

# Bus conductor

Deputy chairman and chief executive of FirstGroup, and recently named SOE/IRTE honorary fellow, Sir Moir Lockhead talks about future bus engineering with John Challen

**H**aving spent a lifetime in transport, a large part of it at the helm of the largest bus company in the UK, Sir Moir Lockhead, deputy chairman and chief executive of FirstGroup, is clearly aware of the challenges facing bus operators and continues to search for solutions, not just for his own company, but for the transport industry.

Throughout his career, Lockhead says he has always stuck to the principle that attention to detail pays. "First, you need to understand how a component works, so that you can understand what caused a failure and then find a solution. When I see a problem, what I really see is an opportunity," he insists. And the biggest 'problem' on the horizon for bus operators – like so many others – is the environmental issue. And Lockhead is keen to clean up the industry.

The desire to reach substantially lower CO<sub>2</sub> emissions is hampered, says Lockhead, by earlier approaches to bus engineering. "For the last few years, we have been drawn into the idea that durability and life expectancy of a bus or truck is about how heavy it is," he explains. "[As a result] we continued to add weight, and we achieved DDA (disability discrimination act) compliance, made buses more comfortable, added double glazing and better quality seating."

That may sound good – but not when it means the average PCV is now running at a 3:1 ratio, unladen weight to payload. "The average double decker is about 12 tonnes and carries about 4 tonnes of passengers," states Lockhead. As a consequence, cleaner engines can help lower emissions, but fuel consumption continues to rise.

"Buses are full less often than we would like and certainly less often than we need them to be," says the chief executive. Yet all that extra unladen weight has seen average fuel consumption figures for double deckers shift inexorably from 6mpg towards 5.5mpg. Clearly, the goal must be to reverse this trend. Indeed, on the emissions side, the target is a 25% cut in CO<sub>2</sub> by 2020 – and Lockhead confirms that the technologies in train range from Euro 4 and 5 engines to hybrids, biofuels and a new approach to the vehicles themselves.

In March 2010, FirstGroup announced conduct trials of a single deck bus that aims to be 20% more efficient than current vehicles. The Avenue bus weighs just under 10 tonnes, almost one tonne lighter than average, thanks to generous use of composite materials on the floor, roof and in the body panels. However, losing a single tonne is not enough for Lockhead, who has set his sights much higher.

## Weighing scales

"We're looking to cut two-thirds of the weight," he reveals, although cautioning that he is not yet sure of the viability of that aspiration. "I'm sure we can do better [than current configuratinos]," he reasons. "The old Routemaster weighed 9 tonnes and carried 3.5 tonnes of passengers, so even it was more efficient, in that regard, than today's double deckers."

Lockhead argues that this example proves reductions can be made, but says he is unlikely to rely too much on hybrids in the equation. Despite the current scale of work on hybrids and the fact of diesel-electrics on the First fleet, Lockhead remains unconvinced. "A hybrid bus is too heavy and, even though it is more CO<sub>2</sub> efficient, it is still a relatively high consumer," he suggests. "Also, [hybrids] are not sufficiently reliable. Performance is not yet good enough and they are quite expensive. My concern is that they are not the step change we need."

So, without hybrid propulsion, what's the plan? "My ideal position is to build a bus around a CO<sub>2</sub> footprint, so consumption of CO<sub>2</sub> to make the bus meets the emission of CO<sub>2</sub> to run it, if the life is more than 15 years," says Lockhead. "I'm hopeful that, if we can do that, we can look into composites and other lightweight materials that would maintain durability and save weight. We'd have to move away from a truck derivative, where we currently use truck components, because of the relatively low volumes. But, if you made it a global initiative, with networks throughout Europe and North America, there would be more demand."

North America was the scene of one of FirstGroup's biggest triumphs in February 2007, when the company bought Laidlaw, operator of the





A man with grey hair, wearing a dark suit, white shirt, and a striped tie, is smiling and looking towards the camera. He is standing in front of a bus. The bus has the 'FirstGroup' logo in large, glowing orange letters on its side. To the right of the logo, there is a yellow sign with the number '€3.0'. The background is slightly blurred, showing the structure of the bus and some lights.

# FirstGroup

## Where's the next Sir Moir Lockhead?

Having started at 15 as a trainee mechanic at a bus garage in Darlington, Lockhead is clearly a great role model of apprenticeships, as well as a big fan. As the industry continues to search for new blood, he never underestimates the opportunities that were given to him on the first rung of his engineering ladder.

"Apprenticeships provide great learning experiences, not just in the skills and technical ability to understand how components work, but also in growing up," he recalls. "I learned that lesson when I left school. It is a good way of learning, and also a good way of earning."

"The people I met were top quality craftsmen who made sure the quality of my training was second to none, and I appreciated that. Now, the relationship with skilled staff for apprentices is very important. Part of growing up is getting on, understanding and respecting what they do. Apprentices' lives are fantastic, because they are doing a job they enjoy and, as well as getting paid, they are learning every day."

yellow school buses in 37 US states and owner of the legendary Greyhound cross-country coaches.

From a fleet operations point of view, that experience has been invaluable. "We have learned a great deal about high mileage operation in North America and brought that experience back to the UK," he explains. "We now have a much better approach to understanding and predicting failure rates, for example. We spent time analysed engine and gearbox mileages from Greyhounds that are so high we have never seen them in the UK."


Lockhead reveals that operating procedures from the UK have also been applied in the US, to good effect. And the close UK/North American relationship also extends to safety, where Lockhead says injury levels involving First Bus drivers have reduced by between 30 and 40% in just two years.

### Operations, operations

The First Bus fleet might number more than 9,000 vehicles, but Lockhead says that the same issues are as important to his transport engineers and technicians as to those of an operator running a handful of trucks, vans or buses. One of the major factors he raises is diagnostic tools. "Under our engineering leadership, we are getting things right first time, but we are still getting repeat failures," he reveals. "In our fleet, we can use best practice and then repair the first time we see it. But root cause analysis is the way forward and we are now getting better at that across the whole fleet."

Currently, he says, technicians aim to take action before failure, based on previous experience. "If technicians see a pattern of failure, such as starter motors, which are subject to regular problems, they track them and log when the units are likely to fail."

In this respect, Lockhead also values training and qualifications, whether it be NVQ, irtec or a visit to one of the company's 60 workplace centres that serve 85% of FirstGroup staff. "My ideal is technicians being kept up to date on vehicle types – making sure that manufacturers give us the right details, at the right time, about design changes."

At 65, he may now qualify for a bus pass, but Lockhead has no intention of standing down and has clear views on how the company should move forward. "I'd like FirstGroup to be seen, over the next few years, as the preferred employer," he states. "We haven't achieved that, so we should strive to, because it is a function of success. Much depends on whether I am part of [the company's future], but, at the moment, I am delighted to be here." Clearly, there will be no bus man's holiday any time soon for Lockhead. 

The logo consists of the letters 'TE' in a bold, white, sans-serif font, set against a dark blue background. The 'T' and 'E' are connected at the top.

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