

TWENTY TOP TIPS TO IMPROVE THE FUEL EFFICIENCY OF A LARGE GOODS VEHICLE (LGV)

Since the original article was written many years ago vehicle technology has improved and it now seems appropriate to update the original article. The three themes set out previously still remain as do some of the original tips.

The first theme is ensuring that you have accurate fuel consumption figures. The second, getting the best from your present fleet and the third making fuel efficient purchasing decisions when buying new or second hand equipment. The following twenty tips are designed to give a basic guide to operators who want to reduce their fuel bills and environmental impact, without spending too much money.

ACCURATE DATA

1. Check that weekly or monthly averages are produced by total distance divided by total fuel used rather than average of the daily averages. Quarterly summaries (using average of the averages) have been found to be inaccurate by as much as half a mile per gallon (MPG). The four week period shown in Table 1 illustrates this clearly.

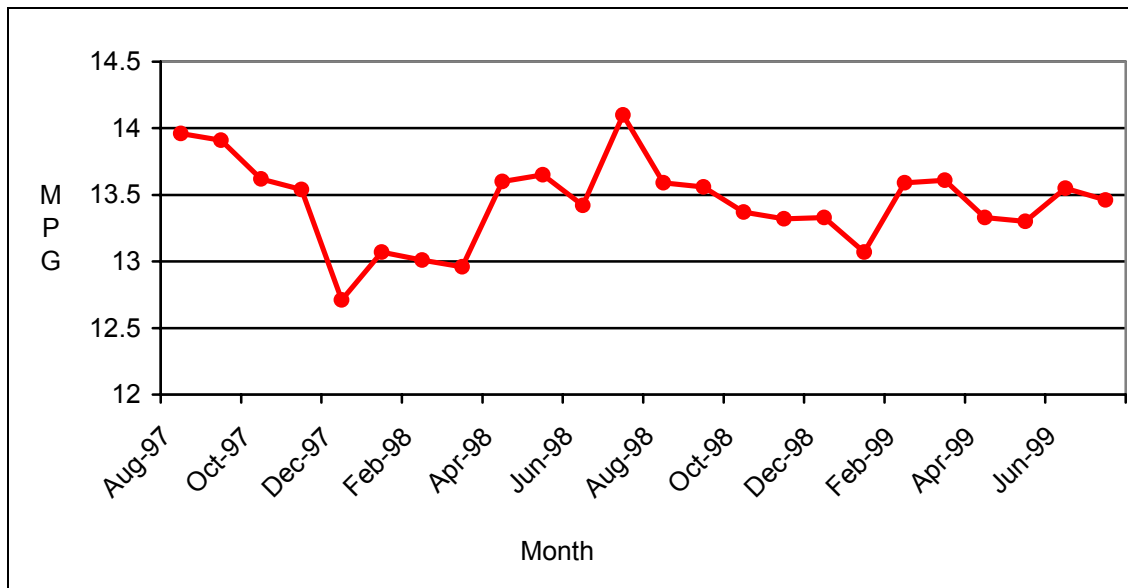
Table 1 The correct calculation of a periodic miles per gallon

Date	Distance (Miles)	Fuel (Gallons)	MPG	Week
17-Mar-99	651.96	74.70	8.73	12
20-Mar-99	1,011.90	103.80	9.74	12
23-Mar-99	530.14	62.14	8.53	13
26-Mar-99	650.71	73.58	8.84	13
30-Mar-99	1,062.77	98.27	10.81	14
01-Apr-99	247.36	43.99	5.62	14
07-Apr-99	709.76	83.70	8.48	15
09-Apr-99	463.02	54.71	8.46	15
10-Apr-99	299.56	36.56	8.19	15
Total	5,626.48	631.45		
Average of MPG figures			8.60	
Correct average			8.91	
Difference (Abs)			0.31	
Difference (%)			3.46%	

Source: Coyle M, 2000

2. When you find a large discrepancy in daily MPG investigate it and identify the cause, don't just average it or ignore it. Introduce measures to prevent it from happening again.
3. In most cases there is a seasonal pattern to MPG, peaking in July and August and bottoming out in December and February as shown in Chart 1. This is very important if you are going to test products that claim to improve MPG. If setting a benchmark figure use 52 weeks' data to mitigate the impact of seasonality.

Chart 1 Seasonality in fuel consumption over a two year period



Source: Coyle M, 2000

4. If your vehicle has an on-board computer that displays fuel consumption always validate it with your 'tank to tank' figures.
5. If you want to accurately determine the effect of different equipment under controlled conditions then enter the British Transport Advisory Consortium (BTAC) Fuel Efficiency and Technical Evaluation Event that is run annually. It is a lot cheaper than hiring a facility on your own and you get the benefit of mixing with like minded fleet managers and engineers.

OPTIMISING PRESENT FLEET

6. Driver training such as the Safe and Fuel Efficient Driving (SAFED) programme consistently improves fuel consumption, but it needs a reinforcement mechanism to sustain it otherwise there is a high risk of its effectiveness diminishing in the long term. Reinforcement mechanisms for fuel efficient driving can be simple feedback on a notice board (although there are also downsides to notices and league tables), individual letters to drivers, prizes or a fuel bonus. However, whilst an annual bonus can use the annual average MPG, shorter term bonus systems (e.g. weekly or monthly) should not use the annual average MPG due to the effect of seasonality.
7. The first person to undergo a driver development programme in any company should be the most senior person with an LGV licence.
8. Identify the most fuel efficient vehicles and if possible, bearing in mind other operational factors, place them on the operations or routes that consume the most fuel. This is referred to as "Effectiveness Analysis" and an example can be found in "Basic Steps to Improve Fuel efficiency".

9. Think of aerodynamics. For example, ensure that the gap between the back of the cab and the front of the trailer is minimised to reduce aerodynamic resistance. An evaluation conducted at BTAC determined savings of up to 9% Tippers with easy-sheets should have them closed when empty to prevent the airflow hitting the inside of the tailboard. Another BTAC evaluation identified a saving of up to 9%
10. If adjustable air deflectors are fitted, get them adjusted for maximum effect. If the deflector is too low you will see a tide mark on the front of the trailer or body. As a rough rule of thumb, every ten centimetres of tide mark will cost you 0.1 MPG
11. Specify the correct bodywork, it should be no higher, wider or heavier than the job requires.
12. Monitor maintenance records, poor MPG and short brake lining and clutch life are a good indicator of an inefficient driving style.

OPTIMISING PURCHASING DECISIONS

13. When buying new vehicles, calculate which is best over the life of the vehicle. Is it a better residual at the end of its life from a larger engine, or reduced fuel costs from a smaller engine that is just as capable of doing the job?
14. Specify trailers or bodywork with rounded leading edges (minimum 200 millimetre radius).
15. Aerodynamic aids may not be cost effective on vehicles that do not undertake long high speed journeys as part of their regular work. Think of where and how much fuel is burnt. A vehicle that spends a lot of time in a city might still consume most of its fuel on a motorway or dual carriageway getting to and from the city (the stem distance).
16. Beware of claims made for aerodynamic equipment tested at 56 miles per hour (MPH) and translating the saving to your vehicle(s). Aerodynamics is highly sensitive to road speed. Use the BTAC event (tip 4) to evaluate such products with your own vehicles, simulating your own operational profile.
17. Modern vehicles have a lot of electronic systems which capture data on driving style and whilst some operators do not purchase the in-cab display systems the data can still be downloaded (when the vehicle is inspected or serviced at a dealership) and subsequently used to produce a short report. Some manufacturers will do this for free.
18. With modern electronic engine management systems you can limit the engine speed. Why would anyone want more revs than those that achieve maximum power! Once you exceed the top of the power curve you are putting more fuel into the engine but getting less power.

19. When buying a second hand vehicle take it for a test drive and note the engine speed at 56 mph. If the vehicle is being purchased for medium or long distance work you do not want to purchase a vehicle that is geared for local work. If you get this wrong you will end up cruising at too high an engine speed and subsequently wasting a lot of fuel. This should also be checked when purchasing a new vehicle, especially if it is part of another operator's cancelled order.

20. When purchasing a new vehicle get the manufacturer to provide free driver training. Most do, so take advantage of it.

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