



Build Tight, Ventilate Right?

Air Quality in Housing
2nd February 2012

Conference Sponsored by



Build Tight, Ventilate Right?

This conference will provide landlords, architects, housing associations, developers, policymakers and legislators with important new knowledge that is emerging from current research and practice in the UK and Europe that examines relationships between ventilation, indoor air quality and health.

Housing is a ubiquitous building type, and one that all members of society experience. The need for indoor housing environments that support health and wellbeing is self evident, yet unlike places of work or study, there has been less investigation into issues of environmental quality in housing.

Current legislation for greater energy efficiency that promotes air tightness has brought this area into sharp focus, with questions being raised about the health impacts on buildings with lower ventilation rates. At the same time, concerns about presence of VOC gases and moisture in buildings are also emerging as contemporary causes of concern. It is apparent that this problem is not confined to new housing, and the conference will provide insights that are emerging from studies in existing housing and housing refurbishment.

Speakers will discuss several areas of current research that is investigating the effects that ventilation is having on indoor air quality in housing and how this might impact on occupants' health. Issues include indoor air pollution and health, ventilation, housing and health in children, moisture in buildings, and effects of domestic laundry practices on internal environments. The key questions to be addressed include, are contemporary houses healthy places to be, and if not, what are the problems and solutions?

As well as identifying the challenges, speakers from practice will identify some possible approaches that may be taken to address these issues. The timetable for the day ensures that there will be time for questions and discussion.



Conference Programme

09:00	Breakfast and Registration	
09:25	Welcome	Dr Tim Sharpe The Glasgow School of Art
09:30	Building Ventilation: A Healthy, Comfortable Indoor Environment Remains the Prime Requirement	Prof. Hugo Hens University of Leuven, Belgium
10:40	Indoor air quality and ventilation	Dr Derrick Crump Cranfield University
11:20	Break	
11:30	Indoor Air Quality and Health: A Scientific Journey During two decades	Prof. Jan Sundell Technical University of Denmark
12:10	Are Timber Frame Dwellings Causing the Asthma Pandemic?	Dr Stirling Howieson University of Strathclyde Glasgow
12:50	Lunch	
13:30	Energy, CO ₂ and 'Bad Company'	Prof Colin Porteous The Glasgow School of Art
14:10	Ventilation Issues Arising from Post Occupancy Studies on New Build and Refurbishment	Dr Tim Sharpe and Donald Shearer The Glasgow School of Art
14:50	Break	
15:00	Designing the Building Envelope: Influences on Materials and Forms of Construction	Jonathan Potter Robert Potter & Partners
15:30	Is MVHR the Way Forward?	Chris Morgan Locate Architects
16:00	Sponsor Presentation: Heat Recovery Ventilation from a Manufacturing Perspective	Jim Glass Residential Sales Manager, Nuaire
16:15	Summary	Dr Tim Sharpe The Glasgow School of Art
16:30	Thanks and close	

Sponsor Information

Nuaire is the market leader in the design, manufacture and distribution of ventilation and air movement solutions. With a tradition of excellence in ventilation since 1963, the Nuaire name has always been at the forefront of the industry. Our award winning, quality products include conventional ventilation solutions as well as state of the art heat-recovery systems and innovative next-generation renewable energy solutions.

Nuaire's ventilation solutions set the standard in terms of energy efficiency, low noise and reduced carbon emissions. Nuaire was the first ventilation company to gain the Carbon Trust Standard in 2009, an award which has now been retained for a further two years. Next to carbon reduction and sustainability, we place a high value on industry training and sharing best practice. As part of our commitment to our installers, engineers and customers, Nuaire now offers accredited ventilation installer training from our BPEC approved training facility in South Wales.



Our Speakers

Dr Tim Sharpe The Glasgow School of Art



A graduate of Dundee and Strathclyde Universities, Dr. Sharpe has both practice and research experience in a number of fields, including user participation, environmental design and sustainability.

His Ph.D. examined the nature of community architecture and design participation and he was able to apply and develop this research in practice whilst working as an architect for the Technical Services Agency, a tenant managed Community Technical Aid Centre, where he worked on a variety of housing and other design and rehabilitation project where he developed further expertise in energy related technical issues.

He has taught and researched at the Mackintosh School of Architecture for 18 years where he co-founded the Mackintosh Environmental Architecture Research.

In recent years the unit has developed rapidly and in the last three years MEARU has developed and undertaken over £1.3m of research and KE projects, with funding from EPSRC, AHRC, SFC, EU, UK, Scottish Government, Glasgow Housing Association, Local Government, Housing Associations and Architects.

Several current projects are investigating issues of building performance in housing, with particular emphasis on balancing energy efficiency, environmental quality and health in relation to ventilation and sunlight.

Currently the Director of MEARU, he is also a Reader in Environmental Architecture, Head of Architectural Technology at the Mackintosh School of Architecture, and a Senior Researcher at Glasgow School of Art

Prof. Hugo Hens University of Leuven, Belgium



MSc Engineering in 1968. Until 1972, working as a structural engineer and site supervisor.

His PhD thesis defended in 1975. Since then, Professor at the KU Leuven, responsible for the lectures in Building Physics, Performance Based Building Design and Building Services. Head of the Unit of Building Physics at the Department of Civil Engineering. Research and consultancy in performance based design, energy in buildings and IEQ.

Published numerous papers in peer reviewed journals and conference proceedings. Authored 7 books in Dutch and 3 in English. Holder of the prestigious Franqui Chair in 2006.

Fellow ASHRAE in 2007.

Prof. Derrick Crump

University of Cranfield



Derrick has over 30 years experience of research, consultancy and government policy work concerning environmental pollution. As Director of IEH he leads a team of toxicologists, chemists, epidemiologists, information scientists and environmental scientists concerned with the adverse impacts of pollution on human health and the environment.

Derrick's current research concerns assessing chemical emissions from products used indoors, IAQ in indoor environments (e.g. buildings, cars, aircraft) and exposure to dust and airborne particulates. IEH has well equipped laboratories including thermal desorption / gas chromatography / mass spectrometry facilities for the study of volatiles as well as a range of monitors to determine concentrations of gases and particulates.

Other IEH research and consultancy activities together with details of our postgraduate (MSc and PhD) and short course teaching activities are described on our web site.

He serves on national (BSI) and international standardisation (CEN and ISO) committees concerned with developing methods to measure air pollutants and evaluation of 'dangerous substances' used in materials. These include BSI committees B/557 and EH2, European committees CEN TC 264 and 351 and international groups under ISO TC 146 SC6.

He also serves on European expert groups concerned with air quality, assessment of exposure to pollution and labelling of low emission products

Prof. Jan Sundell

Technical University of Denmark



Jan Sundell is a Swedish environmental scientist with a background in both engineering (M.Sc.Eng) and medicine (Dr.Med.Sc.). Before going into science, and becoming a professor within 12 years, he was responsible for building codes, and occupational health legislation in Sweden regarding indoor climate. During this time he wrote model building codes on ventilation and indoor climate for the Nordic countries, as well as for UN. In Sweden he has been deeply involved in governmental inquiries regarding allergies, and environment/health.

As scientist he has conducted several large multidisciplinary studies on associations between indoor environmental factors and health. Especially, he has been searching for the causes of sick building syndrome symptoms, and for the increase in allergies/asthma.

He has initiated and led numerous European multidisciplinary reviews of the total scientific literature with regard to indoor climate and health, and has published around 50 peer-reviewed scientific articles in the last decade. He is a founding member of "The International Society of Indoor Air Quality and Climate" (ISIAQ), and of the "International Academy of Indoor Air Sciences". He is the Editor-in-Chief of the scientific journal "Indoor Air". In USA he is a member of the ASHRAE "Environmental Health Committee", and Standard 62.1 committee.

He is appointed a "Distinguished Lecturer" for ASHRAE. He has had and has numerous appointments in research funding bodies within Environment/ Health", and "Asthma, allergy" in Sweden, Norway, Denmark, EU and USA. He has received several scientific awards including the "Nordic Indoor Climate Award" 1994, the "SCANVAC Prize 1999", and the "ROCKWOOL Prize" 2004.

Dr Stirling Howieson

University of Strathclyde Glasgow



Stirling Howieson is Chartered Architect and Engineer who has spent 25 years researching the impact of poor quality housing on occupant health.

He is the author of *Housing and Asthma* (Taylor and Francis) that investigates the hypothesis that the high prevalence of asthma in the UK is primarily due to humid indoor conditions leading to house dust mite infestation.

He believes that reducing air change rates in dwellings will impact negatively on indoor air quality. He is a Senior Lecturer in the Department of Architecture, University of Strathclyde

Prof. Colin Porteous

The Glasgow School of Art



An architect – interest in energy-efficient design moved from practice to in-depth research, 1981; became active in the international solar community; then a full-time academic 1986 after leading a community technical aid centre ... linking problem of fuel poverty to passive solar solutions via EU-funded Easthall Demonstration Project in early 1990s.

He initiated Mackintosh Environmental Architecture Research Unit (MEARU) 1993 and is author of *THE NEW eco-ARCHITECTURE*, 2002, *Solar Architecture in Cool Climates*, 2005 and *Sensing a Historic Low-CO2 Future*, 2011 – a holistic overview of indoor air quality (Ch 8, Intech.org; free online book).

Donald Shearer

The Glasgow School of Art



Donald is a Research Fellow with and Co-director of the Mackintosh Environmental Architecture Research Unit. He is a registered Architect who graduated from the University of Strathclyde with degrees in both Building Design Engineering and Advanced Architectural Design.

He has a strong knowledge of contemporary building standards and technical design approaches developed through a 6 year tenure with pre-eminent Scottish firm, Elder and Cannon Architects. During this period Donald worked on various building typologies, including large and small scale residential developments, and was Project Architect responsible for the RIAS 'Best Building in Scotland, 2010' Shettleston Housing Association Offices.

Within the Mackintosh School of Architecture Donald teaches at both undergraduate and postgraduate levels as well as undertaking work towards MEARU's ever developing academic research and consultancy portfolios.

His recent research has focussed on post occupancy building performance evaluation of energy efficient homes with a particular emphasis on their performance relative to internal air quality.

R. Jonathan Potter BSc(Hons) BArch RIBA FRIAS Robert Potter & Partners



Jonathan Potter is Senior Partner of Robert Potter & Partners LLP, Chartered Architects, Project Managers and Town Planning Consultants, with offices in Glasgow, Ayr, Dumfries and Stranraer. He has particular experience of designing social housing, with an emphasis on low energy in use to combat fuel poverty.

Project work ranges from Orkney to Milton Keynes and includes care housing, designing for dementia, conservation of listed buildings, crematoria, healthy living centres, nursery school and university projects. These have incorporated a variety of technologies such as ground-source heat pumps, combined heat and power (CHP), solar water heating, breathing wall construction and passive solar strategies

Chris Morgan Locate Architects



Chris Morgan is an Architect with over twenty years grappling with sustainability issues at a wide range of scales from masterplanning to research, one-off self-build homes to community facilitation. He is additionally qualified in Permaculture, Building Biology (Buildings and Health) and latterly, Passivhaus ultra-low energy design. He was previously Chair of the Scottish Ecological Design Association and sits on the Advisory Board of the Centre for Timber Engineering at Napier University and the Design Review Panel for Architecture + Design Scotland.

Chris worked with Christopher Day in Wales and Malcolm Newton Associates in Northumberland before joining Gaia Architects in Edinburgh in 1997 where he worked as both Architect and M&E Services Co-ordinator.

He set up Locate Architects in 2004. Current workload includes an emphasis on Passivhaus projects and Refurbishment projects with an emphasis on 'Hard to Treat' housing. Unusually for an Architect he has spent around three years working as a Builder and hopes to build his own home later this year.

Jim Glass Residential Sales Manager, Nuaire



Jim Glass is the Regional Sales Manager for Nuaire, where he provides domestic ventilation solutions for customers across Scotland. Jim has over 20 years experience in the ventilation industry, gained through several years as a commercial estimator and over 10 years in ventilation sales. Jim has worked in the design of both commercial and residential fans, and is now a champion for residential heat recovery, of which he has in-depth knowledge of the latest technology, application and benefits.



Nuaire can be contacted on 08705 121400
or at their website <http://www.nuaire.co.uk>



70 Cowcaddens Road
Glasgow
G4 0BA

T: 0141 273 1411

admin@cicstart.org
www.cicstart.org

