

## **ACOUSTICS2008/2700**

### **Single-sided air-coupled ultrasonic NDT of thick plates**

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Non-contact air-coupled ultrasonic inspection using single sided access to the material offers interesting possibilities for the development of ultrasonic in-line NDT-systems. This contribution reports observations and simulations obtained from a single-sided air-coupled pitch-catch configuration. The feasibility of the technique is demonstrated with respect to artificial defects in aluminium samples. Depending on the configuration it is possible to establish one or more ultrasonic images of the defect, their number and relative position containing information about the location and depth of the defect. The experiments are simulated using a spectral solution obtained within Comsol, and compared with a full 2D Finite Difference Time Domain simulation and a ray tracing (shadow) approach. The simulations allow simple prediction of the response images in more complicated experimental conditions.