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Industrial Gases

US Industry Study with Forecasts to **2010 & 2015**

Study #2149 | February 2007 | \$4400 | 259 pages

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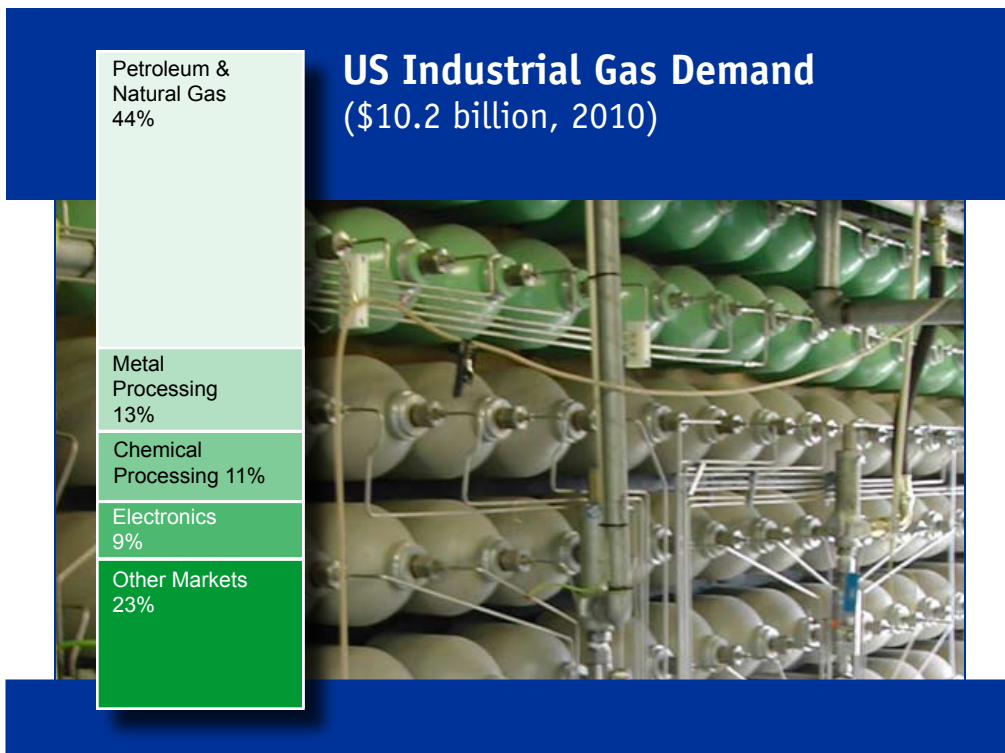
The oil and gas production segment will grow over nine percent per year, due largely to the increased use of nitrogen and carbon dioxide for well stimulation and enhanced oil recovery projects.

US industrial gas demand to reach 4.7 trillion cubic feet in 2010

Industrial gas demand in the US is forecast to expand 3.6 percent per year to over 4.7 trillion cubic feet in 2010, with value increasing 4.0 percent per annum to \$10.2 billion. Best opportunities will continue to come from the important petroleum and natural gas market although faster growth will be recorded in smaller volume applications such as electronics and healthcare. In contrast, market maturity and competition from other technologies will limit growth in chemical processing, metals, and food and beverage applications.

Petroleum, natural gas market to remain largest

The petroleum and natural gas industry will remain the largest market for industrial gases, accounting for over 40 percent of demand (including both merchant sales and captive on-purpose production at refineries) in 2010. The smaller oil and gas production segment will grow over nine percent per year, due largely to the increased use of nitrogen and carbon dioxide for well stimulation and enhanced oil recovery projects. However, it will still comprise only seven percent of the petroleum and natural gas markets. Petroleum refining applications will also see strong growth of almost four percent annually, as more hydrogen is required to comply with environmental regulations which limit sulfur levels in fuel.



Electronics industry to be fastest growing market

The electronics industry will be the fastest growing market for industrial gases, supported by a rebound in electronic components production, and a strong performance from semiconductors. Demand will benefit from this industry's increasingly high purity requirements for gases used in the production of delicate electronic components, as ultrahigh-purity gases are priced at a premium.

Industrial gas demand for medical and healthcare applications will continue to grow at an accelerated pace. Growth will be fueled by an increasing elderly population, which is more likely than other

segments of the population to require medical treatments such as respiratory therapy and various testing procedures. Greater use of portable oxygen tanks for home healthcare applications will also support demand.

Primary metal manufacturing, which utilizes oxygen, nitrogen and argon, will exhibit below-average gains. Foreign competition negatively impacts this market, and market maturity limits the potential for adding value through performance-enhancing product innovation. In addition, gas is generally supplied via pipeline under long term contracts which support exceptionally low prices with relatively little pricing flexibility on the part of suppliers.

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Sample Text, Table & Chart

CARBON DIOXIDE

Shipments & Production

Shipments of carbon dioxide are forecast to increase year to year to 5 million. Carbon dioxide will be used in a variety of applications, including the production of ammonia, urea, and other fertilizers. Carbon dioxide is also used in the production of carbonated beverages, and in the production of dry ice. Carbon dioxide is produced as a byproduct of natural gas processing. Due to this method of production, supply varies from one geographic region to the next.

Carbon dioxide production grew through the mid 1990s in 1994 and continuing into 1998, when US carbon dioxide production reached a record high. Gains during the 1994 to 1998 period were due to steady requirements arising from most major markets, including the key food and beverage processing segment. More recently, increases in demand have slightly outpaced capacity increases, resulting in greater utilization of capacity.

Carbon dioxide production is forecast to increase year to year to 9.3 million tons in 2010. Captive and carbon dioxide is very significant, and continues to be an important part of natural gas operations and captive recovery operations is excluded from this data. Carbon dioxide produced as a byproduct of chemical operations, notably that in the ammonia, soda ash and urea data for carbon dioxide also excludes solid ammonia (as this would lead to double counting), although the production of dry ice is included. Production of about 1.5 tons of liquid carbon dioxide.

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SAMPLE TEXT

TABLE IV-1

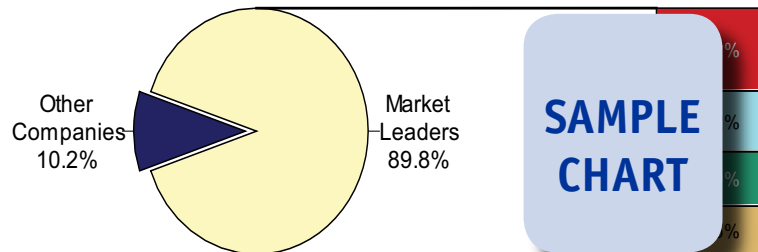
NITROGEN SUPPLY & DEMAND

Item	1995	2000	2005	2010	2015
Gross Domestic Product (bil \$)	7398	9817	12456	16100	20600
\$ gas/000\$ GDP	0.16	0.15	0.16	0.16	0.15
Nitrogen Demand (mil \$)					
\$/000 cubic feet					
Nitrogen Demand (bil cu ft)					
+ exports					
- imports					
Nitrogen Production (bil cu ft)					
Exports as a % of Production					
Imports as a % of Demand					

SAMPLE TABLE

TABLE XI-1

US INDUSTRIAL GAS SALES BY COMPANY, 2005
 (\$12.6 billion)*



SAMPLE CHART

* This figure encompasses merchant gas sales for industrial gas producers & distributors, including related equipment and services, and thus is not directly comparable to shipment value figures for gas included in other sections of this study, which include the value of all gas at the manufacturer's level.

Sample Profile, Table & Forecast

COMPANY PROFILES

Praxair Incorporated
 39 Old Ridgebury Road
 Danbury, CT 06810
 203-837-2000
<http://www.praxair.com>

Sales: \$
 Employe

Key Pro carbon dioxide,
 helium, welding equipment;
 and relat

Praxair is the largest industrial gas company in the US, maintaining a market share of over 20 percent. The company supplies atmospheric and process gases, and also designs, engineers and constructs equipment that produces industrial gases for internal use and external sale. Praxair operates in five segments: North America, South America, Europe, Asia and Surface Technologies.

The Company is active in the US industrial gases market through the North America segment, which had sales of \$4.7 billion, including eliminations. The segment operates over 600 locations in the US, Canada and Mexico, including air separation plants, hydrogen production sites, carbon dioxide manufacturing and other facilities. The segment has two major product lines: industrial gases, which includes the manufacture and distribution of such atmospheric gases as oxygen, nitrogen, argon and rare gases; and process gases, comprising carbon dioxide, helium, hydrogen, acetylene, carbon monoxide, and electronic and other specialty gases. Praxair produces these gases for use in a wide range of industries, such as food and beverages, healthcare, semiconductors, chemicals, refining, primary metals and metal fabrication.

TABLE V-2

OXYGEN SHIPMENTS & PRODUCTION (billion cubic feet)

Item	1995	2000	2005	2010	2015
Industrial Gas Shipments (mil \$)	34	37	40	43	46
% oxygen	2	2	2	2	2
Oxygen Shipments (mil \$)					95
\$/000 cubic feet					18
Oxygen Shipments Onsite & Pipeline					70
Bulk Liquid & Cylinder					90
+ captive consumption					35
Oxygen Production	6	6	6	6	705

**SAMPLE
TABLE**

**SAMPLE
PROFILE**

“Industrial Gas Demand -- Demand for industrial gases in the chemical processing industry will grow at a rate of 2.1 percent per year to reach 775 billion cubic feet in 2010. Value demand will exceed \$1.1 billion at that time. Gains will be supported by a slight upswing in chemical production compared to the previous decade, led by a turnaround in plastic, rubber and fibers. Nitrogen, oxygen and hydrogen will continue to account for the vast majority of demand.”

--Section III, pg. 53-4

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OTHER STUDIES

Specialty Gases

Specialty gas demand in the US will grow 5% annually through 2011. Best market opportunities are expected in electronics and manufacturing, as well as in a variety of new and/or lower volume uses such as home health care, propellants and packaging. Oxygen, noble gases and fluorine-based gases will lead gains by type. This study analyzes the \$2.8 billion US specialty gas industry, with forecasts for 2011 and 2016 presented by product and market. It also evaluates market share and profiles major players.

#2192 05/2007..... \$4400

World Oilfield Chemicals

Global demand for oilfield chemicals will rise 5.9% annually through 2010, driven by sustained growth in drilling activity. The dominant North American market will register healthy gains as producers strive to maintain production. Drilling fluids will remain the largest type while well stimulation chemicals will lead gains. This study analyzes the \$10.9 billion world oilfield chemical industry to 2010 and 2015 by type, world region and for 25 countries. It also details company market share and profiles major players.

#2162 03/2007..... \$5400

World Well Stimulation Materials

Global demand for well stimulation materials is forecast to increase 11.3% annually through 2010. Gains will be driven by high oil and gas prices coupled with maturing wells. Among the leading markets, China, Canada and Russia hold stronger prospects than the US. Proppants will be the largest and fastest growing product. This study analyzes the \$2.5 billion world well stimulation material industry to 2010 and 2015 by product, key country and world region. It also evaluates market share and profiles major players.

#2161 03/2007..... \$5400

World Catalysts

The world catalyst market will reach \$12.3 billion in 2010, driven by growing demand in the chemical, polymer and refining industries for more energy efficient processes and products. Polymer catalysts will grow the fastest while chemical synthesis types will remain dominant. Organometallics will lead gains by material. This study analyzes the global catalyst industry to 2010 and 2015 by material, product, market, world region and for 18 countries. It also evaluates market share and profiles industry participants.

#2125 01/2007..... \$5500

Well Stimulation Materials

US well stimulation material demand will grow 11% annually through 2010. Gains will be driven by efforts to maximize output of existing oil and gas wells and by increases in well drilling and completion. Proppants will remain the largest type and grow the fastest, followed by foaming and gelling agents and base fluid additives. This study analyzes the \$1.1 billion US well stimulation material industry to 2010 and 2015 by product and regional market. The study also details market share and profiles major players.

#2101 09/2006..... \$4200

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