

Case study



Future-Ready Port Cranes with Smart Monitoring

How Villari's certified wireless crack detection technology transforms STS crane management by extending structural lifetime and optimizing maintenance.



Impact and Results

The implementation of Villari’s sensor system unlocked a new level of data-driven asset management and maintenance. A continuous stream of data provides instant alerts when cracks start to develop. The total inspection and maintenance costs are reduced by more than 40% annually. Additionally, the EOL for each asset could now be precisely assessed – and increased – through the valuable data acquired.

Conclusion

Villari and Partner’s innovative approach not only addressed the immediate challenges faced by the Terminal operator, but also paved the way for a more efficient and cost-effective future in crane maintenance. This case study exemplifies how proactive, data-driven solutions can revolutionize the management of aging assets; ensuring longevity and reliability in crucial terminal operations.

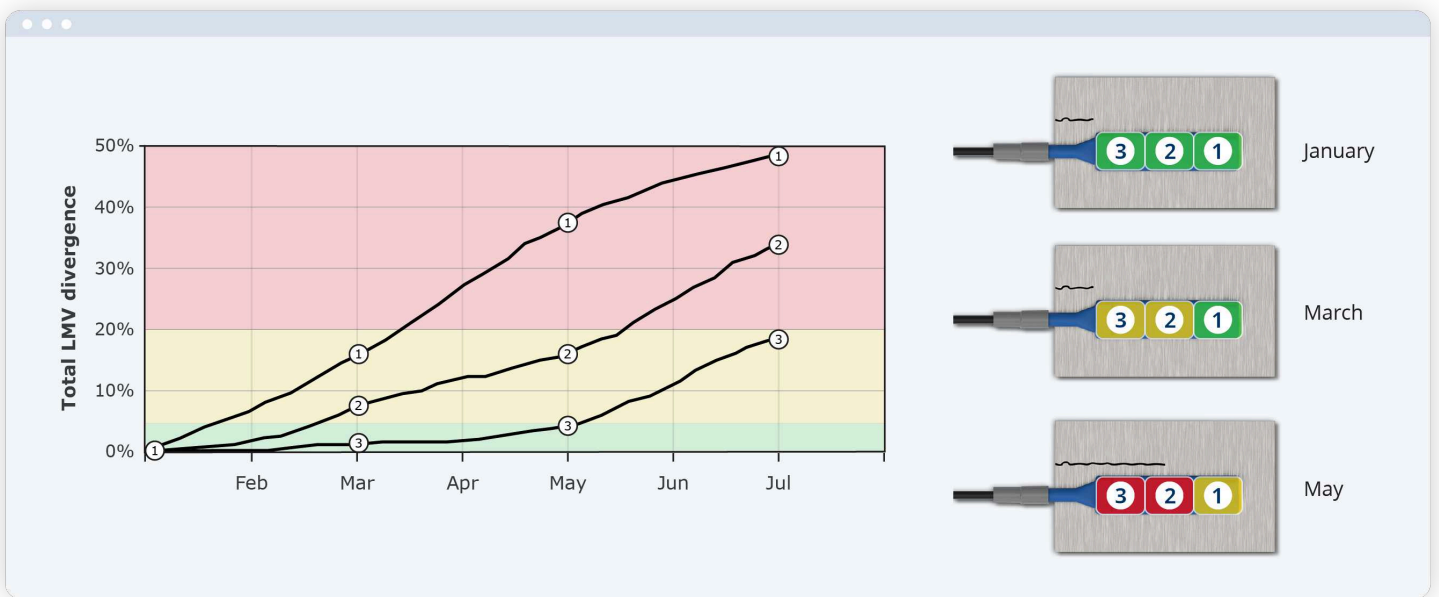


Figure 2 A graph illustrating the key outcomes of Villari’s sensor implementation. The data highlights Villari’s capability of early detecting crack growth and providing unique insights with continuous monitoring.

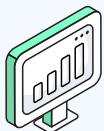
Key Numbers



10 min
Installation time/sensor



48 hours
Maximum response time



Up to 4.000
Measurements per year/sensor



>30-60 %
Reduction in inspection and maintenance costs

Context

In the dynamic realm of Port Operations, the lifespan of a STS crane is a critical factor. Typically lasting between 20 to 45 years, a substantial number of cranes find themselves in the “end-of-lifetime” (“EOL”) stage or beyond. Aging assets face the challenge of cracks appearing due to steel fatigue, resulting in costly inspections, maintenance, and downtime.

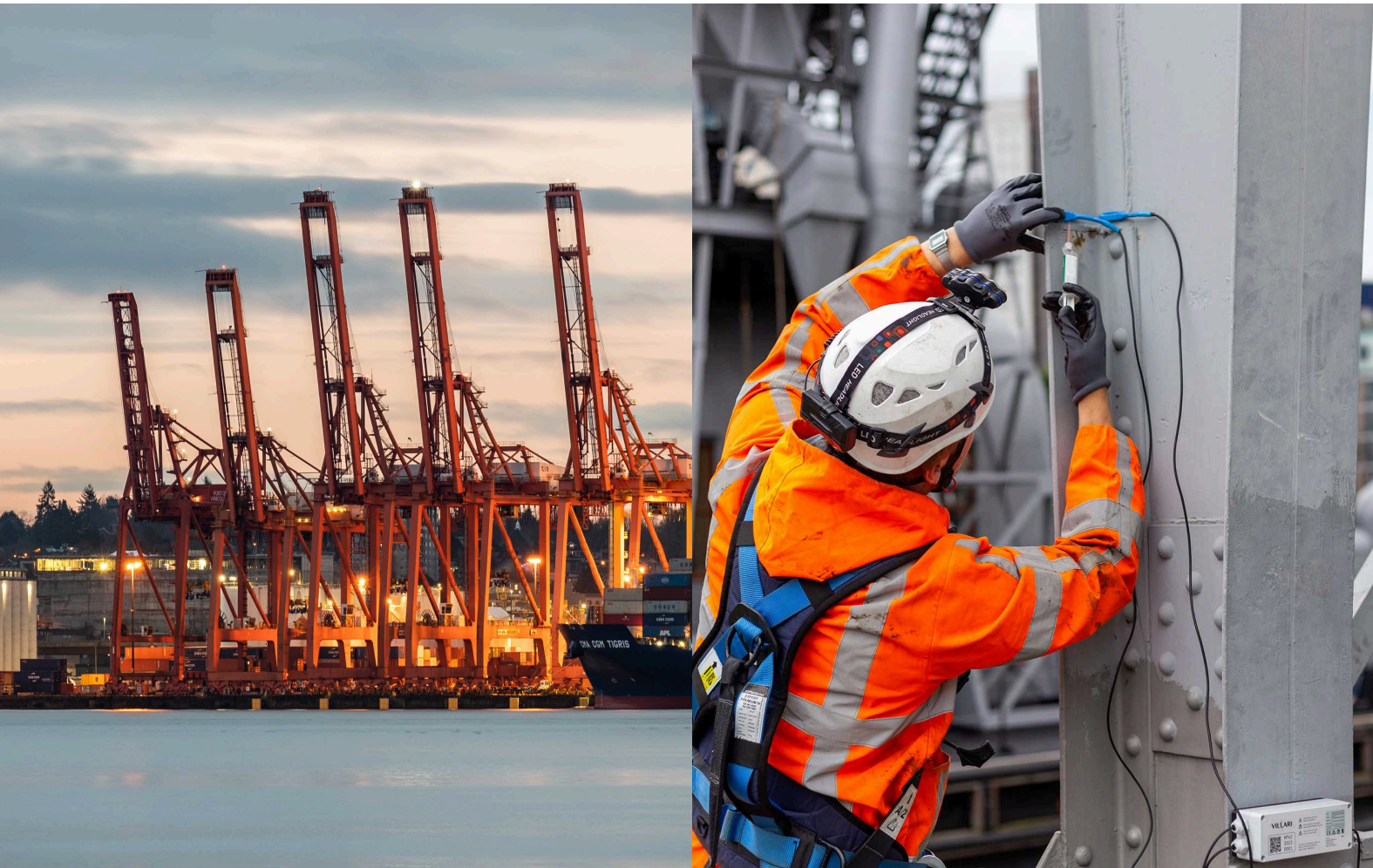
The Challenge

A prominent Terminal Operator in Europe grappled with this exact issue. Seven large STS Cranes, all beyond their EOL stage, required quarterly inspections, that would lead to a major inspection cost of upwards of €250.000 annually. The frequent downtime that would be incurred during inspections added to the financial strain.

Villari’s Solution

Collaborating with an engineering partner, Villari proposed a groundbreaking IoT monitoring solution. Following a comprehensive inspection for each crane, our certified crack detection sensors were strategically deployed in critical locations. Each sensor was installed in 10 minutes without surface preparation and will continue monitoring the crane for up to 5 years.

Figure 1 (Left) This image illustrates a typical STS (Ship-to-shore) steel crane, similar to the type used in the Villari case study. (Right) Villari’s crack detection sensors are typically installed at critical stress points, to ensure continuous monitoring and proactive maintenance.





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