

## Committed to constant development

To enable us to calibrate our Hygrox™-Portable system to international traceable standards, we at McQueen Cairns have designed and constructed a purpose-built environmental chamber, in collaboration with Brunel University, West London, UK.



Humidity measurements are traceable to the NATIONAL PHYSICAL LABORATORY, LONDON, ENGLAND and to the NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, WASHINGTON DC, USA.

It enables us to simulate any type of oven or cooker, which allows us to create accurately the conditions under which any product is processed. For example, we can introduce steam to create the conditions of meat cooking. Or we can inject combustion gases of Oxygen, Carbon Dioxide and Nitrogen to simulate baking in a Direct Gas Fired oven.

It's also possible to programme in a wide range of temperatures and humidities from ambient to 600°C/1112°F, and Dewpoint up to 90°C/194°F. And in addition we can introduce and change the levels of oxygen, carbon dioxide and nitrogen to investigate the effects of these gases on the product.

Working with postgraduates at Brunel University from Physics & Chemistry, we're constantly researching ever more efficient sensors and technology to enable us to improve our systems still further.



## Impressive track record

Over the past eight years we've been specialising in instrumentation for monitoring humidity at high temperatures. We've worked with some of the best known names in the food processing, paper and ceramics industries world-wide. We've enabled them to improve the quality of their products and the overall efficiency of their processes.

What we've done for them, we can do for you.

If you'd like more information about Hygrox P™ or any of our other systems including fixed humidity sensors for control, please contact us or your local distributor.

 nos documents sont disponibles en traduction française

 Dieser Prospekt und alle weiteren Unterlagen sind auch auf Deutsch erhaltlich

 Questo catalogo e tutta la documentazione e disponibile su richiesta in italiano



**mcqueen cairns**  
technology

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## Technical summary

- Measures Specific humidity (0 - 1000 g/kg), and Water Vapour content (0-100%/per Vol).
- Measures Dewpoint over the range 0°C/32°F to 95°C/203°F.
- Measures Process and Product temperatures over the range of 0°C/32°F to 400°C/752°F.
- Can be used in Direct and In-direct gas fired ovens and cookers at process temperatures up to 400°C/752°F.
- Ultra low profile insulated unit for Biscuits Ovens - less than 35mm/1½" high. Other systems include high velocity steam protection for impingement cookers, and extended cooking programmes - of up to 5 hours.
- Easy and quick to set up and use by all operators. System can be returned into oven within minutes for multiple profiles using the Hygrox™ Transit case fast cooling, downloading and recharging technique.
- Hygrox™ Windows® uses .net framework that reduces conflicts between applications by helping incompatible software components coexist.

Microsoft  
.net

All Trade marks acknowledged.



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# Turn problems into profits

Creating the right atmosphere

# INCREASE YIELD, IMPROVE CONSISTENCY AND QUALITY, INCREASE LINE SPEED AND CAPACITY, INCREASE PROFITABILITY.

- Spot, locate and rectify oven faults sooner
- Move products between ovens and plants with more knowledge of conditions
- Know and Optimise your process

## HYGROX™ -Portable Humidity and Temperature Process Data Logging System.

*Humidity* is important in the food processing and drying industry. It controls not only the moisture content and yield of your products, but also their texture, succulence, crustiness, quality and the shelf life.

Cook times are shortened in moist air because heat transfer to the product is assisted by the latent heat of the water vapour in the oven atmosphere. The product reaches safe core temperatures sooner. Shorter cook times mean faster belt speeds and increased throughputs.

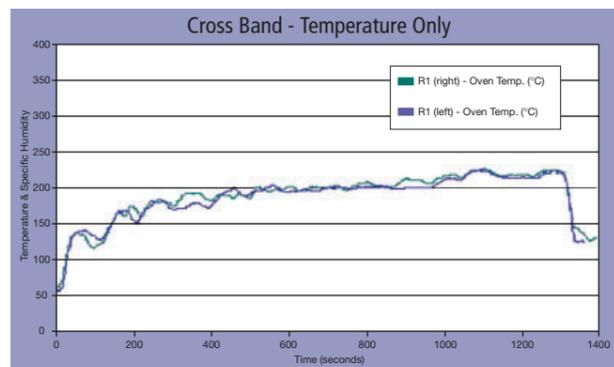
By controlling *humidity* as well as temperature throughout the process, you can increase capacity, achieve higher yields, and get better consistency, not to mention saving energy. Knowing *humidity* levels as well as temperatures gives you extra control. Faults in ovens become easier to locate.

When moving products between ovens you get back to productive conditions more directly and so too more speedily.

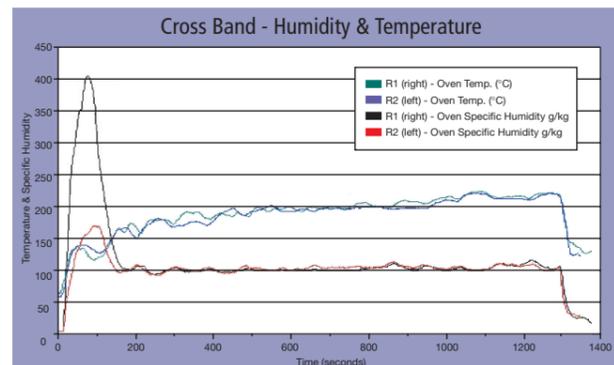
All this adds up to greater efficiency, throughput and profitability.

### A major step forward.

Until now, most ovens and dryers used in food processing provided just a single temperature control in each zone, usually far from the product. Through process recording has given an accurate temperature profile along the belt.



Now *humidity* profiles too can be recorded close to the product on the belt. Just knowing the profile can often produce some interesting results, some immediate opportunities for improvement.



## HYGROX™ Software.

When you buy a Hygrox™ system you are not only buying proven\* humidity technology, but also Hygrox™ software that uses .net - the very latest from Microsoft®. This is used to set up Hygrox™ and to analyze the humidity and temperature profiles measured in the ovens and processes. The Microsoft® .net Framework is an important new component of the Microsoft Windows® family of operating systems. It is the foundation of the next generation of Windows-based applications that are easier to build, deploy, and integrate with other networked systems.

\*Used and trusted by many of the world's leading food manufacturers since its launch in 1999.

## HYGROX™ -Portable in meat cooking.

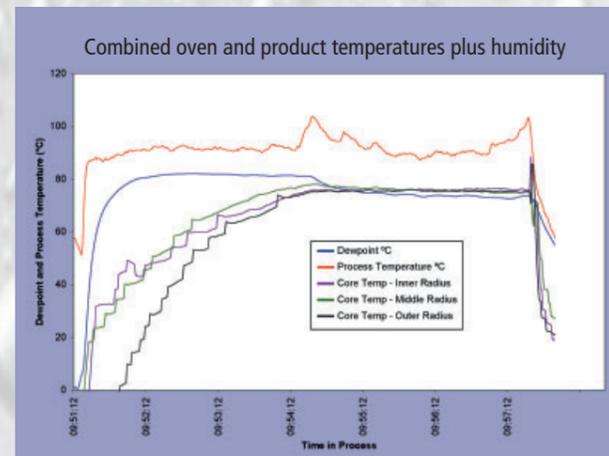
One of the most important factors in producing cooked meat products profitably is to minimise moisture loss.



*Humidity effect on product temperature.*

Not only does a high moisture content give a product succulence and customer appeal, it also maintains maximum weight. And as you know, maximum weight means maximum profit.

Added to this, humidity control within the cooker keeps the amount of energy used to the minimum, consistent with ensuring safe core temperatures early in the process. So you and your customer can be sure that the product is perfectly safe for the consumer to eat.



*Hygrox™ data from dewpoint cooking.*

Hygrox™ shows you what oven humidity levels are needed to reach safe product temperatures.

## HYGROX™ -Portable in baking.

*Humidity* affects biscuits and other baked products in three ways. It governs the risen height or thickness of the product, its consistency and its final colour and finish.

The thickness of the product is important because it controls the stack height - the number that will fit into the pack. Too much height means less product in the pack, and too little height means more will be needed to fill it.



Carefully controlled *humidity* also means that the product is more consistent, both in texture and composition. And especially in the final stages of baking, correct *humidity* means that your product will have the final colour and finish that appeal to the consumer.

In addition, the final moisture content of the product determines its shelf life.

The system is suitable for all kinds of baked products. Biscuits, breads, breakfast cereals, pasta, snacks and crisps.

Hygrox™-Portable gives you continuous *humidity* and temperature information about what's happening at every stage of baking.



This information enables you to control the process far more tightly than ever before, resulting in high quality, high consistency products with exactly the right moisture content. Oven burner and damper faults quickly become noticed, located and rectified.

All with maximum energy efficiency. And maximum profitability.

### Not just the food industry.

Although we developed Hygrox™-Portable primarily for use in the food processing industry, it's equally suitable for monitoring *humidity* in a range of other areas.

Pulp, paper and board, for example, where moisture content plays a major part in the quality of the final product. Also the ceramics industry, where the correct moisture content must be maintained during the final glaze to control lead release.

Indeed, any industry where *humidity* control is important benefit from using the unique new Hygrox™-Portable *humidity* and temperature logging system.



*Bread baked with low humidity level.*

*Bread baked with correct humidity level.*



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