A wider range of gas supply applications services for glass manufacturing

Safety and Reliability You Can Count On

When Praxair provides supply and process systems, we use advanced equipment and technologies to help ensure safe operation. All of our installations conform to applicable government and regulatory standards and to our company’s high standards, all of which must meet applicable codes for industrial gas safety.

To help promote safety in operations involving our products, we provide relevant industrial gas instruction, safety literature, and videos.

A Global Leader

Praxair is one of the largest industrial gas companies in the world, and the largest in North and South America. We operate in more than 50 countries and serve more than 300,000 customers in a wide variety of industries including energy, manufacturing, chemicals, metals production, and healthcare.

To learn more about Praxair’s gas supply expertise, call us at 1-800-PRA XAIR or visit our website at www.praxair.com.

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To help promote safety in operations involving our products, we provide relevant industrial gas instruction, safety literature, and videos.
Praxair – A Wider Range of Options

Praxair is more than just gases. We have a wide range of services that help create value and improve the competitiveness of glass manufacturers around the world. Praxair has been working with the glass industry for years, developing advanced technologies that improve energy efficiency, environmental emissions and product quality.

From Gas Supply to Services

Gases Supply Systems Expertise:

Praxair’s industrial gas supply leadership spans more than eight decades. Whether your manufacturing processes require oxygen, nitrogen, argon, hydrogen, helium or specialty gases, Praxair supplies it. Today, we offer a wide range of gas production and storage systems options for glass manufacturers, including cryogenic, pressure-swing adsorption, membrane, and bulk liquid. Together we work to deliver one path to provide you with the most effective supply method, tailored to your specific needs.

Core applications include:

- Cryogenic systems for task segmenting, enhanced glass production
- Pressure-swing adsorption
- Membrane systems for task segmenting, enhanced glass production
- Bulk liquid systems for task segementing
- Refrigeration systems for task segmenting

A Collaborated Approach with Computer Modelling:

Praxair uses the highly regarded Glass Furnace Model of Glass Services to perform Computational Fluid Dynamic (CFD) modeling studies for our customers. This fast access to tools on the experience generated in over 100 years of glass furnace operation in Europe. And, the results are easy to understand and implement.

A Glass Team Driven by Your Needs:

Praxair’s global glass technology team is comprised of engineers and industry specialists who are focused on our customer’s goals and challenges. The team works with industry consultants, glass engineering companies, and educators to develop better technologies for the glass industry. A well-planned, and more efficient system and industrial gas supply meeting your needs.

Quality, Efficiency, Productivity and Profitability:

In addition to supplying industrial gases, Praxair has developed technologies and combustion equipment to help you achieve one goal: to provide you with the most cost-effective supply method, tailored to your specific needs. Core applications include:

- OXY: full oxy-fuel conversions, oxy-boosting, oxy-lancing, high production, low emission, and improved glass quality
- N2: float furnace tin bath, bubbling
- H2: float furnace tin bath, flame polishing
- CO2: total oxygen enrichment, enhanced glass production
- Highly efficient, environmentally friendly, and easy to install

Sustainable development is an integral part of Praxair’s business strategy. Environmental performance of our combustion equipment has always been a cornerstone of our design as evidenced by our DOC technology.

A Strategic Commitment to the Environment:

Sustainable development in an integral part of Praxair’s business strategy. Environmental performance of our combustion equipment has always been a cornerstone of our design as evidenced by our DOC technology.

A Wider Range of High Value Combustion Technology

Whether for completion oxy-fuel conversions or in auxiliary burner applications, Praxair in the industry leader providing high performance, reduced emissions to meet the glass industry needs.

Day-Fuel Conversion of Glass Furnaces

More than 100 conversions prove the value of Praxair’s oxy-fuel burner technology. It eliminates the noise-source of nitric oxide from the combustion process, resulting in environmental benefits, significant fuel savings, and improved glass quality.

Day Boosting and Partial Day-Fuel Conversions

Praxair’s oxy-boosting burners have been installed in over 80 furnaces worldwide, delivering up to 25% increase in pull rate. They also improve glass quality, lower electric power input, and reduce stack emissions. Ballistic conversion for improved performance, repair, and higher efficiency.

Dilute Oxygen Combustion (DOC) Technology

Conventional oxy-fuel benefits without complexity or performance. Praxair’s DOC technology for glass melting provides up to 16% fuel savings over conventional oxy-fuel burners, with no main environmental benefits for H2O and NOx.

Benefits include:

- No capital equipment investment
- No oxy-fuel burner technology troubleshooting
- No changes to oxy-fuel burner technology

A Wider Range of High Value Combustion Technology

Praxair’s DOC Wide Flame Burner provides an extraordinary wide flame and full furnace coverage. See insert.

An Atmosphere of Excellence and Innovation

This timeline demonstrates Praxair’s commitment to the glass industry providing you with the highest performance, reliability, and global facilities to supply you with the industrial gases and related services you need when you need them.

1960s
- Develops 100% Natural Gas and Oxygen Preheaters
- Develops First Total-Oxygen-Melt Furnace

1970s-1980s
- Develops Rapid Oxy-Fuel Batch/Cullet Lancing
- Develops Oxy-fuel Production Boosting and Partial Oxy-Fuel Conversions
- Develops 4,000 TPD Total Oxygen Melt Furnace
- Develops DOE-funded Advanced Batch/Cullet Oxy-Fuel Furnace

1990s
- Develops Wide Flame Oxy-Fuel Burner with Natural Gas Preheaters
- Develops Refiner Oxy-Fuel Burner

2000s
- Develops Lean Burn Oxy-Fuel Burner
- Develops Low NOX Oxy-Fuel Burner
- Develops Oxy-Fuel Burner

2010s
- Develops Oxy-Fuel Burner

Praxair’s DOC Wide Flame Burner provides an extraordinary wide flame and full furnace coverage. See insert.
Praxair – A Wider Range of Options

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From Gas Supply to Services

Gas Supply Systems Expertise

Praxair’s industrial gas supply leadership spans more than eight decades. Whether your manufacturing processes require oxygen, nitrogen, argon, hydrogen, helium or another specialty gas, Praxair supplies it. Today, we offer a wide range of gas production and storage system options for glass manufacturers, including cryogenic, pressure swing adsorption, membrane, and bulk liquid. Together we work to deliver one path to your supply system that improves furnace operations, reduces energy consumption and lowers your costs.

Core applications include:
- Cryogenic furnaces for melts; building
- High-purity furnace for melts, flame polishing
- Helium and other specialty gases for coating

A Collaborative Approach with Computer Modeling

Praxair uses the highly regarded Glass Furnace Model of Glass Supply to perform Computational Fluid Dynamics (CFD) modeling studies for our customers. This tool allows us to build on the experience generated in over 80 furnaces worldwide. And, the results are easy to understand and implement.

A Glass Team Driven by Your Needs

Praxair’s glass technology team is comprised of engineers and specialist who are focused on our customers’ goals and challenges. The team works with industry consultants, glass engineering companies, and educators to develop the best technologies for the glass industry. Our team can help enhance any existing system you may have. This results in an integrated, well-planned, and more efficient system and industrial gas supply meeting your needs.

A Wider Range of High Value Combustion Technology

Whether it’s for complete oxy-fuel conversions or auxiliary burner applications, Praxair in the industry leader providing a full range of high value technologies to improve energy efficiency, reduce environmental emissions, and carbon footprint in line with today’s legislative requirements.

An Atmosphere of Excellence and Innovation

This timeline demonstrates Praxair’s commitment to the glass industry by showing that we have the technical resources, flexibility, and global facilities to supply you with the industrial gases and related services you need when you need them.

1956 – Praxair develops oxygen and natural gas systems and becomes the first supplier to the glass industry.

1970s – Praxair develops the DOC (Dilute Oxygen Combustion) Technology.

1990s – Praxair develops the DOF (Dilute Oxygen Flame) Technology.

2000s – Praxair develops the SOF (Single Oxygen Flame) Technology.

2010s – Praxair develops the FOF (Full Oxygen Flame) Technology.

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A wider range of gas supply applications

When Praxair provides supply and process systems, we use advanced equipment and technologies to help ensure safe operation. All of our installations conform to applicable government and regulatory codes. For example, in our combustion system designs, all control logic must meet applicable codes for industrial furnace combustion systems as adapted for oxygen operation.

To help promote safety in operations involving our products, we provide relevant industrial gas instruction, safety literature, and videos.
A wider range of applications services for glass manufacturing

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A wider range of applications services for glass manufacturing