PureJet Methane Reduction Project: Alberta Demonstration Results

Project Overview

The PureJet Demonstration Project, funded by Emissions Reduction Alberta (ERA), tested an efficient methane capture system at an operational oil and gas site near Brooks, Alberta. The project evaluated how well the PureJet incinerator integrates with existing infrastructure while reducing methane emissions from routine operations.

The technology addresses a pressing industry need: finding practical ways to reduce methane venting while maintaining operational efficiency and meeting evolving regulatory requirements.

The Methane Challenge

Methane has 25 times the warming potential of CO_2 over a 100-year period. Traditionally, oil and gas operations vented methane directly to atmosphere, contributing significantly to provincial emissions totals. With carbon pricing in place and regulations tightening, operators need reliable alternatives to venting.

The PureJet system captures methane at the source and combusts it at 99.92% efficiency, converting it to water vapor and CO_2. This approach reduces the climate impact of methane releases while helping operators manage compliance costs.

Key Results

Technical Performance: The system achieved near-complete methane destruction without requiring modifications to existing well site infrastructure.

Economic Impact: Operators can access Alberta's carbon credit programs and reduce carbon tax liabilities through documented emissions reductions.

Operational Integration: The technology works with current infrastructure, reducing implementation barriers and capital requirements.

Scale Potential: Commercial deployment is planned for 2026, with broader industry adoption targeted by 2030. At full scale, the technology could prevent millions of tonnes of CO_2 equivalent emissions annually.

Environmental and Health Benefits

Beyond greenhouse gas reductions, the system eliminates criteria air contaminants including volatile organic compounds (VOCs) and carbon monoxide. This contributes to improved local air quality around oil and gas operations.

The technology operates without water consumption and integrates into existing sites without additional land disturbance. These design features minimize environmental impacts beyond emissions reductions.

Employment and Skills Development

As the technology scales commercially, it will create demand for technical roles in:

- Emissions monitoring and verification
- System engineering and maintenance
- Carbon offset project development
- Environmental compliance and reporting

These positions require specialized skills in clean technology, emissions measurement, and regulatory frameworks—areas where Alberta is building expertise.

Implementation Timeline

2025-2026: Expand testing to additional sites to validate performance under different operating conditions and enhance system automation.

2026-2028: Commercial rollout with improved monitoring capabilities and data analytics for emissions tracking.

2028-2030: Industry-wide deployment supported by regulatory frameworks, manufacturing capacity, and partnerships with major operators.

The project demonstrates a practical pathway for methane reduction that works within existing industry operations while supporting Alberta's emissions reduction goals.