PRACTICAL | THE ENVIRONMENT

TOURING to save the planet. Is it *possible*?

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The relationship between caravans and their surroundings is a close one. It is certainly hard to find a caravanner who does not have a love of the great outdoors. However despite this deep respect for the environment, little is known about the damage caused by the caravans themselves. In order to address this unknown area, Bailey Caravans commissioned a study into these impacts. The results reveal a relationship that is more complicated than you might think.

There is currently very little known about the environmental impact of caravans or caravanning. Speaking to caravan owners it is clear that this does not result from a disregard for the environment; but rather that the very nature of caravanning means that it is largely considered to be environmentally benign.

This belief certainly has some basis. Towing a caravan produces approximately 75% less emissions than flying (based on a family of four travelling) and using a caravan demands far less energy than staying in a hotel. However, like any product the manufacture, use and disposal of a caravan requires energy and produces greenhouse gases. From the materials used to make them, to the power used to dismantle them, the very existence of caravans has an impact on the environment. What is important is that we understand these impacts and minimise them where possible.

As such Bailey Caravans commissioned a two-year environmental development project in conjunction with the University of Bath. The goal of this project was to understand the environmental impacts related to caravans and develop new designs to reduce them.

Shape changes are being developed and tested to help improve aerodynamics.

The first step in this process is to determine exactly what the environmental impacts are. This has been achieved through the completion of the world's first Life Cycle Assessment (LCA) of a caravan. The LCA is an environmental design tool that maps the life cycle of a product from material extraction, through production and use, to disposal.

These stages are known as 'lifecycle phases', each of which involves activities that demand energy and produce emissions. Calculating the amount of energy and emissions related to each life cycle phase, allows identification of the most environmentally damaging to be identified.

This assessment found that a caravan consumes just under 620GJ ofenergy and produces around 40 tonnes of CO2 throughout its lifetime, or approximately 40% less than your average family car. Representing these figures according to the life cycle phases, it was found that 70% of the energy and emissions is attributed to the use of the caravan and that the majority of this figure results from the fuel required to tow it. In other words the additional fuel required to tow accounts for over two thirds of the energy consumed throughout the entire lifecycle of a caravan.

This was a surprising discovery but one that gave a clear design goal. In order to reduce the impact of a caravan we need to reduce the fuel required to tow them. This can be achieved in three ways: reducing the weight of the caravan, reducing the aerodynamic drag of the caravan and reducing the rolling resistance of the tyres. In response to this, design projects have been setup to tackle all three areas. Design optimisation is taking place to help reduce weight, shape changes are being developed and tested to help improve aerodynamics and the rolling resistance of a caravan tyre is being investigated.

The result of these ongoing projects will see the reduction of both the environmental impact of Bailey Caravans and the overall cost of owning one. I once asked a caravanner what he thought caravans would look like in 50 years time, his response was "nonexistent" and his reason was the rising costs of large car ownership. I believe that it is the large car that will be extinct in 50 years time not the caravan, and design is developing with that in mind.

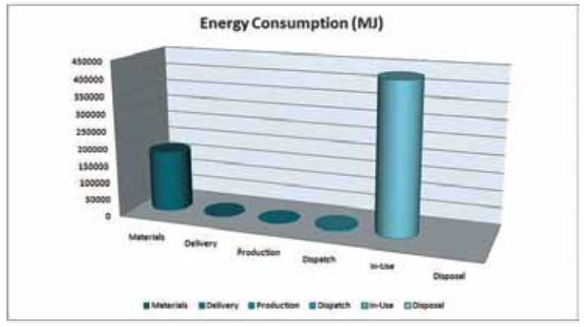
But this all sounds a little bit far off doesn't it? For those of you who would like to reduce their environmental impacts, or indeed fuel bills, now, what can you do?

Luckily there are plenty of small actions that will help, especially iwe all make them. First of all think about what you are packing for the journey. Do you really need three weeks worth of food when you set off or can you visit a local supermarket when you get there? Are all your water tanks empty, or are you dragging around large volumes? There is a direct relationship between the weight of the caravan and the fuel consumption of the car, so it is worth making sure that the caravan is as light as possible for the journey.

Secondly drive sensibly. Reducing your speed will reduce your fuel consumption, improve your stability and increase your safety. Impatient and aggressive drivers will not only consume more fuel, but make the holiday less enjoyable for both those inside and outside the car.

Thirdly make sure your car and caravan tyres are fully inflated. Approximately 30% of the energy produced by a car is used to overcome the rolling resistance of the tyres. Maintaining the correct air inflation in both the car and the caravan will help to minimise the fuel consumption needed to overcome this resistance.

Finally start demanding environmental improvements from your caravan manufacturers. Between us we can make sure that caravans do not harm the very environment that they both celebrate and rely upon. Most importantly we can make sure that in 50 years time we are still caravanning!



The use of the caravan accounts for just over 70% of the energy use and emissions generated.

The research detailed in this article is the result of a Knowledge Transfer Partnership between the University of Bath and Bailey Caravans. This project is supported by the Technology Strategy Board and aims to support the transfer of knowledge between the university and the company. The research has been conducted by Molly Buckingham, an environmental design engineer who trained at the University of Glasgow and has been working on the development of more environmentally friendly products since her graduation in 2007.