

AECB

building knowledge

Building for a Future

AECB Annual Conference 2022

Conversations with Experts

30 September 2022 | Shell Store & NMITE (Skylon Park), Hereford

Programme: 30 September 2022

08.00	Registration and coffee	Shell Store
09.00	<p>OPENING SESSION</p> <p>Opening remarks Andy Simmonds, <i>CEO, AECB</i></p> <p>Welcome to NMITE: Professor Beverley Gibbs, <i>Chief Academic Officer, NMITE</i></p> <p>Introduction to Tours: Professor Robert Hairstans, <i>CATT Director</i></p> <p>Plenary talk: Andy Simmonds, <i>CEO, AECB</i> and Jeff Colley, <i>Passive House Plus</i></p> <p>Introduction to the day, our experts and the assemblies</p> <p>Our experts will headline in 3 minutes their main area of interest, concerns, and the changes they want to see:</p> <p><u>Experts</u></p> <p>Beth Williams, <i>Build Collective. Expert: Structural engineering</i></p> <p>Hugh Whiriskey, <i>Technical Director, Partel</i></p> <p>Neil Turner, <i>Technical Manager UK, Ecological Building Systems</i></p> <p>Martin Twamley, <i>Technical Director, STEICO</i></p> <p>Gervase Mangwana, <i>Waxwing. Expert: Airtightness and whole house modelling</i></p> <p>Tim Hulse, <i>EcoVert Solutions. Expert: Buildability</i></p> <p>Andy Mitchell, <i>Managing Director, Green Building Store</i></p> <p>Matt Stevenson, <i>Ecosystems Technologies – Expert: Homegrown mass timber design, manufacture and install</i></p> <p>Barbara Jones, <i>Ecococon. Expert: Straw based construction</i></p> <p>Toby Cambray, <i>Greengauge. Expert: Building physics, monitoring and modelling</i></p> <p>Trish Andrews, <i>AECB CarbonLite™ Training</i></p>	Shell Store
11.00	Coffee (Shell Store)	Shell Store
	CATT Building Tours (see below)	CATT workshop
11.30	<p>Tours of assemblies and exhibits</p> <p>Join groups to tour and review assemblies and exhibits and to formulate topics for discussion.</p> <p>Our experts will guide discussion and thinking within the groups.</p> <p>Sponsors will give each group 15 minutes presentations.</p>	CATT workshop

Assemblies include:

AECB deeper retrofit & new build extension: replacement insulated solid floor, I-beam EWI on old cavity walls & new I-beam walls off insulated raft foundation/floor

This assembly demonstrates a resource-efficient approach to external wall insulation for retrofitting buildings that takes a non-proprietary 'conventional' carpentry approach using commonly available environmentally conscious materials and products. Achievable by people with non-specialist building skills the timber I-beam framework allows options to incorporate a variety of low carbon insulation materials, air and windtight systems, and cladding finishes. The method was recently applied to a 1940's 2-storey house aiming for the EnerPHit standard and again for a recent bungalow retrofit designed to achieve the AECB Retrofit Standard.

Tags: deep retrofit, low carbon materials, airtightness, insulation, resource efficiency, windows, WUFI, EnerPHit, AECB Standards

Sponsors: Partel and Green Building Store

AECB partial retrofit: cavity walls with suspended floor, airtightness, IWI, floor insulation

This assembly demonstrates a situation where a partial retrofit using a heat pump may be appropriate but demonstrates options for insulating & making airtight the suspended timber floor installation from above with low carbon materials. IWI options are also included.

Ecological Building Systems have developed a proven system for thermal improvements using a combination of advanced building fabric technologies and naturally hygroscopic insulation. Ecological Building Systems will also be displaying a selection of IWI systems to ensure existing solid walls are thermally upgraded with compatible moisture open, natural materials and showcasing all the latest and relevant airtight and windtight product building solutions from pro clima.

Tags: light retrofit, partial retrofit, low carbon materials, circularity, airtightness, insulation, resource efficiency, WUFI, AECB Standards

Sponsor: Ecological Building Systems

EcoCocon assembly

This assembly demonstrates the use of a fast-growing natural fibre material (straw) used to create highly insulated and airtight walls for new high-performance buildings. The demonstration construction shows constructional arrangements at an external corner of a building, where the walls meet at roof eaves and verge.

EcoCocon straw panels are structural exterior wall elements that consist of 98% raw, renewable materials - straw and timber. Thanks to a special straw pressing technology, the panels achieve excellent insulation properties. Together with an interior clay plaster, an exterior airtight membrane and a protective layer of wood fibre board, the entire system is Passivhaus standard certified. Airtight, yet vapour-permeable, the system has no thermal bridges and provides exceptional indoor comfort.

Tags: new build, low carbon materials, airtightness, insulation, resource efficiency, natural fibres, WUFI, Passivhaus, AECB Standards

Steico/Ecomerchant assembly

Existing house insulated internally using wood fibre-based vapour open materials, intermediate floor junction.

The STEICO internal wall insulation system highlights the benefits that natural woodfibre solutions, can provide. The focus is on achieving 75% thermal performance improvement compared with an un-insulated wall, with a relatively thin insulation layer that minimises the impact on internal room sizes. The use of a natural material reduces condensation risk, gives healthy internal temperature ranges and a sensible payback period. Always driving towards the lowest possible U-value is not always the most practical or sensible approach and focusing on the right material in the right application area ensures a much more robust strategy for the building fabric.

Tags: light retrofit, low carbon materials, airtightness, insulation, natural fibre, resource efficiency, WUFI, AECB Retrofit Standards

GenZero Classroom

The GenZero classroom assembly demonstrates a building method based on a kit of parts – focused on offsite fabrication of sustainable school buildings. UK sourced cross laminated timber provides the main construction material for the design. The system aims to use 35% less timber than a typical mass timber school whilst including a timber envelope; timber cladding, opening windows and acoustic attenuators, for cross flow natural ventilation. The spaces are standardised and simple, with consistent construction materials and allow for different curriculum models with little need for change, which reduces material waste and maximises flexibility.

Tags: schools, system building, offsite, low carbon materials, airtightness, insulation, resource efficiency, homegrown materials, natural fibre

AECB CarbonLite™ Training Centre

Trish Andrews & Sarah Everitt

The AECB CarbonLite™ Training Centre has developed retrofit and low energy building e-learning courses to upskill and train the built environment sector to make concerted moves towards low energy demand, energy efficient and healthy buildings. Delegates will be given a brief overview of the AECB's various training offerings and encouraged to discuss which types of training, skills and partnerships need to be developed further to help facilitate a rapid transition.

AECB's PHribbon software drop in sessions

Tim Martel

How can I build my PHPP model quicker and easier? How low carbon is my building? PHribbon gives answers for Embodied and Operational CO2 by using the data already in your PHPP. It also saves you time building your PHPP (including the new version 10) with the window tool, U-value calc library, lambda value library and others. It converts window data and U-value calcs from v9 to v10. This will be a drop-in area for people to find out about PHribbon, both those that are completely new to it and those that have some knowledge of it. Booking a timeslot is recommended.

Decarbonising construction materials drop in sessions

David Olivier

13.00	Lunch (Shell Store)	Shell Store
	CATT Building Tours (see below)	CATT workshop
14:30	Discussion groups	CATT workshop and Shell Store
	Discuss key issues raised by study of assemblies and distil questions with all our experts: Join dedicated focus groups or explore the assemblies individually with AECB and sponsor experts on-hand to discuss their specialities.	
	14:30-15:10	
	Seated focus groups (Shell Store) Group leaders	Exploring the assemblies (CATT Workshop) Experts on-hand
	Space 1: Toby Cambray, <i>Building physics, monitoring and modelling</i>	Tim Hulse, <i>Buildability</i>
	Space 2: Jeff Colley, <i>Embodied carbon</i>	Gervase Mangwana, <i>Airtightness and whole house modelling</i>
	Space 3: Beth Williams, <i>Structural engineering</i>	Matt Stevenson, <i>Homegrown mass timber design, manufacture and install</i>
		Barbara Jones, <i>Straw based construction</i>

	15:20-16:00	
	Seated focus groups (Shell Store) Group leaders Space 1: Tim Hulse, <i>Buildability</i> Space 2: Gervase Mangwana, <i>Airtightness and whole house modelling</i> Space 3: Matt Stevenson, <i>Homegrown mass timber design, manufacture and install</i> and Barbara Jones, <i>Straw based construction</i>	Exploring the assemblies (CATT Workshop) Experts on-hand Toby Cambray, <i>Building physics, monitoring and modelling</i> Jeff Colley, <i>Embodied carbon</i> Beth Williams, <i>Structural engineering</i>
	AECB's Phribbon software drop in sessions Tim Martel Decarbonising construction materials drop in sessions David Olivier	
16:00	Coffee	Shell Store
	CATT building tours (see below)	CATT workshop
16:30	Expert reflections Join all our experts for their insight and reflection on discussions during the day.	Shell Store
17:30	Drinks and follow up discussion	CATT workshop
18:30	End of Conference	

Note: Programme and timings may be subject to change

Pre-conference reading

For the purpose of this conference, we will be basing the installations and discussion around the themes introduced in the following article under the headings of '1. Sufficiency', '2. Simplicity', '3. Circular Economy' and '4. Efficiency'. We recommend it would be useful to read these sections ahead of attending the conference in order to gain an understanding of these concepts and approaches that the conference then builds from. However, of course we do welcome you to read the whole of the article as this is as a key piece underpinning the AECB's ethos and approach/direction:

[Read article](#)

Building Tours

Available at: 11.05 /13.05 /13.35 /16.05

Sign-up at registration and meet at the NMITE stand in CATT workshop for a 15-minute guided tour

Tour 1: NMITE Skylon Campus: Materials, construction, performance

Hosted by:

Stuart Brisbane, *Head of Estates, NMITE*

Stuart has over 30 years' experience within the construction industry with expertise in contract, procurement and programme strategies. He is a member of the Hereford climate and nature partnership board

Sophie Leake, *Site Manager, Speller Metcalfe*

Sophie was a Site Manager on the NMITE Skylon Campus build. She is a committee member for Herefordshire and Worcestershire Construction Excellence and a CIOB Tomorrow's leader.

Tour 2: NMITE's Centre for Advanced Timber Technology: CATT and the Living Lab

Hosted by:

Professor Robert Hairstans, *CATT Director*

Robert has spent his career adding value to the timber supply chain with an emphasis on engineered timber products and offsite construction. He combines a joint role as the founding Director of the Centre for Advanced Timber Technologies (CATT) at the New Model Institute of Technology and Engineering (NMITE0 and the Head of the Centre for Offsite Construction + Innovative Structures (COCIS) at Edinburgh Napier University.

Gabriele Tamagnone, *Research Fellow (CATT)*

Gabriele is Research Fellow at CATT, mainly working towards the implementation of a Living Lab approach to monitor different aspects of the building. Civil Engineering graduated, he has a PhD in Timber Engineering on modelling and behaviour of CLT structures and assemblies. Outside academia, he worked as a consultant in structural design with a particular focus on concrete, timber, and steel structures.

Additional NMITE staff onsite:

Professor Beverley Gibbs, *Chief Academic Officer NMITE*

After 20 years in manufacturing, mining and metrology sectors - in engineering, research and commercial leadership roles, Beverley moved into Higher Education to encourage new models of teaching engineers that benefit graduates, employers and society as a whole.

Tabitha Binding

Tabitha leads Timber Development UK's University and Regional Engagement Programme. Working with industry, academia, professionals and students to enthuse, encourage and educate -passing on her knowledge about all things timber. Her speciality is interdisciplinary project-based challenges, that break down barriers between professions, and facilitate dynamic learning. Her background is in forestry, milling, manufacturing, new build and renovation along with research, product development, monitoring, certification and policy.

Tabitha also has a strategic role with NMITE as the CATT Lead for External Engagements and Partnerships.

Ben Shirley

Ben has a background in carpentry and architecture. He is currently undertaking a Master of research (MRes) at Edinburgh Napier University and his dissertation is written on the development of a methodology to establish agile timber upskilling factories. His work has taken him across Scotland and England where he has engaged in several exciting projects that ultimately promote the use of homegrown timber resources. Currently, Ben is situated at NMITE's Centre for Advanced Timber Technology (CATT) where he is gaining valuable work experience.

AECB Experts

Trish Andrews, AECB Training Manager



Trish is the AECB's Training Manager. Qualifying as an Architect 23 years ago she has a wide-ranging experience in Sustainable Design. Prior to joining the AECB, Trish worked at the Centre for Alternative Technology (CAT) as Programme Leader/Senior Lecturer on the Masters in Sustainable Architecture in the Graduate School for the Environment for 15 years, as well undertaking the roles as Environmental Building Consultant and Sustainable Buildings Manager.

Her specific experience includes contribution to the education of sustainable architecture, developing and running the UK's first fully holistic environmental architectural Masters degree course, involving integrated pedagogical approaches complemented with ethical business and cooperation management skills. She was listed as one of the top 20 Women Influencing Sustainable Architecture (AJ, 2013).

Her involvement in the higher education sector has both enriched and forged a desire to share her knowledge and skills with building professionals and educators within the sustainable building and construction industry and to pursue an interest in implementing low carbon training courses, best practice methods, ethical pedagogical teaching methods with a determination to improve low carbon practices/knowledge, quality and standards for a net zero future.

Toby Cambray, Greengauge | Expert: Building physics, monitoring and modelling



Toby is a founder-director and building physicist at Greengauge; he is particularly interested in moisture risk in retrofit and traditional and historic buildings.

Toby is one of the most experienced practitioners of hygrothermal simulation in the UK, sits on the modelling and monitoring technical working group of the UK Centre for Moisture in Buildings and is currently undertaking a PhD on moisture in historic brickwork at UCL. He is also an experienced Passivhaus consultant and trainer on the Carbonlite Passivhaus Designer course. Toby and Hannah are currently completing a deep-energy retrofit of their own house.

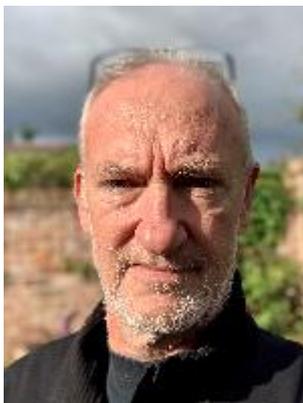
Jeff Colley, *Passive House Plus* | Expert: Embodied carbon



Jeff is the editor of *Passive House Plus*. He won the Green Leader award at the 2010 Green Awards for his advocacy work on the inclusion of energy ratings in property advertising, and a proposal to finance energy upgrades via utility bills. He established *Construct Ireland* (for a sustainable future), Ireland's pioneering sustainable building magazine, in 2003. The magazine evolved into *Passive House Plus* in late 2012, the world's first English language magazine focused on passive house, as well as other aspects of sustainable building. He is also a founder of *Éasca*, (the Environmental and Sustainable Construction Association), an organisation set up to develop and promote a membership of approved companies offering genuinely sustainable solutions.

He writes a regular column for the *Sunday Times*, and has authored, co-authored and contributed to articles on sustainable building for numerous newspapers including the *Irish Times*, *The Sunday Business Post*, the *Irish Examiner* & the *Sunday Tribune*.

Tim Hulse, *EcoVert Solutions* | Expert: Buildability



Returning to England after 12 years in Canada cast the UK housing stock in a very poor light from both a comfort and energy efficiency perspective which led to Tim obtaining a Masters Degree in Architecture from CAT and starting EcoVert Solutions to do something about it.

Focused on building new homes and retrofits to the Passivhaus and AECB Building Standard and celebrating its tenth anniversary last year, Ecovert Solutions prefers to use sustainable insulation materials built around timber frame.

Tim certified as a Passivhaus Designer and Tradesperson and is completing the AECB Carbonlite and Retrofit Coordination courses.

Barbara Jones, *EcoCocon* | Expert: Straw based construction

Biography to follow

Gervase Mangwana, *Waxwing* | Expert: Airtightness and whole house modelling



Gervase carries a Masters degree in Renewable Energy and the Built Environment and has done AECB CLR training and CEPH (Passivhaus).

He is a fully accredited IATS Level 1 Blower door tester with more than 10 years' experience testing the airtightness of buildings specialising in existing housing retrofit and very air-tight new builds including for Passivhaus certification. He is also a trained Thermographer.

Over this time, he has built up a deep feel for the airtightness issues of the existing housing stock. Additionally, Gervase has been doing whole house retrofit assessments for over 10 years.

Since 2015 he has sub-contracted as an assessor and modeller for Carbon Co-op on the scheme now known as People Powered Retrofit of which he is a founding board member. He now also works independently using both People Powered Retrofit's HRP SAP model and PHPP in Herefordshire where he resides. In this capacity he has done assessments and proposed whole house plan measures for the deep retrofit of around 100 homes.

Tim Martel, *PHribbon* | Expert: PHPP and Embodied CO² energy calculations for new build and retrofit projects



Tim is an AECB Expert Advisor and an expert in CO₂ calculations for buildings. He qualified as a Passivhaus Designer in 2012 and worked on new build, retrofit, domestic and commercial PHPP models. For several years he contributed data for the AECB Retrofit course. Later he also qualified as a Retrofit Coordinator and coordinated 90 retrofits in London. Four years ago he started developing the AECB's PHribbon software, combining his experience in PHPP with earlier work in research and as a programmer. Tim saw a great need for Embodied CO₂ calculations that could be easily done in PHPP. He has continuously improved the software ever since, given many talks on it, and there are now Canadian and US versions.



Andy Mitchell has been the Managing Director of Green Building Store since February 2022. Under his leadership he continues to build on the company's established position at the forefront of the low energy and Passivhaus building market. Andy previously worked for 12 years at Natural Building Technologies, in a variety of roles including Managing Director and previously both Technical and Sales Director. He has also held Directorship roles within a number of other companies and organisations working within the field of sustainable construction. Andy's knowledge and experience ranges from modular construction to the thermal performance of buildings and construction product innovation.

Matt Stevenson *Ecosystems Technologies* | Expert: Homegrown mass timber design, manufacture and install



Matt is a recognised industry leader in digital construction technology and low carbon building designs, having previously founded and developed early industry pioneer Carbon Dynamic.

Matt is a serial collaborator with industry and academia to drive forward applied innovation, specifically in timber technology to add value to the homegrown timber, and this has most recently been demonstrated through the pioneering work Ecosystems has been focussed on in demonstrating the commercial viability of homegrown mass timber.

Neil Turner, *Technical Manager UK, Ecological Building Systems*



Neil is Technical Sales Manager of Ecological Building Systems and is former TIMSA/BBA competent U-value scheme. He has been involved in development of CEN European Standards and has extensive experience within the natural insulation sector.

Martin Twamley, *Technical Director, STEICO*



Martin Twamley BSc (Hons) is the Technical Director of STEICO UK Ltd who are a subsidiary of STEICO SE, the world's largest producer of wood fibre insulation.

Martin trained as Architectural Technician, working on numerous projects across Europe, and has been involved in the supply, design and specification of both structural timber products and natural insulation materials for over 30 years. He has also been a guest lecturer on various EU funded skills workshops, which promote the use of natural and sustainable building processes.

In his spare time Martin is actively involved with The Conservation Volunteers who aim to connect communities with the green spaces around them.

Beth Williams MEng (Hons), CEng MICE, *Build Collective* | Expert: Structural engineering



Beth is a Chartered Civil Engineer and Certified PassivHaus Designer, and associate at Build Collective, a bespoke engineering consultancy based in Bristol.

Beth has over 10 years' experience in low-energy and low-carbon design and construction, focussing on timber frame PassivHaus buildings. Her project experience ranges from domestic extensions to new build sports halls and high security NHS facilities.

Alongside practice work, Beth is a visiting tutor at Bath, Cardiff and UWE architecture schools, and group leader for the AECB Bristol & Bath local group. Beth is passionate about making low-energy buildings simple to build, affordable and available to all.

Hugh Whiskey, *Technical Director, Partel*



Hugh is the Founder and Director of Partel. He is an accredited Certified Passive House Designer and a leading specialist in sustainable building and energy efficiency, with extensive knowledge in design and construction management, building fabrics, technical engineering, and R&D. During his career of over 23 years, he has been involved in many different projects ranging in scale and complexity from large commercial developments and residential developments to bespoke residential dwellings. Hugh has wealth of expertise within low-energy construction sector across various roles such as consultant sales engineer, product training, contracts manager, technical engineer, project manager and in recent years as a technical director - BEng MIEI MCIQB CEPH.

Passionate about innovative low-carbon materials and sustainability, Hugh strongly believes that we all can accelerate our contribution to a carbon-neutral built environment, with a keen focus on the holistic approach to building envelope systems.

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