

## Introduction

Welcome to Propelair News, the occasional newsletter of Propelair 1.5 litre flush toilets. Since the June 2006 edition of Phoenix News reported on the Propelair development programme, there has been an incredible surge in public awareness of environmental issues, which has brought us much attention and taken us to some very interesting places....

## National Energy Efficiency Awards

Following the outstanding results of the WC trials at the Water Research Centre (WRC), where independent monitoring established an 87% reduction in water consumption and an 85% reduction in energy use, Dr. Kim Littlewood and Garry Moore were delighted to attend the finals of the National Energy Efficiency Awards, held at the National Science Museum in December. While it was disappointing not to win, it was very gratifying to have our work recognised and help promote the link between saving water and reducing CO<sub>2</sub> emissions.



Dr. Kim Littlewood and Garry Moore.

## WRAS product approval testing

As Part of our R&D programme, it has been necessary to gauge compliance with the relevant WC test protocols to ensure that all new Propelair installations satisfy building regulations. WRC-NSF Ltd is a UKAS accredited facility that operates a pre-production test programme, which allows prototype equipment to be tested against international regulatory requirements. This provides an independent assessment of suitability and can determine areas where further development is required. With any radically different technology, there are always sceptics who question conformity, so it was important to clarify the regulatory perspective on Propelair before expanding trials into entire buildings. WRC-NSF took delivery of a prototype last August and conducted a full set of tests to EN 997:2003 class 1 & 2 and American Standard ASME A112.19.2. The prototype comfortably passed all of the tests with an average recorded flush volume of just 1.46 litres and an exceptionally high contaminant removal rate of 99.8%, which compares with a test requirement of 94% for dual-flush toilets.

## Bathrooms & Kitchens Expo 2007

The main event for the UK bathroom industry will soon be with us, and we were delighted to accept an invitation from the organisers to demonstrate Propelair as part of their 'Glimpse of the Future' feature, which will showcase cutting-edge and prototype technologies from across the country. This will be a great chance to show some of the performance benefits of Propelair, as well as how effective it is at flushing with only 1.5 litres of water.

We will be demonstrating 2 prototypes working with both conventional drainage, and air-assisted small-bore drainage. This will allow visitors to see the benefits of installing small bore waste pipes between joists without the need for gradients, and both toilets will interface with a booster tank (developed in-house) to demonstrate superior onward drainage into a conventional drainage system. This should be of particular interest to the many architects and specifiers who attend the show and are looking for ways to reduce both the water / carbon footprint of their developments, and drainage installation costs. Despite the fact that the technology will be in prototype form and visitors will not be able to see its full potential, we are confident that they will still appreciate the main benefits of specifying the finished product. Visitors can register with us at the show (or via our website) to receive priority notice when Propelair becomes commercially available.

There will also be a lecture by Garry Moore from Propelair and Ana Maria Milan from the University of Exeter on "Future Technologies for the Sustainable Bathroom", which will focus on the research that has been conducted into water conservation and air assisted drainage. The lecture is scheduled for 13:30 - 14:30 on Tuesday 15<sup>th</sup> May.

A competition will run throughout the show to guess how much water the 2 Propelair toilets save over the 3 days. The Institute of Plumbing and Heating Engineers will adjudicate and the winner will receive a 1.5-litre magnum of Champagne to celebrate the success of the prototype trials. We hope that everyone will take the opportunity to visit us at the show to see Propelair in action. Free tickets and show times can be obtained by calling 01923 690685 or by registering online at: <http://www.bkexpo.co.uk>



13 - 15 May  
ExCeL London  
[www.bkexpo.co.uk](http://www.bkexpo.co.uk)

## Website launched, and deluged!

The Propelair website was launched last June, but soon became deluged by a flood of enquiries following extensive media coverage on Sky News, BBC Radio, the Daily Telegraph, Environment Agent Bulletin and a host of environmental and building magazines from around the world. People can now learn about the system on-line, or register their interest to buy or invest in the technology. The website address is: [www.propelair.com](http://www.propelair.com)

## Aerosol testing at CREH

As part of the WaND research programme, the Centre for Research into Environment & Health (CREH) have been conducting studies into the extent of bacterial aerosol caused by toilet flushing. Aerosol causes wastewater particles to become airborne, which can contaminate surrounding areas. This is thought to have contributed towards the SARS outbreak in Hong Kong in 2003, so it can have some very serious implications. The CREH study aims to quantify the levels of aerosol caused by WC flushing and investigate whether low-flush WCs emit higher levels of bacterial aerosol because of their changing flush patterns.



CREH laboratory introducing E.coli to a Propelair prototype to test bacterial aerosol

As part of the study, CREH tested a Propelair prototype to compare the air-flush with both conventional and reduced flush WCs. The test involved contaminating the WC bowl water with E.coli and measuring the amount of contaminated aerosol deposited onto a sterile cover fixed to the inside of the closed lid during flushing. The results were exceptional, indicating that the Propelair prototype generates 95% less aerosol than the conventional WC. The study is still ongoing, but it will be very interesting to see the official comparison with the new 2/4 litre flush toilets now entering the market. Laboratory testing over the past year has indicated substantial hygiene benefits of Propelair toilets. Not only is the rimless, side-hinge pan design very easy to clean, but a 99.8% contaminant removal rate and a 95% reduction in bacterial aerosol make it a very tough act to follow when it comes to WC hygiene.

## Building refit

The benefits of specifying Propelair toilets and small-bore drainage systems are significant, including lowering the construction and operating costs of new developments, and reducing the carbon footprint of its occupiers. With this in mind, a diverse consortium of environmentally conscious partners has been formed to trial Propelair prior to it being specified on a wider scale. Partners include Faber Maunsell, WRc, the University of Exeter (who are planning to retrofit an entire campus building), and Investec Bank (UK) Ltd (who are planning an installation of 6 toilets in their City of London HQ). Discussions are currently underway with several councils about joining the consortium to support the work, and additional partners are welcome.

## Overseas trials

The UK trials have produced some amazing data: 5 tonnes of water saved in 19 days and carbon emissions reduced by 85% at WRc, and the Essex house trial has now clocked up an impressive 7500 flushes and saved over 50 tonnes of water since it was installed 18 months ago. It was, therefore, not surprising that a recent visit to Sydney yielded significant interest in trialing the technology in Australia. We have now linked up with a council in Sydney and a leading Australian university to trial Propelair in a public building later this year. We have also entered discussions with investors keen to explore Australian manufacture.

## New patents filed

In addition to the existing global patents that already protect the broad principle of operation of Propelair, the Company has recently filed an extensive series of new international patents for some of the unique equipment developed during the R&D programme. This bolsters our already robust intellectual property portfolio, which includes international Patents, Registered Designs, Trademarks and Know-How.

## Investors slow but steady

Following disappointingly slow discussions with the sanitaryware industry, we have now entered into talks with non-industry investors to allow us to commence production. The response has been better, and two scenarios are now on the table - one involving a single Venture Capital investor, and the other a consortium of private investors. Many registrations of interest to invest have already been received from the 'Investment Opportunities' area of the [www.propelair.com](http://www.propelair.com) website, and each will receive an Offer Document should this route prevail.

## Ceramic pan development

All Propelair toilets currently on test are produced from prototype resin components with glass-fibre pans. These were constructed purely to prove functionality, and the non-durable materials do not give the same high-performance as the final production materials. However, the commercial interest now being shown in trialing Propelair on a much wider scale required the development of equipment produced in the final materials. One key component was the pan, where an impermeable finish and solid construction is not possible with glass-fibre. We were, therefore, delighted to receive support under the London Development Agency's SME Innovation Support Programme to develop ceramic pans to our unique design. The programme is being co-ordinated by Ceram Research Ltd in Stoke-on-Trent and the first batch of vitreous china pans will shortly be fired for testing. This should greatly improve the characteristics of Propelair and improve the marketability of the technology.

