

# TELETEST™ FOCUS+ IN FINNED TUBE INSPECTION APPLICATIONS

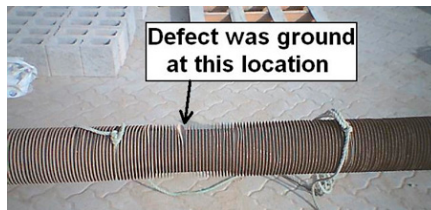
Teletest FOCUS+ is a long-range ultrasonic or guided wave non-destructive testing method developed to detect metal loss in pipes.

It is a pulse-echo system aimed at testing large volumes of material from a single test point. Its initial application was detecting corrosion under insulation (CUI) in petrochemical plant pipes, but it has found widespread use in other inspection situations where pipes or tubes are not accessible, for example when they are buried, encased in a sleeve, or elevated above the ground.

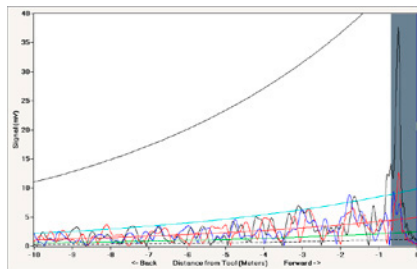
Recently Eddyfi Technologies was called upon to use FOCUS+ to inspect finned tubes in the Middle East. These tubes are subject to severe corrosion and are notoriously difficult to inspect because the fins prevent direct access to conventional NDT probes and internal tools are expensive and impractical.



A defect was ground into the center of the pipe and FOCUS+ was used to see whether this could be detected.



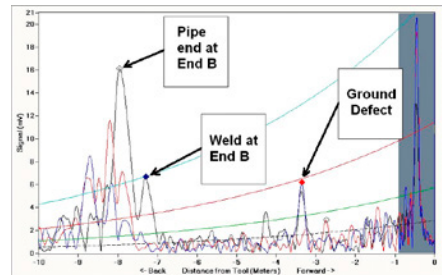
FOCUS+ uses the MultiMode™ system, which enabled inspecting this finned tube using torsional and longitudinal wave modes. Torsional and longitudinal wave modes were found to be affected very differently by the geometry of pipes.



The propagation torsional waves were significantly inhibited by the radial fins along the tube length. This made the

detection of the pipe end impossible and the noise of the pipe high.

Longitudinal waves were relatively unaffected by the radial fins making the data much clearer. With this wave mode the response from the pipe end was easily seen as was the defect at between 3 m (9.8 ft) and 4 m (13.1 ft).



This highlights the advantage of having a standard MultiMode system on the same tool. It ensures that the operator is collecting guided wave data with the optimum wave mode in any situation.

A custom longitudinal tool is under development to inspect these pipes in-situ, negating the need for each pipe to be removed from the furnace for inspection. This could potentially save the end-user significant downtime.