

VILLARI | Case Study



Context

In the railway infrastructure sector, ensuring the structural integrity of bridges is key to ensure safety and operational efficiency. Bridges, especially critical members like the main girder, must be closely monitored for any damage or deformation, as these issues can lead to expensive repairs and possible downtime.



The Challenge:

A railway bridge in the Netherlands faced a significant challenge after a truck collided with its structure, causing visible deformation to the bottom flange of the main girder—a critical component of the bridge. The deformation raised concerns about potential crack growth and initially a repair was scheduled - but it would result in excessive downtime and substantial expenses, making it a costly solution.



Villari's Solution:

To avoid unplanned downtime and expensive repairs, Villari collaborated with the bridge's owner to implement a continuous monitoring system. The sensors were strategically placed on the deformed flange, a process that required minimal installation time and no surface preparation. The sensor system detects crack growth by monitoring changes in the ferro-magnetic field of the steel structure, providing real-time data on any structural developments.



Transformation and Results:

Since their installation, the sensors have shown no signs of crack growth. This continuous stream of data provided reassurance that the structural integrity of the bridge remains intact despite the visible deformation. As a result, the bridge owner now has the flexibility to reschedule or avoid a repair - with the cost of monitoring negligible compared to the estimated €100,000 repair cost, besides the bridge operational downtime.



Conclusion:

Villari's innovative monitoring solution allowed the railway bridge owner to make data-driven decisions about the repair timeline, reducing costs and avoiding unnecessary repairs. This case study highlights the power of proactive, continuous monitoring in managing aging or damaged infrastructure. Villari's approach ensures both safety and financial savings, demonstrating how technology can revolutionize asset management in critical sectors like rail transport.

Key Numbers

10
min

Installation time/Sensor

Up to
4.000

Measurements Per Year/Sensor

48
Hours

Maximum Reaction Time

€100k

Repair cost avoided