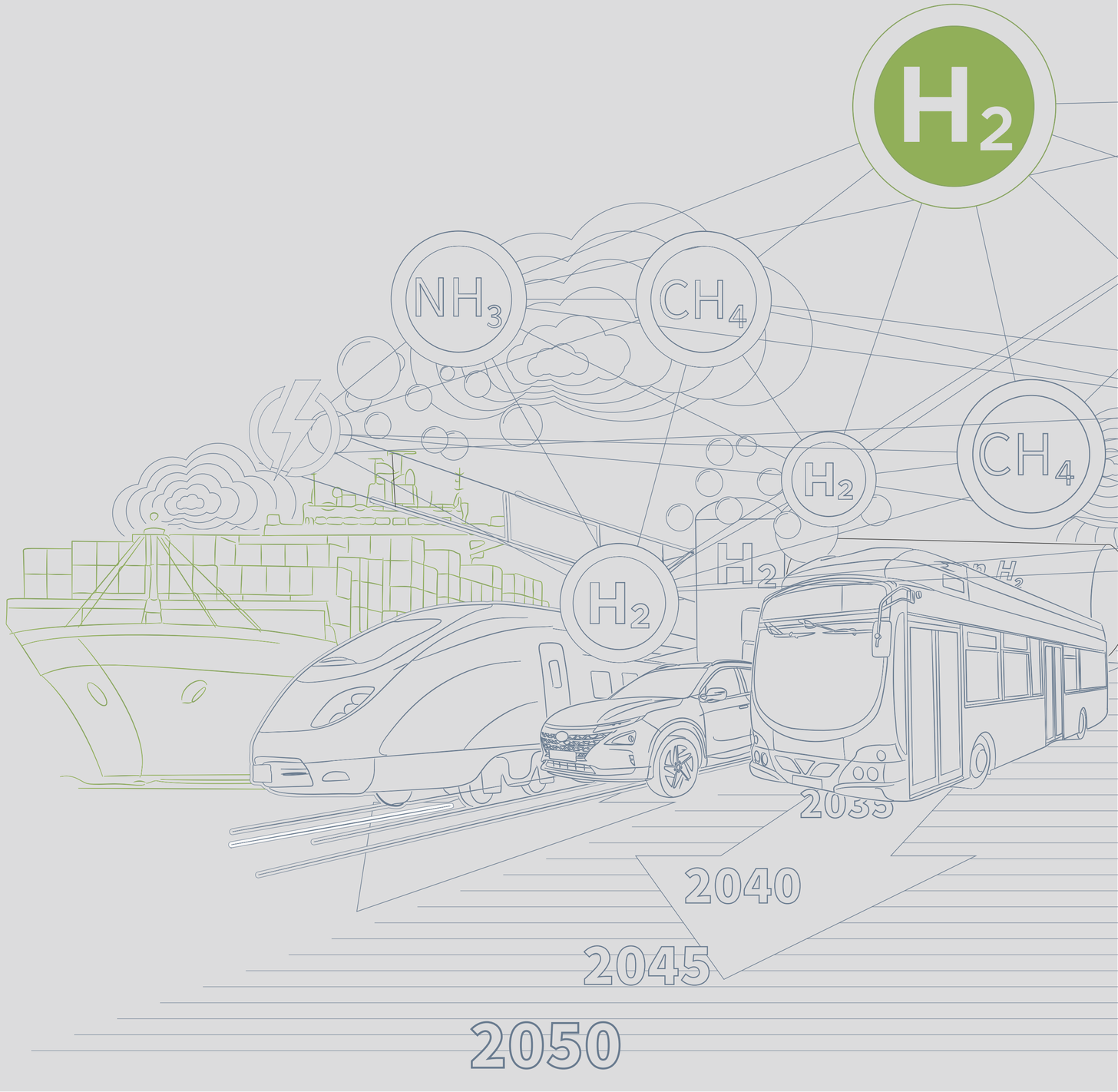
COUNTDOWN TO CARBON ZERO

CONVERSATION SERIES:
KEVIN HOBBS INTERVIEW



ADDLESHAW GODDARD

HYDROGEN IS THE ANSWER FOR SHIPPING SECTOR

Kevin Hobbs, Chief Executive at Caledonian Maritime Assets Ltd in conversation with **Paul Hirst, Head of Transport at Addleshaw Goddard.**

What's your perspective on the decarbonisation challenge that we face and the biggest factors affecting it?

The biggest challenge from our perspective is the technology. It's still very much evolving and not yet capable of achieving what's needed in the shipping sector, particularly at the larger end of the ferry market. The other major challenge is that whatever we design and build today is going to be operating for the next 25 to 35 years. This means that the emissions produced by these vessels are also going to be with us for a long time. Naturally, we're looking at the possibility of retro fitting ships, but this may not be feasible.

We're quite lucky in that we're owned by the Scottish Government and this gives us a unique opportunity to push the envelope in terms of technology. For example, in 2012 we were the first company in the world to create a fleet of electric hybrid vessels. If you're in the private sector, it's harder to make this kind of investment because using cutting edge technology costs a lot of money. I think this is something everyone needs to understand. Achieving carbon zero is going to be very, very expensive. There are some really big challenges ahead.

You're at the forefront of the industry in your use of liquefied natural gas (LNG). How do you see this progressing? What's going to be the best future-proof solution for the shipping sector?

If we're aiming for zero emissions, then ultimately hydrogen is the answer. However, hydrogen technology in bulk for ships has not hit the ground properly yet. There are several major ongoing projects looking at how this can happen and indeed ships are being built that will have hydrogen as their primary energy source, but these haven't been delivered yet. In the meantime, many companies including ourselves are looking at so-called transition fuels, so duel fuels and/or pure LNG. If you look at the carbon footprint for LNG versus marine gas oil it's about 25% lower for sulphur oxide and 90-95% lower for nitrous oxides – and the particulate side of things virtually goes to zero. So this is progression, but LNG is still emitting 75% of the carbon footprint that the more traditional fuels do.

What we're doing at CMAL is looking at our fleet of electric hybrid ferries and replacing 10 of the 17 vessels with either next generation diesel electric technology or, on some routes, purely electric power generated from renewable sources. So some of our ferries will soon be achieving net zero emissions.

> **THE SHIPPING SECTOR IS READY TO REDUCE CARBON EMISSIONS BUT NEEDS ADVANCES IN HYDROGEN TECHNOLOGY TO TAKE THE NEXT LEAP FORWARD**

Why can't we go straight to hydrogen? What's holding us back?

The technology around hydrogen is very complex and although some innovative companies are rapidly developing it, it's not yet there. The production of hydrogen… the storage of hydrogen… the transfer to ships… the safety on board – all of these things have to be taken into account. There's still a huge mountain to climb in terms of the scale of hydrogen that you need for ships, even smaller ships.

Many people have talked about how the pandemic offers an opportunity to rethink how we use transport modes. What's your view on this?

Obviously, the world has changed around us, and people are realising we can't just carry on the way we were. At the same time, we're a connected world and journeys still need to be made.

Certainly in Scotland, the demand for ferries to go out to the western isles and northern isles will remain because of the lifeline services that they offer. Of course, there are added benefits such as tourism but fundamentally you need ferries to get goods to and from the islands whether that's whisky, fresh produce or freshly caught fish.

Can you tell me how your battery hybrid ferries operate in practice?

Effectively, on all the routes we can operate for about 30 to 35% of the day on pure electric and the rest of the day we use diesel. That's because there's always a trade-off between the carrying capacity of the ship and the weight of the batteries – these are still quite heavy despite all the recent technological advances.

In future, on our shorter routes, we believe we can have purely electric vessels that would charge up overnight and have no need for diesel. However, on our longer routes it's more challenging because the more power you need, the more batteries you need and you get to that point where you have so many batteries on board, you can only carry one car!

We have another major difficulty in Scotland which is that many of our smaller routes are relatively remote so just getting the pre-requisite amount of power to the quayside to enable vessels to charge overnight is a challenge and also very expensive.

Do you think there would be benefits in a closer relationship between the energy and transport sectors?

Yes, this would be very useful. It takes two years to build a ferry from start to finish and as things stand, we can't reserve power. So when we start a building project, there may be available power on the island where the ship needs to lay over at night but two years later a distillery or other major user of energy may have taken that spare capacity. That means we can find ourselves in a position where there is actually no capacity left and it can take many millions of pounds to upgrade these facilities.

HYDROGEN IS THE ANSWER FOR SHIPPING SECTOR

If you're looking at major investments in power supply, would it actually make more sense to look at hydrogen?

We are looking at hydrogen in the sense that we are one of the lead consortium members for the European backed project called High Seas 3. High Seas 1 and High Seas 2 were largely desktop exercises whereas High Seas 3 involves hydrogen fuel cells and a string test for the factory environment to see if all the component parts marry together to create the necessary propulsion. Our role is to design a vessel and get a vessel approved that can have hydrogen technology in it from a safety perspective and within maritime guidelines.

Do you foresee any safety issues with hydrogen?

Safety is the number one priority. On a ship where you're maybe carrying anything from ten to 500 people you can't take any risks. So effectively we have to engineer out possible risks so that if and when we do use hydrogen, it's 100% safe.

There's been a lot of progress to reduce sulphur in emissions and it's well known that globally the largest vessels are responsible for a big proportion of these emissions. What do you think the shipping industry can do more widely to clean up its act in terms of its carbon footprint?

There's a clear understanding in the shipping industry that we have to play our part in reducing emissions. There's legislation to reduce actual emissions of sulphur oxides and we're now using less sulphur intense fuels. So all of that is happening but it's very difficult to force people to do things when the technology isn't there to enable them to do anything more than use a transition fuel like LNG.

So who is going to drive the technology forward?

Well, the trend is to be greener and greener and we're already seeing incremental improvements. For example, some countries have legislated to say that all vessels have to be plugged in overnight at ports rather than using diesel generators to create what is called the 'hotel load' – the power to keep the lights on and the heating going and things like that.

We ourselves have done some analysis on our northern isle ferries which run into Aberdeen and if we plug them in, either in Aberdeen or in Lerwick (Shetland) where they lay over through the day, we will reduce their carbon footprint by about 12%. So change is happening and as an organisation we're doing everything we can to minimise our carbon footprint with the best technology we can currently get our hands on.