



Presentation to: North American Natural Gas Conference

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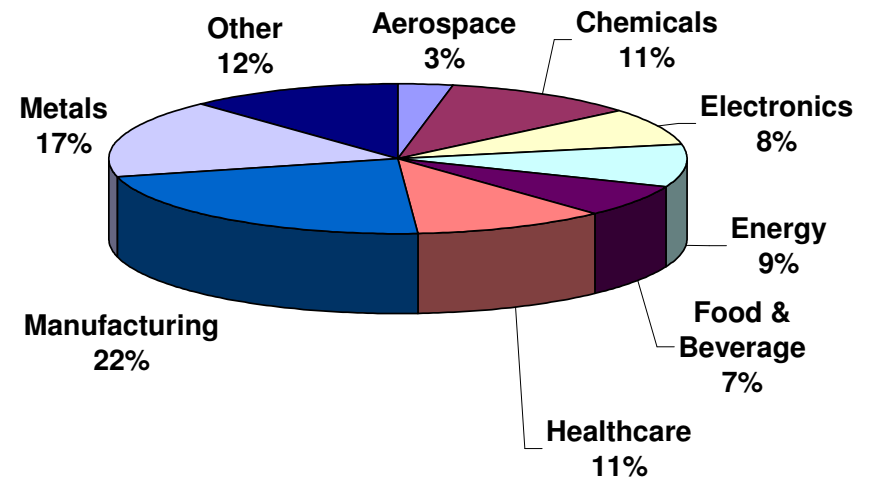


Praxair at a Glance



- **Growing Fortune 300 company**
- **Largest industrial gas company in Americas**
- **Sales exceeding \$8.3 billion per year**
- **27,000 employees with operations in over 30 countries**
- **Leader in the development of applications technology**
 - not just an industrial gas provider
- **Pioneered new applications**
 - many relevant to the energy arena

Industrial Gas Customer Base



- **Strong growth in hydrogen demand has made Praxair a significant natural gas consumer**
 - Approximately \$0.5 billion in natural gas purchases per year
 - Steam Methane Reforming is the predominant H₂ production technology
 - Approaching 1 bscfd and growing at 15-20% per annum
- **High natural gas prices have created opportunities for industrial gases**
 - Hydrogen and Energy Systems monitoring and integration capabilities
 - Technologies for improving efficiencies and reducing costs
 - Technologies for upgrading lower value or difficult fuel sources
- **History of technical innovation -- over 3000 patents -- many energy related**

Industrial Gas Fuel Applications



- **Oxygen (oxyfuel) is now commonly used in industry to enhance combustion**

- Increased throughput
- Reduced emissions (NO_x, CO, particulates)
- Reduced capital
- Improved fuel efficiency

- **Applications include:**

- Glass furnaces
- Coal fired boilers
- Process heaters

- **Moving towards sustainability**

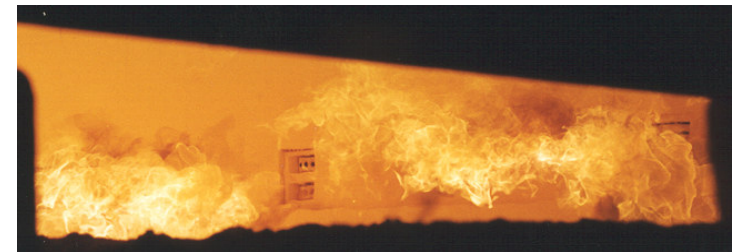
- Alternate fuels
- CO₂ capture ready



CoJets in Electric Arc Furnace



Cement kiln
O₂ Lance



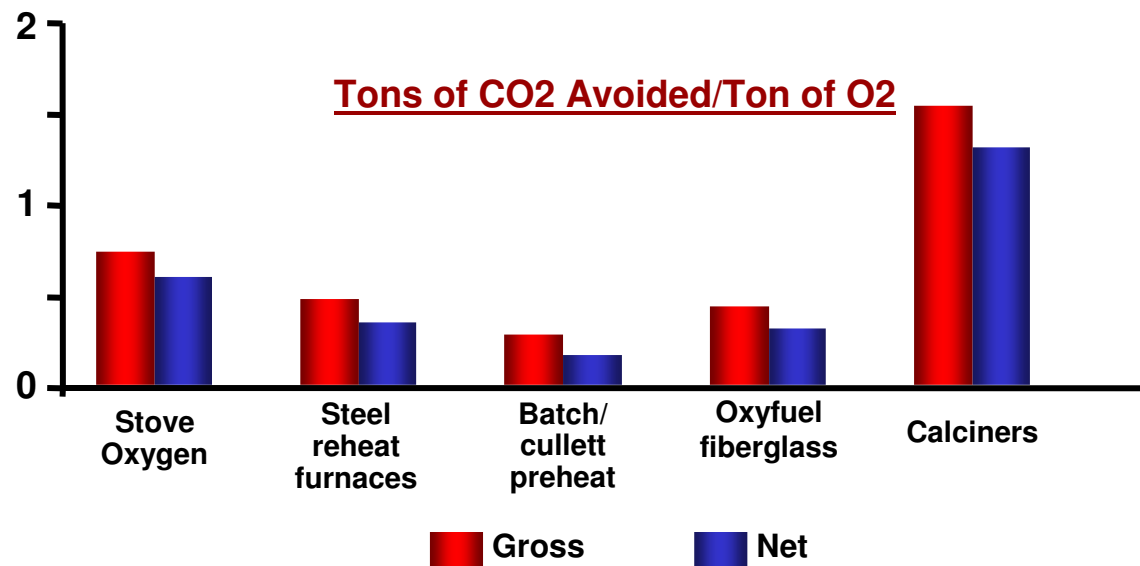
Wide flame burner in Glass Furnace

Demand for Oxyfuel Combustion Increasing



- High fuel costs driving adoption
- Emission limits growing
- Industry applications expanding
- About 37% of US glass furnace have been converted
 - 25 billion scf/yr savings

Applications	Fuel Savings (MMBtu/ton O ₂)
Steel - Stove Oxygen	14
Steel Reheat Furnaces	9
Glass- batch/cullet preheat	5
Fiberglass	8
PetCoke Calciners	29



- **Industrial gas use can optimize energy efficiency and mitigate high natural gas (and energy) costs**
- **Industrial gas solutions offer multiple benefits**
 - Fuel savings
 - Emissions reductions
 - Capital avoidance
 - Productivity
- **Proven track record in developing oxygen and hydrogen technologies and applications**



Thankyou

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www.praxair.com