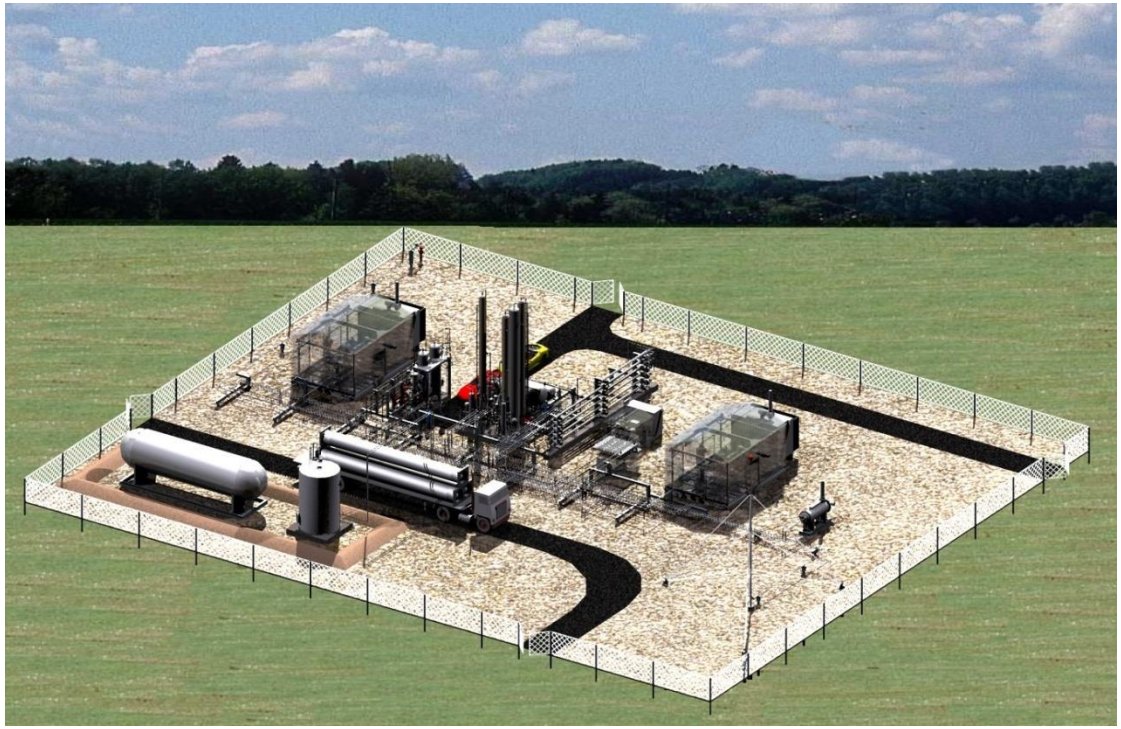

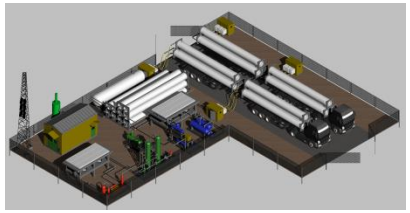

Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Presentation to GPAC / PJVA | October 29, 2015

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

From The Globe and Mail January 2013

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions


BAKKEN FORMATION
MINNEAPOLIS - ST PAUL
CHICAGO
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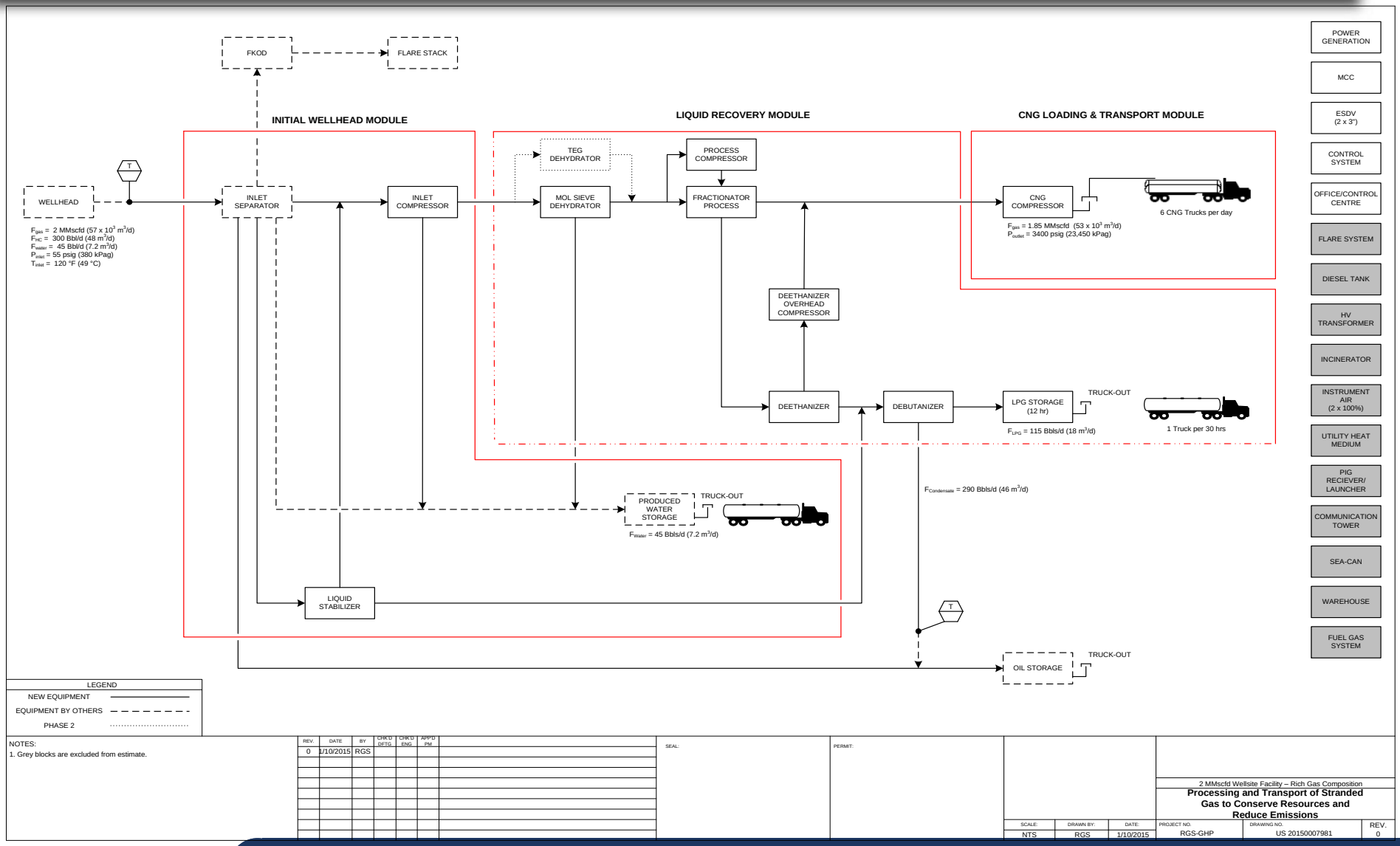
Micro Gas Processing Solution
Block Flow Diagram – Patent Protection



NOTES:
1. Grey blocks are excluded from estimate.

REV.	DATE	BY	CHK'D DFTG	CHK'D ENG	APP'D PM
0	1/10/2015	RGS			

SEAL:

PERMIT:

2 MMscfd Wellsite Facility – Rich Gas Composition
Processing and Transport of Stranded Gas to Conserve Resources and Reduce Emissions

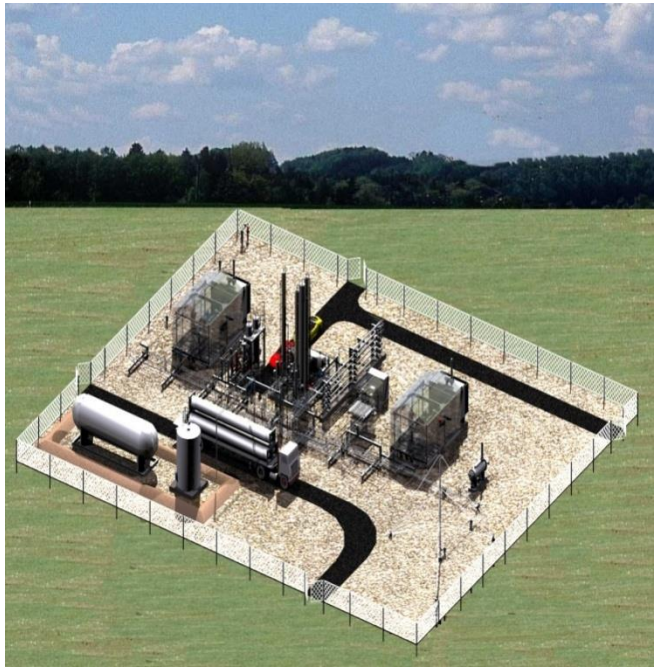
SCALE:	DRAWN BY:	DATE:	PROJECT NO.	DRAWING NO.	REV.
NTS	RGS	1/10/2015	RGS-GHP	US 20150007981	0

\Rev\1A - Micro GP BFD 2 MMscfd Wellhead Facility - Rich Comp Rev 0 Oct 2015.vsd

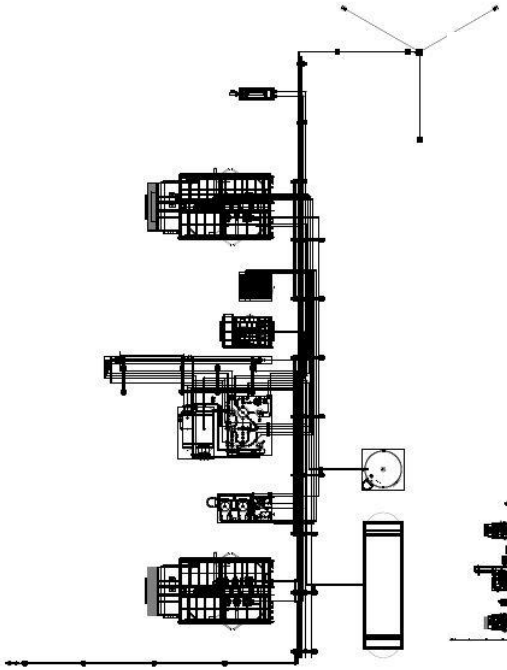
Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Micro Gas Processing Solution Module
Drilling Lease Comparison to Micro Process Module

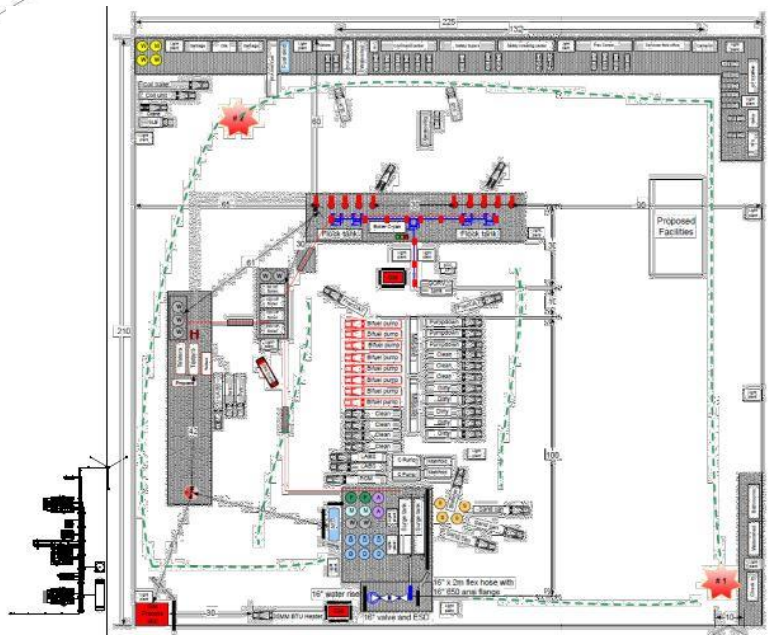
Stranded Wellsite Rendering



Layout



Drilling Platform Size Comparison

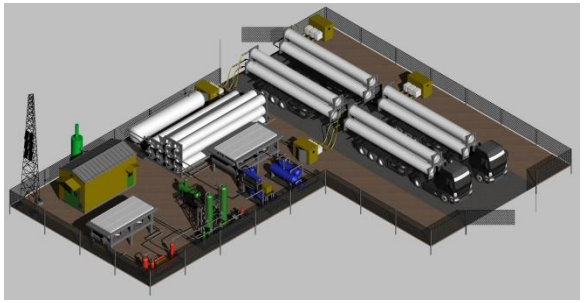


Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

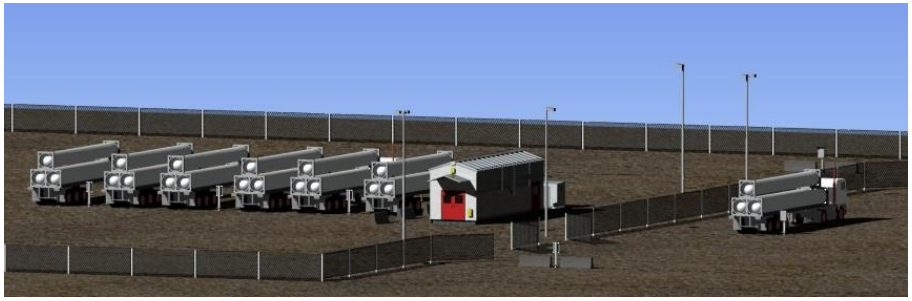
Micro Gas Processing Solution Module
Stranded Well - Facilities

- **Micro Gas Processing**
  - Flaring reduction, elimination with full liquid recovery
  - Field lifecycle optimization – low capital deploy
  - Diluent recovery and fuel gas transport
- **Focussed on local market energy consumers**
  - High Liquids Recovery
    - C_2, C_2+, C_3, LPG, NGL, Y Grade, C_4, C_5+
  - Natural Gas, CNG

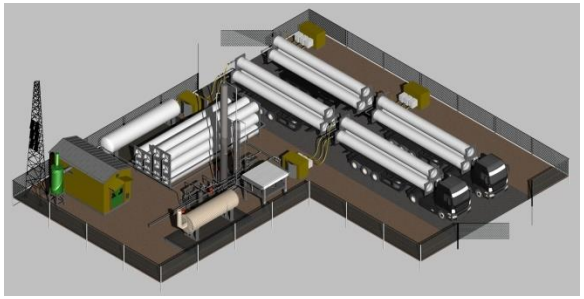
Micro Gas Processing – Well site facility - Rich



2 - 10 MMscfd Micro Processing Loading - Lean



6 MMscfd TCPL CNG Design



2 - 10 MMscfd Micro Processing Loading - Lean

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Benefits of Remote Micro Gas Processing

Bulk CNG

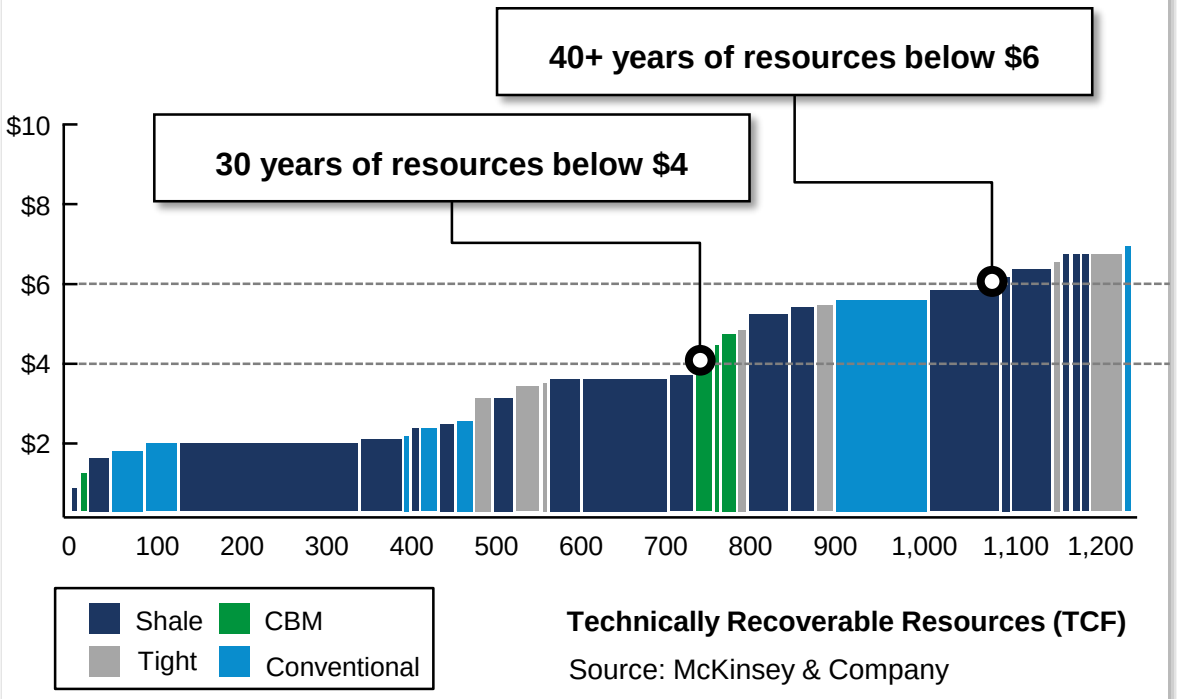
New Energy Sources aligned with Energy Consumers

- Flare Reduction
- Flare Elimination
- Lean Fuel Gas - CNG
- Spec Liquids Product for Market, LPG, Stabilized Condensate, C5+
- Wellsite Diesel Displacement
- Drill Rigs
- Water Conditioners
- Heaters/Boilers
- Compressors/Pumps
- Power Generation
- Turnaround Supply
- Pipeline Back-up
- Remote Mills & Mines
- Remote Work Camps

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

New Markets Support Infrastructure Economics
Shale Gas Flaring By-products Recovery

Natural Gas Supply Predictability



Technically Recoverable Resources (TCF)

Source: McKinsey & Company

*10% Returns. Excludes finding and land costs. Not including associated gas or predominantly oil basins

Benefits to New Well head Market

Indicative Delivered Prices
(Diesel Litre Equivalents - DLE)

$1.05 ——— Diesel

By-products

$0.80 / DLE

$0.70 / DLE

} **CNG**

and Liquids Marketplace

C2

C2+ - AECO + 1.5/GJ

C3 - $0.6/l

NGL (C3+)

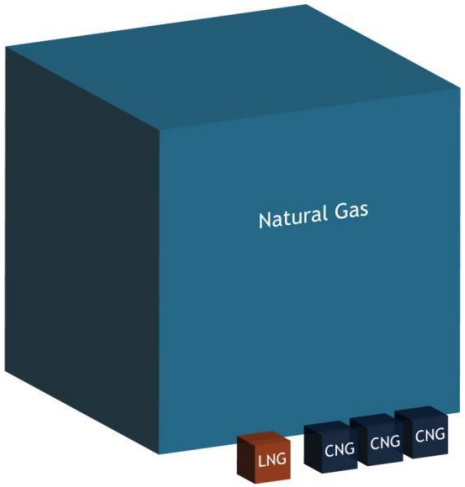
LPG

C4 - 55% WTI

C5+ - 95% WTI

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Gas Transport: Recent Marketplace Advance
CNG Transport Aligns with LPG/Oil Trucking



CNG
Volume – 200:1
3,400 psi | 68° F

LNG
Volume – 600:1
3.6 psi | -260° F

Natural Gas (Standard Conditions)
Volume – 1:1
14.7 psi | 68° F

Compressed Natural Gas Transport History

1ST Generation	(1980's)	Type1
- 100,000 scf		~170:1
- 2,900 psig		20,000 kPag
2nd Generation	(2007)	Type 2
- 225,000 scf		~200:1
- 3,600 psig		24,810 kPag
3rd Generation	(2014)	Type 3
- 480,000 scf		~280:1
- 4,200 psig		29,000 kPag

In just 2 years more than **50 CNG trailer** services in Western Canada, and East Coast market expanding in parallel

US Market expanding

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Gas Transport

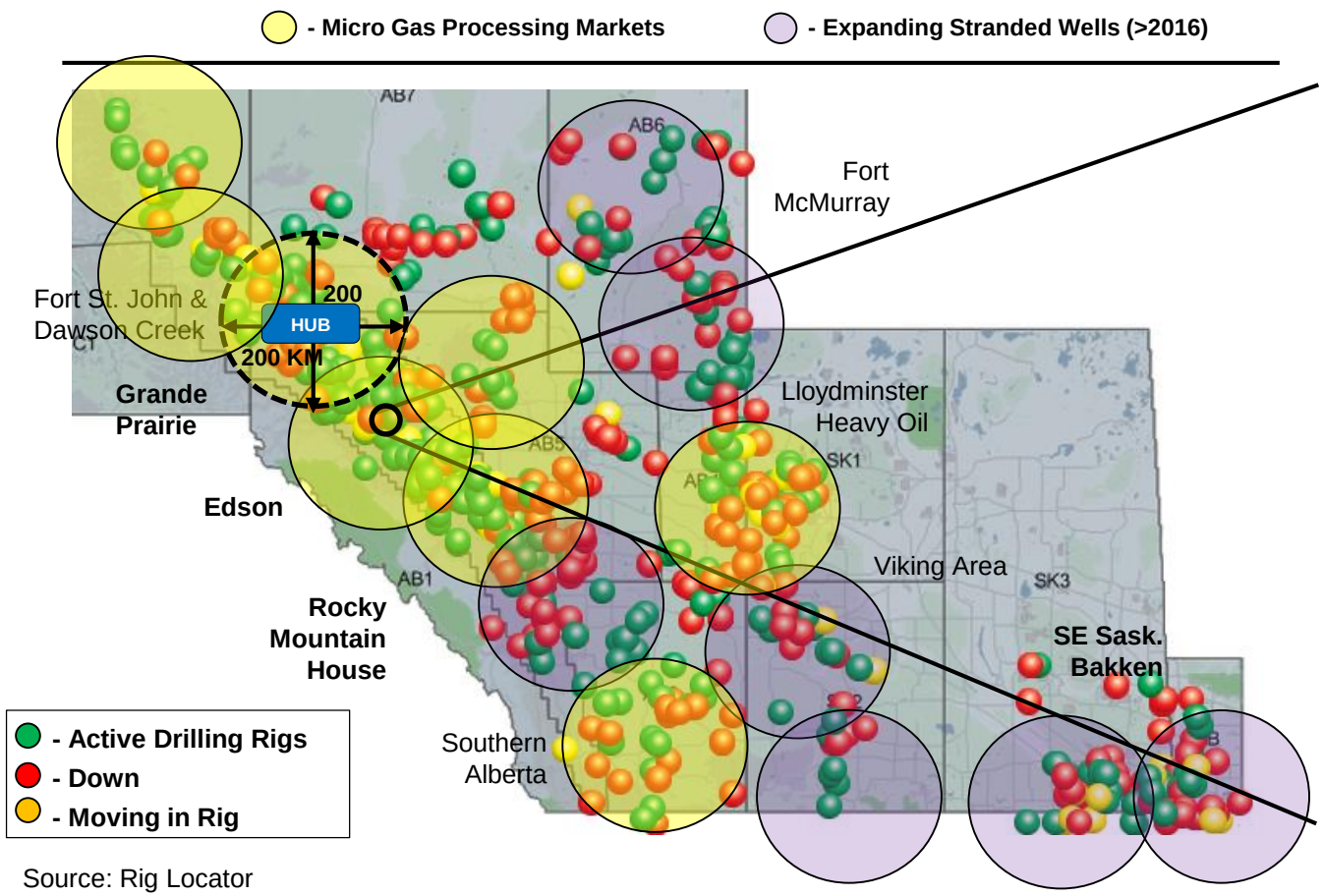
1st Generation - 100,000scf Type 1
2nd Generation - 225,000scf Type 2
3rd Generation - 480,000scf Type 3

	CNG		LNG	
Capital Costs	✓	• Low: CNG does not require liquefaction and expensive processing equipment	✗	• High: LNG requires cryogenic liquefaction equipment
Green Solution - Emissions Reduction Versus Diesel	✓	• Compression & decompression process environmentally friendly with limited energy use • No gas processing required	✗	• Significant energy consumption during liquefaction process
System Containment	✓	• Fully contained system with zero on-site venting / gas loss • Venturi system to capture low pressure gas	✗	• On-site methane venting during LNG re-fueling process • On-site and transport boil off venting
Safety	✓	• Mercaptian injection at CNG facility • Reduced requirement for on-site individual CO_2 sensors	✗	• Liquefaction process restricts mercaptian injection • Mandatory CO_2 sensors
On-Site Reliability & Monitoring	✓	• Reliable and redundant pressure reduction / decanting system • Remote monitoring PLC system for Certarus and client observation	✗	• Vaporizing process incorporates key mechanical failure points • Requires daily inspection by LNG provider without remote connection
Western Canadian Expansion Opportunities	✓	• Many: Lower absolute & per unit capital costs support complementary regional CNG development and targeted basin expansion	✗	• Few: Higher absolute & per unit capital costs preclude redundant regional development & results in more measured basin expansion

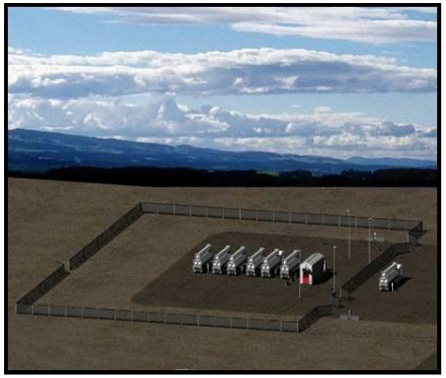
Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Well Site Target Coverage

The majority of drilling well sites and Stranded wells are within a 200+ km CNG transport radius to demand markets – Aligned to support previous development.



Source: Rig Locator



Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Micro Gas Processing - Applications
Industry Support for wellhead Natural Gas

- **Significant natural gas technologies have resulted in consumers opening a market for Micro Gas Processing with wellhead energy conversions**

Manufacturer Adoption

"We have decided to go all-in on gas. We are going to invest because we see a long-term, global opportunity. Large engines are going gas. It's not debatable; it's our conclusion."

Joel Feucht, Director of Gas Engine Strategy for CAT Energy & Power Systems

Producer Adoption

"Bi-fuel technology that allows equipment to run on diesel and natural gas simultaneously is achieving greenhouse gas reductions and cost savings in our Canadian Division. As bi-fuel rigs continue to reduce our environmental impact and provide cost savings, we look forward to further implementing this technology on other compatible operations."

EnCana: Using Natural Gas to Reduce Emissions

Consumer Adoption

"The successful implementation of the leading-edge compressed natural gas system generates thermal energy which fuels the company's potato processing plants and eliminates the use of 22 million litres of heavy fuel oil annually."

PEI Guardian: June 12, 2012

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Gas Markets are aligned with CNG Growth
Broad Industry Support

- **Large volume diesel, heating oil and propane consumers to effectively convert their engines, boilers and generators to CNG natural gas**
  - Natural gas engines are approaching comparable torque loads as traditional diesel-fired engines
  - Tri-fuel now readily available for serve, CNG, LNG, Diesel with improvements in natural gas efficiency
  - Industry engines warranties for conversions from diesel fired to natural gas fired engines

Westport: 100% Natural Gas	CATERPILLAR: 100% Nat Gas	Cummins: Bi-Fuel Generator

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Western Canada Growth Market

Applications in North America align with Western Canada

Gas Market Opportunities

Drilling Rigs	Bulk Transport	Natural Gas Heaters & Generators
• Encana has converted drilling rigs to run bi-fuel 70% NG and 30% Diesel •Bi-fuel drilling rigs gaining interest from various drilling operators	•100 new units by the top Canadian CNG Transport units since 2013 •Bulk CNG transport operates in many Countries around the world for decades •Canada, Australia, United States, China, Columbia, Thailand, Peru, Nigeria are the world leaders CNG bulk transport	• Natural Gas heaters •Propane and diesel heaters can be easily converted to run natural gas

Economics of Compressed Natural Gas
Indicative Cost Savings and Payback Period

Attractive Expanding Market for Micro Gas Processing and CNG Conversion Economics

	Equipment	Conversion	Daily Fuel Displaced	Annual Utilization	Conversion Cost	Months to Payback (1) Low		High
Lowest Capital Conversions **Paybacks < 3 Months**	Fracc Heater 32 MMBTU	Diesel to 100% CNG	13,000/ liters	~60%	~$50,000	1 Month	to	2 Months
	Fracc Heater 20 MMBTU	Diesel to 100% CNG	11,000/ liters	~60%	~$50,000	1 Month	to	2 Months
	Hot Oiler 14 MMBTU	Diesel to 100% CNG	8,000/ liters	~60%	~$50,000	1 Month	to	2 Months
	5 MW Power Generation	Diesel to 70% CNG	12,000/ liters	~90%	~$300,000	3 Months	to	4 Months
Capital Conversions: **Payback ~12 Months**	Pressure Pumper 15Khp	Diesel to 50% CNG	14,000/ liters	~60%	~$500,000	10 Months	to	13 Months
	Drilling Rig Single	Diesel to 50% CNG	3,000/ liters	~60%	~$125,000	11 Months	to	15 Months
	Drilling Rig Double	Diesel to 50% CNG	4,000/ liters	~60%	~$250,000	16 Months	to	22 Months
	Drilling Rig Triple	Diesel to 50% CNG	5,500/ liters	~60%	~$250,000	12 Months	to	16 Months

(1) High & Low Payback ranges are based on an efficiency loss range of 15% to 25% by converting from Diesel to CNG. Conversion economics are based on public and private cost estimates for equipment conversions.

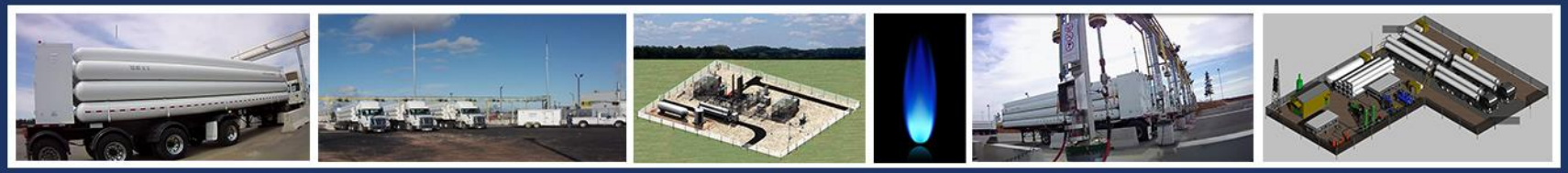
Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Micro Gas Processing Solution

- **Path Forward**
  - Contact Ourselves – Micro Gas Processing for stranded well production with integrated flare reduction and field life-cycle development planning
    - Flare Reduction
    - Flare Elimination
    - Product to Market , flexible range of products to align with local market
    - High Recovery for Liquid Products
    - Target payouts are less than two years
    - System Simulation and Design, Cost Estimate with complete 3D Model
    - Percentage-of-Proceeds agreement (PoP) supports economics
    - Well head to market with the **Micro Gas Processing Solution**

Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

Discussion / Questions



Patent No: 20150007981: Micro Gas Processing and Transportation of Stranded Gas to Conserve Resources and Reduce Emissions

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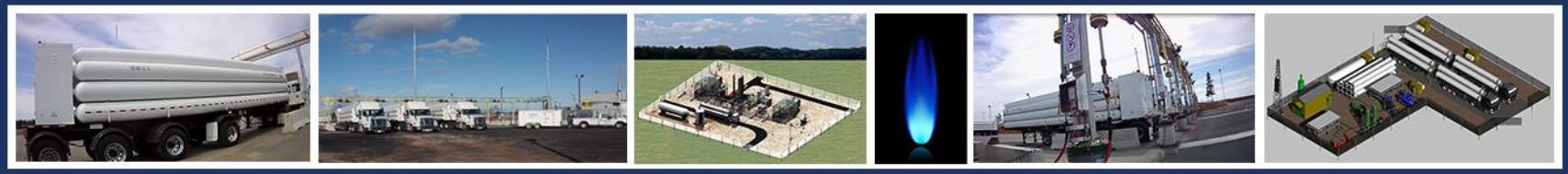
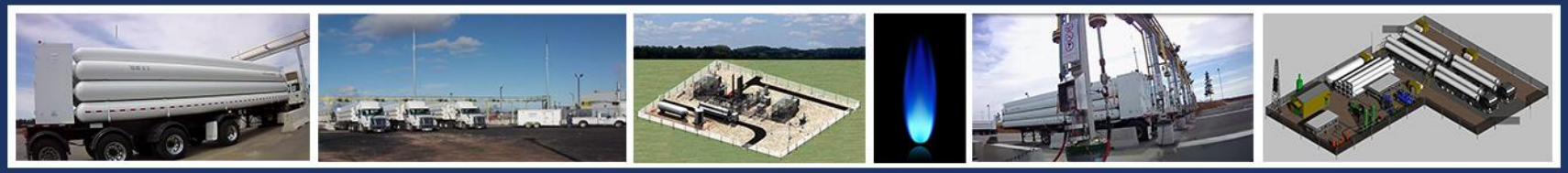


Related Items

Micro Gas Processing – our Micro LNG feasibility is part of the next patent pending



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