



Alkcon Corporation

Energy • Environment • Empowerment

Lauren Scott
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Corporate Team



Chief Executive Officer

Lauren Scott has over 20 years of technical and management experience in developing process equipment for the semiconductor and biofuels industry. She has held senior management positions at various early-stage technology companies. She holds a B.A. in Business Administration and an Associates in Applied Sciences.



Chief Technical Officer

Ryan Ravenelle holds a Ph.D in Chemical Engineering from Georgia Institute of Technology. His graduate research focused on material stability studies of catalysts used in biomass derived chemicals to fuel processes. He was the senior scientist at Agni Corporation from 2009 to 2011.



Vice President of Business Development

Phil Martin was a client manager at Trayport from 2011 to 2014, focusing on business relationships in global energy markets. He delivered record revenue returns and established exceptional business relationships with key clients. He has experience in European energy commodities markets and carbon-trading.



Technical Advisors

Kent Hoekman holds a Ph.D. in Organic Chemistry and is a research professor in the Division of Atmospheric Sciences at the Desert Research Institute (DRI). His area of research focuses on the development of sustainable energy systems and the conversion of biomass to biofuels. His team has provided gas collection and GC/HPLC analytical services.

Carl Nesbitt holds a Ph.D. in Metallurgical Engineering from the University of Nevada, Reno. He worked as a Research Associate Professor at the University of Nevada Reno from 2007 through 2009. He developed and patented a novel process for activated carbon electrode material. He provided chemical process validation and business model analytics.

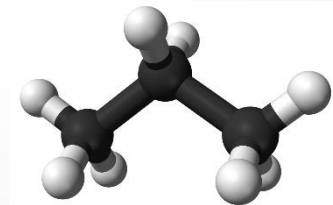
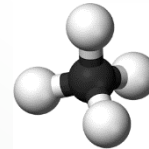
Wyndham Boon holds a Ph.D. in Chemistry and is a SCORE advisor at the University Nevada Reno (UNR). Bill has worked in the chemical industry for the past 30 years in many capacities in the areas of research and business development. He has provided business and technical advice to the company.

John Kohls has held various positions relating to material sciences and control system design and for over 20 years. He has provided early-stage funding and technical support to the company. He holds a B.S. in Chemistry and a B.S. in Mathematics.



Corporate Overview

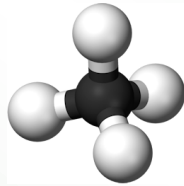
- Early-stage company, founded and incorporated in 2013
- Researches and develops chemical and physical processes relating to renewable fuels production
- Focused on globally deploying **methane-to-propane** gas conversion systems
- Provisional patent filed in February 2015
- Additional patents filings forthcoming





Methane to Propane Conversion

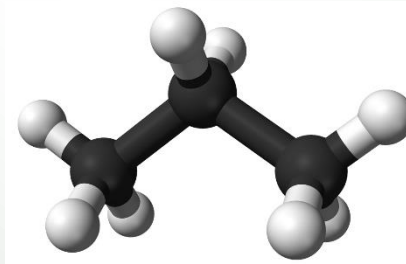
Methane
 CH_4



- Low cost
- Rurally available
- Difficult to transport
- Motor fuel at 3,600 PSI
- Potent greenhouse gas
- Regulatory actions



- Higher value
- Easier to transport
- Motor fuel at 140 PSI
- Not a greenhouse gas
- Rapidly growing demand



Propane
 C_3H_8



Methane to Propane Conversion

- Nearly unlimited amount of low-cost feedstock from a wide variety of sources, yielding a high-value product
- Short feedstock and product logistic pathways
- Economical process with disruptive IP potential
- Demonstrated process technology components
- Decentralized systems
- Globally deployable



Alkcon Methane-to-Propane (AMP) process



What is Methane?

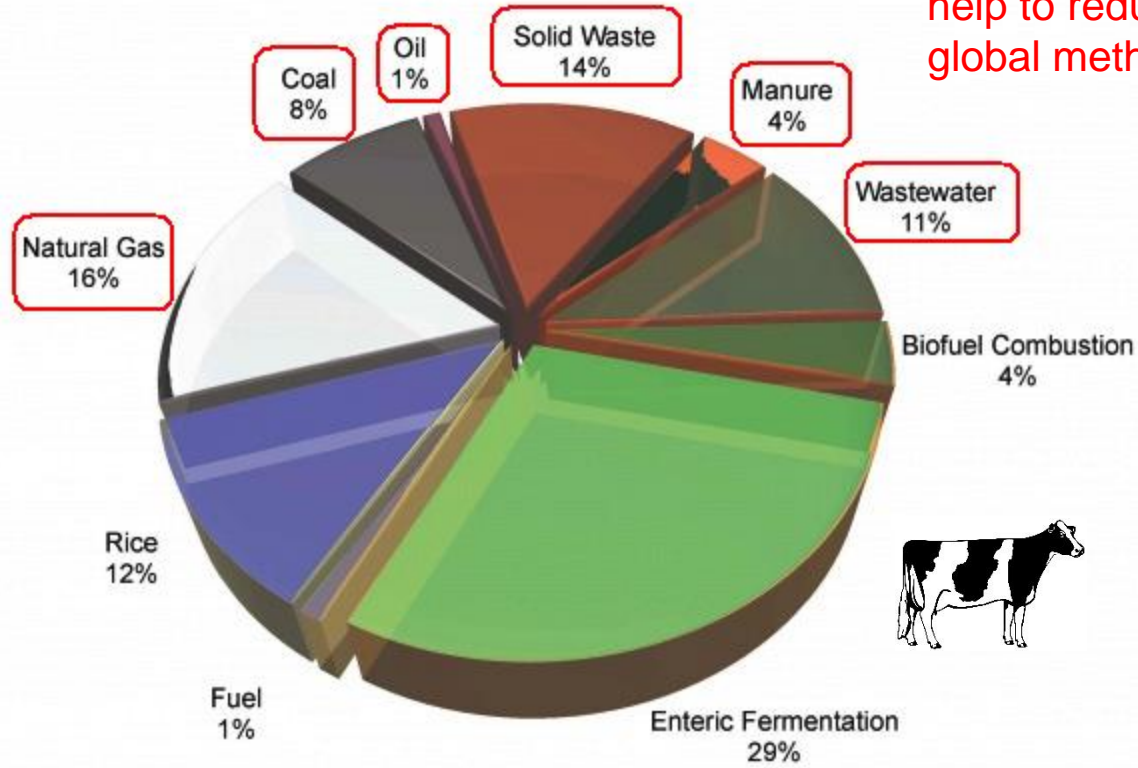
- Known as natural gas, biogas, landfill gas or flare gas
- Fuel for residential and commercial heating, drying and cooking in urban areas
- Motor vehicle fuel when compressed to 3,600 PSI but is not easily stored or transported as a liquid
- 20x more potent than CO₂ when released in the atmosphere
- White House suggests stronger regulation of methane emissions





Methane Sources

Alkcon technology could help to reduce over 50% of global methane emissions



Global Methane Emissions from Human Activities (2006)
Source: M2M 2006



Methane Sources

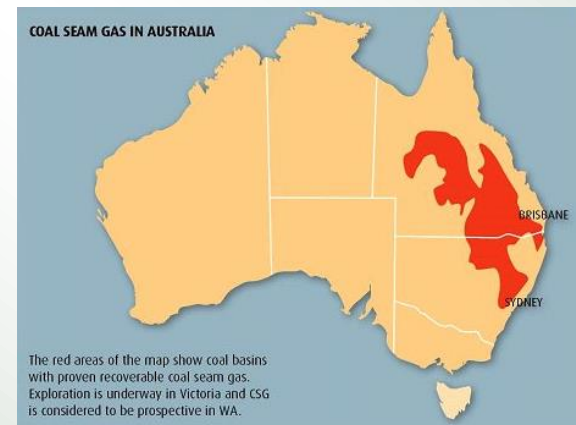
- Wellhead flaring gases
 - \$1 billion worth of gas is flared off in North Dakota
 - Methane is a large part of oil well gaseous products
 - Lack of CNG pipelines makes transportation uneconomical
 - Strong interest in gas capture
 - Legislation being considered





Methane Sources

- Coal mine methane and coal seam gas (CSG)
 - Methane gas is absorbed into the solid matrix of coal
 - Gas is released during coal mining operations and continues after mining operations cease
 - CSG production has increased by **120%** over the last decade
 - Large opportunity for CSG development in Australia and Asia-Pacific region





Methane Sources

- Anaerobic digestion
 - Over 2,200 sites in the US producing and capturing large amounts of biogas (methane and CO₂)
 - More than 11,000 more sites that could be developed
 - Uses food refuse, fats, manure, agricultural waste, as a feedstock
 - Feed gas for 'biopropane' production in Europe





Methane Sources

- Landfill gas
 - From the decomposition of organic material in municipal solid waste landfills
 - Landfills produce hundreds of billions of cu/ft of methane per year
 - Much of the gas is simply released or flared off
 - Legislation expected





Methane Sources

- Wastewater treatment
 - Over 21,000 wastewater treatment plants in the US
 - Accounts for up to 11% of global methane emissions
 - Developing countries are building new wastewater plants
 - Methane emissions are expected to grow by 19% between 2010 and 2030





What is Propane?

- Produced as liquefied petroleum gas (LPG) at centralized petroleum refining operations
- Commonly used as a residential and commercial heating, drying and cooking fuel in rural areas
- Does not contribute to global warming when released to the atmosphere
- Vehicle fuel (autogas) is easily stored and transported as a liquid at 130 PSI
- Globally, 3rd most consumed motor fuel



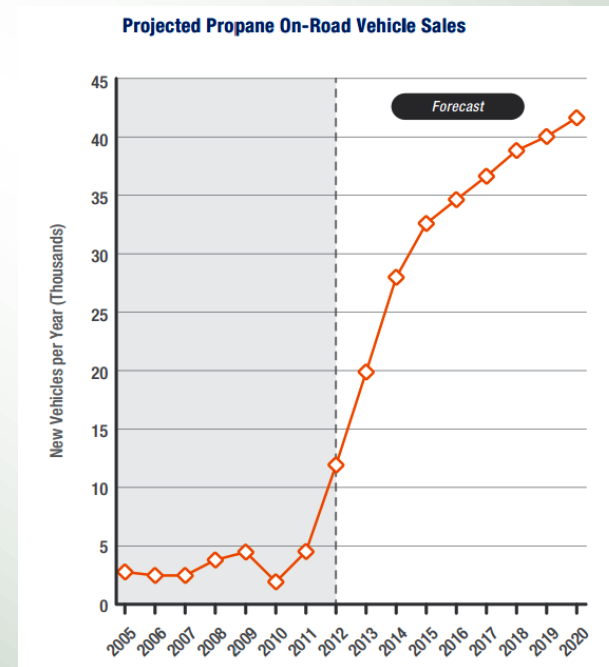


Propane Market

- 15 million vehicles use autogas worldwide
- Autogas usage is rapidly increasing domestically in buses, taxis, police and service fleet markets



- Over 3,000 autogas filling stations in United States



From the PERC Propane Market Outlook 2013



Propane Market

- Over **80%** of households in US rural areas use propane
- Prolonged cold weather resulted in states of emergency in Arizona, Nevada, New Mexico and Michigan
- The price of propane tripled in some areas due to a shortage of propane
- These areas are often co-located with biodigestible materials such as agricultural waste





Product Line

- **MP100** – 40 gal/wk of propane from a residential natural gas connection for home autogas refueling
- **MP500** – 250 gal/wk of propane from a commercial natural gas connection for fleet refueling
- **MP8K** – 4,200 gal/wk of propane from a mid-sized biogas plant, wastewater treatment plant or landfill collection system





Product Line

- **MP32K** – 16,400 gals/wk (32,000 kg/wk) of propane from a commercial scale anaerobic digester, landfill collection system or oil field operation (200 CFM feed rate)
 - 1.6 gal/min production rate
 - Internal CHP system
 - Globally deployable
 - Strong customer interest in multiple markets



MP32K Concept



Initial Market Opportunity

- Received signed LOI from Flogas Group in July 2015
 - Order for more than 50 ea MP32K units over five years
 - Deliveries scheduled to begin Q3 2016
 - MP32K units will be installed at existing biogas sites
 - Flogas would be the first company to produce 'biopropane' as a fuel in Western Europe in 2016





Market Status

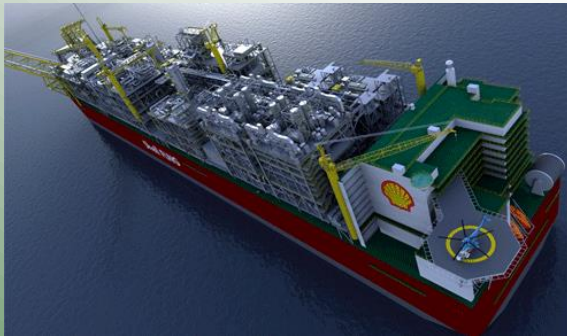
- **Neste** biopropane production facilities
 - Announced intention to produce biopropane at Rotterdam renewable diesel refinery
 - Capital investment of €60 million
 - Production scheduled for 'late 2016'
 - SHV Energy signed four year exclusive license to sell Neste biopropane under Calor brand





Future Opportunities

- Deep ocean oil and gas exploration
 - Reduces the cost of natural gas liquefaction
 - Reduces the cost to transport liquid fuels



Shell Prelude natural gas LNG production platform will cost an estimated **\$11 billion**



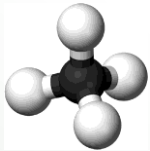
LNG (natural gas) vessels are more costly than less complex LPG (propane) vessels





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