

Safety, quality, control.

Advanced atmosphere control systems for heat treaters.



Air Products has been delivering innovative solutions to the metals industry for over 50 years. Together, our range of high quality technical and industrial gases, including nitrogen-hydrogen blends, and technical expertise have helped customers all over the world to optimise their heat treating processes.

We understand that among the number of challenges you face the need for a controlled process can be critical for your operation. Our experts have worked closely with customers to help them reduce costs, maximise uptime, increase throughput and even improve product quality in order to meet ever changing customer demands.

And we are here to help you.

Environmentally friendly

Our nitrogen-hydrogen atmospheres eliminate the need for the more traditional exo-generator systems. Nitrogen, typically the main atmosphere component, provides the inert base that prevents undesirable reactions from occurring. Often a reducing agent, such as hydrogen, will be added to adjust this atmosphere-reducing potential. As no carbon-monoxide is produced they are safer and also more environmentally friendly too. The ability to reduce harmful oxidizing components will mean fewer rejects and better yield, resulting in an overall reduction to operating costs.

Putting you in control

Air Products nitrogen-hydrogen blending panels are fully automated gas mixing systems for heat treating furnace atmosphere production. Each system enables you to adjust your gas mixture and flow to meet your most exacting conditions - a highly valued operational characteristic. This flexibility makes the system user-friendly even in industrial environments.

Built-in flow regulator

The system features a unique differential pressure flow adjustment, and an optional touch screen control. It also includes the option of built-in flow rate measurement and can automatically set the nitrogen and hydrogen flow rates based on a desired % hydrogen concentration. Each panel is fully pre-piped, wired and tested to perform to specific furnace requirements..

Quality and accuracy

For superior quality and accuracy, the blending and flow control equipment provides you with an easy way to manage and maintain a consistent atmosphere and precise gas composition without losing operational flexibility.

Full system range

Whether you have a constant or variable flow, we will help you adjust the hydrogen composition level or the dew point to ensure the best fit and most economic operating conditions for your needs.

The blending panel can be integrated into annealing, sintering and brazing applications for different types of materials and surface reactions. It can also deliver three gases to produce a defined oxidizing atmosphere, for example the controlled surface oxidation of steel strip.

Available in four sizes – from small to extra large (as shown in fig 1.) – with many additional features, including the ability for data logging and automatic calibration with the advanced system.



Figure 1: Flow Rate in Nm³/h based on inlet pressure 13 barg

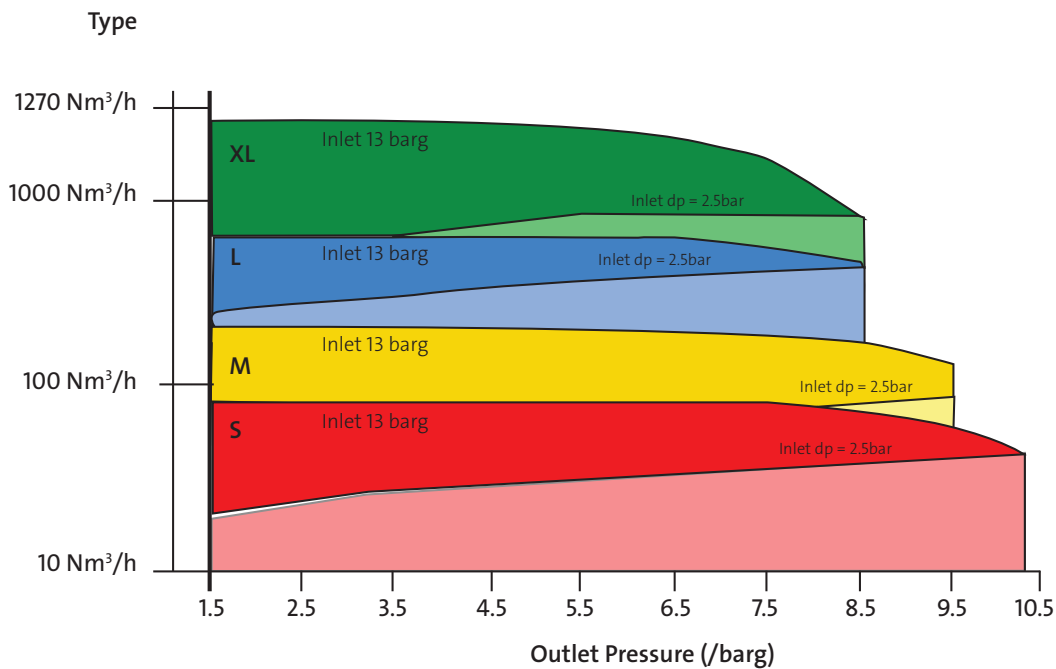


Figure 2: Comparison of system features and benefits

	Standard	Advanced
Reliable low cost base modules to adjust the nitrogen-hydrogen blends	●	
Easy to handle	●	
Low maintenance cost	●	●
Data acquisition		●
Closed-loop atmosphere control systems integration capability		●
Integrated precision hydrogen analyser to measure % H ₂ in the atmosphere introduced to the furnace		●
Integrated N ₂ purge control ¹	●	●
Ability to link to existing process control units ²		●

¹ EN 746-3 standard equivalent

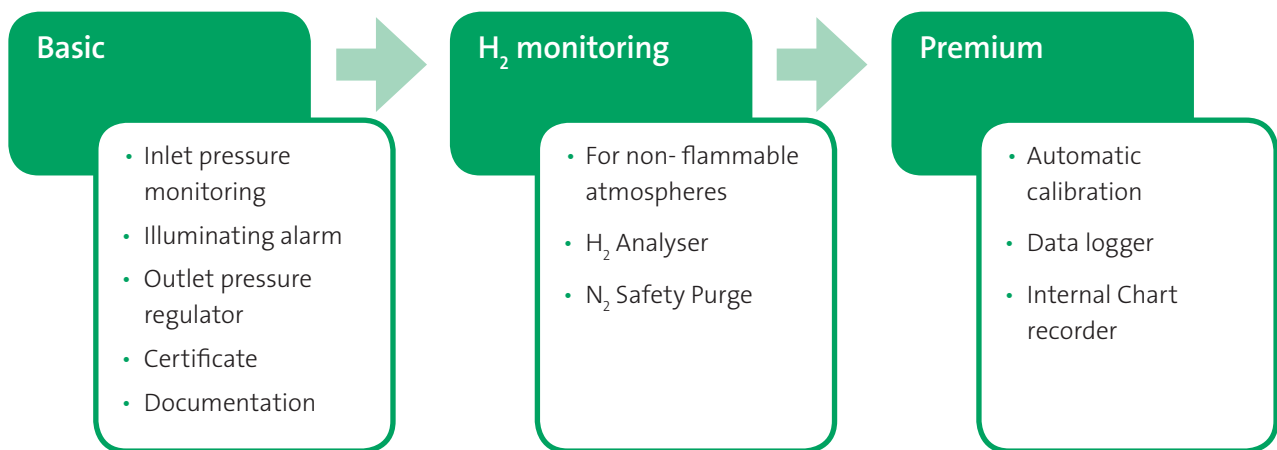
² Can be used with single or multi-zone furnace

Flexible and tailored design

For added peace of mind, whatever your budget, we have a system to suit you. Available as a standard or advanced model both systems have been specifically designed to meet the most basic, yet essential, heat treating requirements with a range of benefits and an affordable price. The advanced system provides additional features such as the ability to link with existing control units.

Figure 3: System options

Pure nitrogen-hydrogen blends delivered by technical gases usually have a dew point of more than -65°C, and a residual O₂ level of below 5ppm. For applications such as brazing and sintering, where a humidified atmosphere can deliver significant advantages, our purposefully-designed humidification system can be added to the Air Products blending panel.



Audits

Our experts can undertake a furnace audit and recommend an appropriate system to improve part quality or reduce your furnace maintenance costs.

Our application engineers can work with you to recommend custom improvements to help improvements to help optimise your gas use and improve product quality.

Evaluation

The Air Products team will fully evaluate your furnace equipment, conducting in-depth performance and safety checks to ensure our blending panels enable you to achieve the required quality standards for your products and meet required safety regulations.

Safety

Nothing is more important to us than your safety. Not sales, not production, not profits. And, a safe operation means an efficient operation.

We offer a wide and varied range of high-quality, tailored safety and training programmes to suit any operation and to keep operators confident and in control. Our programmes include:

- Handling of gases
- Gas atmosphere safety
- Thermodynamics of furnace atmospheres

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