

TIM - Non-invasive monitoring of storage tanks

The Tank Integrity Monitoring (TIM) project is working to develop a low frequency ultrasonic technique for the non-invasive condition monitoring of tank floors to detect corrosion or cracking degradation. Leakage from corroded storage tanks, especially their floors, is a major environmental, economic and safety hazard for the UK and Europe. Tank farms are normally coastal and close to large population centres so the risk of tank failure and the potential risk of fire and explosion at adjacent petrochemical plants is unacceptable.



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In-service inspection normally requires taking tanks out of service and emptying, cleaning and going into the tank to perform the inspection tasks. This is costly, time consuming and, since it is carried out on a fixed time interval, there is no prioritisation given to the tanks requiring the most urgent attention.

Project objectives

The main aim of this project is to develop a field-usable long range ultrasonic testing (LRUT), non-destructive testing (NDT) system for the inspection of large above ground bulk liquid, storage tank floors without the need for access to the inside of the tank or to empty its contents.

The specific objectives are:

- To develop new LRUT test techniques based on previously developed and proven LRUT technology, into a field-usable test technique for tank floor testing applications for tanks up to 60metres diameter.
- To determine the sensitivity to degradation achievable and the limits of performance over the target tank range of 30m radius.
- To produce a field prototype LRUT NDT system, sensors, signal processing and software for inspection of tank floors from the outside of the tank.
- To demonstrate and validate the system's performance on in-service, in-situ tanks.
- To integrate the application of this inspection approach with operating techniques and procedures for storage tanks.

The project is aligned to the Technology Strategy Board's High Value Manufacturing (HVM) key technology area in that it creates a high value product (in-situ tester) and will allow UK businesses to offer a service to owner/operators of large storage tanks. A minimum 30% step change reduction in whole life-cycle costs, whole life environmental impact and whole life product reliability will result from the project.

The TIM project was funded by the Technology Strategy Board. For further information, please visit the project website at www.timproject.co.uk.



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