



G L O B A L F O R U M

On Flaring and Venting Reduction
and Natural Gas Utilisation

Clearing The Air!

*Achieving Air Quality and Sustainability
With Technology*

Audrey Mascarenhas
President and CEO
Questor Technology Inc

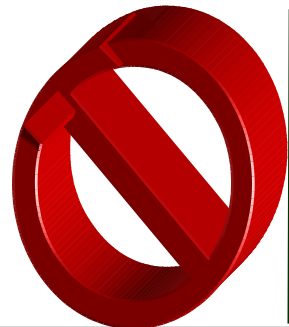
The Challenge

- 14 Bcf/d of gas is flared or vented daily emitting 400 million tonnes of CO₂ per year
- Wasting 1600 Trillion Btu of energy
- Much of this flared gas is in developing countries where infrastructure or capital is not available to conserve this gas
- Proven efficient and cost effective technology is available to reduce the flared volumes

Clean Air Technology



- Safety
- Air quality improvement
- Energy efficiency
- Emission reductions
- Waste heat capture



But you are still Burning it!

- Always have waste gases and emissions
- There is a big difference in flaring vs. incinerating
- Waste gas can be burned cleanly in a controlled closed chamber yielding:
 - ✓ *99.99% measurable combustion efficiency*
 - ✓ *No visible flame, odour or smoke*
 - ✓ *An opportunity to recover heat*
 - ✓ *Unaffected by composition, wind, liquids and heat content.*
 - ✓ *Gas does not escape unburned*
 - ✓ *Fuel gas reductions and energy efficiency opportunities*
 - ✓ *Greenhouse gas (GHG) reductions*

Wasted Energy

- Flares utilized throughout the oil and gas process
- Facilities use a large amount of fuel gas for utilities, process heat and sweep gas.
- While waste gas heat is going 'up in smoke' with the flare
- Opportunity to significantly reduce costs and GHG emissions



Greenhouse Gas Emissions

- The Global Warming Potential (GWP) of methane is 21 times higher than that of CO₂
- Inefficient combustion increases GHG emissions
- *Example:* 19 mscf/d of waste methane gas generates the following CO₂ emissions:

	<u>T/d</u>	<u>T/yr</u>
➤ Vented	7.6	2,775
➤ 65% combustion efficiency	3.3	1,205
➤ 80% combustion efficiency	2.3	840
➤ Incineration (99.99%)	1.0	36

Incineration converts 99.99% of the methane to CO₂ and H₂O

In both pilot tests Questor technology's portable incinerator was used. In each case approximately 75 per cent of the remaining gas was incinerated. Questor incinerators use a vortex combustion system to achieve 99 per cent combustion efficiency.

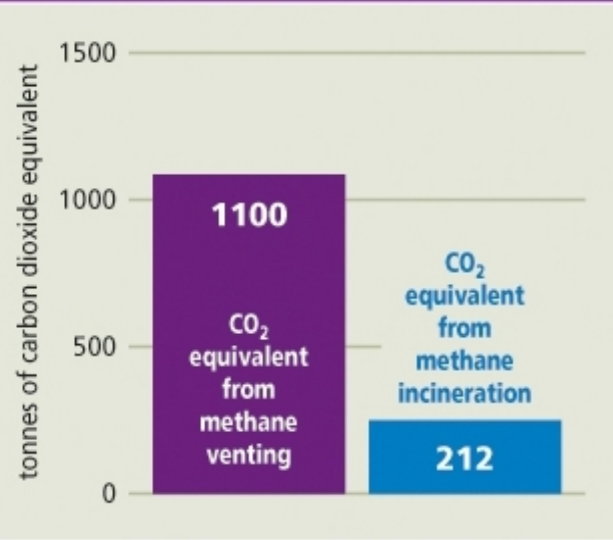
Each Incineration:

- Reduced emissions by approximately 1100 tonnes of carbon dioxide equivalent
- Produced approximately 212 tonnes of carbon dioxide emissions from combustion
- Incinerated approximately 2.93 million cubic feet of gas
- Approximately 3.11 million cubic feet of gas remained in the lines after transfer compression

Methane Incineration for both tests was equivalent to:

- Taking 209 cars off the highway
- Heating 10 homes for one year
- Planting 1,337 lodge pine trees

GHG Emission Comparison with and without Incineration after Transfer Compression



Community, Safety and Environment
Climate Change Group

Contact: Hasan Imran phone: 403.920.7270
 email: hasan_imran@transcanada.com



Trailerized 3MMscf/d Unit



Building Environmental, Economic, & Sustainable Solutions

Innovative Solutions

Benzene Destruction

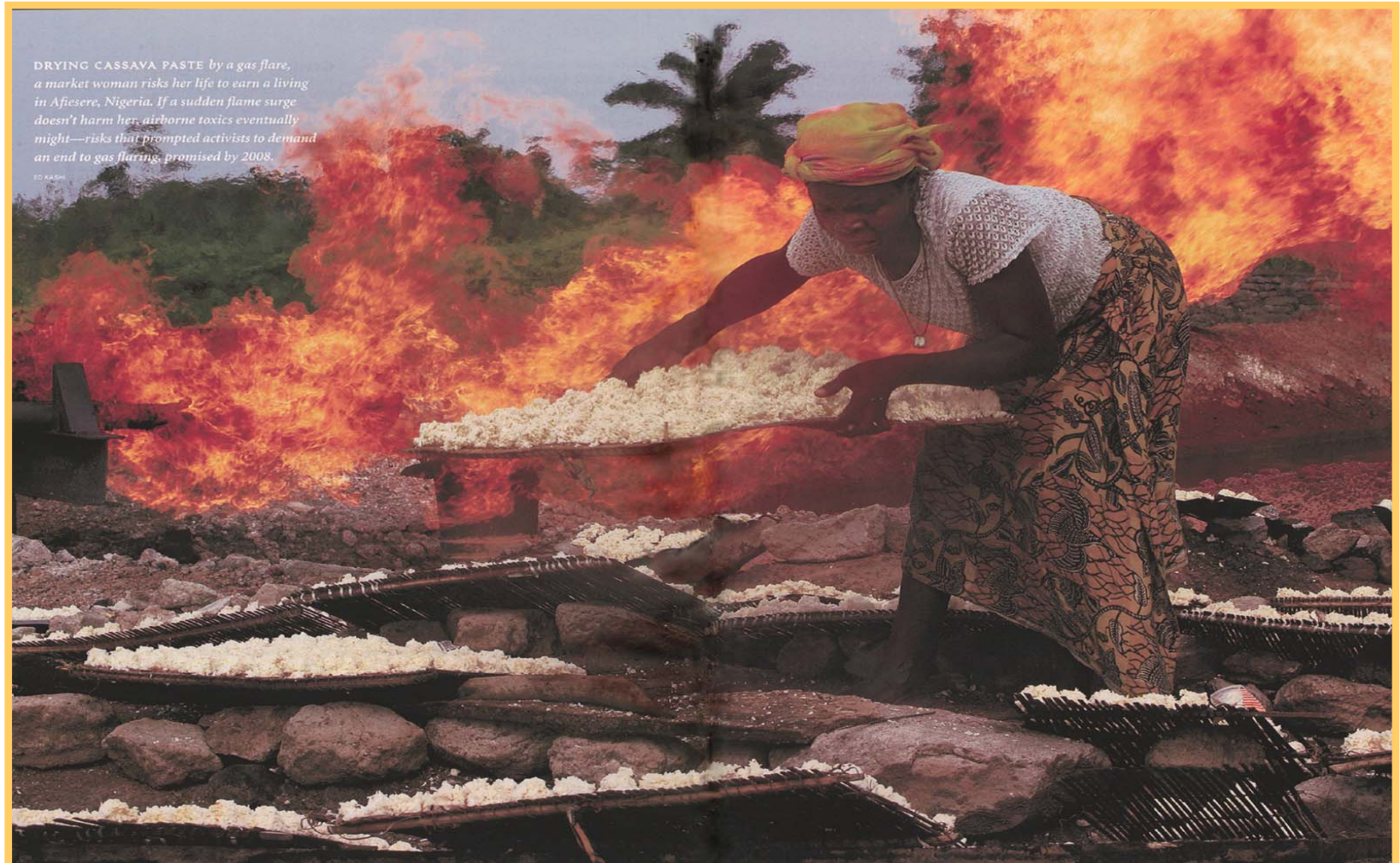
- Meet regulations
- Minimize community impact
- 80% less fuel used
- Reduce operating costs
- Reduce pipeline corrosion
- Reduce footprint
- Smaller lease size
- Reduced piping
- Waste heat recovery



Clients

- AltaGas
- Access Pipeline
- Amerada Hess
- Arc Resources
- Artek Exploraton
- Anadarko
- Apache
- Atco Pipelines
- Baytex Energy
- Bear Ridge
- Birchcliff
- BP Amoco
- Bonavista
- British Gas
- Cabre
- Calpine
- Canadian Forest
- Canadian Natural
- Canetic
- Chevron
- Compton
- Conoco Phillips
- CrossAlta
- Crest/Ketch
- Dakota Power
- Devon
- Duke
- Duvernay
- Dominion
- EnCana
- Enerchem
- Enermark
- ENI
- EOG
- Equitrans
- Exxon/Mobil
- Forest Oil
- Galleon
- Highpine
- Hunt Oil
- Husky
- Lockwood
- Mustang
- Natco
- Navarro
- Navigo
- Northland -
- NorthRock
- Nexen
- NuVista
- Occidental
- Paramount
- PetroCanada
- Powerwell
- PrimeWest
- Purcell Energy
- Pogo
- Quintana
- Rider
- Rockwell
- Samson
- Shell
- Sherritt Int.
- Sinopec
- Spectra
- Talisman
- TransCanada
- Vaquero
- Velvet
- Zargon

Wasted Energy



National Geographic September 2005

Conclusions

- Low hanging fruit
- Easy and proven
- Smart business – cost effective solution
- Environmentally responsible
- Community well-being
- Air quality improvement
- Sustainable development
- Energy efficiency is key to reducing GHG emissions

Clearing The Air!

**REDUCING COSTS
FOR OUR CLIENTS**



**INSPIRING
PUBLIC CONFIDENCE**



**PROTECTING
THE ENVIRONMENT**



QUESTOR TECHNOLOGY INC.

www.questortech.com

420, 1414 - 8th St SW
Calgary, Alberta, Canada
(403) 571-1530