

Like it or not, the days of the diesel-fuelled internal combustion engine are numbered; electrification is full steam ahead. Tim Campbell, MD of Campbells Electric Vehicle Consultancy, has – among other things – worked confidentially with many of the biggest global truck and van OEMs, served as senior commercial vehicle consultant to the UK National Grid (Ventures Division), and contributed to the Electric Vehicle Energy Taskforce report for the UK government. To explore this we need first to understand the big picture, and Campbell is the best man to draw it.

“The truck is the probably the last thing you should think about,” he says. Infrastructure is everything, followed by chargers, cloud-based software, data, and only then vehicles.

Can generating the power avoid being just as dirty as diesel? “The answer is yes,” he assures us. Renewable power is moving forward at a massive rate. “We’ve got about 10GW of offshore power at the moment,” Campbell points out, with a commitment for five times more than we have, in eight years (see map, p22). On top of that, the government stopped building onshore wind turbines in 2017, a decision now up for review.

The big issue is further down the line, so to speak. “Think of the National Grid as like the motorways,” Campbell tells us. “Taking power from the motorway to your home or depot is the responsibility of the Distributor Network Operators (DNOs) and unfortunately, many have been caught out by how quickly automotive electrification is happening.”

While we’re waiting for the DNOs to

# GRIDLOCK

Road tests of electric trucks are everywhere, but the actual vehicle is only part of what’s required. Thinking about the infrastructure behind it can quickly feel overwhelming, and the overall message around whether this country is ready for such rapid progress is somewhat blurred, finds Lucy Radley

catch up, we should be thinking about things like dynamic balancing – cloud-based software which enables chargers to talk to one another, prioritising vehicles in the order they’re due to go out, for example. Ways to avoid needing to upgrade the power coming into your site, in other words, along with solar and battery storage.

Also, operators need to start small, but they do need to start. “You can’t build infrastructure in five minutes; you need a long-term plan,” Campbell says. “Meanwhile, if you’ve got a van – most transport companies have – electrify that so you get to learn about it. You want the transition to be a steady climb, not a cliff edge.” They might also consider technician competence, through schemes such as IRTE’s irtec Large Electric Vehicle.

“As an industry, we’ve evolved as much in the last 120 months, as we did in the previous 120 years,” Campbell points out, and he doesn’t just mean technologically, but commercially, too. For example, Daimler, Volvo Group and Traton Group (which owns Scania and MAN), are joining forces to put public access truck chargers across Europe. “They’ve worked out that this is not a brand challenge, it’s an industry

challenge, so they have to work with their competitors.” Now it’s time for logistics companies to start doing the same, reducing the cost compared to building individual facilities. “Electrification will change the way we operate completely.”

## SELLING DIFFERENTLY

Campbell isn’t the only person who thinks the vehicle should come last in this process; the OEMs agree. In fact, they might not even sell you one at all, as Phil Rootham, pre-sales technical manager at Scania, explains. “We’re trying to take a far more consultative approach,” he says. “There’s a lot of due diligence up front.” That means looking at each operation in detail. “We try and understand what the routes look like, whether they’re repetitive, what the daily distances look like, what kind of bodywork is on there to understand ancillaries; all those kinds of things.” This enables them to work out whether the vehicle the customer is asking for will actually be able to do what they want it to do. If all looks good, then deeper analysis of specific routes comes into play.

“Are we at a point where we’ve got all

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Tim Campbell

the answers yet? I'm not certain there's enough product out on the road to say we can really nail it, but good practice we can definitely cover," Rootham says. "But time will improve calculations, as is the case with everything - the more vehicles you have out there, the better you understand it." To a certain extent, all the manufacturers are asking industry to challenge their operations to allow for early adoption, but that does not mean they'll take risks with customers' money and trust.

If the truck the customer wants, on the route they want it to follow, is not going to be viable, Scania will advise them of the challenges and question if it can adapt the operation, or whether they should wait for the next steps in range or performance. "Putting vehicles into jobs they can't do just ruins customer relationships," he continues. "We wouldn't sell a customer a nine-litre engine to do heavy haulage: the principle is the same."

What they will do, however, again mirrors the diesel analogy. "The key to all these conversations is looking at alternatives. If your use case won't facilitate electric, what about a plug-in hybrid?" Rootham suggests, to illustrate. "Then you can maximise your range, increase your flexibility a little bit, and still utilise that zero emission part - as well as getting a fuel benefit."

#### **NEXT STEPS**

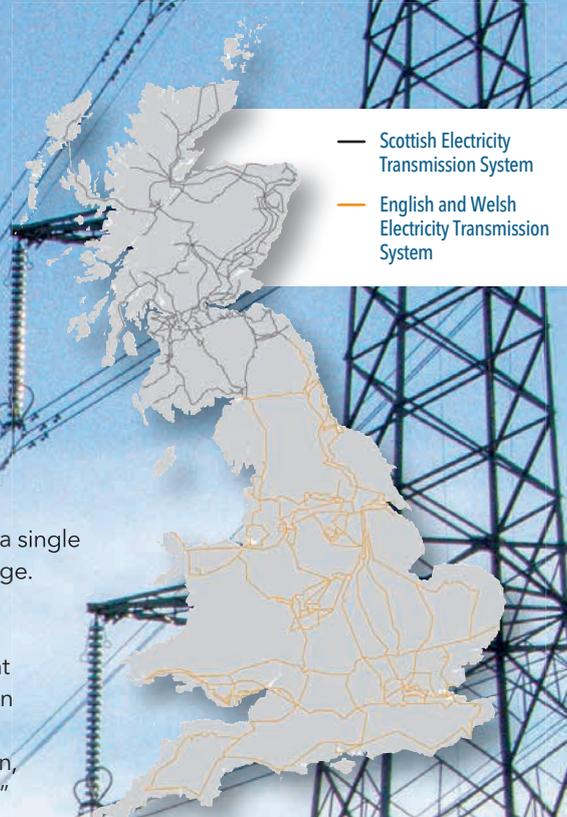
Assuming the scope for electric is there, what is the next step on the ladder? Richard Riley is the electromobility sales development manager at Volvo. "There's a huge amount that's going to be different," Riley says. "But charging need not be an issue." Volvo supplies

a 22kW AC wall box with every vehicle, which will charge the lighter end of their range - say, eFE or eFL - within nine to 10 hours. "It's a 32A three-phase feed, you'd run various workshop equipment off it, so most sites will have that power," he points out. "So you get your electrician to fit the box and you're off and running."

Great if that fits your operation, but there may not be a single 10-hour window in which to charge. Or you may wish to scale things up. "Then we've got partners we bring in who have subtly different offerings," Riley tells us. "They can connect with the customer and provide a DC fast-charge solution, including liaising with the DNOs." But Campbell's warning applies here.

"A 150kW DC fast charger might be £50-60,000, but this could easily increase due to installation considerations," Riley says. "The biggest lottery is what's coming into your site already. So in one location it could cost you seven figures, but in a less built-up area right next to a power station, it might be tens of thousands."

The bottom line is that somehow this is all going to need to level up, but in the meantime, with electric trucks will inevitably come learnings. "Where do I put the charger in the yard? What can I do with shift patterns to make this easier? Do I charge before or after loading? Everyone's going to have to learn these things," Riley warns. But that doesn't mean it's simply too soon to make your first move. "Fundamentally,



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what are you going to do, buy an iPhone and benefit now, or wait for iPhone 28?"

### OTHER VOICES

As well as working together on major infrastructure projects, the OEMs are also working with external consultants and facilitators to find a way through the current situation. A good example of this is Equans EV Solutions, which is behind the GeniePoint public charging network, and has also undertaken design and installation of workplace chargers for the likes of NatWest. More recently, Equans has moved into truck, securing a referrer agreement with Mercedes-Benz Trucks.

"Essentially, it's about figuring out where your opportunity to charge is," says managing director Dee Humphries. Equans will happily install infrastructure where trucks that come back to base every night are able to charge, but it does far more interesting things, too. "For example, we could add in battery storage, so you can be filling up those batteries during the day with energy produced from solar, then charging your trucks at night for free," she offers. "There are lots of ways to look at energy management."

Putting aside the more experimental stuff - like the three projects Equans has just done in Germany with overhead power line catenary charging - the ultimate aim is to keep things simple. That's great with our one truck, plugged in every night scenario, but what about when a fleet expands? "One of the

things we look at is how much energy is available at your site," Humphries adds. "We can also look at what it would cost for a power upgrade, but substation costs probably send a chill down the spine for most people, so we look at offsetting as well."

This is where solutions like the solar mentioned above come in, but it needn't be quite that complicated. "We will always look at what you've got available right now, and at ways to increase that," the MD says, adding "If you put a battery in, you can pull more energy from the grid and discharge it later, so you're not having to upgrade the grid connection." But operators do need to be realistic. "If you suddenly say, we're going to electrify this depot and the 25 articles in it, and we want them all to rapid charge at the same time, you probably are talking substations," she cautions. "If you want to do it sensibly, go piece by piece."

### DYNAMIC THINKING

Operators also need to remember that electricity is not a static thing, in the way a tank full of diesel is. "I was talking to one guy whose choice of truck had more range than he actually needed, and his routes meant they would be getting back during peak electricity tariffs, with battery power remaining," Humphries says. "We can set up a solution where we take the power out of those trucks and

sell it back to the grid at peak time, then recharge when it's off-peak.

It's all about energy as a flexible commodity." Don't be fooled into thinking such ideas are only for big operations, either. "Actually, aside from grid-scale projects, it's the smaller companies that stand to benefit the most from that kind of approach."

Equans will install the smallest, slowest chargers that will keep your business working, because they pull the least amount of energy and cost the least amount of money. Then, once you hit capacity with that, they look at whether it's better to do battery, grid, solar, or a combination of all three. "It's all about how to make that work for that specific business," Humphries tells us. "The common denominator is you've got a charger and you plug it in, but there is always a slightly different, bespoke solution, which works for each business, and that's where we come in."

In other words, electrification will, as Tim Campbell indicated back at the start, change the way we operate completely. But there are people out there to guide us through this mindset change, and there are ways to make the stuff 'fuelling' your lorries work for you, in a manner diesel never could. In the meantime, patience is key, but that doesn't mean sitting still either. The more test vehicles are deployed, the more the industry will learn. **TE**