Scott K. Sanderude
Vice President, Global Market Development

Scott K. Sanderude was appointed global vice president, Market Development, for Praxair, Inc. in 2011. He leads the company’s Global Market Network team of industry experts who, with the regional business development teams, help provide efficient global deployment of applications technology and marketing support functions.

Sanderude joined Praxair in 1999 as vice president, Food and Beverage Markets. He became vice president, Marketing and Business Development, for North American Industrial Gases, Praxair’s largest business unit, in 2001. Prior to joining Praxair, Sanderude was global director of Marketing and Sales Capabilities for the Dow Chemical Company.

Sanderude holds a bachelor of arts degree in business administration from Principia College, Illinois, and a master's degree in business administration from Harvard University.
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; the impact of information technology system failures, network disruptions and breaches in data security; 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 Market
Total Industry Sales: $74 billion

Source: Spiritus Consulting 2011
Excludes non-gas sales such as Praxair Surface Technologies

Consolidated industry with few large, global players
Industrial Gases are Fundamental to Many Industries

- Manufacturing: 24%
- Metals: 18%
- Energy: 11%
- Chemicals: 10%
- Electronics: 9%
- Healthcare: 8%
- Food & Beverage: 6%
- Aerospace: 3%
- Other: 11%

% of Praxair 2011 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%
- Neon: 0.0018%
- Helium: 0.0005%
- 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
The Air Separation Process
Air Separation – VPSA (Non-Cryogenic)
First commercialized in 1960
Praxair Chicago Area Pipelines

- 25,000 tpd O$_2$/N$_2$ capacity
- Largest liquid argon and rare gases production center in North America
- 230MM scfd H$_2$ capacity
- Integrated liquid hydrogen production
- 130 miles of pipeline
- 30 customers
- Advanced pipeline control center

Facilities and Customers

- Praxair
- Customer

Pipelines

- Oxygen
- Nitrogen
- Hydrogen
- Argon
Hydrogen – a Process Gas

Sulphur, LA

Texas City, TX

Praxair Steam Methane Reformers
How is Hydrogen Produced?

- **Steam Methane Reforming (SMR)**
  \[ \text{CH}_4 + \text{H}_2\text{O} \leftrightarrow \text{CO} + 3\text{H}_2 \]

- **Gasification**
  \[ \text{C}_n\text{H}_m + (2n + m)/4\text{O}_2 \rightarrow n\text{CO} + m/2 \text{H}_2\text{O} \]

- **Water - Gas Shift**
  \[ \text{CO} + \text{H}_2\text{O} \leftrightarrow \text{H}_2 + \text{CO}_2 \]

- **Purification (PSA)**

- **Process choice determined by feedstock availability / cost**

- **Gasification significantly more capital intensive**

- **Chinese refineries increasingly using gasification**
  - Limited natural gas supply

- **COAL / PETCOKE**
  - Oxygen

SMRs continue to dominate within refining
Helium – a Process Gas

Praxair - A Fully Integrated Helium Supplier from Source to Customer

Limited number of sources; global supply chain with specialized equipment
Merchant Liquid Supply Systems

Overview of a cryogenic supply system.

Sized for customers’ specific requirements
Packaged Gas

Smaller individual volumes; significantly metal fabrication/welding
Transportation Vehicles

Tube Trailers

Liquid Trailers

Pallet Truck

Microbulk

Praxair Services Truck

Box Truck

Driven by productivity
Production and distribution density…

Praxair: largest and only fully-integrated industrial gases company in North America

- 500 production plants
- 3,000 distribution vehicles
- Fully-integrated supply system
- Strength across all three countries: U.S., Canada and Mexico

… drives reliability, growth, and profitability

* Source: S&P
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
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

High Purity Oxygen
Low Purity Oxygen

10-250 TPD

Oxygen Cost Index ($ per ton O₂)

Plant Size (TPD)

3 + % capital and energy savings p.a.
Applications Technology: Creating Value for Customers

**Combustion**
Fuel Savings, productivity, emissions reduction

**Food & Beverage**
Greater yields, less dehydration losses

**Welding**
Productivity, quality, fume reduction

**Energy**
Efficiency and productivity in natural resource use

**Steel**
Productivity, energy savings (DRI, PCI, CO-jet)

**Healthcare**
Full range of medical gases, services and technologies

Drive growth at a multiple of industrial production
Increasing Gas Intensity – Two Examples

Argon intensity - Welding
(CF argon per lb consumables)

O₂ Intensity - Steel
(scf O₂ / ton steel)

Source: Praxair estimates
Unique Revenue Model

On-Site/Pipeline 25%
- 15-year take-or-pay contracts
- Indexed to energy, inflation, currency

Merchant Liquid 32%
- Exclusive supply agreements
- Sourced as by-product from on-site

Packaged/Medical 27%
- Cylinder rental and specialty gas focus
- Sourced as by-product from bulk

Integrated supply & contract terms drive high ROC
Selective Geographic Focus

Excellent geographic footprint… well-positioned for future growth

2011 Sales
Praxair Key Growth Drivers

Emerging Economies
- Infrastructure development & domestic consumption
- Migrating application technologies
- Outsourcing of captive production

Energy
- Global growth of refinery hydrogen
- Coal gasification in China
- Oil and gas well services

Environment
- Air, water and waste regulations
- Development of alternative fuels
- Resource-efficient solutions

Execution
- Low cost product-line plants
- Sustainable productivity
- Capital project execution
Driven by emerging economy and energy markets

**Backlog ($B)**

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**Project Backlog**

- 44% H2
- 39% ASU
- 8% Energy
- 9% Metals
- 11% Electronics
- 12% Manufacturing
- 9% Chemicals

**Backlog by Market**

- Energy: 43%
- Manufacturing: 26%
- Metals: 12%
- Electronics: 11%
- Chemicals: 9%

- 2.6B - signed, long-term contracts with customers
- Solid customer bidding activity
Consistent Outperformance

Unique Revenue Model

- No speculative capex
- Long-term contracts
- No commodity pricing
- Critical product, but low percentage of customer’s cost stack
- High ROC and cash flow

Indexed EPS

- Praxair: 16% CAGR
- S&P 500: 8% CAGR

Operating Cash Flow

- $2.5B
- 11% CAGR

Steady earnings growth through economic cycles

* Source: S&P
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.