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Can short freight trains build rail industry's market share?

A new study makes the case for short, fast freight trains, using low-cost loading sites with minimal infrastructure. It's a long way from modern intermodal terminals, but could it be viable? PAUL CLIFTON reports

A short freight train, carrying a dozen containers at passenger-train speeds, could compete with road lorries on cost. That's certainly a novel claim, but it also comes with a lot of caveats.

It could be viable in some circumstances. But it is the opposite approach of today's intermodal rail freight market, which is concentrated on moving very long, very heavy trains from deep-sea shipping terminals at Southampton and Felixstowe to large inland hubs for onward distribution.

This new approach is based on short, fast trains linked to very small terminals, in which containers stand still for no more than a handful of hours.

A report concludes: "The intensively operated trains can compete fully on cost and service over shorter sector lengths than longer and heavier conventional trains. Shorter trains can also be loaded at many (ten times) more locations than currently used by multimodal services."

It is the outcome of a £191,000 study supported by Innovate UK and the Department for Transport and carried out over two years by Phil Mortimer's Truck Train Industries, The Railway Consultancy, Preston Solutions, The University of Newcastle and Inno4Less.

"The overarching objective has been to investigate and validate where an innovative rail/intermodal service offer can compete on commercial, technical, operational and asset management terms within the highly competitive market currently dominated by all-road solutions," according to the project team.

Apparently, it can. But it requires a fundamental repositioning of rail freight. The project is called F3, standing for Fast, Frequent, Fulfilment.

The barriers to rail competition are formidable. Rail is a closely regulated, highly controlled environment that sets schedules, train paths, access positions to routes and terminals, and train sequences which take account of the varying speeds of different trains.

Road freight is agile, quick to respond to market needs, operates at small scale, and uses direct point-to-point pathways that are instantly accessible. And with no requirement to shift the container onto another vehicle along the way.

But road freight isn't without constraints. There's an acute shortage of 50,000 lorry drivers, which leads to wage inflation. The industry already depends on 70,000 drivers from abroad, mainly from Eastern Europe, some of whom are discouraged by the Brexit process. London and Bristol are committed to clean air zones, and other cities are likely to follow, with punitive charges on all but the cleanest of road vehicles.

Rail has traditionally been unable to compete against high-volume, time-sensitive road transport that is fully integrated into complex supply chains. Big car manufacturers and others essentially use lorries on motorways as their mobile warehousing, keeping only a few hours of stock on site. And those motorways are funded directly by government - road tax for lorries is not directly comparable with the track access charges paid by rail freight.

More than 90% of all freight by volume in the UK is moved by road. But the network is increasingly congested and unreliable. Its overall efficiency is only 44%, given that almost one in three lorries runs empty and those carrying goods have a capacity utilisation of 56% (*Eurostat*.)

A key performance indicator in general use is achieving 98% of deliveries within 30 minutes of the scheduled time. The study finds that to achieve this, some logistics companies build extra time into schedules, which results in drivers parking in lay-bys to await their booked slot - 'just in time' comes at a cost. In the rail sector, freight trains are quoted as achieving 94% on time, which means within 15 minutes of the booked time.

Rail has just an 8% market share. And while there are thousands of lorry companies competing for business on tight margins, there are only six rail freight operators.

One multimodal logistics company told the research team that response rates from the three modes of road, sea and rail were typically two hours, two days and two months respectively.

There have been experiments before. Trials using smaller freight trains have been held with Innovatrain in Switzerland, Light-Combi in Sweden, and CargoSprinter in Germany. None of them went ahead commercially.

Central to the project is a requirement for major changes at rail terminals, reducing train dwell times from several hours to fewer than 60 minutes. Train planning and pathing, with access to terminals, would have to permit far more intensive use of rolling stock. The fastest and cheapest way to transfer loads at terminals would be needed.

The study assesses the capital cost of locomotives and wagons, and the cost of lifting containers, as well as the price of terminal access, train speed and the minutes needed to complete each stage of the operation.

It finds that a train with only eight wagons could not achieve a lower cost than road. The break-even train length is 12 wagons per train. Existing rail operations claim only to break even at double this length.

"F3's overall advantages are marginal, but there are specific circumstances where there are commercial opportunities," the report finds.

On some routes, the difference is in the region of 4p per tonne-km.

The F3 project carried out testing at Long Marston, in Warwickshire, measuring loading and unloading over several days. It used a system called Containerlift - a lorry that can crane a container between road and rail vehicles. Tests were also conducted loading and unloading single pallets by fork-lift truck, between dry cargo rail wagons and curtain-sided lorry trailers. This mimicked constrained sites with limited space alongside a railway siding.

There are 65 recognised intermodal terminals in the UK. But several are very close together, as at Southampton, leaving large parts of the country beyond the reach of intermodal rail services.

However, the study uncovers 650 possible terminal sites (ten times the current number), because the F3 project requires only short sidings, with adjacent hard standing on which equipment and trucks could manoeuvre without significant capital investment. There are many such terminals currently used for other purposes such as for unloading aggregates, or not used at all.

The study also identifies many more rail siding complexes which are either still connected but not used, or which are no longer connected but could be reinstated.

These sites would require easy access to local roads on which additional lorries would be acceptable, and close to known markets. They would also need to be at a distance from inappropriate neighbours such as housing or schools.

It became clear during the study that F3 terminals would also have to offer temporary storage, for several hours either side of the train's visit to the terminal. Potential clients said they would prefer a truck to make repeated journeys between terminal and destination, rather than using multiple trucks over a couple of hours.

The study finds that some sites in ideal locations failed many of these criteria. Some have been sold off as part of the Government's requirement for Network Rail to make best use of its property portfolio. They include Melton Mowbray's station yard, sold because the siding is too short for conventional freight trains. Another is Wigan Springs Branch, taken over during the project for Network Rail track maintenance vehicles and by Northern Rail for bi-mode train stabling.

The report's conclusions are carefully worded and not overly optimistic. Extra funding will be needed to bring new services to market.

It says: "The rail sector has major energy efficiency, speed, volume and capacity advantages on which it has failed to commercialise. Road transport has made significant advances in fuel economy. Because of longer asset life and a lack of electrification, rail has not kept pace with this.

"Rail freight remains excessively complex, slow to respond and negative. This compares poorly to the customer-facing responsiveness of the road freight sector, even though run on low profit margins. Rail is a 'big ticket' sector in terms of setting up new operations. This compares unfavourably with road transport where entry and exit rules are less complex. The rail sector has a major credibility gap to overcome."

There are other problems, the report finds. There are no modern small freight locomotives on the market, and no ongoing supply of container wagons. Shippers have high expectations of responsiveness and capability, derived from their road transport experience. To be accepted, rail has to perform at the same level or better.

The report authors call on the Government to complete an inventory of potential freight terminals and to safeguard them. One at Fratton in Portsmouth, intended for use by the cross-Channel ferry port, has recently been ended after years of not being utilised.

"A rail/intermodal offer could potentially compete for some traffic in Britain, both in terms of cost and service quality… with break-even possible from distances of 100 miles and with as few as 12 wagons per train," it says.

"This requires a more intensive use of traction and rolling stock assets, well above prevailing industry norms. It also requires terminal operations to be quicker to support intensive train itineraries.

"Terminal and haulage costs need to be seriously constrained, as they currently amount to over 50% of the total offer.

"Growing traffic from a small volume base may initially be unprofitable because of the high costs of terminal operations, even using a minimalist or austere terminal. Achieving profitability will require detailed operational, commercial and financial management skills - and possibly a little luck." R

Pallets and containers are loaded and unloaded at Long Marston as part of the F3 project to reduce the cost of moving goods by rail. PAUL CLIFTON.

Comment

Maggie Simpson, *Director General, Rail Freight Group*

"There are some good areas within this report worthy of more consideration.

"Personally, I am not wholly convinced by running shorter trains of conventional containers. Why not take 50 boxes if you can? But if there is a market demand, then fair enough.

"However, the question of whether faster freight trains are desirable is definitely worth looking at. Modern locomotives could go faster. You would need different wagon bodies. But the main point is whether or not it creates capacity, or whether in fact we just get to the next loop sooner.

"There is also the question of new markets. I know that a lot of businesses are looking at various new models.

"I'm also interested that the modelling has concluded it is financially viable. It has assumed a more efficient asset turnaround than we regularly achieve, and there may be some lessons in that."