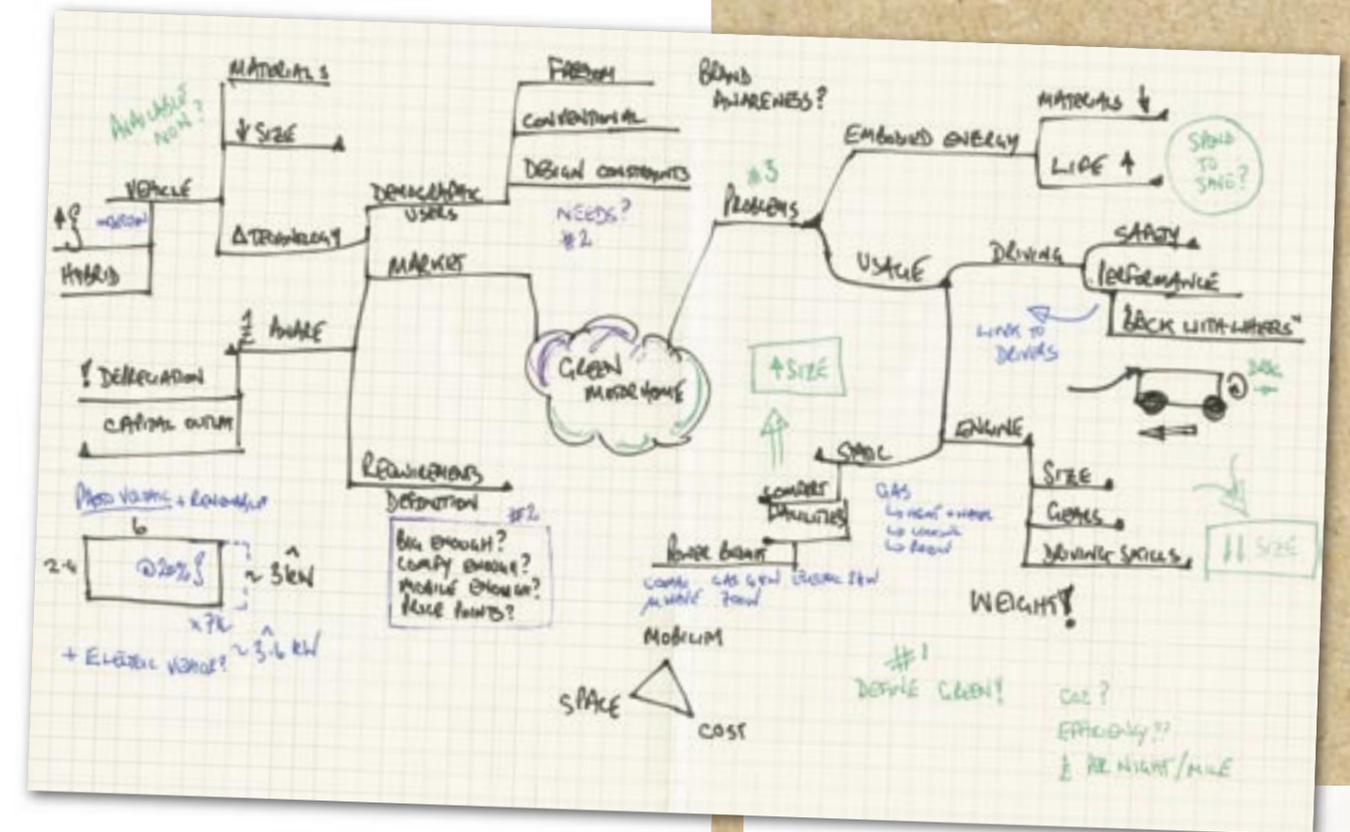


# CHALLENGE

## DICK

TV star **Dick Strawbridge** takes on the next of his motorhome challenges: to design a green motorhome. After visiting Bailey in Bristol, he concludes modern motorhomes are already very eco efficient. But he discovers more, much more, can be done, although he does decide fitting a wood-burning stove may be a green step too far



work on and repairs are such that it should last. The great British classic, the Land Rover, has a similar design and has stood the test of time. So I see no reason to move away from a proven technology and, for the avoidance of doubt, I reckon four wheels makes sense too!

### SIZE AND POWER MATTER

Despite what lots of people say, size matters. I was trying to address the way motorhomes are used to get my head around the comfort and facilities we are accustomed to – and demand – and I quickly concluded the vehicle must be a decent size.

To design anything much smaller than 2.4m x 6m would be disingenuous as it's a different type of vehicle. So, if the motorhome is to be big enough, it will need a certain amount of power to move it, so the engine and gear train were my next consideration.

I was very interested to read about Hymer presenting the world's first hybrid motorhome. For those less technical, a hybrid is the mating of a conventional engine and another, usually electric, motor. The Hymer B578 has diesel driving the front and electric motor driving the back wheels. Hybrids can harness some nifty technology: the power for the batteries for the electric motor can be generated when the vehicle is braking. But battery charging is an issue and the Hymer is only capable of 40km at a maximum speed of 35km/h (which is more than enough for most cities!) on a fully charged set of batteries, but it's the principle.

So for my green motorhome I would say I'd have to stick with the highly efficient Euro 5 diesel engine, but, I know of a retrofit-able hybrid drive that has recently won awards (and it's British!) for rear-wheel drive vehicles (for the techies – kinetic energy is captured during braking and converted to battery power and then reused when the engine is at its least efficient). The system is available today and we can expect up to 25% reduction in fuel usage with normal driving.

### FEATHER FOOT NOT LEAD FOOT

Eco driving is the next thing I'll address. Most motorhome drivers do not have a boy racer mentality. However, how we drive really effects fuel consumption and few of us have been taught how to drive efficiently.

Understanding the 'sweet spot' of your engine and changing gears at exactly the right time is pretty useful, so my green motorhome is going to have an optimal operating efficiency (OOE) display, which could be good for another 10% fuel saving as it guides you when to change gears. And the beauty of this little gadget is I just needs to be connected to the on-board diagnostic socket that already exists in modern engines.

**OKAY** what's a green motorhome? Being asked for my thoughts on designing a 'green' motorhome the very first thing is to understand the challenge. I have a background in sustainability and environmental issues so I'm comfortable discussing CO<sub>2</sub> emissions and can deal in tonnes of carbon, I can even picture one (a mole displaces 22.7 litres for those of you interested in doing the calculation). However, back in the real world all discussions on what is green seem to revolve around guilt and what we shouldn't be doing. It seemed like a sensible place to start by defining what I would like to see in a sustainable/green/eco motorhome.

For me being green is all about eliminating waste, so the vehicle would have to be efficient to run, and that really comes down to £s, be it per mile when driving or per night when static. Some people may think it vulgar to talk in pounds, shillings and pence. However, there is a sound logic behind it as, unless you are buying art or paying for a brand name, the costs tend to be a good approximation for how much of an impact your expenditure will have on the planet. A simple example would be the mpg as, obviously, fuel usage comes into the equations when determining your costs, but savings in this area are also reducing your emissions, etc, so a more frugal engine means cheaper means better for the environment.

However, let's not forget the other running costs such as servicing and the big one, depreciation. This raises the issue of whether it is better to 'spend to save'. Quality costs more but it can work out cheaper if you have longer service intervals and the vehicles actually lasts for longer.

### BUILT TO LAST

Some modern cars have a life expectancy of no more than 10 to 12 years and then they are (mostly) recycled. However, it's fair to say that a well-made car could stay on the road for twice that length of time and a classic will be kept going almost indefinitely. If we have a driving life of say 50 years then we could get through one classic, two-and-a-half quality cars or five lesser quality vehicles. I have to nail my colours to the mast and say I'm for spending money for something that will last, not least of all because once the depreciation has got over its initial drop it holds value much more effectively.

When it comes to motorhomes lasting is all about the build quality. The chassis has to be the starting place and the ladder construction of the ubiquitous Al-Ko chassis is sensible and long lasting. It's easy to



Eco champion Dick takes time out to consider how to 'green' a motorhome



Dick investigates how a motorhome is built at Bailey's Bristol manufacturing plant

## Challenge Dick Strawbridge



As part of his eco research, Dick looks at Bailey's motorhome and caravan construction methods

### SHAPE AND SPACE

I have a bit of a problem with the shape of motorhomes. Would it be too cruel to describe some of them as bricks with wheels?

When you are cruising on a motorway up to 60 per cent of the power is used to overcome the effects of aerodynamics. The typical motorhome probably has a drag coefficient of about 0.6, whereas the most streamlined concept cars down about 0.14. It doesn't take a lot of brains to work out that a motorhome will never get very low but there is room for improvement so I'm designing a slope in and a slope out shape, nothing excessive but it doesn't take much to make a difference and even caravans are taking this on board.

To build a motorhome to last you definitely need a structure that will survive the flexing of the body and that cannot be destroyed by water ingress, so using materials other than wood makes sense to me. I liked the plastic wood in the panels I saw at Bailey. The standard Truma combi heater is relatively efficient heating system and I realise that modern motorhomes have to pass environmental tests and to be certified to Grade 3 EN1646-1 and tested down to minus 15 degrees C, but there is always room for more insulation to keep the heating bills down.

With the years of experience that has gone into fitting out a modern motorhome I don't believe there is much I could do to better utilise the space, but I do have opinions on the equipment. The appliance that uses the most energy in the average home is the fridge – think about when you open the door and all the cold escapes. Having spent last summer sailing around the coast of Britain on a Sicily Isle Pilot Cutter, the *Amelie Rose*, I was particularly impressed by the fridge – yep I'm a certified anorak.

On the *Amelie Rose*, the fridge resembled a chest freezer and was highly insulated – there's not much spare energy on a sailing boat. The other electrical devices would obviously be the most efficient I could

source. Of course, I would want to generate my own electricity and the roof is the first place to start. The 2.4m x 6m roof, if covered in photovoltaic cells, would be capable of generating 3kW in peak sun. That's impressive – it's enough to boil a kettle, operate a washing machine or even charge up your own tow-along electric vehicle!

With a little re-thinking and possibly changing your routine so you use the most energy when the sun shines, you could have a really useful supply of power. Storing the excess energy is problematic; it is possible to use batteries, if not other more high tech fuel cells. However, it is difficult to store enough to do the heating or cooking, and somehow a little wood burner, which is a great eco-solution, may be a step too far?

*If you have an idea for a motorhome challenge for Dick, email us at [mmm@warnersgroup.co.uk](mailto:mmm@warnersgroup.co.uk) and put 'Challenge a Celebrity' in the subject box. In the final article of the series, Dick will attempt the best challenge submitted by a reader – it could be yours!*

#### Interested in Dick's ideas?

Then the following will help:

- **Ashwoods' Transit EcoDrive:** [www.ashwoods.org/hybrid\\_vehicle\\_products.php#mod5](http://www.ashwoods.org/hybrid_vehicle_products.php#mod5)
- **Hymer's hybrid motorhome:** [www.hymer.com/Presse2012/HYMER\\_PK\\_260811/Press\\_release\\_GB/HYMER\\_world\\_premiere\\_Hybrid\\_GB.pdf](http://www.hymer.com/Presse2012/HYMER_PK_260811/Press_release_GB/HYMER_world_premiere_Hybrid_GB.pdf)
- **Al-Ko chassis:** [www.al-ko.co.uk/pages/amc-motorhome-chassis.html](http://www.al-ko.co.uk/pages/amc-motorhome-chassis.html)
- **Solar panels:** see feature on pages 195 and 217
- **Eco driver training:** [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)