Praxair, Inc.

Ray Roberge
SVP and Chief Technology Officer

Citi Chemicals for the Non-Chemist Conference
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Forward Looking Statement

This document contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. These statements are based on management’s reasonable expectations and assumptions as of the date the statements are made but involve risks and uncertainties. These risks and uncertainties include, without limitation: the performance of stock markets generally; developments in worldwide and national economies and other international events and circumstances; changes in foreign currencies and in interest rates; the cost and availability of electric power, natural gas and other raw materials; the ability to achieve price increases to offset cost increases; catastrophic events including natural disasters, epidemics and acts of war and terrorism; the ability to attract, hire, and retain qualified personnel; the impact of changes in financial accounting standards; the impact of changes in pension plan liabilities; the impact of tax, environmental, healthcare and other legislation and government regulation in jurisdictions in which the company operates; the cost and outcomes of investigations, litigation and regulatory proceedings; continued timely development and market acceptance of new products and applications; the impact of competitive products and pricing; future financial and operating performance of major customers and industries served; and the effectiveness and speed of integrating new acquisitions into the business. These risks and uncertainties may cause actual future results or circumstances to differ materially from the projections or estimates contained in the forward-looking statements. The company assumes no obligation to update or provide revisions to any forward-looking statement in response to changing circumstances. The above listed risks and uncertainties are further described in Item 1A (Risk Factors) in the company’s Form 10-K and 10-Q reports filed with the SEC which should be reviewed carefully. Please consider the company’s forward-looking statements in light of those risks.
Global Industrial Gas Industry

*Total sales 2010F: ~$65 billion*

Consolidated industry with few large, global players

Source: Spiritus Consulting
Industrial gases are fundamental to many industries

Source: Spiritus Consulting, 2009 sales
Products We Make

- We supply customers with atmospheric, process and specialty gases, high-performance coatings, and related services and technologies

- Atmospheric Gases
  - Produced when air is purified, compressed, cooled, distilled and condensed
  - Oxygen, nitrogen, argon and rare gases

- Process & Specialty Gases
  - Produced as by-products of chemical production or recovered from natural gas
  - Carbon dioxide, helium, hydrogen, semiconductor process gases, and acetylene
Components of Air

- Nitrogen: 78.09%
- Oxygen: 20.95%
- Argon: 0.93%
- CO2: 0.03%
- Other: 0.0024%
- Helium: 0.0005%
- Neon: 0.0018%
- Krypton: 0.0001%
- Xenon: 0.00001%
Vertically Integrated System

On-Site/Pipeline Supply

Merchant Liquid
(O₂, N₂, Ar)

Packaged gas facility
(pure gases, medical, specialty gas blends)
Customer demand matched with optimum supply systems
Air Separation – Cryogenic Distillation

First commercialized in 1896 → Continuous improvements and enhancements

Air Filtration & Conditioning

Air

Purify

Liquefy by cooling to -320 °F

Separate by distillation

Nitrogen -320 °F

Argon -302 °F

Oxygen -297 °F

Air

78% N2
21% O2
1% Other Gases

Citi Chemicals for the Non-Chemist Conference – NYC 11/29/10

9
Air Separation – VPSA (Non-Cryogenic)

First commercialized in 1960

Oxygen

Adsorbent

Air

zeolites
Merchant Liquid Supply Systems

Sized for customers’ specific requirements
Pipeline enclaves offer highest returns and customer reliability.
Hydrogen – a Process Gas

Praxair Steam Methane Reformers

Port Arthur, TX – 100 MMSCFD
Texas City, TX – 100 MMSCFD

Steam Methane Reforming

\[ \text{H}_2\text{O} + \text{CH}_4 \rightarrow 3\text{H}_2 + \text{CO} \]
Strong Growth Outlook for Hydrogen

● Developed markets
  – Environmental fuel standards
  – Efficiency/flexibility/reliability
  – Shift to diesel

● Emerging Markets
  – Greenfield refining capacity
  – Adoption of Euro fuel standards
  – Heavy/sour crude capability
  – H₂ for chemicals
  – Trend toward outsourcing

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<td>US/Europe</td>
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<td>India</td>
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<td>Middle East</td>
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<td>Brazil</td>
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Praxair targeting 3 B scfd of hydrogen supply
Role of Technology at Praxair

• We continually drive cost reduction
  – New supply systems with reduced capital and operating cost
  – Efficiency of existing infrastructure

• We grow our business by developing and commercializing new applications technologies
  – Existing customer base looking for solutions
  – Expand our markets
  – Industrial gas solution typically lower capital or operating cost

New technologies drive growth and cost reduction
Continuous Improvement in Plant Design

- **Product line plants**
  - >90% of plant builds
  - Flexible platforms

- **Increased sizes for gasification**

- **Technology Roadmap**
  - Distillation
  - Heat transfer
  - Pre-purification
  - Turbomachinery
  - 45+ programs through 2015

### Product Line Plants

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<thead>
<tr>
<th>Low Purity Oxygen</th>
<th>High Purity Oxygen</th>
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<td>10-250 TPD</td>
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<td>3,000 TPD</td>
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### Oxygen Cost Index ($ per ton O₂)

- Up to 30% improvement over 2006

3 + % capital and energy savings p.a.
Applications for Industrial Gases

- Increase energy efficiency
  - Oxy-fuel combustion

- Higher productivity
  - Throughput, yield

- Improve environmental performance
  - Air
  - Water

~2-3% per year sales growth from high margin applications
Increasing Gas Intensity – Two Examples

Argon Intensity - Welding
(CF argon per lb consumables)

O₂ Intensity - Steel
(scf O₂ / ton steel)

Industrial gas intensity increasing with new applications

Source: Praxair estimates
Unique Revenue Model

On-Site/Pipeline 24%*

- 15 year take-or-pay contracts
- Indexed to energy, inflation, currency

Merchant Liquid 29%*

- Exclusive supply agreements
- Sourced as by-product from on-site

Packaged/Medical 31%*

- Cylinder and equipment rental
- Sourced as by-product from bulk

*2009 sales
Production and Distribution Density…

Praxair: Strongest North American supply system

On-site and Bulk Gases
- 300 production plants
- 8000 customer locations
- 1500 distribution vehicles
- 11 pipeline enclaves

Packaged and Specialty Gases
- 400 distribution facilities
- >400,000 customers
- 1000 distribution vehicles
- 83 filling stations

... drives reliability, growth, and profitability
Praxair Key Growth Drivers

Emerging Economies
- Increasing domestic consumption; infrastructure development
- Migrating application technologies
- Outsourcing of captive production

Energy
- Global growth of refinery hydrogen
- Coal gasification in China
- Enhanced oil recovery

Environment
- Air, water, waste regulations
- Development of alternative fuels
- Potential GHG regulations
Long-Term Growth Outlook

Annual Organic Sales Growth

+8-12%

3-5%

On-site project backlog

2-3%

Applications and technology transfer

3-4%

Base business follows IP*

Generates 12-18% annual organic EPS growth

Project Backlog

Major projects >$5MM capital

$2.5 B Est.

$1.0 B

$2.0 B

December 2006

December 2008

December 2010F

*Industrial production
Unique and Profitable Business Model

- No commodity pricing
- Long-term contracts – high renewal rates
- Raw material cost pass-through
- No speculative capex
- High value, low cost product – reliability is key
- Production/distribution density drives returns
- Applications technologies drive growth above Industrial Production
- Secular growth trends – energy production, environmental legislation and emerging market infrastructure development
Steady Earnings Growth Through Economic Cycles

Indexed EPS

16% CAGR


Praxair

S&P 500

8% CAGR

Recession

*Source: Thomson First Call
Principles of Sustainable Development

**Governance and Integrity**
Maintain strong systems and a culture of global corporate governance, compliance, ethics, human rights, integrity and accountability.

**Strategic Leadership**
Stay current with, and take advantage of, emerging global opportunities, developments and challenges to position Praxair for the future.

**Customer Commitment**
Focus relentlessly on the delivery of customer value through continuous innovation that helps our customers enhance their product quality, service, reliability, productivity, safety, energy efficiency and environmental performance.

**Environmental Responsibility**
Achieve continuous environmental performance improvement and energy efficiency in our operations.

**Employee Safety and Development**
Provide opportunities that allow employees to develop to their fullest potential in a creative, inclusive and safe environment.

**Community Support**
Participate in community development in regions where we operate.

**Financial Performance**
Maintain year-on-year recognition from shareholders and stakeholders for top-tier financial performance.

**Stakeholder Engagement and Communication**
Partner with internal and external stakeholders to achieve a strong, secure and sustainable society, economy and environment.
Glossary

LIN/LOX/LAR – Liquid nitrogen, liquid oxygen and liquid argon

Cryogenic - A state of extreme cold characterized by low temperatures, usually -130°F (-90°C) or below

Air Separation Unit (ASU) – A cryogenic air separation unit typically ranges in size from 50 to 5000 tons per day, capable of producing high purity gaseous O₂, N₂ and Ar, when equipped with a liquefier can also produce LIN/LOX/LAR

N-Plant - A Praxair acronym for plants that use cryogenic distillation columns to produce ultra high purity nitrogen only.

Non-cryogenic - An air separation process that operates at near-ambient temperatures and uses physical property differences other than boiling point, such as molecular size and mass, to produce commercially valuable gaseous products such as nitrogen and oxygen. Typically lower purity than cryogenic

Membrane Plants - . A non-cryogenic technology that uses hollow-fiber polymer membranes to separate gaseous nitrogen from air by selective permeability.
Glossary cont.

Vacuum Pressure Swing Adsorption (VPSA) - A Praxair acronym for non-cryogenic oxygen plants. VPSA plants use one or two molecular sieve-filled beds to hold all the impurities of air and allow purified oxygen to pass through.

Steam Methane Reformer (SMR) - A reaction of natural gas (methane CH4) or other light hydrocarbons (ethane or propane) with steam for the on-purpose production of hydrogen and/or carbon monoxide.

Pressure Swing Adsorption (PSA) – Advanced H₂ purification technology

Partial oxidation - A reaction of hydrocarbons (such as natural gas, naphtha, petroleum coke or coal) with oxygen to produce hydrogen and carbon monoxide

Integrated Gasification Combined Cycle (IGCC) – Most advanced (clean coal) power generation technology

Gasification – Partial oxidation of hydrocarbons to produce synthesis gas

Synthesis Gas – Combination of H₂ and CO
Praxair Air Separation Units (ASUs)

SOPO – 3000 TPD

Texas City, TX – 1800 TPD
Air Separation – Non-Cryogenic

VPSA
Praxair Pipeline Complex

Burns Harbor, IN; Northwest Indiana pipeline complex ~12,000 TPD
Packaged Gases