

OIL & GAS SUCCESS STORY

CNRL Heat String Pump Retrofit

Canadian Natural Resources Ltd.

Calgary, Alberta, Canada

OVERVIEW OF OIL & GAS PROJECT:

NAME OF COMPANY: Canadian Natural Resources Ltd. (CNRL)

GENERAL GEOGRAPHIC LOCATION: Fort St. John

RELEVANT SECTOR OF THE OIL AND NAUTRAL GAS: Production

THE METHANE EMISSION REDUCTION OPPORTUNITY: Gas-driven pumps are used to run a heat string pump. The currently vented methane will be used to provide heat in adjacent buildings.

ESTIMATED ANNUAL EMISSION REDUCTIONS: 739 e³m³ / 9,020 MTCO₂e/year

PROJECT DETAILS

- In the process of doing field sampling related to a potential high to low bleed controller conversion project, Greenpath Energy of Calgary found five gas-driven versamatic heat pumps with high vented methane rates, some pumps exceeding 200 e³m³/year.
- The five pumps in aggregate are estimated to emit almost 10,000 MTCO₂e/year.
- The potential to generate carbon offsets via sale of the reduction to Pacific Carbon Trust made the economics of conversion very attractive.
- CNRL has evaluated a number of different options to address the methane venting issue and has elected to take the vented gas from the gas driven pumps and use that formerly vented gas as supplemental fuel in the line heaters.

PROJECT DEVELOPMENT PLAN

Greenpath Energy completed a field survey in October of 2012 to determine the population of high bleed controllers to determine the viability of a high bleed to low bleed controller conversion offset project.

In the course of doing an inventory of controllers and gas-driven chemical injection pumps, the heat string pumps were quantified using a high flow sampler and the results showed promising potential as a carbon project.

Conversion of the heat string pumps will occur during the first quarter of 2013.

Heat String Pump



Gas Driven Pump



FLIR View



PROPOSED TECHNOLOGIES

High Flow Sampler



Forward Looking Infra Red Camera



PROJECT CHALLENGES

Energy efficiency projects face competition with capital incremental drilling. Incremental drilling is generally much more profitable than a project like the conversion of heat string pumps. The low gas price environment also greatly hampers the incentive for energy efficiency projects. The key challenge in this project was uncovering the magnitude of the opportunity. The use of FLIR cameras and Hi-Flow samplers helped to quantify the opportunity.

The project will likely use the “vent gas capture module” of the oil and gas meta protocol to quantify the reductions when implemented.

ECONOMIC ANALYSIS/BENEFITS

Without the provision of carbon offsets, the heat string conversion project is marginal. With the addition of carbon offsets, the project meets an internal rate of return criteria similar to that of drilling a new well.

PROJECT FINANCES

- Capital cost estimates will vary depending on the abatement technology selected. Maximum capital expenditure (capex) is projected to be approximately \$50,000 CDN. Pacific Carbon Trust and Canadian Natural are still in the process of negotiating the carbon value associated with the reduction project.

FOR MORE INFORMATION

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