Issue 5

October 2015

PIONEER

The monthly newsletter from

CLP
Custom Laboratory Products

MALTING BOX
CRAFT BREWING deserves CRAFT MALTING

HEADLINES

Pictured L-R: Dan, Irina, Peter, Geert

September was a busy month for us, with lots of very welcome visitors coming to take a closer look at our micromalting machines, Pilot Plant and some of the other activities conducted at our HQ in Milton Keynes, UK

We were thrilled to welcome Irina, Dan, Peter and Geert from Boort Malt. They received our usual guided tour, taking in the 250kg pilot malting plant, our analytical micromaltings and our refurbished mashing baths.

Irina and Geert had travelled all the way from Belgium but they felt the trip was worth it!

From a little closer to home, Paul and Brendan from Irish Craft Malts came to inspect the Pilot Malting Plant and to share some of their plans for malting in Ireland, where the 'field to glass' concept for craft brewing is growing quickly.

A little later, we were also delighted to welcome Donal, from a different part of Ireland, which serves to underline our point!

Pictured L-R: Brendan, Paul, Hugh (master maltster)

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We are receiving lots of enquiries about our model malting machine, which is currently displayed in the lobby of our HQ in the UK.

So much so, that we are thinking about making more!

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CRAFT BREWING deserves CRAFT MALTING

Enquiries continue to pour in from around the world and, in response to market demand, we have begun work on the design for a new, significantly larger machine, which we expect will be complemented in most cases by our speciality 250kg kiln (pictured), for the production of speciality malts such as crystal

BIO GEN ACTIVE®
Bio Gen Active®
Intelligent Cleaning

Our BioGen range of environmentally friendly cleaning products, supplied by AquaOzone, offer truly outstanding results for descaling, degreasing and other applications including floors and walls.

We continue to receive excellent feedback on their effectiveness

Bespoke Machines

As our name indicates, CLP offer a bespoke consultancy, design and engineering service for the production of specialised machines for a variety of applications.

We are currently working on designs for machines as diverse as a 10 tonne vessel for under-modified grains; an intelligent weighing mechanism for use in laboratories and a mixer for health food supplements.

A multi-filter skid designed and built to order earlier this year

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NEWS FROM AROUND THE GROUP

eozone group

Aqua Ozone

AquaOzone are about to launch the biggest revolution in drinking water the world has seen. Hydrogen-rich water is going to be huge and our machines will be in the vanguard of the movement.

Hydrogen-rich water is a perfectly natural substance, with no chemical additives or harmful residue.

Research and publications in Japan and the USA suggest that this kind of water has excellent health-related properties and tests on Japanese footballers showed an 18% reduction in the production of lactic acid when drunk pre-exercise. It is also said to be an excellent anti-inflammatory and has outstanding anti-oxidation properties.

A number of US athletic and football coaches are on record as believing firmly that consumption of the water provides an extra 'edge' in both training and competitive environments, while Japanese and Chinese doctors are making stronger claims for its general health benefits.

We believe that demand for the water – and the machines that make it – is going to be very high and we are looking for distributors and partners around the world.

For more information, please see our website - http://aquaozone.co.uk/hydro-cool-hydrogenated-water

HYDRO-COOL

HEALTHIER HYDROGENATED WATER

AVAILABILITY

Hydro-Cool hydrogenated water is produced from our patented H2S Machine and can then be dispensed into drinking glasses, our elegant branded sports bottles or the new H2 Hydration Station water coolers, soon to be found in gyms offices and hotels across the UK. Our electronic tap (illustrated) is very popular for domestic installations and smaller professional kitchens

ELECTRONIC SENSOR TAP

H2S (HYDROGEN AND OZONE MACHINE)

HYDRO-COOL BRANDED BOTTLES

HYDRO-COOL H2 HYDRATION STATION

Distributed by:

Aqua Ozone

Pioneer House, 9 Bond Avenue, Milton Keynes, MK1 1SW | +44 (0) 1442 843640

www.aquaozone.co.uk

HYDRO-COOL

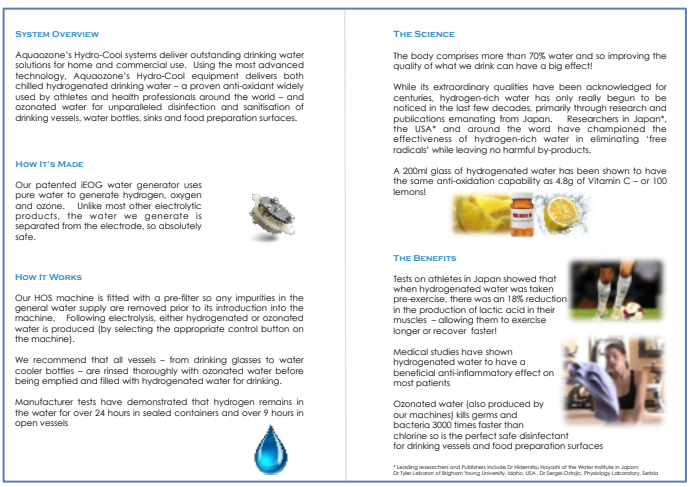
HEALTHIER HYDROGENATED WATER

THE SCIENCE OF REFRESHMENT AND HYDRATION

Renowned in Japan and the USA in particular, where 'healthy water' is widely promoted, hydrogen-rich water is a scientific breakthrough in drinking water for gyms, health clubs spas and the home.

AquaOzone's Hydro-Cool systems produce hydrogen-rich water literally at the press of a button, providing you with an endless source of drinking water to improve your overall health and foster a sense of well-being.

Scientific tests have shown hydrogen-rich water to be an excellent anti-oxidant, to have anti-inflammatory qualities and also to improve the performance potential of footballers. So whether you're a serious athlete or simply a health-conscious individual, this is for you – and it tastes good too!



SYSTEM OVERVIEW

Aquaozone's Hydro-Cool systems deliver outstanding drinking water solutions for home and commercial use. Using the most advanced technology, Aquaozone's Hydro-Cool equipment delivers both chilled hydrogenated drinking water – a proven anti-oxidant widely used by athletes and health professionals around the world – and ozonated water for unparalleled disinfection and sanitisation of drinking vessels, water bottles, sinks and food preparation surfaces.

HOW IT'S MADE

Our patented iEOG water generator uses pure water to generate hydrogen, oxygen and ozone. Unlike most other electrolytic products, the water we generate is separated from the electrode, so absolutely safe.

HOW IT WORKS

Our H2S machine is fitted with a pre-filter so any impurities in the general water supply are removed prior to its introduction into the machine. Following electrolysis, either hydrogenated or ozonated water is produced (by selecting the appropriate control button on the machine).

We recommend that all vessels – from drinking glasses to water cooler bottles – are rinsed thoroughly with ozonated water before being emptied and filled with hydrogenated water for drinking.

Manufacturer tests have demonstrated that hydrogen remains in the water for over 24 hours in sealed containers and over 9 hours in open vessels

THE SCIENCE

The body comprises more than 70% water and so improving the quality of what we drink can have a big effect!

While its extraordinary qualities have been acknowledged for centuries, hydrogen-rich water has only really begun to be noticed in the last few decades, primarily through research and publications emanating from Japan. Researchers in Japan*, the USA* and around the word have championed the effectiveness of hydrogen-rich water in eliminating 'free radicals' while leaving no harmful by-products.

A 200ml glass of hydrogenated water has been shown to have the same anti-oxidation capability as 4.8g of Vitamin C – or 100 lemons!

THE BENEFITS

Tests on athletes in Japan showed that when hydrogenated water was taken pre-exercise, there was an 18% reduction in the production of lactic acid in their muscles – allowing them to exercise longer or recover faster!

Medical studies have shown hydrogenated water to have a beneficial anti-inflammatory effect on most patients

Ozonated water (also produced by our machines) kills germs and bacteria 3000 times faster than chlorine so is the perfect safe disinfectant for drinking vessels and food preparation surfaces

* Leading researchers and Publishers include Dr Hidemitsu Hayashi of the Water Institute in Japan; Dr Tyler Lebaron of Brigham Young University, Idaho, USA ; Dr Sergei Ostojic, Physiology Laboratory, Serbia

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FROM OUR MASTER MALTSTER …

Our regular series of insights and ideas relating to malting and brewing, from Hugh Alexander

The Art of Kilning – Part 1

Reg Agu of the Scotch Whisky Research Institute in Edinburgh told me of a method of beer production using either millet or sorghum used in parts of Nigeria.

The grains are steeped in vessels and germinated on woven rush mats. These rush mats are covered with either dampened cotton cloth or rush matting material to prevent the grains from drying out. After the requisite period of germination, the grains are simply uncovered and the heat and power of the sun dries the malted grains to a state where they can be stored or used straight away for beer production. I imagine that this system in its elegant simplicity has been used without the need for change for many generations.

But, what, if like me, you live in latitudes where seeing the sun is rare and a privilege? Northern Scotland is beautiful, but known more for mists and rain, than sunshine. To make malt here we need a method of drying the germinated grain, which doesn't rely solely on the elements.

Early malt kilns were usually square in cross section, fairly tall with pyramidal, tapering roofs. The top of the roof was not closed over, but an air gap left, over which another smaller pyramid roof was placed, so that rain could not enter the building. This shape allows for a natural draught to move from bottom to top of the building, especially if some form of fire was set in the bottom of the building. The drying floor was placed mid-way up the building. Originally the floor was of timbers overlaid with smaller and smaller sticks and twigs, and finally with straw, and this provided a bed on to which the germinating grain could be placed. To reduce the risk of setting fire to this combustible floor, more elaborate brick channels and ducts were used to get the heat of the fire to pass through this drying floor without sparks and mixed with fresh air to get the right range of temperatures.

Because these kilns relied on natural draughts, kilning could take up to four or so days. With the advent of the industrial revolution and our ability to make iron and then steel, this wooden floor was replaced with an iron lattice over which wire mesh could be placed, and so greatly reduce the risk of the floor catching fire. If you want to see an example of such a malt kiln then please visit AnCnoc distillery near Keith in Banffshire, where such a kiln remains as part of their heritage museum.

Coal or peat fired, direct kilns were the norm and much of what we value today in malt relies on information and methods gained using direct fired kilns. With electricity came electric fans, which greatly improved the efficiency of the malt kiln, and a true forced draught system became commonplace. The coal used for providing the heat also gave sulphur dioxide in the flue gasses and this had the effect of bleaching the malt and at the same time making the surface slightly acidic, so good conditions for the mash tun extraction. It also had some bad side effects, like coal from around the Birmingham area had a high arsenic content, and this ended up in the malt. Not good. Oil and also natural gas fired kilns replaced many of the coal fired kilns. This too had some unwanted results.

Whenever a metal surface is taken up to red heat, and air comes in contact with this surface, then oxides of nitrogen can be formed. These in turn can react with a compound in the germinating barley(hordenine) to produce nitrosodimethylamine (NDMA), which, being a nitrosamine, may be carcinogenic.

Interestingly, the sulphur dioxide produced in coal fired kilns makes the chemistry of NDMA formation much less likely, because the acidic conditions it creates do not favour this reaction. Serendipity in action.

So, these days, most large scale kilns are indirect fired, because they still use oil or gas to fire them, but the heat so produced is extracted by heat exchangers so the nitrous oxides do not come into contact with the malt bed. The use of electric elements is also acceptable, providing the element does not reach red heat temperatures in normal operation. This is something to be wary of. Our kilns use sheathed, finned elements, whereas a lot of other kilns use the more efficient, but nitrous oxide producing, open wire elements.

Kilns today should have ample fannage to ensure a rapid drying phase. A heat producing system without producing nitrous oxides in the drying air. A method for accurate recycling of the exhaust air, to save energy. But most importantly the ability to reach high temperatures. And this is why.

Most beers (and washes for distillation) require a certain amount of lightly kilned malt to provide the enzymes necessary for mash tun conversion. This malt is base malt or standard white malt. It doesn't provide much flavour, because it has been kilned lightly. Malts made this way will have high fermentabilities and low colours. But what if you want a beer which has a dark colour and rich malty flavours with characters like chocolate and coffee and dark caramels? If your kiln cannot reach 95 centigrade and higher, then you can only dream about dark malts like biscuit malt, or Vienna malt or Munich malt, or beautiful crystal malts. The chemical reactions, which bring about the formation of dark colours with their associated rich flavours only happen above 95 centigrade.

Below that, forget it, it doesn't happen, you won't make those malts. Similarly, if you don't have the ability to recirculate the exhaust air, how are you going to stew the malt for Vienna or Munich malts, or crystal malt?

We have always made kilns capable of producing good crystal malts.

Right from the start, we knew people want to make dark malts, because that's where flavour lies.