

# Cleanfire® HR<sub>e</sub>™ burner

## The first smart burner for the glass industry



“After a week of feedback from the HR<sub>e</sub> burner, I was able to see that the ratio and staging valve on that burner were both off enough to affect its flame shape. If we had that kind of feedback from the beginning of our operation, I think I could have corrected a burner issue sooner and realized greater fuel savings.”

Jeff Remson,  
Gerresheimer Glass,  
Batch and Furnace Manager



### The Cleanfire HR<sub>e</sub> burner enables:

- Asset protection
- Rundown detection
- Feedback during unmanned operation
- More consistent operation
- Immediate notification of issues

Experience has shown that monitoring your glass furnace's performance with conventional methods can leave certain issues undetected—leading to losses, inefficiencies and potential equipment damage and process interruptions. Air Products' patent pending\* Cleanfire HR<sub>e</sub> burner, the first smart burner in the glass industry, can help you uncover and correct those issues to help improve efficiencies and avoid damage before it occurs.

### Advanced monitoring for overall optimization

The Air Products Cleanfire HR<sub>e</sub> burner uses the same combustion technology as our industry-leading Cleanfire® HR<sub>e</sub>™ Burner. In addition, it includes sensors for monitoring and real-time reporting of key burner conditions that may require operator attention. With 24/7 access to sensor data and immediate notification of issues when they arise, you can better protect your process, optimize and maintain burner performance, and improve overall operation.

\* May be covered by one or more of the following: US 2015/0316262, EP 2940388 A1; US 2015/0316256; US 2016/0238246, EP 3055617 A1

All the benefits of our Cleanfire HR<sub>e</sub> burner technology:

- Low momentum, high aspect ratio flame
- High turndown capability
- Low inlet pressure requirements
- Independent flame length adjustments
- Reduced NO<sub>x</sub> emissions
- Nozzle design that prevents carbon build-up and reduces the frequency of maintenance

**Plus:**

- 24/7 access to burner sensor data for setup, monitoring and alerts
- Text message alerts available for critical alarms
- Data integration with customer DCS and PLC systems
- Simple installation and maintenance, while furnace is running
- Wireless data collection and communication
- Robust electronic components that are high-temperature compatible
- More accurate and continuous burner monitoring, allowing precise burner adjustments

## Recognized leader in glass technology

Air Products has been supplying oxy-fuel technology to the glass industry since the mid-1970's. From our original Cleanfire burners, which have been recognized as the leading technology since their introduction in 1991, to our innovative Cleanfire® ThruPort burner for furnace life extension and emergency regenerator repairs, we continue to provide state-of-the-art solutions for your glass melting operations. Our industry specialists can also help you with the supply and use of nitrogen, hydrogen, helium, argon, and other industrial and specialty gases for additional processes involved in melting and refining, forming, and assembly.

**For more information, please contact us to understand how the HR<sub>e</sub> burner can be integrated with your operations.**

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