NDT Method Comparison

Examining the Non-Destructive Testing (NDT) options for ammonia refrigeration pipe testing will ensure you and/or your mechanical contractor are able to select the best technology for your needs. The details below compare the capabilities of RP versus other common NDT methods.

Capable	Capable with exception	Not Capable

	Radiometric Profiling (RP)	Ultrasonic Thickness (UT)	Industrial Radiography (RT)	Pulsed Eddy Current (PEC)
Zero holes in piping insulation	Jacketing and insulation remains intact	Requires holes / removal of insulation, and surface prep	Jacketing and insulation remain intact	Removal of insulation above 8” thick is required
Zero radiation exposure risk	Testing can occur without operations interruption	Testing can occur without operations interruption	Radiation field present, may require test area barricades and operations interruption	Testing can occur without operations interruption
All piping can be tested	Can test all piping up to 24” diameter, including elbows, and nested and suspended piping	Can test all piping including nested and suspended	Piping must be 6”< diameter; nested, suspended, and elbows cannot be tested	Piping must be <6" diameter; suitable for magnetic steels only
Measure entire pipe profile	Measures entire circumference of pipe, top and bottom, wall to wall	Measures only where transducer is in contact with pipe (about 1” on a single side)	Captures image of 1 or 2 walls	Measures average single wall
Fast evaluation	Average rate is 150+ test locations per day	Average rate is 50 test locations per day	Average rate is 30 test locations per day	Average rate is 100 test locations per day
Pipe wall thickness	Measured on bare and insulated piping	Estimated results; prone to erroneous results on pitted or frozen pipe	Accuracy sensitive to film/source orientation	Erroneous results if isolated pitting is present
Water or ice in insulation	Detected and measured (volume)	Detected with visual after insulation removed	Evidence may or may not be detected	Cannot detect or measure moisture in insulation
Corrosion	Evidence is identified on bare and insulated piping	Detected with visual after removed	Accuracy sensitive to film/source orientation	Erroneous results if isolated pitting is present
Erosion	Evidence is identified on bare and insulated piping	Estimated results; prone to erroneous results on pitted or frozen pipe	Accuracy sensitive to film/source orientation	Erroneous results if isolated pitting is present