TOFD: (Time of Flight Diffraction)

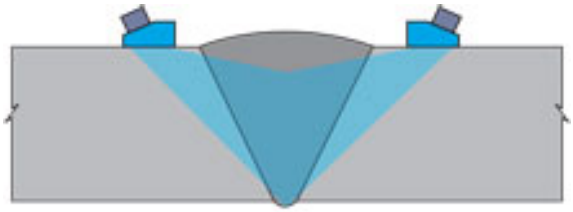
The TOFD technique involves 2 probes transmitting and receiving probes being located equidistant from the weld center, and then scanned parallel to the weld. The technology is so accurate and reliable that normally a single pass is sufficient to enable the desired inspection coverage, irrespective of the type and orientation of flaws.

TOFD - Operational benefits. The key to the TOFD operation is the transmitting probe.

The probe emits a short burst of sound into the material to be inspected. The energy generated then spreads out and propagates into an angular beam. Some of this energy is reflected from the flaw, while some is incident to the flaw and is diffracted away.

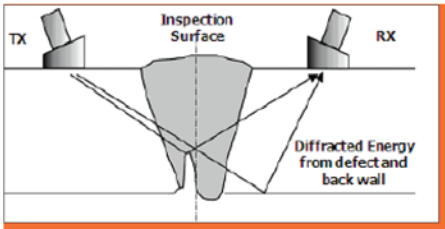
Advantages

• TOFD has a through-wall sizing accuracy of ±1 mm and a crack growth monitoring capability of ± 0.3 mm
• Efficient detection of defects of all orientations
• Permanent digital record of the inspection data with images of the weld quality.

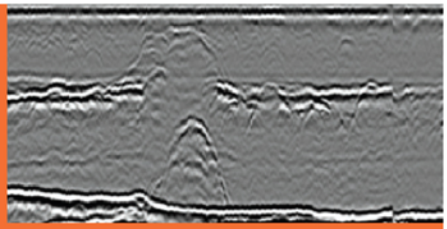


JANX

Has more than 25 Level II TOFD technicians. With over 80 hours of classroom training, and at least 160 hours of on-job training.



Principles of TOFD

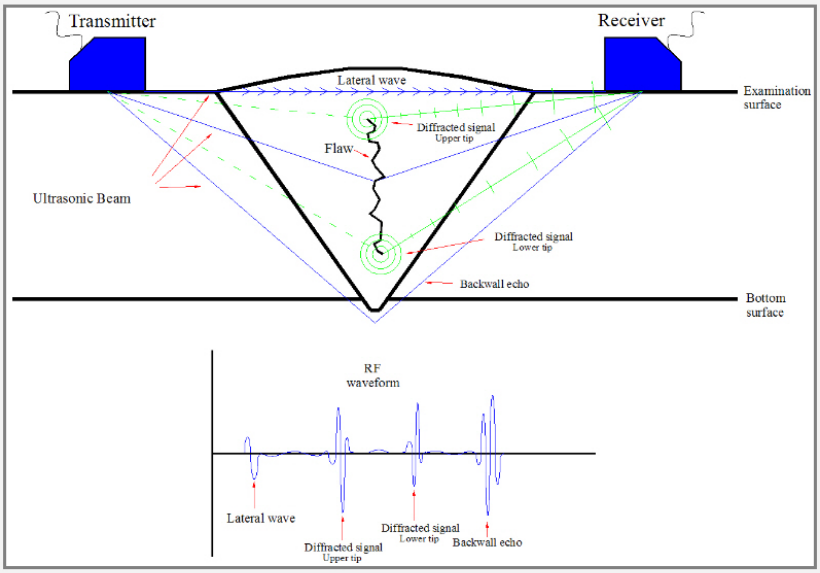


A lateral wave propagates just below the surface and in conjunction with the known ultrasound velocity is used in depth measurements.

- A fraction of the diffracted sound travels towards the receiving probe, and the signal obtained are time resolved.

- Data is collected using a simple single-axis scanning frame with an encased optical encoder for positional information.

- Signals can be enhanced using special software routines and analyzed on ultrasonic imaging system.



The American Society of Mechanical Engineers (ASME), through Section VIII, implemented the use of TOFD in the Boiler and Pressure Vessel code. The purpose of this was to allow ultrasonic examinations on welds greater than 0.500" in thickness in lieu of radiography. The downside to radiography, especially of heavy wall materials, is its long shot time. This results in hours of down time due to its radiation zone, thus causing a loss of production. Ultrasonic scanning can be performed in a matter of minutes, which does not stop production, and is environmentally safe. Other advantages are: fast, accurate, repeatable, full volumetric inspection, and data electronically recorded and saved.

Additional information please contact 517-531-8210 ask for Operations Department or visit our website @ www.janxndt.com