CENTRAL TYRE INFLATION

Taking the **pressure** off tyres

The last stop

Where others fear to tread, Les Hughes and Son is trialling Bigfoot, a central tyre inflation system, in the tough driving conditions of the forests of Wales

Words / Images: Colin Barnett

The Montgomeryshire village of Abermule is best known in transport history as the scene of the 1921 railway disaster, when human failings overcame the best current working practices to cause what remains the worst single track accident in UK rail history. The lessons learnt spread around the world, and "Remember Abermule" as a warning to work safely can still be seen on Indian railways today.

Although trains no longer stop at Abermule station, then a thriving 13-line goods depot on the Cambrian line from Shrewsbury to Aberystwyth, the goods yard is now home to innovation of better working methods, this time on the road, or more precisely, off-road on the gravel forest tracks of Wales.

It's now occupied by Les Hughes and Son, run by the son, Tony. The firm has specialised in timber transport since its beginnings in 1979, a few miles away in Kerry. Today, it operates nine trucks in the industry, which could be described as the nearest thing that UK haulage has to the Ice Road Truckers, hauling from deep within the Welsh forests, often many miles of treacherous gravel track and unclassified country lanes away from main roads.

The dangers faced by these unsung heroes were brought to mind as we realised that our visit was coming up to one year after Hughes' driver Graham Pugh was killed at the seat of his crane by a freak wind-blown tree.

The British timber industry is doing well, but there's still a lot more product that could be extracted. The two limiting factors are physically gaining access to the logging sites with road-going trucks, and the amount of damage done to the tracks and lanes in the process. Over the summer, the Forestry Commission has been surveying its estate with a view to classifying roads as suitable for access by conventional vehicles, or by low-impact vehicles only. In an attempt to solve both of the issues, Les Hughes and Son has been chosen to trial the use of a central tyre inflation (CTI) system in real-world operations. The trial is being managed by ConFor Cymru, the local section of the Confederation of Forestry Industries (UK), with support from the Forestry Commission.

Bigfoot system

The Bigfoot system is fitted to one of an otherwise identical pair of new Renault Premium Lander 6x4 prime movers with three-axled trailers. It's not new technology, having been developed by the US military in World War 2 to allow seaborne landing trucks to negotiate soft beaches before driving into action with tyres fully re-inflated. The difference is the electronic control systems that allow rapid operation from the driving seat. The system begins with an array of dedicated air tanks, fed by the truck's existing compressed air facility. Each individual tyre, except for the steering pair,

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has a separate feed pipe attached to its valve. On the trailer tyres, Michelin X-One 455/45R22.5 mega-singles in this case, the feed comes through the axle tube, but on the twin-wheeled Lander's drive bogie, there is an external pipe from the chassis to a rotary coupler on the outside of each hub, then onto the individual tyres. Each pipe can be individually isolated by a simple tap, to cope with punctures or a damaged pipe. However, while the external pipes look vulnerable to roadside damage, Tony Hughes reckons the biggest danger is from being hit by a dropped log during loading, but this hasn't happened yet.

Control box

From a driving perspective, Bigfoot amounts to a small control box on the engine hump. In normal use, a button toggles the pressures through the five pre-determined settings shown in the table. In each case, the steer axle pressure remains as standard.

Mode	Truck (psi)	Trailer (psi)
On road - unladen	50	50
On road - laden	90	100
Off road - unladen	35	55
Off road - laden	65	65
Emergency	30	100

The functions are largely self-explanatory, with emergency mode reserved for the most extreme situations, with the drive axles getting maximum traction and the trailer having minimal rolling resistance.

We watched the Renault in action on a typical job. It was extracting from a clear fell of a privately-owned wood, very close to the English border near Montgomery. Low quality timber was being loaded for transport to a wood-burning stove manufacturer, which would convert it to logs for use in its products. According to driver Chris Bearmond, there is no doubt of the Bigfoot system's traction benefits. Quite simply, the rig can be easily driven out of situations that a conventional vehicle could not even get into.

Secondary, but still important advantages, include reduced stress on the truck and driver, and improved tyre wear. Hughes specified the Lander with a bespoke mixture of rubber to suit the operation. The steer and third axles use conventional on-highway Bridgestones, but the second axle, which has the hardest time, carries aggressive Continental HDC construction tyres. Although too soon to quantify, after six weeks and 22,000km there is already a significant improvement in tyre wear, especially on the normally fast-wearing inner drive tyres. The big trailer tyres on 22.5in wheels, by the way, allow much larger brake discs than the usual 19.5in, a welcome feature when operating conditions can easily cause brake overheating.

The second major aspect of the CTI system's benefits, the effect on the road surface, is much harder to quantify

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THE LES HUGHES FLEET

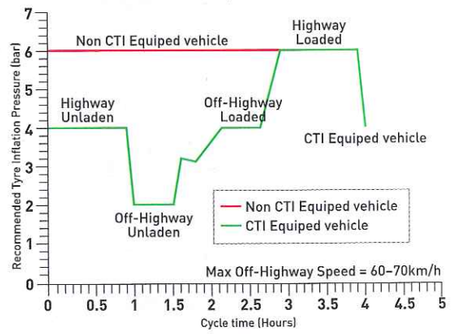
The nine-strong Les Hughes fleet mostly consists of six-axle drawbar combinations, although there are also two artics. As well as the pair of Renault Premium Landers in the trials, there is another in 6x4 tractor guise. Two MAN's were bought around the same time as the Renaults, while the rest of the fleet are Cat-powered Fodens, including what is reckoned to be the second or third from last Alpha to be built, and close to retirement.

Tony Hughes' plans for the newer trucks is to replace them when the three-year warranty expires, transferring the existing bodies and cranes to the new chassis. Alucar bodies and Epsilon Palfinger Z-folding cranes are fitted, with mostly M+G trailers, although there is a small Dennison presence. Reps hoping to changing the firm's crane allegiance must be dismayed to find Palfinger agent Forestry Transport Maintenance ensconced as a tenant in the Hughes yard.

Hughes is a firm believer that all modern trucks are fairly equal, with the difference being the local dealer support. As such, he's becoming a firm a firm convert to Renault, and is very pleased with the Optidriver+ automated transmission, which is specified with the Off Road software package. He also praises the Optifuel driver training, which Chris Bearmond had recently done. The training, given in the driver's everyday environment, was considered a success.

Not shy of innovation, for future purchases, combining Renault's Optitrack hydraulic front wheel drive on a 6x2 with lifting tag axle is under serious consideration. Even more radical but still under wraps is a plan for a completely new approach to forwarding within larger woods.

TYPICAL DUTY CYCLE OF TIMBER TRUCKS



except to say that when we followed the Renault out of the woods, the tracks left by the big Michelins were less noticeable than those of the 4x4 we were in. Like many other such initiatives, the future of CTI systems lies not in legislation, whether industry or government imposed, but from customer demand. Tony Hughes predicts that within as little as a year, when landowners realise that their timber can be harvested without major road damage, they will create new opportunities, but only for these low-impact vehicles. Bigfoot's £10,000 price tag may then look like a sound investment. ■

ROAD DAMAGE LIMITATION

Tests reveal less road damage with low tyre pressure operation

The CTI system chosen for the ConFor Cymru trial is Bigfoot, from New Zealand, a country similar in topography to Wales. Research into the benefits of low tyre pressure operation was started by the US Forest Service in 1984. The initial tests revealed an 80% reduction in damage to unsealed roads as well as an 85% reduction in truck component damage.

In 1996, New Zealander Neil Wylie, whose CV includes five years as head of transport research at the then Logging Industry Research Organisation, set up Innovative Transport Equipment to commercialise CTI systems for New Zealand's forestry industry, which are now marketed as Bigfoot.

The firm's data shows a 40% increase in tyre footprint between 90psi and 30psi, and tyre deflection increases from 8% to 30%, with a corresponding rise in road shock absorption. Traction increases by around 17% on wet clay and up to 34% on sandy tracks, with each 17% increase equating to another 2% in gradeability.

As fitted to five axles of the Les Hughes Premium Lander combination, the Bigfoot system costs in the region of £10,000.

Further Information

BigFoot www.bigfoot.co.nz
ConFor www.confor.org.uk