



SOUTHWEST RESEARCH INSTITUTE



MsSRv5TM

Fifth-Generation Magnetostrictive Sensor Instrumentation System

Magnetostrictive sensor (MsS[®]) technology, developed at Southwest Research Institute[®] (SwRI[®]), provides inspectors with a rapid, cost-effective means to assess the structural integrity of tubes, pipes, and plate structures in oil, gas, nuclear, petrochemical, and other industries. The technique provides full volumetric coverage of tested structures for corrosion defects and cracks using guided waves. Up to several hundred feet of pipe can be inspected from a single sensor location, and, except at the sensor location, no removal of insulation or coating is required.

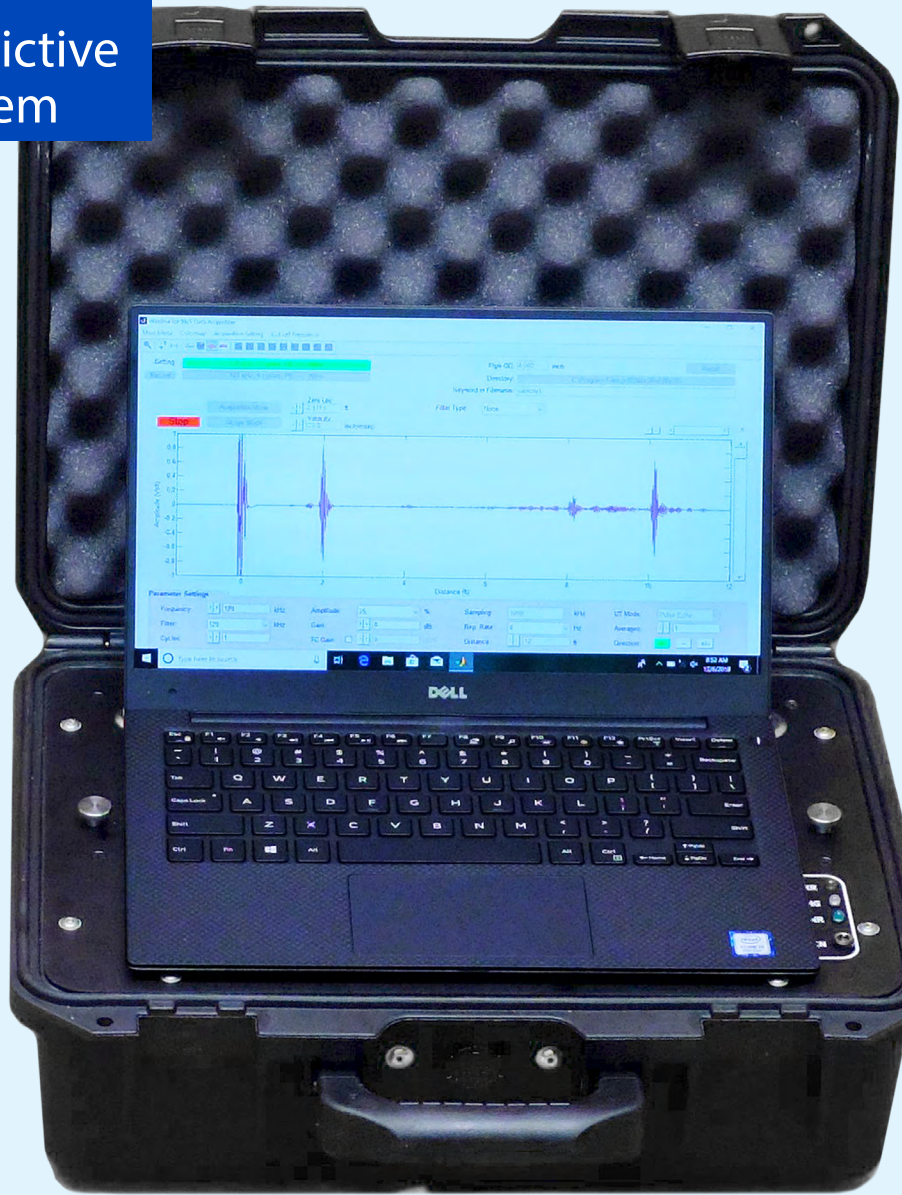
MsSRv5TM is the fifth generation of magnetostrictive sensor guided wave instruments, designed and developed based on 10 years of MsSR3030R[®] field experience. Advantages include smaller size, lighter weight (11 lbs), longer battery life, water resistance, and a more ruggedized design with overcurrent and overtemperature protection.

The MsSRv5 operates with a great variety of magnetostrictive sensors (MsS or MsT) suitable for guided wave testing of pipes, plates, anchor rods, steel ropes or heat exchanger tubes. Over the past two years, more than 50 systems have been shipped to clients worldwide.

Specifications

Transmitter

- Outputs: Two high-voltage differentially driven, synchronous, burst-type outputs; may be operated in-phase or with ± 0 -degree phase displacement (for directionality control)
- Waveform Type: Square wave
- No. of Cycles: 1–14 cycles selectable
- Output Voltage: 240 Vpp max
- Output Current: 40 amps P-P
- Output Amplitude: 0, 25, 50, 100%
- Frequency: 1 kHz to 500 kHz
- Pulsing rate (PRF): 1, 2, 4, 8, and 16 pulses/sec



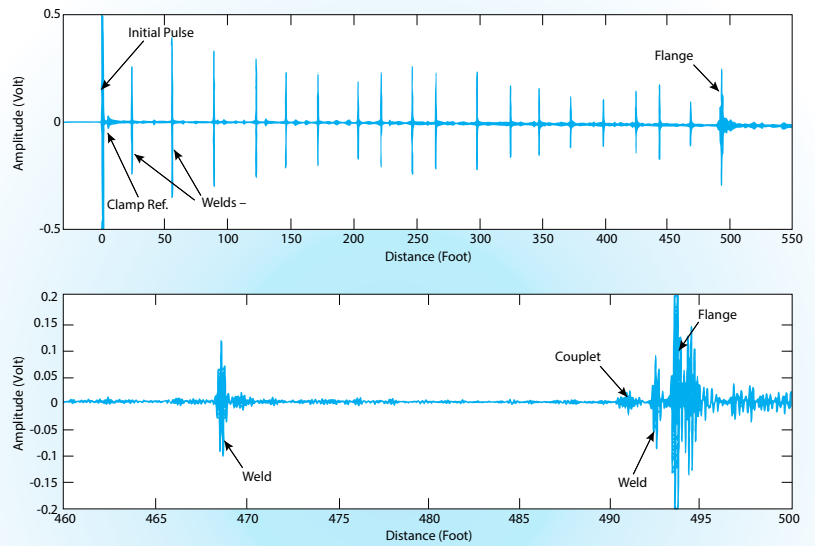
MsSRv5 instrumentation system

Receiver

- Input: Two high-voltage differential inputs summed together. Prior to summation, the signals may be electronically phase shifted +/- 90 degrees for directionality control. Input overvoltage protection
- Programmable gain: 0–80 dB (1-dB steps)
- Time-controlled Gain (TCG): 0–80 dB linear ramp
- Filters: Eight 4-pole active filters with center frequencies of 16, 32, 45, 60, 90, 128, 180, 250 kHz standard; other choices available
- Operating modes: Pulse-echo and pitch-catch

General

- Communication: USB 2.0
- Data resolution: 12 bits
- Power supply: One Li-ion Battery
- Battery life: Minimum 24 hours continuously pulsing (test condition: 25% power, 128 kHz, 3 cycle pulses, 4 Hz PRF, 3-inch pipe sensor)
- Overcurrent and overtemperature protection
- Temperature: -15°C to +40°C (operating); -20°C to +60°C (storage)
- Humidity: 10 % to 80 % relative humidity (operating, non-condensing)
- Dimensions: 41.1 x 32.3 x 16.8 cm (16.2 x 12.7 x 6.6 inches)
- Weight: 5 kg (11 lbs) including battery (without laptop PC)
- Water-resistant



MsS data collected from a 16-inch diameter gas transmission line over a 500-foot-long section containing 19 welds and a flange connection (top waveform). The bottom waveform shows signals from a weld and couplet (type of piping branch) next to the flange.

We welcome your inquiries.

For more information, please contact:

Yanquan Xia, PhD
Principal Engineer
210.522.5395
yxia@swri.org

Sergey Vinogradov, PhD
Staff Engineer
210.522.3342
svinogradov@swri.org

Clinton Thwing
Manager
210.522.3989
cthwing@swri.org

Sensor Systems & NDE Technology
Structural Engineering Department
Mechanical Engineering Division

ndesensors.swri.org

SOUTHWEST RESEARCH INSTITUTE

Southwest Research Institute is a premier independent, nonprofit research and development organization using multidisciplinary services to provide solutions to some of the world's most challenging scientific and engineering problems. Headquartered in San Antonio, Texas, our client-focused, client-funded organization occupies 1,200 acres, providing more than 2.3 million square feet of laboratories, test facilities, workshops, and offices for more than 2,600 employees who perform contract work for government and industry clients.

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210.522.2122
ask@swri.org

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