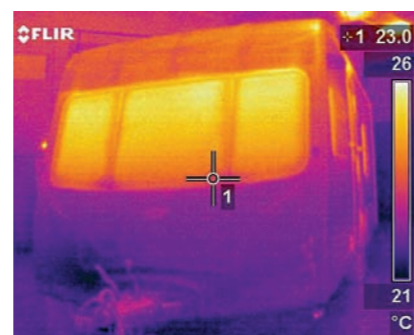




Left: Each prototype underwent thermal grading testing in the cold chamber at the Millbrook Proving Ground. Below: A thermal image of the heat losses from one of the Pegasus prototypes during cold chamber testing. Bottom: Demonstrating the strength of the unit



Breaking new ground

Bailey of Bristol has gone back to basics with the development of the Pegasus, a next-generation caravan range to be unveiled at October's NEC show. DOUG KING shares his preview of the extensive development work carried out behind the scenes. Pictures by ALAN BOND

IN A MOVE that's going to rock the caravan industry, Bailey Caravans has launched a new range incorporating an innovative body shell – the Alu-Tech – resulting in the first British caravan to come with a ten-year warranty against water ingress. Not surprising perhaps when you remember that Bailey was the first manufacturer to offer a five-year factory-backed warranty against water ingress back in the mid 1990s.

I believe it's no exaggeration to say Alu-Tech is the biggest advance in caravan design and construction since Sam Alper brought caravanning to the masses with the launch of the Sprite back in 1948. Called Pegasus, the new range will be launched at the International Caravan and Motorhome Show at the

NEC from 13-18 October.

Developing the new body has involved a dedicated project team during more than two years of research and development, as well as calling on the expertise of several outside organisations including AL-KO, the University of Bath, Smithers Rapra (the Rubber and Plastic Research Association), and Millbrook Proving Ground in Bedfordshire.

In addition to the ten-year warranty, Pegasus is the first British caravan to boast insulation properties complying with Grade 3 classification of EN 1645-1. This means owners will be kept warmer in the winter and cooler in the summer than those in conventionally built Grade 2 caravans. Bailey also says the caravan is some 20-25kg lighter than

conventional caravans. And despite the fact that it has cost thousands of pounds to develop, Bailey believes there's little cost difference to its comparable conventional range.

AL-KO was involved in developing improvements to the chassis, while the University of Bath acted as a technical consultancy, including testing the integrity and torsional rigidity of the body shell. The third significant outside organisation, Smithers Rapra, was responsible for testing the performance of all the plastic components.

After each prototype had been built it was sent to the testing centre at Millbrook where it underwent a series of tests that were almost certainly the most vigorous any British caravan has

undergone. All the tests were drawn up independently by Millbrook personnel.

Two separate forms of testing were involved: a thermal grading test carried out in Millbrook's cold chamber and an accelerated three-year structural durability test covering a total of 657 miles over a seven-day period.

The thermal grading test was in two parts – the first to find out if it was good enough to achieve Grade 3 classification of EN 1645-1, and the second to calculate its thermal efficiency. For the tests the Pegasus was put into the cold chamber and the temperature reduced to -15C, a process that took some ten hours. The caravan's spaceheater was then switched on and the temperature inside the caravan raised to 20C and maintained there for two hours. The caravan's thermal efficiency was then calculated at 0.96W/m²K, significantly below the 1.2W/m²K required by the tough Grade 3 specification, becoming another first for Bailey, which now has the first British caravan to achieve the Grade 3 classification.

The three-year structural durability test was carried out in six different areas of the Millbrook facility and involved towing the caravan 231 times over a section of Belgian pavé, replicating some of the worst roads anywhere in Europe. The total distance travelled over the pavé was 208 miles.

The next tests involved kerb strikes, twist humps and potholes, as well as both high speed and hill towing until the full 657 miles of testing had been completed. At regular intervals during the tests the results from the various stages were recorded and analysed. And having completed the course, the 'van was put through the whole thing a second time.

I was lucky enough to travel in the towcar while the caravan was towed around the test track twice. The AL-KO chassis in particular was subjected to far more punishment than it is ever likely to incur with even the most inconsiderate owner. Equally, the body withstood everything the Millbrook test circuit could throw at it. In fact, I'm sure I was more shaken up at the end of the test than the caravan.

So what are the obvious differences between the Pegasus Alu-Tech body and a conventional British-built caravan? Well, firstly the roof and front are a single panel and, together with the sides and rear panels, are clad with single-sheet aluminium.

Bailey also believes it may be much more aerodynamically-shaped with rounded edges and flush-fitting windows and doors.

Additionally, the panels are 30 per cent thicker than conventional panels, and comprise a sandwich of aluminium, high density polystyrene and an inner Glass Reinforced Plastic (GRP) lining.

Importantly too, the usual timber battens in the panels have been replaced by a composite plastic. This is also used around the windows and other external apertures like doors and locker covers as extra insurance against water seeping in. Additionally, there has been a 90 per cent reduction in the number of external joints and fixing points.

Other changes included in Pegasus are an increase in the headroom to 1.95m (6ft 5in) while the gas locker has been reduced in size and now only takes two gas cylinders.

The size reduction is due to the front locker being partitioned at each side of the gas cylinders, thus creating a near and offside wet locker. Access to these lockers is via doors in the side walls rather than from the front.

I have no doubt the Pegasus range is going to become the jewel in the Bailey crown and in years to come will be considered a watershed in the design of British touring caravans.

For the time being, the Pegasus range will sit alongside Bailey's other ranges – Senator, Pageant and Ranger. If the new construction techniques prove popular, Bailey will consider implementing them in other ranges in the future.

■ Doug King has been caravanning since the early 1970s and writes on technical subjects, as well as carrying out DIY projects and product testing for a number of caravan publications.

■ Visit baileypegusus.co.uk and baileyalu-tech.co.uk for details. Websites are live from September 17.



Pictured from top: Pegasus on the road; all the prototypes were subjected to being towed over a section of Belgian pavé – replicating some of the worst roads in Europe; the speed test at the Millbrook Proving Ground; speed humps like you've never seen before; the potholes at Millbrook are far more severe than anything a caravan is likely to meet on normal roads; at regular intervals during testing, the caravans were given a thorough inspection by Millbrook staff