



Ask our experts

Got a question for our experts? Email sanctuary@ata.org.au with the subject 'Ask our experts'.

Your design, product and specification questions answered by our expert columnists.

Dick Clarke is principal of Envirotecure, a sustainable building design firm in Sydney.

Tim Adams is principal of F2 Design, a sustainable building design firm based in Melbourne and on Victoria's Surf Coast.

Sophie Liu provides Alternative Technology Association member services.

Q – We'd like some advice about building a green roof on my Sydney shed. We enjoyed reading the article on green roofs in a recent issue [*Sanctuary* 38] and I have a few specific questions for a project which is yet to be built. It's a 20-metre-square, L-shaped shed plus a roofed outdoor area to make it a rectangle. It's a single-pitch/skillion roof with a slope of 2 to 3 degrees and a structural capacity 100 kg/m². The thinnest possible substrate is about 100mm to grow sedum and thyme. Do you have feedback on the pitch and capacity and whether we should use a pool liner or paint-on waterproofing products? We are also wondering about substrate and drainage options. – *Lyn*

A – Always assume total saturation of mature plantings in your structural design, and the factor of safety should allow for hail build-up. With waterproofing, either a liner or paint will work, but I'm firmly in favour of heat-welded sheet liners. Or, you could choose a two-pack polyurethane paint that does not use atmospheric conditions to cure. I recommend contacting a commercial waterproofing installer to discuss your options. Substrate should be installed below the membrane, but talk about this with your engineer or architect as there are several good options available. Plastic draining cells are also a good idea, like Atlantis products, but you need a lightweight planting medium on top, with a very reliable geofabric filter above. – *Dick*

Q – I'm renovating a property in Melbourne and, although I have faith in our builder, I want to ensure we give him the best instructions regarding retrofitting insulation as it's not an area he specialises in. Specifically, I'm interested in knowing: the best strategy for retrofitting insulation

to a brick veneer flat roof house (i.e. no access to the roof cavity); whether the interior walls should be insulated or if this could cause problems with condensation; and, if floor insulation is worthwhile. – *Vincent*

A – The definitive response is to prepare an energy rating for the design so that decisions around the specification of insulation can be based on hard numbers rather than the finger in the wind approach. An energy rating for a design like this would cost a maximum of \$350. At a very basic level, an energy rating provides anticipated heating and cooling energy loads for each room and, as a result, the savings in build cost will be made many times over.

Good R-values for roofs in Melbourne climate zone is R3.5 to R4 but higher values may also be cost effective. The depth of the existing rafters will be the limiting factor for what level of performance can be achieved within the existing cavity, whichever product is chosen. An option is sometimes to pop off the existing roof sheeting and introduce deep batten/purlin members to create a higher roof cavity. Then new reflective sarking can also be installed to improve summer performance. Attacking the problem from the underside may well be an option if a reduction in ceiling height is open to consideration. Insulation of internal walls can be useful where they're between conditioned and unconditioned zones within the house. High internal humidity levels due to inadequate ventilation predominantly cause condensation, and heat recovery ventilation systems are available at different entry levels to address this issue. Floor insulation can be extremely helpful if it means that heat is not being sucked out of occupants' feet during the cold months and can affect occupant comfort more than

what may be indicated by the energy rating. – *Tim*

Q – My question is about efficient electric ovens and induction hobs. I'm on an off-grid solar system which I'm thinking of upgrading to allow more energy for cooking with electricity and other things. I'm against connecting to piped or bottled gas which is not a good option for the future. I know I can already cook with electricity most of the year, even with my smallish 2kW system and have been doing that using a portable induction hob and portable convection oven for 2 years. But I'm starting to look around to see what efficient built-in appliances might be available, and thought I'd ask in case others have travelled this path already. – *Kerry*

A – When choosing an efficient appliance I would usually go by energy rating labels and compare products on: www.energyrating.gov.au. However, currently in Australia ovens and cooktops don't need to carry an energy rating label. If looking at European brands they may have energy efficiency ratings to meet standards in Europe, so if you can obtain this information from suppliers this may help you compare models. A smaller volume oven will need less energy to heat up of course, and consider how well insulated the door is, double- or even triple-glazed doors are available in some models. Built-in induction hobs often need a really high amperage electrical connection, so be sure to check the connection requirements (in amps) and overall power connection rating of the unit. For more tips on induction cooktop selection see our article in *Sanctuary* issue 30, and for energy efficient cooking info see the Alan Pears article in *ReNew* 130. – *Sophie*