

ULTRASONIC INSPECTION HEAT EXCHANGERS, BOILERS & CONDENSERS



DESCRIPTION

Leak Detection of heat exchangers, boilers and condensers most often involves inspection of three generic areas: tubes, tube sheets and housings. The ultrasonic detection unit can be used to detect leaks three ways: pressure leaks, vacuum leaks or by utilizing a unique Tone transmission method. While it may be necessary to take a unit off-line to inspect for leaks, with ultrasound, it is often possible to perform an inspection while on-line or at partial load.

How Ultrasonic Leak Detection Works

During a leak, the fluid will flow from high pressure to low pressure producing a turbulent flow at the leak site. This turbulence has strong ultrasonic components, which are sensed and translated (via heterodyning) into the audible range where they are heard in headphones and seen as intensity increments on a meter.



Exit turbulence is produced as a fluid or gas moves from high to low pressure

Leak Detection Method

Most often leak detection is concerned with tube leaks. In heat exchangers and condensers, there are situations where the end plates (headers) are removed or water boxes are isolated while the unit is still on-line or at partial load. The tube sheet is scanned while listening for a distinct "hissing" or "rushing" sound of a leak. By adjusting the sensitivity of the instrument to help discriminate direction, move in the direction of the tube with the loudest sound. Should the unit require off-line inspection, it is possible to use the Ultrasonic Tone transmission method. Using ultrasonic transmitters such as the patented Tone Generators, the heat exchanger is flooded with intense ultrasonic sound waves on the shell side and the tube sheet is scanned for a distinct tone sound coming from the leak. As above, adjust the sensitivity to discriminate direction and follow the sound to the loudest point, which will be the leaking tube. While under pressure or vacuum, fittings and casings may also be checked for leakage in a similar manner.

TO FIX IT.....FIRST YOU HAVE TO FIND IT!