

Newsletter

www.campdenbri.co.uk



Improving oven efficiency during bread baking

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Typical commercial ovens could reduce gas use by nearly 5%, which equates to over £14,000 per year. This is the key finding from recent research which has looked to measure and improve oven gas balance during bread baking, in order to reduce heat loss and energy usage. Specific focus was on the inlet burner air and outlet flue gases of a 3-zone pilot oven in order to calculate savings for a typical commercial travelling oven.

Energy intensive

Baking is the most energy intensive process in the production of baked goods, being responsible for 35-45% of total site energy costs. The amount and type of food in the oven can significantly affect gas flows and energy usage.

One of the unknown gas flows during baking is the volumetric rate of gas released from products, which must be known before gas flows can be balanced. The volume of gas produced by bread varied significantly by oven zone - and was 6-fold greater in zone 3 than zone 1 - while gas from combustion was consistent. Reducing the amount of exhaust air to match the burner air, by using sensors, a ratio controller and a variable speed fan, improved oven balance, and gave an energy saving of 42% in the pilot oven.

Pilot plant for successful NPD

New product development (NPD) is essential to the success of the food and drink industry. Innovation is vital to keep pace with changing consumer tastes and to ensure sales volume and profitability. However, the challenge of reformulation and changes in legislation are also major drivers for NPD. And new product development can be costly if not approached in the correct way.

So how can you improve the success of your NPD? It is crucial to include scale up trials before progressing to factory trials. Pilot scale trials are a fundamental part of NPD since they enable you to assess a new ingredient or process at a realistic scale without the need for costly factory downtime.

At Campden BRI we have an extensive range of food and drink pilot plant facilities, covering over 3000m², to help you develop new products, analyse existing processes, and evaluate ideas for the future. Using an independent facility can also help give a fresh perspective. Our multidisciplinary team of technologists, engineers, chemists, microbiologists and sensory scientists are on hand to help - think of our skills and facilities as a 'toolbox', there for you to use.

From the preservation processes of heating, chilling, freezing and drying, to sector specific processes like malting, brewing, milling and baking, as well as product development activities, ingredient preparation, product formulation and packaging development - we can help you with all aspects of food manufacturing.

For more information on our NPD and pilot plant facilities please email information@campdenbri.co.uk or come to Campden BRI Day on 3 June to see our facilities and chat to our experts.

Steven Walker, Director General

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Recent releases

www.campdenbri.co.uk

Innovation for the food and drink supply chain

Scientific and technical needs. 2015-2017

www.campdenbri.co.uk/industry-needs.php or send an e-mail to auto@campdenbri.co.uk with the subject line: **send innovation 2015**

Research programme 2015

List of our on-going research and development projects www.campdenbri.co.uk/research/strategic.php or send an e-mail to auto@campdenbri.co.uk with the subject line: **send RP2015**

Research summary sheets

Individual summaries of project work through 2014
www.campdenbri.co.uk/research/summary.php

Training brochure released

New downloadable listing of scheduled training courses - www.campdenbri.co.uk/training/training_brochure2015.pdf

Publications catalogue

Revised edition, includes latest publications
www.campdenbri.co.uk/pubs_cat.pdf



Preparing a due diligence analysis plan for a brewery

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We have produced a White Paper on preparing a due diligence analysis plan for a brewery. A food safety analysis (due diligence) plan provides a risk-based approach to food safety analyses. It ensures that all analyses needed to verify legal compliance / safe products are included and minimises costs by targeting essential analyses. It also ensures regular checks and evidence of compliance to regulations, industry guidelines and in-house specifications. This gives assurance to stakeholders and provides part of the defence for the company in case things go wrong.

Copies of the White Paper are available free by e-mailing auto@campdenbri.co.uk with the subject line: **send brewery**

Improved metal analysis

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We have strengthened our chemical contaminant analysis capabilities with a significant investment in a new state-of-the-art inductively coupled plasma mass spectrometer (ICP-MS). The ICP-MS will be used to quantify the levels of heavy metals and other elemental contaminants in food samples.

Julian South, Head of Chemistry and Biochemistry said: *"This new ICP-MS will complement our other analytical equipment, enabling us to process more samples, more quickly and to lower detection levels. Commonly, we test for the levels of metals such as lead in cereals, cadmium in cocoa beans, arsenic in rice and mercury in fish. There are many further elements that we test for and this new addition will greatly enhance our capabilities."*

A current concern is nickel, and we will be able to offer the highest sensitivity for this at a time when stringent limits are being considered by EFSA. The new instrument will also enable us to deal with challenging food types where, previously, problems have been encountered due to interferences between elements."



Pilot plant - your tool box

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www.campdenbri.co.uk/services/pilot-plant-facilities.php

Our extensive range of food and drink pilot plant facilities can help you develop new products, analyse existing processes, and evaluate ideas for the future. As well as commissioning work from us, the facilities are also available for you to hire for confidential trials or development work. We asked Sarah Chapman to run through what is available.

"We have retorts, pasteurisation tanks and cooking and cooling vessels for heat processing activities, as well as hot air and freeze driers, air blast chillers and freezers. We also have equipment for preparing ingredients for a wide range of drinks including soft, fruit based and carbonated, flavoured beverages as well as facilities for packing and processing drinks. This includes drinks carbonators and a new Armfield HTST/UHT flash pasteuriser. This complements our specialised equipment for malting and brewing, as well as for riddling and tirage bottling of wine."

Our facilities for the cereals sector include mixers, moulders and ovens covering a range of bakery products as well as grain processing facilities, suitable for cereals in quantities of a few grams up to many kilograms."

Packaging is as important as product and process; we have equipment for packing into a range of materials, including cans, glass, pouches and trays, as well as for vacuum and modified atmosphere packing. This is backed up by packaging strength and integrity testing facilities, and temperature controlled rooms for storage in a variety of conditions."

If there is equipment that we don't have that you would like to trial, then we are more than happy to accommodate it in our facilities."

Our extensive range of food and drink processing expertise, together with pilot plant facilities covering over 3000m², can help you develop new products, analyse existing processes, and evaluate ideas for the future

Energy - measure to reduce

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As part of the EU GREENFOODS project, we have been involved in audits of the quantity and type of energy used for the production of different foods and beverages within Europe, with the ultimate goal of reducing CO₂ equivalents emissions from these processes. Information regarding energy generation, transfer equipment and relevant operating temperatures were also collected to determine potential measures of decreasing energy consumption by increasing efficiency, implementing heat recovery, and installing renewable energy technologies.

Critical to the success of this project was the assessment of the primary fuels consumed in the manufacturing process and, as such, the amount of CO₂ subsequently released into the environment. Annual energy consumption totalled over 4,400 GWh, with coal predominating with 2,100 GWh, followed by natural gas (1,085 GWh), electricity (917 GWh), and oil (349 GWh).

In most countries, natural gas was the predominant fuel used, followed by electricity. Virtually all the coal used was by Polish audited companies, and coal was their most dominant fuel source. In Spain, however, oil was the predominant fuel, closely followed by natural gas. Other fuel sources (biogas, biomass, and district heat) constituted less than 1% of the analysed energy.

The project partners have published a summary of some of these findings - see <http://bit.ly/1y4mF25>



Peanut allergy

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Peanut allergy is considered one of the most prominent food allergies, often resulting in severe reactions, which can be fatal. It can be attributed to one or more of the 12 recognised peanut allergens, sensitisation to which is associated with the most severe allergic reactions.

We are supporting a research studentship which is identifying modifications to these allergenic proteins introduced during thermal processing of peanut seeds. The project includes analysis of allergens by mass spectrometry, and a comparison of results on different platforms.

Life cycle assessment services

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www.campdenbri.co.uk/surveys/lca-services-survey.php

We are surveying members to assess the level of interest in a Life-Cycle Assessment (LCA) service related to food and beverage production, and the use of packaging materials.

LCA is considered to be one of the most comprehensive environmental analysis tools for evaluating and comparing the environmental profiles of products, processes or activities throughout their entire life cycles - from the acquisition of raw materials through to product use and disposal.

This service would provide those involved in the food, beverage and associated industries the ability to identify at which life cycle stage significant environmental impacts occur, and enable comparison of various raw materials or production approaches.

New approach to understanding consumer attitudes

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A recently completed member-funded research project on consumer attitudes and behaviours towards sustainable foods has enabled the development of a new concept/product/packaging assessment tool: [online projective mapping](#).

This is a novel approach using a mix of tests based around projective mapping which can be related to consumers' attitudes and behaviours. It is a relatively easy-to-perform, rapid and cost-effective approach to:

- Capture detailed responses from a relatively large number of consumers;
- Simultaneously capture consumers' perceptions of a (very) large number of test items (e.g. labels and images, but possibly also sounds);
- Tap into individual and spontaneous associations between multiple test items - something that other more traditional approaches (e.g. rating products or statements) cannot offer;
- Summarise rich and complex test outcomes in a very visual way, which for example show the inter-relationships between test items.



Predicting results of hop blending

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A new member-funded project will investigate the feasibility of brewers being able to predict the flavour/aroma characteristics of a beer using any blend of hop varieties in order to produce beers with exactly the sensory profile being targeted.

Most brewers use a limited number of hops, often one or two varieties per brand, to deliver the bitterness and flavour/aroma profiles required in their beers. The development of new hop varietal strains has encouraged exploration and development of new products, especially within the craft brewing sector. One of the biggest trends is dry, or late, hopping, which results in beers with very complex and robust hop flavour/aroma characteristics, but not necessarily with the bitterness associated with traditional hopping during wort boiling.

The new project will look to improve on the current iterative process of beer product development with scientifically based predictions.

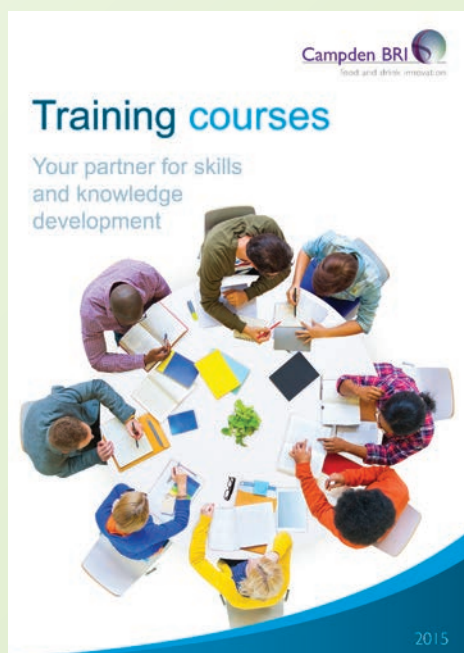
New gin

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We have helped Cotswolds Distillery to select the recipe for its premium Cotswolds Dry Gin. We evaluated 12 original gin recipes from the company. Daniel Szor, founder and CEO of Cotswolds Distillery said: "We source our raw ingredients locally. We were therefore delighted to be able to work with Campden BRI on the selection of the recipe for our debut spirit."

Geoff Taylor, our wines and spirits expert said, "We put the 12 best recipes from the 50 developed by Cotswolds Distillery to our team of sensory experts. The gins were blind tested and assessed against major brands for aroma and taste."

The company is also now looking to produce the first-ever Cotswolds Single Malt Whisky, due to be bottled in 2017.



Training events

March 2015

- 2-6 HACCP - advanced (level 4)
- 3-5 Food processing hygiene management (2 modules)
- 5 Food production machinery: food safety requirements, challenges and applications
- 10 Food safety culture briefing
- 10 Threat Assessment Critical Control Point (TACCP) - foundation level
- 10-11 HACCP - Intermediate (level 3)
- 11 An insight into species detection workshop
- 17 Salmonella - the persistent pathogen
- 18-19 Internal auditing - principles and practices
- 23-27 Food safety - advanced (Level 4)
- 24 Food contact materials seminar
- 24 FSSC 22000 - understanding the requirements

A full list of 2015 scheduled courses is available on our website www.campdenbri.co.uk/training.php or by requesting a booklet from training@campdenbri.co.uk +44(0)1386 842104

What's new -
see our list of upcoming
conferences and events:

www.campdenbri.co.uk/training.php

TACCP training

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A core element to the defence of the food supply chain is a systematic evaluation of vulnerable elements of the chain carried out by an experienced and trusted team. This has become a requirement of the BRC Global Standard for Food Safety issue 7. One of the tools for performing this evaluation has been called Threat Assessment and Critical Control Point (TACCP). This reflects established procedures for risk management and it is likely that organisations will increasingly incorporate it into crisis and/or business continuity management frameworks.

In addition to the Foundation Level training course that next runs on March 10 (see www.campdenbri.co.uk/training/threat-assessment or search *TACCP*), which is designed for technical staff from within organisations, we are also introducing a new Intermediate Level course in June - aimed at TACCP Team Leaders, and Technical and Quality Managers (see www.campdenbri.co.uk/training/threat-assessment-intermediate).



Salmonella just won't go away

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www.campdenbri.co.uk/salmonella-seminar

Salmonella is a food-poisoning bacterium which, despite our best efforts, won't go away. *Salmonella* is still one of the most important pathogens to food producers and consumers.

Our seminar on 17 March, which features a pre-recorded interview with Edwina Currie, will describe where we are with understanding, testing for and controlling this organism.

Amongst the topics to be discussed will be:

- New strategies for reducing and combating *Salmonella* virulence
- Outbreaks in the UK
- Rapid and conventional methods for detection
- Survival and death kinetics of *Salmonella* strains

Visit Member Zone

www.campdenbri.co.uk/memberzone.php



to access privileged member information and services

Welcome to new members

Campden BRI is delighted to welcome the following new members who joined recently:

Freshways Food Co - producer of sandwiches and provider of sandwich ingredients

JDM Quality Foods - manufacturer of cooked meats

Langmead Farms Ltd - producer of herbs

Lola's Kitchen - artisan bakery specialising in cupcakes and celebration cakes

Mackie's at Taypack - manufacturer of potato crisps

Reacta Biotech Ltd - developer and manufacturer of food allergy diagnostic tests

Sanitarium Health & Wellbeing - vegetarian food and drink manufacturer

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Please notify the Membership Department of any name or address changes to allow us to keep our records up to date.

What do consumers want

What do consumers look for on product labels in terms of health and additive issues when they are deciding on what to buy? And how does the manner of presentation influence the decision-making process? Recent research, which included consumers 'making up' their ideal product from a set of alternatives, revealed some interesting trends. Although all people are different, the work highlighted the existence of 3 distinct clusters, with one focussing on health or nutrition benefits and looking for messages such as 'reduced fat' and 'no added sugar', a second being more concerned with the 'additive free' nature of the product, and a third being most interested in cost, eating quality and value for money.

To receive a copy of the report, send an e-mail to auto@campdenbri.co.uk with the subject line: **send RD381**

Food quality specifications - free to members

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We have been involved in the production of food quality specifications for canned and quick frozen primary products - fruits, vegetables, meat and fish - for over 80 years. Written in collaboration with manufacturers and retailers from the industry, these cover product colour, flavour, and texture, as well as tolerances for specific defects. They can be used as a standard in their own right, or as a basis for companies to negotiate their own quality standards, and are applicable to both UK and imported food products.

Over 100 of these specifications are now available as free pdfs to members - to access the lists and select the products you require, go to www.campdenbri.co.uk/services/food-product-specifications.php





www.youtube.com/campden-bri

If you haven't looked at our YouTube channel yet, we have published in the region of 42 videos, filmed on our sites at Chipping Campden and Nutfield. The videos cover a wide range of clips from 'how to' techniques to specific pieces of equipment.

So far we have had over 64,000 views; a useful video demonstrating [Handwashing Technique](#) has reached 10,500 views alone, and is widely used for training.

Our most recently posted video features the [Flash Pasteuriser](#), an addition to our range of pilot plant. Coming soon:

- Sensory descriptive panel
- Cold plasma
- High pressure processing
- UV tunnel

Social media



Facebook - find out more about our history and our lighter side www.facebook.com/campdenbripage

Twitter - regular tweets to keep up to date with our latest news and activities <https://twitter.com/campdenbri>

YouTube - a range of videos providing an insight into the science and technology underpinning food and drink production www.youtube.com/campdenbri

LinkedIn - company updates providing our latest news www.linkedin.com/company/campden-bri

iTunes - subscribe to our podcasts

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