Energy and the Environment
Increasing growth opportunities

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Diverse Markets and Geographies

- Well positioned for continued long-term value creation

### End Markets

- Energy: 23%
- Gen'l Mfg: 13%
- Chemicals: 19%
- Electronics: 15%
- Metals: 9%
- Medical: 8%
- Food: 4%
- Other: 9%

### Geographic Sales

- United States: 39%
- Europe: 32%
- Asia: 22%
- Canada/Latin America: 7%
Providing Solutions for Clean Energy

Industry Leadership

- Resource conservation and energy efficiency
- Hydrogen solutions for refiners to enable cleaner burning conventional fuels
- Clean Energy Solutions
- Power generation development
- Providing Energy & Environmental Solutions for Today’s Needs...
- Preparing Solutions for Tomorrow’s
- Technology to make use of non-conventional fuel sources
- Technology and infrastructure enabling the development of a future hydrogen economy
- Suite of differentiated CO₂ capture technologies including oxyfuel and pre-combustion capture
- Natural gas (remote and non-conventional) solutions
- Technology enabling gasification
- Technology to enable fuel diversity
Industrial Gas Growth Opportunities
Delivering Solutions for a Changing World

Energy

• Hydrogen for refining
• Oxygen for gasification
• LNG heat exchangers
• Gases for photovoltaics
• Efficient Cogeneration

Environment

• Oxyfuel
  – Efficiency for Glass, Steel, etc.
  – Fossil Fuels to low carbon power
• CO₂ capture
• Hydrogen fuels

Emerging Markets

• Electronics across Asia
• Equity Affiliate Positions
• Biofuels and Biomass
• Expanding Merchant positions
Energy and Efficiency

Driving oxygen applications

• Efficiency
  - Steel
  - Refining
  - Cement, glass, aluminum

• Energy
  - Gasification for power, chemicals, hydrogen, etc.
  - Feedstock independence
  - Biogasification and biofuels

• Environment
  - Oxyfuel combustion
  - CO₂ capture

200,000-300,000 tons-per-day new oxygen capacity by 2018
100+ new plants
ITM Revolutionizing $O_2$ Supply

- Lower unit cost for oxygen
- Energy integration with power and steam generation
- Ideal for gasification / energy applications including oxycombustion
- Proprietary ceramic membrane technology

Commercialization Update
- Building 100 TPD test facility with DOE support
- Target on-stream 2011
- Received DOE award supporting acceleration of scale up
Air Products Projects Capturing CO$_2$ from Fossil Fuel-Based Processes

• Oxyfuel technology for pulverized coal boilers
  - Installing proprietary CO$_2$ capture, purification and compression system at Vattenfall's pilot, Germany
  - Target on-stream 2011

• Hydrogen production from natural gas with CO$_2$ capture
  - DOE Phase II Industrial CCS Award, Port Arthur, TX
  - Target on-stream 2012

• Oxyfuel CO$_2$ Purification in China
  - Shanxi International Energy Group study and reference plant design for 350MW demo project
  - Part of joint U.S.-China Fossil Energy Protocol – Annex II: Clean Fuels
New Initiatives
Tees Valley Renewable Energy Facility

• Proposed 49MW Energy-from-Waste facility using advanced gasification technology

• Currently in the planning & development stage

• Potential for:
  - Renewable electricity for up to 50,000 UK homes
  - Diversion of 300,000 – 350,000 tonnes of non-recyclable waste from landfills
BF Plus – Integrated Iron Making / Power Generation

We offer steel producers the complete package...Lower costs, improved iron making productivity, and a cleaner environment
Global Refining

*Solid Growth for Hydrogen, Power & Steam*

Consumer Growth for Clean Fuels, Both Population and Economic

- Lower quality crude oil
- Ultra-low Sulfur Fuels

Results in new balances for
- Hydrogen
- Steam
- Power
- Fuel

For ultra clean fuels

Global Energy Markets

Renewable Energy Supplies
New Hydrogen Application: Transportation Infrastructure

Applications Include:

• Material Handling
• H₂ and HCNG Buses
• Trains
• Planes
• Submarines
• Cell-Towers
LNG Heat Exchangers

*Market Leadership*

- APD world leader in natural gas liquefaction technology and equipment
- Sustainable competitive advantage with full complement of technologies
- Significant increase in demand in Asia drives the market
- Anticipate 2-3 LNG orders per year over next 5 years
- LNG global production doubles 2010-2020.
Sustainability at Air Products

**Business Value**
Providing innovative solutions for the world’s most pressing challenges

**Environmental Stewardship**
Responsibly managing our footprint through improvements and aggressive goals

**Social Responsibility**
Improving the quality of life for our employees and plant communities

**Governance**
Working with integrity and accountability for our stakeholders

**Water**
- Reduce consumption 10% globally by 2015

**Greenhouse Gases**
- Reduce by 7% indexed against production by 2015
Thank you...
tell me more