Constantly investing in new technology

With more than 65 years' experience, TransCanada is a leader in the responsible development and reliable operation of North American energy infrastructure, including natural gas and liquids pipelines, power generation and gas storage facilities.

Our industry-leading R&D program focuses on improving the safety and efficiency of our operations and minimizing environmental impacts.

Continually improving the integrity and reliability of our pipelines and assets is, and always has been, one of TransCanada's highest priorities.

Ensuring safety

There's no doubt pipelines are the safest method of transporting the natural gas and crude oil that must be moved throughout North America every day to meet society's needs. Improving the integrity and reliability of our assets is one of our top priorities.

Partnering with universities, colleges, governments and industry peers, we have one of the industry's largest research and development (R&D) programs, investing more than $142 million in R&D projects across North America in the last five years. We have worked with industry partners on R&D successes such as the development of "smart pigs." Originally used to detect large dents or obstructions in the pipe, pigs have been adapted through R&D to detect flaws, cracks or corrosion from the inside.

One type of smart pig utilizes Electromagnetic Acoustic Transducer (EMAT) technology, which works like an ultrasound to take very precise measurements as the pig travels through the pipeline. After 15 years of development and testing, TransCanada has now successfully employed the EMAT tool as part of our pipe integrity program.

In fact, just this year, we set a new North American distance record for a PIG run, sending one of the most advanced PIGs on a four day journey over 900 kilometres through the Canadian Mainline, gathering valuable data for our pipe integrity group. That's more than triple the normal distance, and required the coordinated effort of more than a hundred team members.

As well, TransCanada has been using the latest infrared leak detection system which is capable of identifying miniscule underground gas leaks while flying pipeline routes by helicopter at speeds up to 200 km/h.

At the External Leak Detection Experimental Research (ELDER) facility, engineers from TransCanada, Enbridge, Kinder Morgan and C-FER Technologies have been testing the latest external leak detection technologies to identify optimal methods of detecting leaks on liquids pipelines.

TransCanada
In business to deliver

Engineers test the latest technologies at the External Leak Detection Experimental Research (ELDER) facility.
Photo courtesy of C-FER Technologies

Smart pig modified with EMAT before its launch into the pipeline
Photo courtesy of ROSEN

Improving efficiency and reducing emissions

TransCanada's commitment to reduced emissions and improved efficiency isn't new. For over half a century we have tested promising new technologies to minimize fugitive emissions and reduce emissions and fuel consumption of our pipeline compressors.

For instance, in 1964 we introduced the pipeline industry's first Rolls-Royce Avon turbine – derived from Rolls-Royce's Avon turbojet – in an Ontario compressor station. Over 50 years later, TransCanada operates the biggest fleet of industrial Rolls-Royce engines in the world.

General Electric (GE) is another long-time partner of TransCanada. In 2014, using key industry insights from TransCanada, GE announced the launch of a new 16.5 megawatt gas turbine, developed to meet the industry's evolving challenges. The NOVALT16 gas turbine raises the standards of efficient and reliable pipeline compressions, power generation and oil and gas plant compression applications.

TransCanada has won a number of prestigious awards for developing a Two-Stage Supersonic Ejector that fits into compressors and reduces emissions.

TransCanada's invention of the Two-Stage Supersonic Ejector exemplifies another R&D success in reducing emissions. TransCanada won a number of prestigious awards for developing this innovative ejector that fits into compressors to capture and recycle 100 per cent of the fugitive emissions that would have been normally vented into the atmosphere. The system, which TransCanada patented and has now licenced to a third-party manufacturer, presents a viable way to reduce carbon emissions and increase energy efficiency.

Focusing our R&D dollars on improving efficiency is another way TransCanada has continued to invest in the long-term sustainability of our operations.

Environmental stewardship

TransCanada has played a key role in advancements related to reducing the environmental footprint not only of our own activities, but across the industry. There are dozens of examples of how TransCanada's work has set the standard in terms of environmental stewardship. We've received international recognition for initiatives such as pioneering the use of innovative winter construction techniques to reduce impacts through short-grass prairie ecosystems, investing in the preservation and enhancement of endangered species habitats and adopting and developing new technology to reduce greenhouse gas emissions from our operations.

As well, TransCanada continually works to study and predict the effect of pipelines on soil and groundwater conditions to ensure impacts are mitigated.

TransCanada also invests heavily in research into better understanding and minimizing the impacts of pipeline rights-of-way (RoWs) on sensitive wildlife species, such as grizzly bears and caribou.

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