IRMOS

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BLS AG: Extending Operational Life with Data

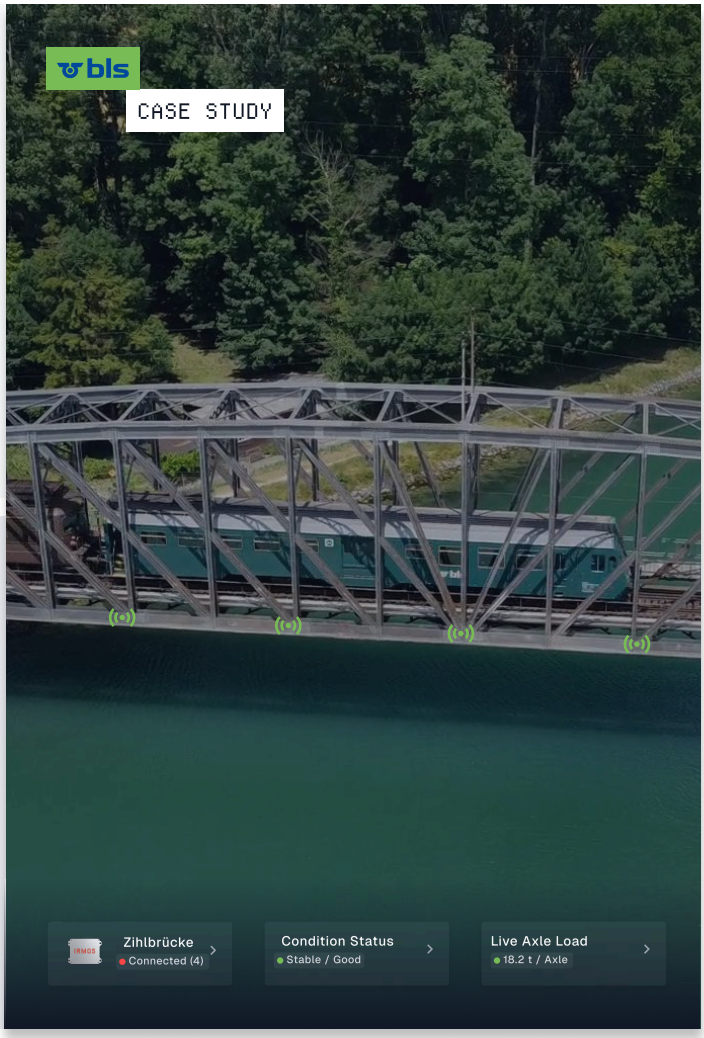
Critical infrastructure is visually inspected according to defined schedules. For larger bridges, load runs are carried out at every inspection cycle, during which deflections at key points are measured geodetically. In addition, long-term settlements of the abutments or piers are monitored using leveling measurements. These activities require thorough planning and are time-consuming due to the necessary personnel resources and scheduling restrictions.

Challenges

- Expensive and subjective information collection based on visual inspections
- Lack of real-world data leads to conservative assumptions for traffic load and dynamic amplification factor
- Inability to detect invisible damage before it becomes critical
- Estimated fatigue service life is depleted

Solution

- Deployment of our high-precision sensors at critical locations to monitor vibrations, deflections, axial deformations, strains, and temperature
- 24/7 Structural Health Monitoring for real-time notifications and alerts
- Bridge-Weigh-in-Motion (BWIM) system to record actual traffic and axle loads
- Automated reporting to complement legally required periodic assessments with real-world data



Impact

IRMOS Live OS allows BLS AG to track the structural integrity of the bridge in real-time. Combined with our BWIM system, the solution delivers reliable estimates of remaining service life under various load scenarios.

Engineering models are calibrated based on the collected data to refine structural assessments. The reduction in uncertainty has allowed BLS AG to consider increasing the speed limit for trains crossing the bridge.

The cost efficiency and scalability of our technology offer a proven complement to today's practices and address future challenges arising from shrinking workforce and aging infrastructure.