Guided Wave Analysis LLC
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2-Day Course: Ultrasonic Guided Wave Testing of Pipelines

Pipeline is the primary structural component in processing plants such as refineries, petrochemical and chemical plants, and electric power plants. Maintaining the structural integrity of the tens and hundreds of miles of piping is an important issue for safe operation of a plant. One of the emerging technology for piping inspection and monitoring is long-range guided-wave technology. This technology is in commercial use and new options for assessing pipeline. It can inspect and monitor long sections of pipeline and can detect quickly and economically a cross-sectional defects when properly applied.

The ultrasonic guided wave travels along the pipe with 100% coverage of the pipe wall and rapidly surveys a long length of pipeline from a single test location. The corrosion wall loss and cracks in aboveground, insulated, and buried pipe can be detected, and their locations and sizes can be estimated by analyzing the data with user-friendly software. The guided wave is useful for inspecting and monitoring areas that are difficult to access, such as those at high elevations, behind walls, or under insulation, from a remote accessible location. This saves the time and money that would otherwise be used for scaffolding, insulation removal, or excavation.

Three guided wave systems for surveying pipeline are currently in commercial use for piping inspection: magnetostrictive sensor (MsS) system, GUL wavemaker, and Teletest. For generating and receiving of guided wave in pipe, MsS system is based on the magnetostrictive sensor (MsS) developed by Southwest Research Institute® (SwRI®) in USA; the other two are systems are based on piezoelectric array sensors developed by Imperial College in United Kingdom. The three systems are compared in their characteristics. The MsS system is explained in detail including generation and detection principle of guided wave, making probe, and applications.

This two-day course is designed for maintenance management personnel, inspectors, or operators responsible for pipeline integrity in oil or gas companies, refinery, chemical, petrochemical plant, or offshore pipeline. Participants will gain an understanding of ultrasonic guided wave technology for inspection and monitoring of pipelines.

The course will teach physical background on guided waves, commercialized system for long-range guided-wave inspection and monitoring, probe installation and guided-wave system operation, data acquisition, mistakes of inspectors, data analysis software and making inspection report, examples of field test inspection report, guided wave monitoring, and application examples of guided wave technology. Emphasis will be placed on the application area, what the guided wave can do, and what the guided wave cannot do, and thus the trainees will learn ideas for guided wave application in their facilities.

Where: Guided Wave Analysis LLC and Southwest Research Institute (SwRI)

Training cost: $1,200.00 per person (minimum 4 people required for course to make)

Instructor: Sang Kim at Guided Wave Analysis LLC is the instructor. He has been researching and developing the technology for last 12 years, training inspectors or operators in inspection companies, and consulting companies using MsS guided wave systems.

Registration: Upon email response of attending the course, the registration form and invoice will be emailed. The registration form includes the information of name, company name, address, telephone number, email address of trainee. The training fee should be paid at the time of registration. The registration is accepted up to five business days prior to the training.

Cancellation: Guided Wave Analysis LLC makes the decision to offer each course based on advanced registration. We reserve the right to cancel the course if there is insufficient enrollment.

Refunds: Guided Wave Analysis LLC will refund the course fee for the cancelled course. If the registered person does not attend to the course with a written notice through email until 1 day before the course start, the half of the course fee will be refunded.

Contact Information: If you need any help in attending the course, email Heui Kim at hk@gwanalysis.com or call 210-842-5819.

2-DAY TRAINING COUSE SCHEDULE

COURSE OF DAY1

8:00 am	Introductory Remarks and Course
	Handouts -- Presentation materials
	Course overview of guided wave testing
9:00 am	Technical Background on Guided Waves
	Physical background on guided waves
	Direction control of guided wave
	Comparisons of guided wave testing systems
12:00pm	Lunch
1:00 pm	Demonstration of guided wave testing with sample pipe
	Probe installation on pipe
	Data acquisition
2:30 am	Guided-wave data analysis software and reading inspection report
	Frequency analysis of signal
	Calibration of distance
	Amplitude calibration with weld signals
	Threshold level of defect findings
	Reading inspection reports and verifying indications
5:00pm	Adjourn

COURSE OF DAY2

8:00 am	Guided wave field testing at Southwest Research Institute
	Data acquisition of 4.5-inch-OD pipe and defect verification with signals
	Bitumen-coated pipeline inspection
	Testing of pipelines selected by trainees
	Learn about sensitivity and inspection range of guided wave testing
12:00pm	Lunch
1:00 pm	Field applications of guided wave testing
	Capability and limitation
	Geometric feature effects
	Effects of Soil, coating, and pipe content
	Inspection range of guided wave testing
	Defect sizes, threshold level, and pipe size
4:00pm	Questions and answers about guided wave testing
5:00pm	Adjourn

Notice: The above agenda may be changed depending on weather conditions or trainee's schedule.