

CRANESINSPECT - Continuous, reliable, advanced, novel and efficient structural health monitoring system for crane inspection applications

There is a vital need for systems to monitor continuously the structural health of cranes. Cranes are one of the most common types of machinery used in industry, installed in industrial plants, construction sites, shipyards, ports, etc., to manipulate loads. In 2008 there were a reported 401 crane accidents, of which 217 were fatal. For crane operators there is a 1 in 1000 risk of being fatally injured.

The project developed an advanced integrated structural health monitoring system to continuously monitor cranes on industrial, logistics, construction, and shipbuilding sites. New non-destructive testing (NDT) techniques and sensor systems are used to inspect for structural damage or cracks in the main frame caused by fatigue, distortion, corrosion, etc., and to provide real-time information about the condition of the structure.



The CRANESInspect monitoring and prevention system features important advantages, such as:

- Real time monitoring of the structure to ensure safety
- Cost-effective and total solutions for inspection/maintenance
- Reduction of human intervention and operator subjectivity
- Highly sensitive and accurate acoustic emission technology
- Low cost and reliable structural health monitoring system for cranes
- Dramatically reduced costs for inspections and insurance during the crane's lifetime
- Prevention of extra costs derived from the structural failure of a crane (down time and compensation costs).

This type of inspection system will lead to a fundamental realignment of inspection/maintenance strategies by detecting the development of structural faults and preventing failure. The outcome of the project is a relatively low cost and reliable structural health monitoring system for cranes, which offers great benefits:

- Dramatically reduced costs for crane inspections and insurance during the crane's lifetime
- Repairs and maintenance can be scheduled exactly when needed while avoiding the risk of failure/



The complete prototype system was assessed both in the laboratory/factory and in the field as part of the capability validation process of the developed system. Finally, as part of the validation process, final experiments were performed on an in-service crane in Rotterdam. No defects were detected during this stage.

For further information, please visit the project website www.cranesinspect.eu

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