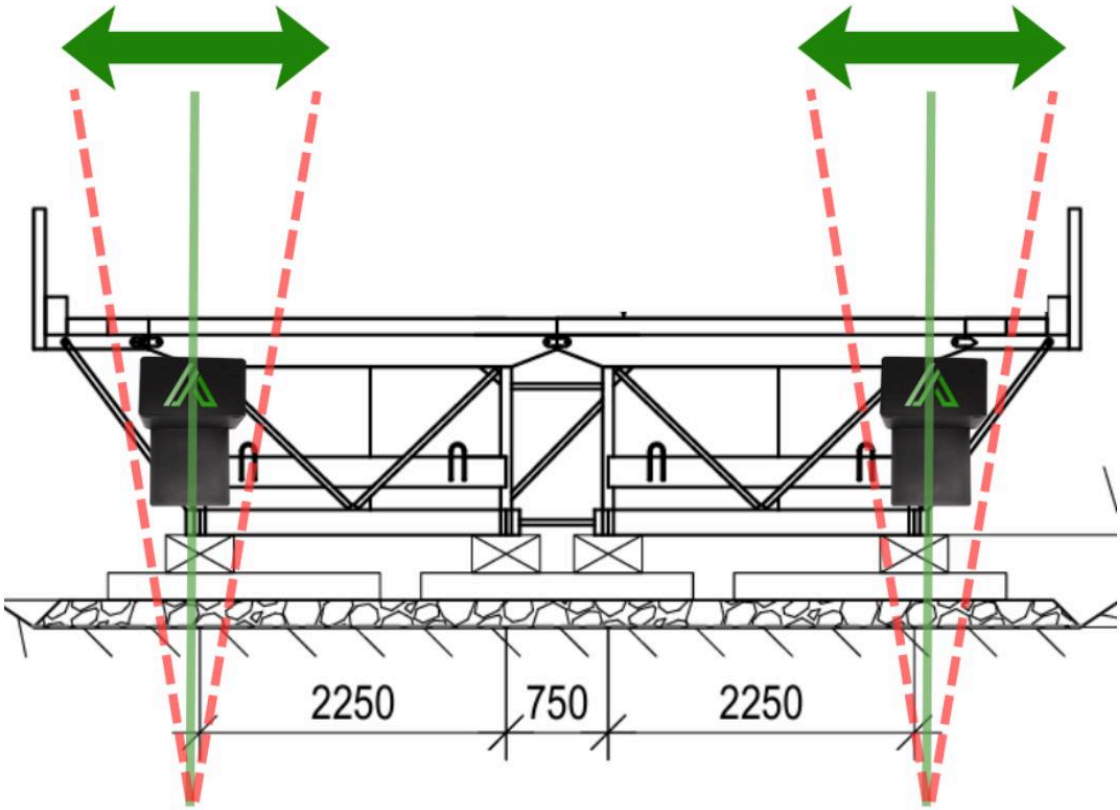
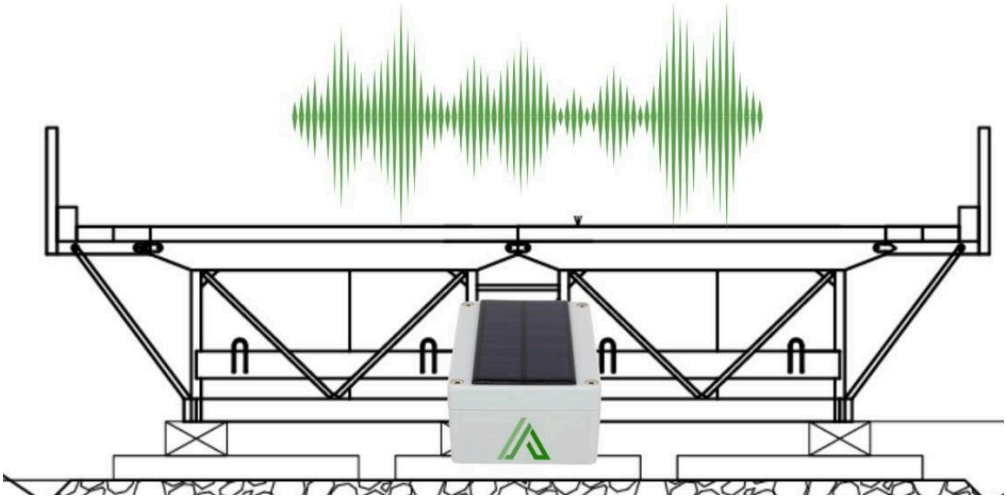
GroundControl: Advanced 3-axis inclination sensors placed on both sides of the bridge superstructure and abutments.

- Purpose: Measures tilting and angular displacement due to dynamic loads or settlement.
- Use Case: Early warning of structural rotation, long-term movement trends.
- Benefits: Helps assess bearing alignment, pier or girder integrity, and detect earlystage deformations.
- Features: High sensitivity, wireless, long-term battery-powered.



QuakeControl: Vibration monitoring system installed on key bridge structural elements such as piers, girders, and abutments.

- Purpose: Measures vibration frequencies and intensity from vehicle loads, wind, seismic activity.
- Use Case: Tracks dynamic performance and fatigue over time.
- Benefits: Identifies anomalous vibration patterns that may indicate cracks, joint deterioration, or resonance effects.
- Specs: Triaxial accelerometer-based with real-time threshold alerts.



Core Components

Temperature Sensors: For expansion joint stress analysis and monitoring seasonal temperature effects.

Displacement Sensors: For bridge deck displacement and joint gap monitoring.

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Liveload.app
Central Analytics Platform

All sensor data is transmitted wirelessly via 5G/LTE gateway to the Liveload.app platform

Key Features:

- Dashboard visualization of sensor metrics in real time
- Historic data analysis & trend reporting
- Threshold-based alarms and notifications (SMS/Email/API)
- Project-specific user interface with secured access
- Cloud-based storage and exportable compliance reports

User Roles:

- Asset Managers: Evaluate structural health KPIs
- Engineers: Analyze long-term behavior for maintenance planning
- Contractors: Validate design assumptions and track construction-phase behavior

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Applications

- Highway Bridges
- Railway Bridges
- Pedestrian and Modular Bridges
- Temporary or Emergency Support Structures

Benefits for Asset Owners & Engineers

- Early detection of structural distress and anomalies
- Cost-efficient predictive maintenance
- Evidence-based decision making for retrofit or capacity enhancement
- Risk reduction during extreme load or seismic events
- Regulatory and insurance compliance

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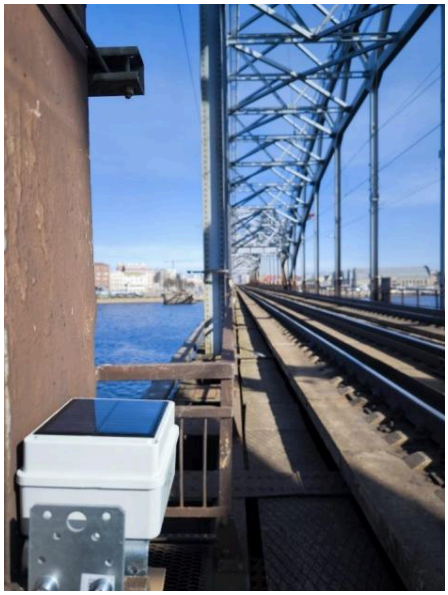
System Configuration & Installation

- Wireless Plug-and-Monitor Deployment
- Configurable sensor quantities depending on bridge size and type
- All sensors are ruggedized (IP67+), solar-power-compatible, and field-calibrated



Contact Adventum Tech

For more details, custom configurations, or pilot projects:

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