

# OIL & GAS SUCCESS STORY

## Pneumatic Controller Retrofit Project

### Various Locations in British Columbia Devon Canada

#### OVERVIEW OF OIL & GAS PROJECT:

**NAME OF COMPANY:** Devon Canada Corporation

**LOCATION:** Various Devon operated wells, batteries and gas plants primarily in the Fort St. John and Fort Nelson regions of British Columbia (BC).

**RELEVANT SECTOR OF THE OIL AND NATURAL GAS INDUSTRY:** Production

**DESCRIPTION OF THE METHANE EMISSION REDUCTION OPPORTUNITY:** Pneumatic controllers use a pressurized gas for applications in the oil and gas production industry, to regulate process variables such as pressure, flow rate and liquid level. Pneumatic equipment is used because electricity is not readily available at remote production sites. Most pneumatic controllers are powered by natural gas and designed to discharge natural gas to the atmosphere as a part of normal operations.

**ESTIMATED ANNUAL EMISSION REDUCTIONS:** 714,000 m<sup>3</sup> natural gas / 9,800 TCO<sub>2</sub>E

## PROJECT DETAILS

This project has been implemented; however, monitoring and carbon offset creation activities are ongoing.

Devon has approximately 250 pneumatic controllers in BC that vent gas to the atmosphere. Emission reductions are achieved through the conversion of high bleed controllers to low or no-bleed. Depending on the make and model of the pre-existing controller, this involves either a Mizer valve retrofit or the installation of a new low bleed controller. Gas that is not vented as a result of the project is fuel gas consumed on-site or sales gas.

Devon hired a third party consultant to measure the flow rate from all high and low bleed controllers using a high flow sampler. This work also involved the completion of a detailed controller inventory. This information will be used to refine emission reductions estimates and project economics, and is required to develop and verify the associated offset credits.

The project was partially funded through offset credit revenues and would not have been economic without this revenue, based on current natural gas prices. Devon is working with the Prasino Group and CapOp Energy to develop the carbon offsets as part of an aggregation program. Offsets are currently under development and will be sold to the Pacific Carbon Trust. Validation was completed in December 2012.

## PROJECT DEVELOPMENT PLAN

Project was implemented between March 2009 and December 2012. The low bleed controllers that were replaced in 2009 have been successfully operating for several years.

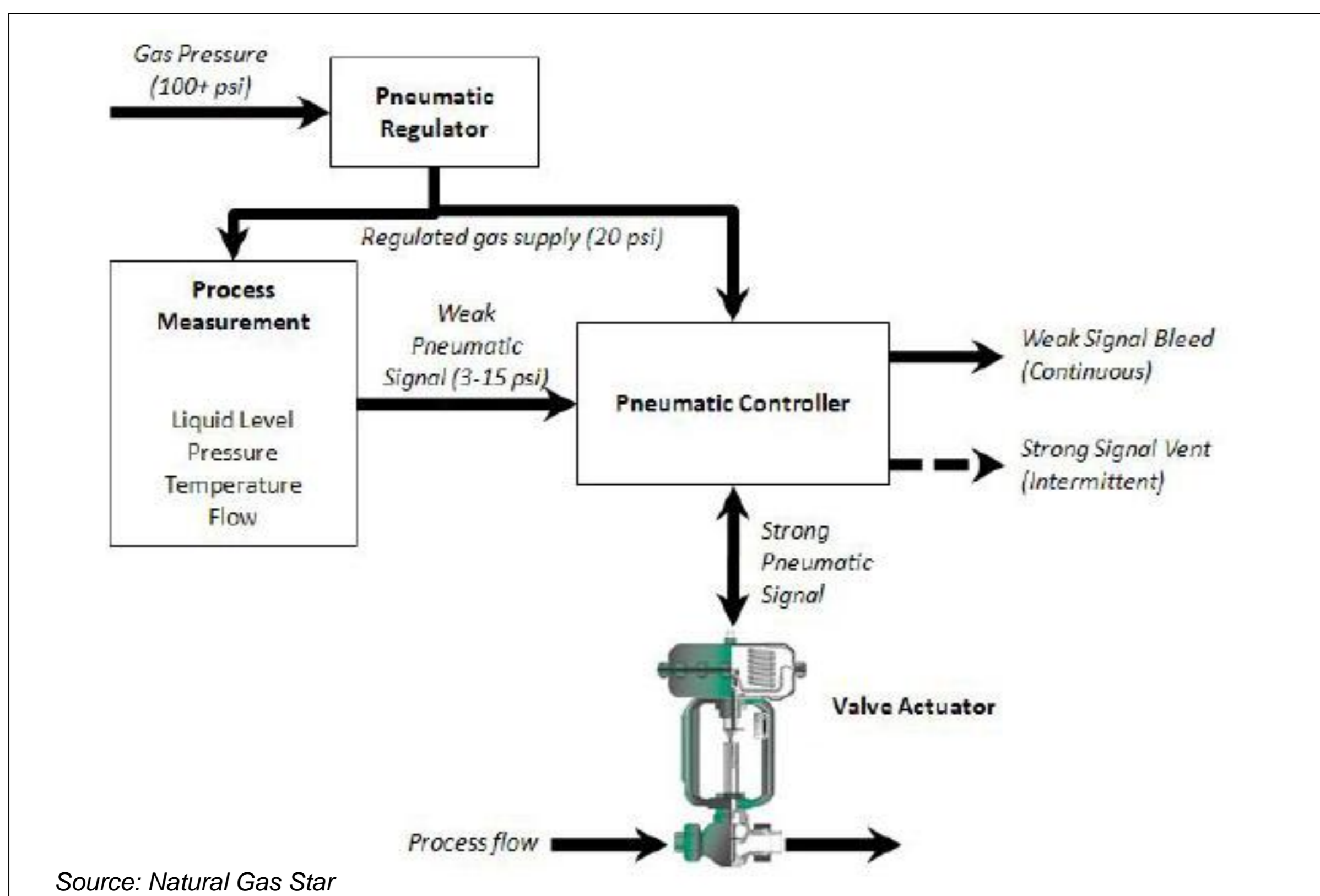


Owner	Date Source	Date of High Bleed Sample	Sampler	Sample Tracking #	For Cap-Op Use: Component Name	Facility Name	Process Description	Installation Date	Expected Replacement Date	Snap Acting?	Field Sample Barometric Pressure (hPa)	Field Sample Gas Temperature (C)	Field Sample Bleed Rate (m <sup>3</sup> /hr)
GPE	Inv Carlos	2012/06/07	GPE	820767		DEVON HELMET B-11-K	Pneumatic Transducer		Life of Facility	No	NA	NA	0.2
GPE	Inv Carlos	2012/06/05	GPE	820744		ANDERSON EAGLE 6-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	
GPE	Inv Carlos	2012/06/05	GPE	820743		ANDERSON EAGLE 6-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	
GPE	Inv Carlos	2012/06/08	GPE	820760			Pneumatic Controller		Life of Facility	No	NA	NA	0.56
GPE	Inv Carlos	2012/06/07	GPE	820763		DEVON BIRLEY B-9-B-G	Pneumatic Transducer		Life of Facility	No	NA	NA	0.73
Grant Cox	S853 & 2011	2012/06/07	GPE	820769			I/P Transducer vent						0.27
GPE	Inv Carlos	2012/06/07	GPE	820769			Pneumatic Transducer		Life of Facility	No	NA	NA	0.27
GPE	Inv Carlos	2012/06/07	GPE	820774		DEVON WARGEN D-5-S	Pneumatic Transducer		Life of Facility	No	NA	NA	0.44
GPE	Inv Carlos	2012/06/07	GPE	820756			Pneumatic Transducer		Life of Facility	No	NA	NA	0.48
GPE	Inv Carlos	2012/06/08	GPE	820764			Pneumatic Transducer		Life of Facility	No	NA	NA	0.49
GPE	Inv Carlos	2012/06/08	GPE	820779		DEVON BIRLEY B-9-B-G	Pneumatic Transducer		Life of Facility	No	NA	NA	0.15
GPE	Inv Carlos	2012/06/06	GPE	820754		DEVON SEPTIMUS 09-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.19
GPE	Inv Carlos	2012/09/10	GPE	820747		DEVON EAGLE 6-22-B-F	Pneumatic Controller		Life of Facility	No	751.6 mm/hg	15	0.48
GPE	Inv Carlos	2012/09/10	GPE	820746		DEVON EAGLE 6-22-B-F	Pneumatic Controller		Life of Facility	No	750.6 mm/hg	13	0.54
GPE	Inv Carlos	2012/06/08	GPE	820767		DEVON BUBBLES A-4-S	Pneumatic Controller		Life of Facility	No	NA	NA	0.74
GPE	2012 BC	2012/06/07	GPE	820768			I/P Transducer vent						0.14
GPE	Inv Carlos	2012/06/08	GPE	820766		DEVON BUBBLES A-4-S	Pneumatic Controller		Life of Facility	No	NA	NA	0.25
GPE	Inv Carlos	2012/09/12	GPE	820748		DEVON MUSKRAT 14-2-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.1
GPE	Inv Carlos	2012/09/11	GPE	840114		DEVON CECIL 6-14-B-4-F							
GPE	Inv Carlos	2012/06/07	GPE	820770			Pneumatic Controller		Life of Facility	No	NA	NA	0.19
GPE	Inv Carlos	2012/09/12	GPE	820749		DEVON MUSKRAT 14-2-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.05
GPE	Inv Carlos	2012/09/08	GPE	823456		DEVON CECIL 6-14-B-4-F	Pneumatic Controller		Life of Facility	No	759.6 mm/hg	22	0.14
GPE	Inv Carlos	2012/06/06	GPE	820751		DEVON SEPTIMUS 09-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.2
GPE	Inv Carlos	2012/09/11	GPE	840118		DEVON CECIL 6-14-B-4-F	Pneumatic Controller		Life of Facility	No	754.3 mm/hg	12	0.49
GPE	Inv Carlos	2012/06/06	GPE	820753		DEVON SEPTIMUS 09-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.53
GPE	Inv Carlos	2012/09/09	GPE	823462		DEVON SEPTIMUS 09-3-F	Pneumatic Transducer		Life of Facility	No	NA	NA	0.56
GPE	Inv Carlos	2012/09/11	GPE	840121		ANDERSON CECIL 15-2-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.24
GPE	Inv Carlos	2012/06/06	GPE	820750		DEVON SEPTIMUS 09-3-F	Pneumatic Controller			No	NA	NA	
GPE	Inv Carlos	2012/06/06	GPE	820752		DEVON SEPTIMUS 09-3-F	Pneumatic Controller			No	NA	NA	
GPE	Inv Carlos	2012/09/08	GPE	823458		DEVON SEPTIMUS 09-3-F	Pneumatic Controller			No	NA	NA	
GPE	Inv Carlos	2012/09/08	GPE	823459		DEVON SEPTIMUS 09-3-F	Pneumatic Controller		Life of Facility	No	NA	NA	
GPE	Inv Carlos	2012/09/08	GPE	823460		DEVON SEPTIMUS 09-3-F	Pneumatic Controller		Life of Facility	No	759.7 mm/hg	22	0.56
GPE	Inv Carlos	2012/09/11	GPE	840119		DEVON CECIL 6-14-B-4-F	Pneumatic Controller		Life of Facility	No	NA	NA	0.36
GPE	Inv Carlos	2012/09/09	GPE	823461		DEVON SEPTIMUS 09-3-F	Pneumatic Transducer		Life of Facility	No	NA	NA	0.24

**DISCLAIMER:** The information and predictions contained within this poster are based on the data provided by the site owners and operators. The Global Methane Initiative cannot take responsibility for the accuracy of this data.



# PROPOSED TECHNOLOGIES



Make	Model	High Bleed Rate (m3/d)	Low Bleed Rate (m3/d)	Alternative Instrument	Estimated Total Installed Cost
Fisher	546	18.7	9.3	Sirius SER Retrofit/Fisher I2P0199	\$2,060
	4150	30.2	0	MIZER Retrofit SIRIUS SER Retrofit	\$1,162 \$2,060
	2500	28.5	14.3	Sirius Retrofit	\$2,060
	2900	24.8	0.1	Sirius Lo Bleed Conversion Kit	\$431
Norriseal	1005P1	1.4			Estimated \$2,000

## PROJECT CHALLENGES

- Low natural gas prices makes energy efficiency projects uneconomic.
- Energy efficiency projects at Devon typically funded using operating budget, and must have a payback period of less than one year.
- Project experienced delays due to early arrival of winter and delays in getting enough low bleed controllers from manufacturer.

## ECONOMIC ANALYSIS/BENEFITS (anticipated)

Assumptions:

- Number of pneumatic controllers converted; 256
- Avoided bleed rate; 15 scf/hr/controller
- Cost per low bleed conversion; \$1,000-\$2,000
- No incremental operating costs
- Discount rate; 10%
- Offsets generated from ~1/3 of conversions and developed through aggregation program to decrease development costs

Rate of Return (10 year)	
Without Offset Revenue	With Offset Revenue
- 3%	17%

## PROJECT FINANCES

- Projected capital costs: CDN\$ 384,000 (for conversion of 256 controllers)
- Projected operation and maintenance costs for fully implemented project: CDN\$ 0/year (no incremental costs)

## FOR MORE INFORMATION

Devon Canada Corporation  
 Lance Miller  
 Environmental Engineer  
 Suite 2000, 400 4 Ave SW  
 Calgary, AB  
 Canada  
 (403)213-7957  
 (403)232-7082  
 Lance.Miller@dvn.com