



Guided Wave Analysis LLC

For Magnetostrictive Sensor Technology

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Guided Wave Testing System for Long-Range Guided Wave Inspection Service

Guided Wave Analysis LLC (GWA) supports pipeline inspection companies with leasing magnetostrictive sensor (MsS) system for long-range guided wave testing. The rental of MsS System is available to any pipeline inspection company that wants to support clients with quality service with long-range guided wave testing.

The guided wave testing is a method for rapidly surveying a pipeline using low-frequency ultrasonic wave generated from a single test location. The corrosion wall loss and cracks in aboveground, buried, and insulated pipe can be detected, and their locations and sizes can be estimated by analyzing the data using user-friendly software.

Guided Wave Analysis LLC supports inspection companies that want to rent MsS system for long-range guided wave testing as follows:

- 1) Leasing the full system for long-range guided wave service
- 2) Five(5) -day guided wave training for Level I inspectors
- 3) Supplying consumable items for guided-wave inspection or monitoring service
- 4) Writing a detail procedure for field application and continuous consulting
- 5) Supporting with data analysis if clients require.

The leasing price of MsS system listed in EXHIBIT A is \$10,000/month for the first month, and \$9,000/month for the following month. The leasing price does not include the costs of training, consumable items, and data analysis service. The minimum leasing period is one month.

Procedure for leasing MsS system for a long-range guided wave service are as follows:

- 1) Contact us by email at rent@gwanalysis.com or Heui Kim at 1-210-842-5819
- 2) Discuss about your applications with guided wave system and schedule for renting.
- 3) Reserve training dates for Level I inspectors (Existing clients who already completed MsS level I course, don't need to take it again).
- 4) Sign the loan agreement and pay the leasing cost of the first month before shipping the system.

What you can do with the leased equipment?

1. Inspect any pipe size of 0.25-inch to 60-inch outer diameter. Consumable items need to be purchased by the inspection company.
2. Operate any frequency between 8 kHz to 250 kHz. The operation at high-frequency can reduce the near-field zone (including dead zone) less than 0.5 ft.
3. Inspect and monitor road-crossing pipeline, piping system in oil, gas, petrochemical, and power companies.

EXHIBIT A

MsS EQUIPMENT RENTAL LIST

1. Instrumentation and Cables

- 1 each MsSR3030R™ Instrument with instruction manuals --- Figure 1
- 1 each Laptop Computer for data acquisition and reporting; software was installed in computer
- 1 each Battery charging adapter
- 2 each Battery for MsSR3030R



Figure 1. MsSR3030R and Laptop Computer

- 1 each 50-ft (15-m)-long interconnection cable between MsSR3030R™ and MsS Inspection Probes
- 1 each 100-ft (30-m)-long interconnection cable between MsSR3030R™ and MsS Inspection Probes

2. MsS Probes and Ribbon Coils

- 3 each Single MsS probe for operating 22 kHz and lower frequency torsional mode
- 2 each Dual MsS probe for operating torsional mode of 22 kHz to 45 kHz
- 1 each Dual MsS probe for operating torsional mode of 32 kHz to 64 kHz
- 2 each Dual MsS probe for operating torsional mode of 45 kHz to 90 kHz
- 1 each Dual MsS probe for operating torsional mode of 64 kHz to 130 kHz
- 1 each Dual MsS probe for operating torsional mode of 90 kHz to 160 kHz
- 1 each Dual MsS probe for operating torsional mode of 140 kHz to 230 kHz
- 1 each Dual MsS probe for operating torsional mode of 200 kHz to 310 kHz
- 2 each Y-connector between 4-pin and two 2-pin Lemo connectors
- 1 each X-connector for connecting two dual adapters
- 2 each Alligator Monitoring connector
- 1 set Matching 40-pin conductor ribbon coils for 4-, 8-, 12-, 16-, 20-, 24-, 30-, and 40-inch-OD pipe; 1 ribbon coils for each pipe size
- 2 each Conditioner for magnetostrictive (or ferromagnetic) strip
- 1 set Tools for making MsS ribbon cable of arbitrary pipe size and MsS probe installing tools in pipe.