

## Universal Beam Tank Offers 7% Fuel Savings

A recently conducted test, strictly controlled and supervised by a leading verification and inspection company, SGS, has demonstrated to striking effect how the **Universal Beam Tank** design can offer hauliers a saving in fuel consumption of 7% when transporting bulk liquids by road.

The test was commissioned by world-renowned tank container manufacturers UBH International and CIMC using two tank containers supplied by the world's largest leasing company EXSIF Worldwide.

The trial was conceived in order to test the belief that the beam tank's more aerodynamic shape and lower tare weight could offer significant fuel savings in comparison to other tank designs.

Both UBH International, who originally manufactured the instantly recognisable **Universal Beam Tank** design, and their licence partners CIMC of China, who have built many thousands of **Universal Beam Tanks** over the last 10 years, have long stressed the benefits of the low tare-weight of the beam design, which minimises the amount of "packaging" carried whilst maximising payload. At the same time EXSIF Worldwide greatly value the resilience and low ownership costs which this proven design has exhibited in worldwide service for nearly twenty five years. In spite of its elegant lines, it provides an outstanding combination of strength and protection when compared to the standard tank.

However, the contention that it was also possible to save fuel by using the beam tank in preference to more traditional "collar" tank designs had never been subjected to serious scientific scrutiny.

The clear logic behind the fuel saving claim was based on the fact that the **Universal Beam Tank** has an open-ended frame design which provides an improved aerodynamic flow shape, contrasting with the enclosed flat end-frame of most traditional collar tank container designs.

Fuel savings had been the subject of anecdotal reports from European customers of UBH International over many years and in today's climate, where the goal of carbon emissions reduction is seen as a key priority, it was felt that the time was right to quantify and, if possible, prove this additional benefit.

The test was undertaken using two tractor units, one pulling a standard collar frame tank and the other a **Universal Beam Tank**. The two test units had a gross

vehicle weight of 42 Tonnes each and were driven over a period of 4 days, covering a distance of 2,400 km.

At the half way point, the tanks were swapped from one tractor unit to the other and, when evaluating the results, the respective fuel consumption differences were

averaged in order to isolate the effect of tank design from all other variables, such as individual truck engine efficiency, tuning differences, brake performance, driving style etc.

Calculations based upon the statistics contained in the final report from SGS, showed a 7% fuel consumption advantage in favour of the **Universal Beam Tank**. In our test this saving was represented by a reduction in fuel

consumed of 2.45 litres/100km (1.04 USG /100miles) for the same gross mass; and not taking into account the reduced Tare Weight benefits of the **Universal Beam Tank**.

Engineering experts at both manufacturers rationalise that this benefit for the **Universal Beam Tank** is indeed attained by virtue of the open framework structure, which allows air-flow to develop a separation smoothly around the front hemisphere and to close again at the rear through the trailing hemispherical surface. They also feel it is reasonable to assume that the flat front end and flat rear end on standard collar tanks disrupts flow considerably, with vortices probably forming at the trailing flat surface of the collar tank and resulting in negative pressure and extra drag.

This test demonstrates that the already excellent green credentials of the tank container as a means of bulk liquid transport can be enhanced even further by careful selection of the right design of tank container.

Whilst this may give many, if not all transport operators a warm and virtuous feeling, the lure of a significant saving in annualised fuel costs is sure to meet with, well..., **universal** approval.

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