

Style icons

Modern trucks are a lot of things to a lot of drivers. So getting the balance between robustness, aerodynamics, safety and appearance is key. John Challen takes a look at how these factors are likely to change in the future



Asok George is the chief designer at Volvo Trucks

When you consider that a truck's priorities are to be robust, aerodynamic, powerful, safe to drive and comfortable to live in, it's clear that an attractive exterior isn't right up there on the hit list. However, with every truck manufacturer's design department looking to improve further on every new model release, aesthetics can and do have a major impact on the product – and influence both its sales success and the engineering itself.

Not that engineering and design necessarily go hand in hand. In fact, for much of the time, these two divisions of a truck or van manufacturer can be at loggerheads – especially in the early stages of development, as each party seeks for

the optimum outcome, relative to their own ideas and criteria.

At the beginning of a commercial vehicle's design process, the designers may not wholly appreciate the subtleties of styling that need to be taken into consideration when creating a truck that needs to cater for a wide cross-section of people and places. A driver hauling a full load up a steep alpine gradient appreciates its power, size and comfortable interior. But it is not just the drivers that design studios are trying to accommodate. A regional planner, with responsibility for environmental issues, would doubtless prefer to see more modest and aerodynamic trucks than some of the more spacious units on the roads.

Truck of the future

Designed as a concept for 2020, Vayro is the idea of Kioko Muthui, a Kenyan design student with a passion for trucks. His concept truck takes into consideration the rigours of long-distance road haulage and meets the demands of increased freight haulage volumes, he says.

Muthui proposes that the ideal truck of the future would make use of high-capacity semi-trailers, each being more than 16m in length, with 23-tonne tridem axles. To aid productivity, the tractor unit would tow these semi-trailers in tandem, making a total vehicle length of 37.4m.

The exterior design of the Vayro is centred on the most aerodynamic shape possible. This means a conical windscreen, curved tractor cab, a raked, low-profile nose, and flush styled bodywork that has no mirrors, handles or windscreen wipers.

When the Vayro driver reaches speeds of 55mph and beyond, the truck's suspension automatically lowers the entire combination by 100mm, a move that Muthui has calculated would achieve a major reduction in underbody drag and bring the overall vehicle height down to just over 4m.

Muthui says his concept would be powered by a 16-litre hydrogen-fuelled ICE (internal combustion engine), with a total power output available of 805bhp. The power would be transmitted via a power-split transmission, which would, in turn, have the ability to perform regenerative braking, saving vital energy, to improve the truck's range.

"The PST would transmit the power mechanically through a conventional driveline [driveshafts, differentials and halfshafts] or electrically through an integrated electric generator that would charge a high capacity lithium-ion battery pack," explains Muthui. "An electric motor, drawing power from the battery pack, would be integrated into the driveline. Given that a mechanical path is efficient at consistent speeds, while an electrical path is efficient at inconsistent speeds, the appropriate driveline would be chosen to suit the driving situation."



“When we are faced with creating a new design, we consider two different types of end-users,” explains Asok George, chief designer at the Volvo Design Centre. “First of all, we have the customer, who usually knows exactly what he wants. To attract him to our brand, the design must express certain values and qualities. The other end-user of our products is society in general. The trucks we design operate everywhere. If people don’t like them, because they look frightening or ugly, they simply won’t function in society. Which means we will have failed.”

At George’s workplace, just outside Göteborg, an international team of around 12 designers works on the creation of what, in truck circles, are some of the most dynamic products in the world: Volvo’s fleet of heavy trucks. Designed with “a thousand faces” for almost as many applications, these vehicles turn out to be the epitome of functional design – design that must function in terms of both content and form. “The lid of a jar looks like the lid of a jar and is designed to be opened in a certain way. In the same way, the truck’s appearance must communicate what it’s intended for and how it is to be used,” says George.

The art of good design

Fairly straightforward so far, but design gets far more complicated when you start adding in the context in which all the world’s truck designers work. A truck is controlled by strict restrictions regarding height, width, length and shape. Hence, departing from the typical flat-fronted design that is the norm for European trucks today is out of the question.

“Our starting point is a square-edged box that is designed to transport goods. There are detailed standards governing everything from the dimensions of the wheel housings to where the lights must be fitted and how large the windscreen must be. And, of course, it’s vital to make the inside as spacious and practical as possible, at the same time as the outside is made as small and slim as can be,” states Rikard Orell, design director at Volvo Trucks and the man who heads the design operation.

Formerly a designer at Volvo Cars and prior to that at Australian car manufacturer Holden, Orell admits that the firm restrictions on today’s trucks can sometimes make the truck designer’s job a little frustrating. “You have a much freer hand when designing cars. You draw a product that may have a production run of millions, where it is often the appearance itself that ultimately attracts the customers. This means that the resources and preconditions are on an entirely different level, compared with working on trucks,” he relates – at the same time emphasising that this focus on exterior design is not always a positive thing.

“The risk is that everything ends up being about traditional styling,” comments Orell. “A truck is far more complex than a car. There are major differences between the different variants and configurations, and, since everything is so firmly tied to the functional aspects, our design work is much more exciting.”

So where does a professional designer draw his inspiration from?

“From everywhere: architecture, cars, product design, boats, mobile homes... I have a 70 or 80 gigabyte database of pictures that I continuously update and look through,” says George. “If you can keep the end-user in your mind throughout the design process, you already have access to the best source of inspiration there is. Just imagine you’re developing the best possible tool for the world’s most professional driver, at the same time as you visualise a little child riding his tricycle in a garden – with those two images playing through your mind, you can’t fail!”

For Orell, it is the environmental requirements, such as fuel efficiency and alternative fuels, that will have the greatest influence on truck design in the future. “We work ceaselessly to improve aerodynamics within the strict frameworks we are given. The focus may be on optimising the radius of a curve in a body panel, getting rid of unnecessary detail or working on the underside of the truck to improve airflow,” he explains. TE



Volvo’s FH16 truck was the subject of a number of design changes over the outgoing model

