

PROJECT facts

U.S. DEPARTMENT OF ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Natural Gas
Infrastructure Reliability

02/2002

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PRIMARY PROJECT PARTNER

Battelle Memorial Institute
Columbus, OH

PROJECT DURATION

12 Months

COST SHARING

DOE	\$184,234
Non-DOE	\$100,000

SCNG WEBSITE

www.netl.doe.gov/scng

CIRCUMFERENTIAL MFL IN-LINE INSPECTION FOR CRACKS IN PIPELINES

Description

This project will develop an in-line inspection system to detect and size cracks in natural gas pipelines. Currently, operators use magnetic flux leakage technology to detect metal loss in a pipeline by measuring variations in a magnetic field as it passes through a pipe wall. But the need for accurate detection and sizing of axial cracks through in-line inspection is increasing. The Office of Pipeline Safety has announced new integrity rules aimed at ensuring pipeline safety. Demands for increased gas throughput make the reliability of pipeline systems critical. Detection of cracks and other flaws that can cause failures is paramount to operating safely and reliably in the 21st century.

Battelle Memorial Institute will evaluate and improve the capability of using circumferential magnetic flux leakage (MFL) inspection to detect and size axially oriented cracks in natural gas and hazardous liquid pipelines. The project has four parts: (1) data collection with both axial and circumferential MFL inspection equipment, (2) development of noise filtering algorithms based on the axial MFL data, (3) development of stress detection algorithms based on circumferential MFL data, and (4) development of a data analysis methodology using filtered circumferential MFL data and the stress detection algorithms. Battelle also plans to estimate the likelihood of detecting cracks using this method and blind data.

Co-funding is being provided by the Gas Technology Institute and the Pipeline Research Council International.



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CUSTOMER SERVICE

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Goal

The goal of this project is to help modernize the nation's natural gas delivery system. It responds to the Secretary of Energy's message of May 2001: "By 2020, Americans will be consuming 50 percent more natural gas than today. We will need newer, cleaner, and safer pipes to move these larger quantities of natural gas." The project responds to the Natural Gas Infrastructure Reliability Program goal: to foster the technologies needed to ensure the integrity, operational reliability, and efficiency of the nation's natural gas infrastructure as it adapts to rapidly changing natural gas markets.