

High Density Polyethylene Inspections

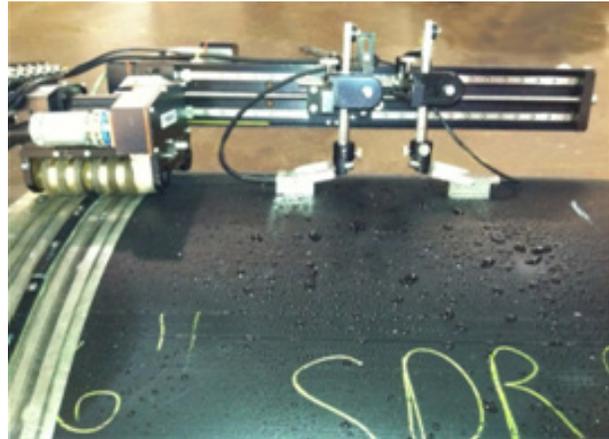
Background

The Nuclear Energy Institute (NEI) guideline, NEI 09-14, Guideline for the Management of Underground Piping and Tank Integrity, specifies that inspections must be performed on buried pipe at nuclear power plants. These inspections may indicate that mitigation is required to keep the system in service. This mitigation may consist of replacement or lining of the pipe in question. High density polyethylene (HDPE) is an attractive candidate for this application, due to its inherent resistance to corrosion.

During the installation process, HDPE pipe segments are joined using a fusion process and these joints must be inspected. Westinghouse, through its subsidiary WesDyne International, offers HDPE inspection services to perform this service.

Description

WesDyne International is known through the nuclear industry for innovative solutions to complex nondestructive examination (NDE) requirements. Building on this experience, an NDE method to inspect HDPE fusion joints is in the process of being developed. This technique utilizes ultrasonic time of flight tip diffraction (TOFD) to interrogate the fusion zone.



Model 5080 Scanner on a sample section of 4.375-inch (11-cm) thick by 35.5-inch (90-cm) diameter HDPE pipe

The system consists of an automated acquisition system, a Model 5080 Scanner, nickel-coated steel strap track (rubber backing to protect pipe surface) and a matching pair of phased array probes. The probe positions can be easily adjusted to accommodate different pipe thicknesses.

The strap track allows for 240 degrees of the pipe circumference to be inspected in one inspection sequence. The track has the ability to be easily moved to cover the second scan area.

Benefits

The TOFD inspection provides:

- Reliable inspections of the HDPE fusion joints
- Automated acquisition with digital storage of data for archival
- Fast setup for inspection

Experience

WesDyne International has developed automated ultrasonic inspection systems and ultrasonic examination techniques including conventional, TOFD and phased array for the nuclear, fossil fuel, aerospace, oil and gas industries.