



Leading Pipeline Research

“The Pipeline Research Council International (PRCI) is the preeminent global collaborative technology development organization of, by, and for the energy pipeline industry.”

 *PRCI's Value Proposition*

Using the leverage generated by our members' resource contributions, we create a research forum of ideas and results producing solutions that assure the safe, reliable, environmentally sound, and cost-effective pipeline transportation of energy to consumers worldwide.

History

PRCI is a not-for-profit, tax-exempt membership organization of energy pipeline companies directing research to enhance the safety, reliability and productivity of the energy pipeline industry. Unique among all pipeline research organizations, PRCI brings together leading pipeline companies from around the world to engage in a collaborative process that is truly “of, by and for” the industry. With the commitment and technical expertise of its members, PRCI develops dynamic research programs devoted to identifying, prioritizing, and implementing the industry’s core research objectives.



The first meeting of the Pipeline Research Committee, 1952

PRCI was established in 1952 as the Pipeline Research Committee of the American Gas Association to address the problem of long-running brittle fractures in natural gas transmission pipelines. In substantially solving that problem within two years, the Committee demonstrated the benefit of industry collaboration

and leveraging voluntary industry funding. Both the industry and PRCI’s membership continue to evolve and broaden. PRCI conducts a collaborative research program for its members, the wider industry, and key government agencies to assure the sustainability of the essential lifelines that deliver most of the world’s energy, both gas and liquids. As a result, PRCI now has a total membership of 52 and is a critical resource for all energy pipelines regardless of where they operate, how they operate, or the purpose of their operation.

Since 1952, PRCI has been recognized around the world as a unique forum within the energy pipeline industry delivering great value to its members and the industry.

Why Research?

Research produces benefits and value for the entire pipeline industry from assuring system safety, environmental performance, productivity and reliability of assets to anticipating change and adapting existing systems through data supporting the design of new pipelines, and the knowledge of where and when they are needed.

It provides intelligence allowing the industry to continue reducing risks *From* and *To* pipelines, and support for influencing public policy affecting the industry.

The results: improved performance, technology development, ROI and profitability, and enhanced public trust for the pipeline industry.

PRCI's Recent Accomplishments & Developments

There are many examples of the collaborative technology developments achieved by PRCI and its members:

Corrosion — Location and Assessment

- Developed guidelines for assessing corrosion in higher strength steels, low toughness pipe, closely spaced defects, at seam and girth welds and under biaxial loading
- Developed techniques to detect, assess, prevent and remediate corrosion in carrier pipes inside casings
- Developed framework for Wet Gas ICDA standard
- Reduced failures & avoided costs for unnecessary maintenance
- Reduced costs for inspection and monitoring of carrier pipes inside casings
- And more...

Mechanical Damage — Location & Assessment

- Verified magnetic models of MFL signals from dents
- Investigated influence of pre-strain and cyclic frequency defects

- Developed method to predict likelihood of failure for dent and gouge damage
- Improved understanding of time-delayed failures to enable reliable strategies for managing external interference damage

ROW Monitoring

- Developed and validated fault tree model to estimate frequency of events
- Developed resource document providing review of successful, new and emerging technologies and leading practices for prevention and detection
- And more...

Growth of Construction Defects

- Characterized failure behavior and mechanical properties of a variety of girth weld types
- Investigated the effect of internal pressure and combined loading on failure behavior of early generation pipe welds
- Extended previous work on older pipelines to determine reliability of girth weld geometries
- Avoided costs for unnecessary replacement of early generation pipe segments

Compressor & Pump Station

- Introduction of “Enhanced Mixing” systems from two vendors that inject fuel gas at pressures from 200-400 psi
- ~200 systems installed in U.S.
- Benefit of consistently achieving < 3 grams NO_x/bhp-hr, with up to 8% fuel efficiency increase reported

Measurement

- Improved custody transfer practice
- Reduction of measurement bias—avoids operational cost penalties and significant customer disputes
- Identifies where established practice could be further improved—e.g. diagnostics for meter cleaning and flow conditioning

Why Collaboration?

Collaboration benefits both the pipeline industry and the individual organizations that participate in research efforts. Research projects then truly reflect the industry's priorities. Leveraging the resources of participants permits a broader, more diverse research agenda and encourages funding from a range of sources.

The resources committed by participants address their specific business needs and are allocated in the most efficient manner.

PRCI Organization & Structure

Pipeline membership is open to companies operating natural gas transmission and crude oil and petroleum products pipelines ("energy pipelines"). PRCI also includes:

- associate members from service providers to the industry
- vendors, or manufacturers of equipment, tools, or pipe

Two levels of Associate Membership:

- **Associate Members**
 - Represented on the Board
 - Eligible to nominate projects and vote on the annual research ballot
 - Eligible to be a member of all Technical Committees
- **Technical Program Associate Members**
 - Eligible to vote on the annual research ballot
 - May participate directly on the Technical Committees they join
 - Eligible to serve on Project Teams established under the Technical Committees

Associate Members' capabilities enable PRCI research to be deployed in the industry and the marketplace. PRCI's current membership includes companies operating in the United States, Canada, Mexico, South America, Europe, Saudi Arabia, and Japan.

PRCI plans and develops research projects through Technical Committees (TCs). These committees:

- are comprised of technical representatives from member companies
- are critical in developing and managing PRCI's research objectives
- assure collaboration in identifying gaps in research and avoiding duplication

Each pipeline member may place representatives on the TCs and Project Teams of its choice. PRCI provides an experienced professional staff—with extensive experience in the energy pipeline industry or in related industries or fields of government—for contract and program management, meeting planning, and project administration.

Chairmen of the TCs are appointed by the chairman of the Board of Directors. TCs gather to review significant research results, provide oversight and management of specific projects where necessary, and to plan new and on-going objectives for research activities.

Project Funding

Funding for PRCI's research program comes mainly from its pipeline member companies and associate members through annual subscriptions allocated to research programs with greatest relevance to their business objectives.

Funding is augmented through: supplemental funding by member companies, associate members, and technical program associate members; and cofunding by non-member pipeline companies, equipment manufacturers, vendors, research development firms, and agencies of the U.S. Government.

Research Contractors

PRCI is justifiably recognized as the preeminent collaborative R&D program in the world through its engagement with a multitude of research development organizations ranging from large, multi-discipline corporations and nonprofit institutions to small, pipeline niche firms to major colleges and universities. With direction and funding from PRCI, these organizations develop the research that PRCI member companies and the wider industry apply on pipeline systems around the world.

Our Members

Working to assure the safe, reliable, environmentally-sound, and cost-effective pipeline transportation of energy to consumers worldwide.



Alliance Pipeline Limited (Canada)

Applus RTD

Association of Oil Pipe Lines
(AOPL)

Berg Steel Pipe Corp.

BJ Pipeline Inspection Services

Boardwalk Pipelines

BP

Buckeye Partners, LP

CenterPoint Energy Gas
Transmission

Chevron Pipe Line Company

Colonial Pipeline Company

Colorado Interstate Gas

Columbia Gas Transmission Corp.

ConocoPhillips Pipe Line Company

Dominion Transmission Corp.

El Paso Natural Gas

Enbridge Pipelines, Inc. (Canada)

EPCO, Inc.

Explorer Pipeline Company

ExxonMobil Pipeline Company

Gassco A.S. (Norway)

Gasum Oy (Finland)

Gaz de France

GE Oil & Gas

IPSCO (Canada)

Lincoln Electric Company

Marathon Pipe Line LLC

N.V. Nederlandse Gasunie
(The Netherlands)



National Fuel Gas Supply Corporation
National Grid (U.K.)
Nippon Steel (Japan)
ONEOK Partners
Pacific Gas & Electric Co.
Panhandle Energy Company
Petrobras (Brazil)
Rosen
Saudi Aramco
Shell Pipeline Company LP
Siemens Energy & Automation, Inc.
Solar Turbines
Southern California Gas Co.
Southern Natural Gas

Spectra Energy Transmission, LLC
T.D. Williamson, Inc.
Tennessee Gas Pipeline
TOTAL S.A. (France)
TransCanada PipeLines, Ltd. (Canada)
TransGas, Ltd. (Canada)
Tuberia Laguna (Mexico)
Tubos de Acero de Mexico
Tuboscope Pipeline Services
Williams Gas Pipeline

Associate Member

Member list as of October 2007



**Pipeline Research Council
International, Inc.**

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