

Portland Energy Market Report: February 2025

With the news last year that China sold more electric cars than conventional petrol and diesel cars, the automotive press has been alight with speculation around the demise of the Internal Combustion Engine (ICE). What has garnered less column inches is the progress of electrification for the Heavy Goods Vehicles (HGV's) that make up the road haulage industry. Therefore, over the next 2 months we will explore the world of HGV's and highlight this month why electrification will never happen - only to counter that next month, with some arguments to suggest that it might...

The first problem facing e-trucks is charging time. Whereas 99% of passenger cars are parked up overnight and thus lend themselves to "at-home" charging, the economics of freight haulage mean that 24-hour operations are essential for asset optimisation. This is an industry that runs on notoriously tight margins and most HGV's have to operate non-stop in order to earn a meaningful commercial payback. Being successful requires almost "Le Mans" like efficiency, whereby one driver finishes his shift, only to be immediately replaced by another driver who jumps into the cab and ensures that the wheels are always turning. Taking a vehicle off the road for 8 hours to recharge is simply not feasible and if vehicles do have to stop, then a quick diesel refill will always be the preferred modus operandi. In addition, if continuously operated vehicles were taken off the road for a third of every day (ie, 8 hours charging), then the number of trucks required to transport the same amount of goods (on a 3 shift rota) will have to increase by 50%...

The next "e-problem" stems from the batteries themselves. Charging a 500+ BHP (brake horsepower) truck means immensely dense and heavy batteries, weighing in excess of 7 tonnes. Surprisingly few people seem to be aware that the maximum weight allowed on British roads is 44 tonnes (40t in Europe, 65t in Canada). The unladen weight of an ICE HGV is around 12 tonnes, giving a freight payload of around 32 tonnes (ie, 12t vehicle + 32t payload = max road weight of 44t). Add a 7.5 tonne battery into the mix (along with a stronger / heavier front chassis system) and you have reduced payload by around 30%. This of course means that costs also have to go up by 30% and we have a repeat of the thorny issue of increased vehicle numbers. Once again, the freight requirement that currently exists does not go away, and electric vehicles will only be able to transport 70% of current payloads.

And if we address the issue of slow charging (to reduce operational delays), this means even denser and heavier batteries, which further reduces freight capacity. One step forward, one step back...

The final "elephants in the room", when it comes to road haulage electrification, are the massively fragmented nature of the industry, coupled with the very high costs of buying a vehicle. Unlike other sectors where major conglomerates dominate, transportation is made up of thousands of SME companies. The largest road haulage company in the UK is DHL Supply Chain with over 9,000 vehicles, which seems a lot until you realise that there are circa 450,000 HGV's in the UK, meaning that the largest company accounts for only 2% of the market. In the USA a similar picture emerges, with over 96% of freight companies owning less than 20 vehicles and the top 25 trucking firms only accounting for 10% of trade. This means that there are very few blue-chip companies who - because of their scale and collective force - can push the industry towards electrification. Instead, we have a myriad of smaller firms, none of whom have the financial capacity or technological clout to electrify what is already an expensive occupation. And there lies the final problem...

At a minimum cost of £150,000 for a tractor (front-end) and trailer (back-end), ICE HGV's are already enormously expensive. This is long before any considerations are made with regard switching to battery electric power, where trucks come in at almost 2.5 times the cost of a standard ICE HGV. Moreover, haulage firms almost never buy their own vehicles, relying instead on an established network of financial institutions who in effect lend the operators money via vehicle leases. At the end of these (5-7 year) leases, the vehicle is returned to the lender to sell into a buoyant second-hand truck market, which is the reason that borrowing costs are competitive in the first place. At this juncture, it is impossible to see how the funding model can continue, without sight of what the second-hand e-truck market is going to look like. One would have to question the appetite of the financial community to fund more expensive vehicles with potentially much lower residual sale values? As a minimum, we would expect the financing deals to be much harder to access and considerably less financially attractive.

The proof is in the pudding as they say, and whilst e-car manufacturers have made (lumpy but) steady progress over the last 5 years, e-truck makers have had a torrid time. In the UK, Tevva went bust in June 2024, whilst US electric truck maker Nikola also filed for bankruptcy in the USA last week, having seen its market capitalisation - once close to \$30bn - plummet to just \$30m and with debts of over \$350m. Tesla have managed to sell 140 of their Semi Truck HGV's, which doesn't sound too bad until you consider that most are tasked with in-house Tesla transportation and that there are also 13.5m trucks registered in the USA! As things stand, it would seem that electrification presents too many practical and financial obstacles to the running of HGV's in the UK, Europe and North America. However, next month we will look at some of the ways that truck electrification may still become a reality and how China is changing the operational model for road haulage.