

### **1.3.35. EXPERIMENTAL RESULTS OF GUIDED WAVE TRAVEL TIME TOMOGRAPHY**

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Corrosion is one of the industries major issues. Currently inspections are conducted at regular intervals to ensure a sufficient integrity level of assets. Both economical and social requirements are pushing the industry to even higher levels of availability, reliability and safety of installations. The concept of predictive maintenance using permanent sensors that monitor the integrity of an installation is an interesting addition to the current method of periodic inspections. Guided wave travel time tomography is a promising method to monitor the wall thickness quantitatively over large areas.

Obviously the robustness and reliability of such a monitoring system is of paramount importance. Laboratory experiments have been carried out on a 10" pipe with an nominal wall thickness of 8 mm. Multiple, inline defects have been created with a realistic morphology. The depth of the defects was increased stepwise from 0.5 mm to 2 mm. Additionally the influences of the presence of liquid inside the pipe and surface roughness have been evaluated as well. Experimental results show that this method is capable of providing quantitative wall thickness information over a distance of 4 meter, with an accuracy better than 1 mm. The method has no problems imaging multiple defects.