

# Melting-Heat Oxy-Combustion

## We deliver:

- 10% Extra energy savings
- 10% Extra CO<sub>2</sub> emission reduction
- Maximized oxy-combustion performance



## The Industry Challenge

In today's glass-production processes, energy consumption and gas emissions present major obstacles to sustainability and productivity.

Whatever you need to optimize the operational costs of your melting process, **Nexelia for Melting-Heat Oxy-Combustion** is the optimal choice.

## The Nexelia Solution

A comprehensive gas solution designed for and adapted to your specific needs, **Nexelia for Melting-Heat Oxy-Combustion** combines the best of our gases, application technologies and expert support. As with all solutions under the **Nexelia** label, we work closely with you to pre-define a concrete set of results, and we commit to delivering them.

Air is commonly used to provide oxygen for combustion to heat industrial furnaces. Oxy-combustion is based on the enrichment of air with pure oxygen to improve the overall energy efficiency of glass-melting process.

**Nexelia for Melting-Heat Oxy-Combustion** is an innovative technology that consists of preheating oxygen and natural gas at high temperature generated by combustion fumes. Compared to oxy-combustion without preheating, it reduces fuel and oxygen consumption to the extent that oxy-combustion is economically beneficial to all types of glass.

**Nexelia for Melting-Heat Oxy-Combustion** is suitable for container, technical and float glass furnaces.

## Your Advantages

### Energy savings

Using pure oxygen instead of air improves the combustion efficiency and reduces fuel consumption. By preheating the oxygen and fuel (natural gas), **Nexelia for Melting-Heat Oxy-Combustion** maximizes the performance of oxy-combustion by providing 10% more energy savings than oxy-combustion without preheating.

### Lower pollutant emissions

Burning pure preheated oxygen and fuel reduces fuel consumption, thus decreasing CO<sub>2</sub> emissions by an additional 10% compared to oxy-combustion without preheating. What's more, thanks to our patented hot oxy-fuel burners, NO<sub>x</sub> emissions also remain extremely low, with up to 90% reduction compared to combustion air.

### Flexible energy sourcing

**Nexelia for Melting-Heat Oxy-Combustion** operates with pure hot oxygen and natural gas or fuel-oil as combustible. It can also operate with air or cold oxygen and cold fuel in a back up mode. This tremendous flexibility helps you reduce energy sourcing dependency and associated risks.

### Capex reduction

Equipment to preheat lower volumes of combustion oxygen is less expensive than equipment to preheat larger volumes of combustion air.

# Core Features

Nexelia for Melting-Heat Oxy-Combustion consists of:

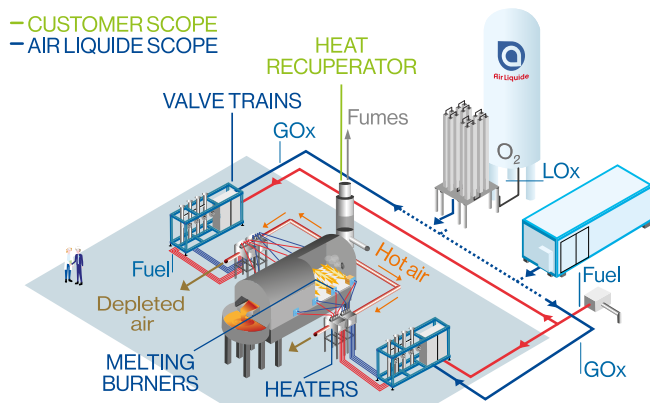
- **Oxygen supply:**

Liquid oxygen supply (LOx) or low pressure gaseous state on-site generation (FLOXAL Oxygen). FLOXAL is our competitive on-site supply offer which provides the required quantity of oxygen according to all your needs.

- **Glass melting patented technologies**

## Heat exchangers

A unique and patented combination of a heat recuperator and heaters: the heat recuperator recovers heat from hot fumes to air; the HEATERS transfer heat from air to fuel and oxygen.



## Patented burners

- **GLASS MELTING BURNER-FC-HEATOX** is a patented non-water-cooled oxy-fuel burner for technical and containers glass-type applications.

- **GLASS MELTING BURNER-SUN-HEATOX** is a patented non-water-cooled oxy-fuel burner for large furnace, such as those that use float glass-type production.

All burners are made of specific materials to comply with high temperature.

**VALVE TRAINS** are automated control systems to monitor the oxy-fuel burners and their supply systems.

- **The full support of our application experts**

Our experts provide full support at every step, from the auditing of your current melting process to the preliminary and detailed designs of your new solution, as well as its complete implementation including commissioning, monitoring and maintenance. All our technologies are easily and reliably installed by our teams.

# Case Studies

## CASE 1: Float glass

- CAPEX = €4.25 million

Solutions	Burning O <sub>2</sub> without preheating	Burning Preheated O <sub>2</sub> and fuel
Fuel (€k/y)	12,300	11,070
Oxygen (€k/y)	3,867	3,481
Capex – linear depreciation (10y) (€k/y)		425
Licensee Fees (€k/y)		95
<b>Total (€k/y)</b>	<b>16,167</b>	<b>15,071</b>
<b>Total savings (€k/y)</b>		<b>1,096</b>
<b>Total savings (%)</b>		<b>7</b>

→ Savings: **€M1.096** per year

## CASE 2: Hollow glass

- CAPEX = €1.66 million

Solutions	Burning O <sub>2</sub> without preheating	Burning Preheated O <sub>2</sub> and fuel
Fuel (€k/y)	3,700	3,330
Oxygen (€k/y)	1,475	1,330
Capex – linear depreciation (10y) (€k/y)		166
Licensee Fees (€k/y)		40
<b>Total (€k/y)</b>	<b>5,175</b>	<b>4,866</b>
<b>Total savings (€k/y)</b>		<b>309</b>
<b>Total savings (%)</b>		<b>6</b>

→ Savings: **€k309** per year

# Related Offers

- Nexelia for Melting-Oxy-Boosting
- Nexelia for Melting-Oxy-Combustion
- Nexelia for Forming
- Nexelia for Finishing

## Contact Us

Air Liquide - IM-WBL  
75 quai d'Orsay  
75321 Paris Cedex 07 - France

www.airliquide.com

