



Ask our experts

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

Tim Adams is principal of F2 Design, a sustainable building design firm based in Melbourne and on Victoria's Surf Coast.
Mick Harris is director of EnviroGroup/Environment Shop and technical adviser to ATA members and supporters.
Dick Clarke is principal of Envirotecture, a sustainable building design firm in Sydney.

Q – Why does a home that is 100m² get the same or similar star rating to that of houses that I have seen that are up to 500m²? And do you see a place for a rating system where smaller homes are rewarded or given a better rating than larger ones as they will more than likely use less energy over the course of years? – Ben

A –There is an area adjustment factor built into the NatHERS software. It is a parabolic curve which gives a big boost to small dwellings, then tapers off to zero at 200sqm at which point it starts to apply a penalty score. Consequently, it is much harder to get a 6 Star compliance score for a 500 m² house than for a 50 m² apartment. That said, the system is not perfect and a 300m², 6 Star house will use close to twice as much energy as a 150m², 6 Star house even if the air conditioning appliances used have the same COP (coefficient of performance). Conversely, you still need to consider appliance energy efficiency as there are no provisions built into the Star rating – a smaller house could end up using more energy than a larger house with more efficient appliances. – *Tim Adams*

Q – We are looking to buy bathroom vanity units. The units we are considering are manufactured in China. We were told that they are made of MDF-type particle board. Our concern is whether we have to be worried about formaldehyde gas emissions. Would you be able to advise about this problem? – David

A – You are right to be concerned. Particle board uses a range of glues in its manufacture and can off-gas a range of VOCs including formaldehyde. MDF also releases very fine dust particles that when inhaled can lead to health problems. While the latter is not a problem to the end user (unless you need to re-cut it), it is a problem for the workers who make it. MDF is being banned in Europe.

You may find you have to buy your kitchen components in Australia if you want to be sure you have minimised VOCs. There are a number of online resources that could help you with alternatives to MDF: Ecospecifier (www.ecospecifier.com.au) has an eco priority guide for kitchens, and the blog at www.mychemicalfreehouse.net is also good for ideas. – *Mick Harris*

Q – We're planning a home for the Wimmera district (western Victoria) and realise that our initial proposal to have limestone external walls then insulation then gyprock prevents walls being used as thermal mass. We are therefore considering other construction methods, incorporating internal stone walls. How would we determine how much thermal mass storage we should have in our location? For internal walls to act as thermal mass, do they have to be either solar exposed or heated by another source (e.g. slow combustion fire)? If yes, we are wondering why there is such an emphasis on reverse brick veneer construction, as in most house plans the southern internal walls will not be solar exposed. And is there any way of quantifying the benefits of thermal mass? – Anne

A – A general microclimate design response should work as long as it is typical Wimmera flat country. The variables that come into play when people live in the house have far more effect than whether or not you have a cubic metre more or less thermal mass.

Therefore I would suggest that you aim for as many high mass internal walls as possible, and run your design through simulation software like AccuRate or BERS Pro. Then add a high mass floor and see what difference it makes. You can have hardwood flooring laid over high mass – either engineered timber stuck down to concrete, or traditional tongue and groove flooring laid on battens with grout screed between battens (so the boards touch the grout) all on a concrete slab.

Reverse brick veneer should have direct or indirect solar gain (or another heat source) if the winter period is long and/or cold enough for it to provide benefit. If there is no solar gain, it will still provide passive cooling.

Yes, the walls will need to be solar exposed or heated by another source –but keep in mind that the software runs on certain occupant behaviour assumptions, which are statistically generalised. How you live in the house will make all the difference. – *Dick Clarke*

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