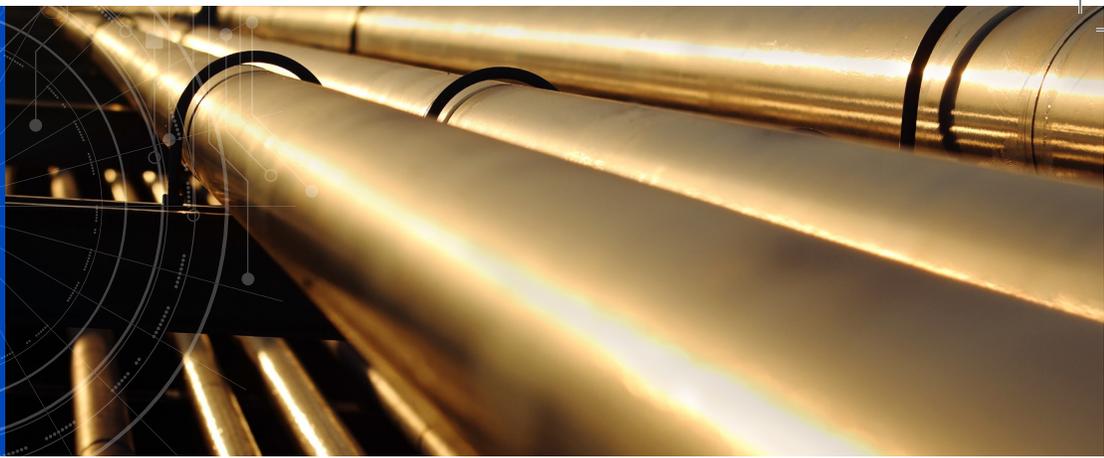




SOUTHWEST RESEARCH INSTITUTE



## Guided Wave Systems for Screening Pipe Supports Using Extendable Arm

Restricted access to corrosion damaged pipe supports makes conventional nondestructive evaluation (NDE) challenging.

Engineers at Southwest Research Institute® (SwRI®) have developed a system using guided waves to evaluate pipe supports using a high-powered magnetostrictive transducer (MsT) probe on an extendable arm, eliminating the need for scaffolding, and allowing for a large number of pipe supports to be screened in a day. A guided wave probe can be mounted on top of the arm and coupled to the bottom of a pipe using a shear wave couplant.

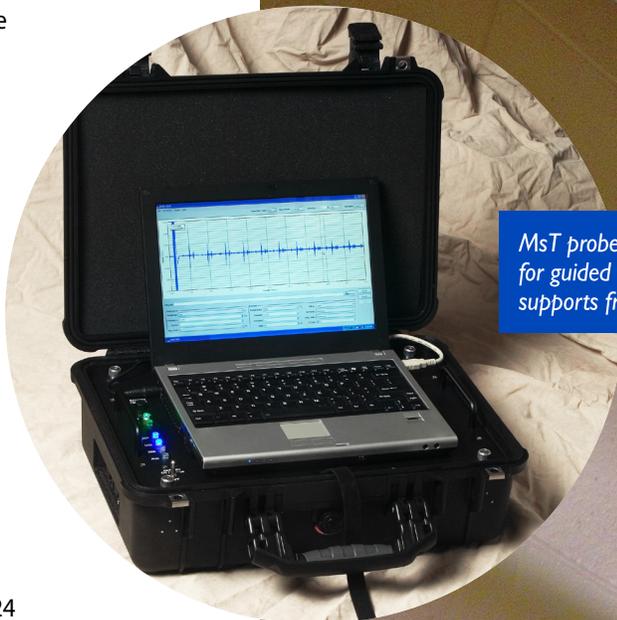
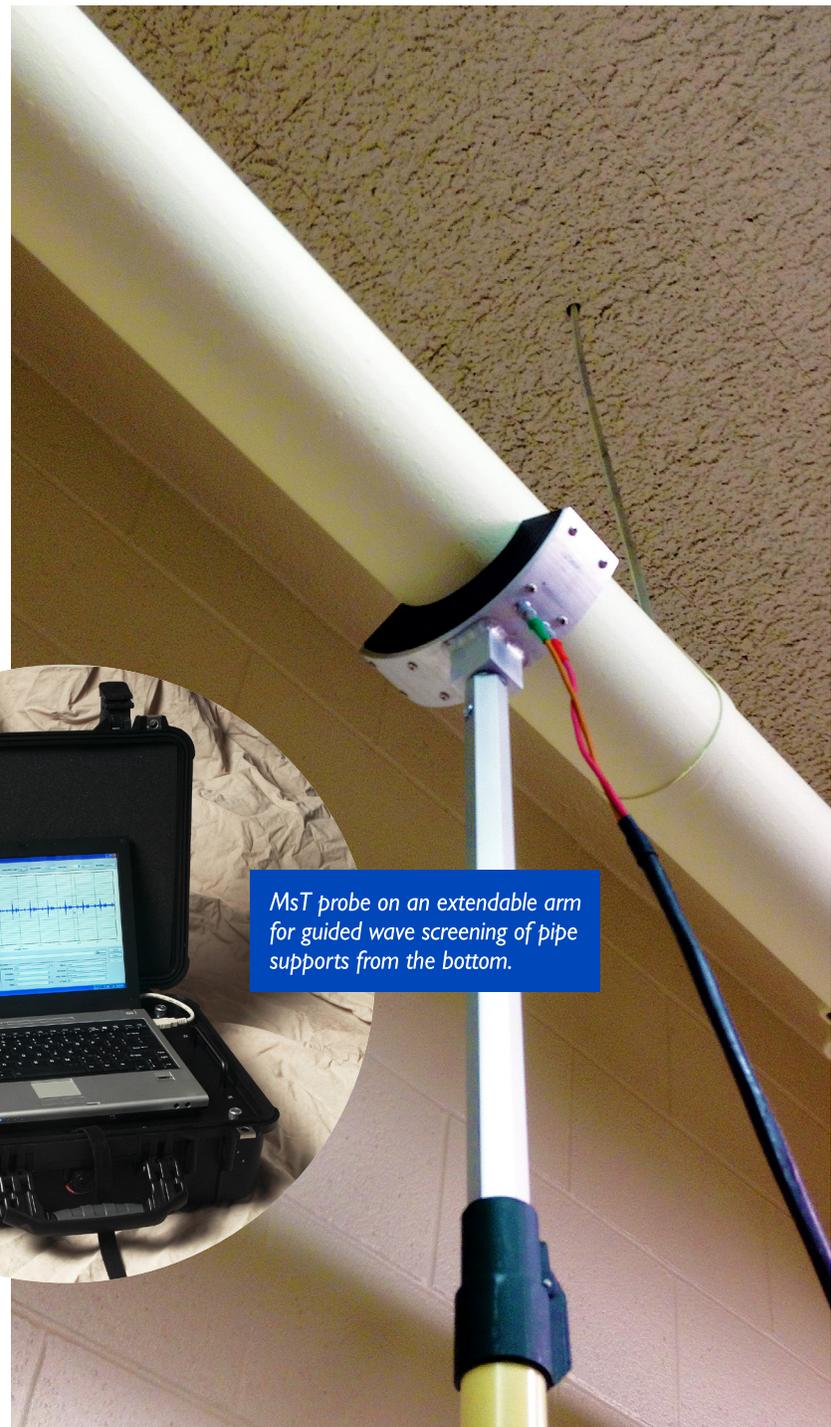
The MsT probe has a solenoidal excitation coil wrapped around an iron cobalt (FeCo) strip, and a belt with built-in magnets to provide magnetization to the FeCo.

### Advantages of using MsT probes:

- High signal amplitudes produced by a solenoidal excitation coil allows signal-to-noise ratios above 60 dB
- Stable permanent magnets provide consistent signal amplitudes over long periods of time
- Protective coatings and ruggedized transducer design allows for multiple applications or long-term use of the same transducer
- Applicable frequency range: 30-250 kHz.

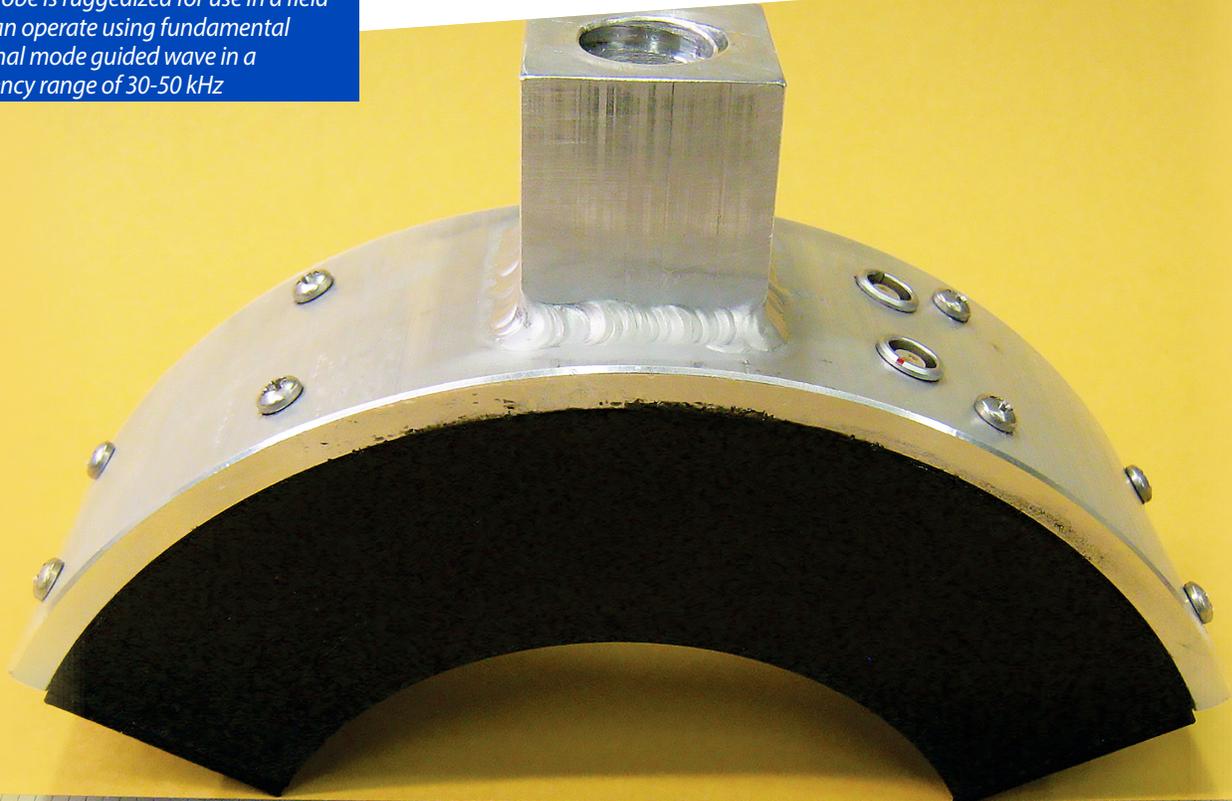
This field-deployed system is effective in finding problem areas under pipe supports. Typically, low frequencies (20-50 kHz) are used to identify the presence of gradual wall thinning, and higher frequencies (above 128 kHz) are used for smaller anomalies such as pitting or cracking.

At 128 kHz, the MsT probe has a dead zone of about four inches and can be placed near (12-24 inches) the pipe support.



*MsT probe on an extendable arm for guided wave screening of pipe supports from the bottom.*

MST probe is ruggedized for use in a field and can operate using fundamental torsional mode guided wave in a frequency range of 30-50 kHz



We welcome your inquiries.  
For more information, please contact:

**Sergey Vinogradov, PhD**  
Staff Engineer  
210.522.3342  
[svinogradov@swri.org](mailto:svinogradov@swri.org)

**Adam Cobb, PhD**  
Principal Engineer  
210.522.5564  
[acobb@swri.org](mailto:acobb@swri.org)

Sensor Systems and NDE Technology  
Structural Engineering Department  
Mechanical Engineering Division  
**[ndesensors.swri.org](http://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 1,500 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.

An Equal Employment Opportunity/Affirmative Action Employer  
Race/Color/Religion/Sex/Sexual Orientation/Gender Identity/National Origin/Disabled/Veteran  
Committed to Diversity in the Workplace

Like. Share. Follow. Listen.

210.522.2122  
[ask@swri.org](mailto:ask@swri.org)



©2022 Southwest Research Institute.

All rights reserved.

Designed & printed by SwRI MPS 18-0922 JCN 268017 tp