

IETF Podcast – Tim Shire and Alex Patrick Smith

Narrator: Connecting for positive change.

Jenni McDonnell: So, hi everyone. And welcome back to our industrial decarbonisation podcast series. Highlighting the progress being made towards net zero and, in particular, the Industrial Energy Transformation Fund, which is provided by the Department for Business Energy and Industrial Strategy. My name is Jenni McDonnell and this podcast series is brought to you today by Innovate UK KTN. So, the purpose of this podcast series is to encourage the permanent deployment of industrial energy efficiency and decarbonisation technologies with support from the IETF fund. The funds, providing capital investment to industrial sites in England, Wales and Northern Ireland to help them to reduce their energy demand and carbon emissions associated with their industrial process, which in some cases can be very energy intensive.

Jenni McDonnell: So, a link to the competition guidance for this fund can be found in the description below, that's associated with this podcast. And if you haven't already, then please do go to the KTN website, through, again, the link provided in the description and sign up for our newsletters because you'll get updates on future IETF funds as well. So, the current competitions are open now and they close on the 9th of September, but there will be another competition window in the Autumn too. You'll also find future episodes of this podcast series listed there too.

Jenni McDonnell: So, joining me today on our second podcast are Tim Shire from Essar UK, representing your large manufacturer based in the North West and Alex Patrick Smith from Hinton, Perry and Davenhill, representing a smaller manufacturing site in the Midlands. So, hello to you both guys, would you want to introduce yourselves and explain a bit about your role within your organization? So, Tim, do you wanna go first?

Tim Shire: Sure. Yeah. So, I work for Essar UK, so we're a very large-scale manufacturer of transport fuels and, chemical feed stocks in the UK. We are one of the UK's top 20 CO2 emitters so we, we have a lot of emissions to deal with and a lot of energy that we use. And my role is as the Site Energy Manager and I, I look at everything from kind of short-term energy monitoring and management, CO2 emissions reporting, right through to longer term strategic initiatives for energy saving and decarbonisation.

Jenni McDonnell: That's great. Thank you, Tim. And now, Alex?

Alex Patrick Smith: Good morning. I run Hinton, Perry and Davenhill and just recently became chairman, but I've sort of held onto this decarbonisation brief because for us, you know, we see this as a, as a negative existential threat to our, our long-term future. We manufacture bricks and roof tiles, so clay building products and that process involves firing products to, to high temperatures and also using gas in the drying process. And we really see our journey to, to decarbonisation as something that is, you know, an, a real imperative and something that we want to accelerate as quickly as possible because we currently emit over 8,000 tons of CO2 a year which, you know, may in itself not sound like a, a huge

amount, but it is roughly about a kilogram of CO2 per pound of turnover. So, the scale of the challenge, you know, is, is, is highlighted really by that number.

Jenni McDonnell: Yeah, indeed. Well, thanks to you both for coming along to share your experience of the IETF with us today. Before we get into the detail on that I was wondering if you could give us- help us to understand why decarbonisation is so important to your business and what measures you may have already put in place to make your operations more resilient and more sustainable. Like, for instance, do you have a net zero carbon target that you are working towards? I mean, Alex, would you like to go first on that one?

Alex Patrick Smith: Yeah. I mean, we've already seen a, a big reduction in our emissions, roughly around 29% from the start of our, well, it was **EUETS** at the time, our auditing of, of our emissions. And, that was through an investment in new dryers and taking some of the available heat from the, the cooling side of our, our, kiln firings. And, we've also looked at smaller things, which, you know, in aggregate, have worked reasonably well to, to, to, to cut, you know, 5%, that sort of number out of our, our emissions.

Alex Patrick Smith: But, this is always, you know, you always go for the low hanging fruit first and the, the sort of next challenge is, is, a step up in, in the level of complexity and, and our focus now is on energy efficiency, really using every little bit of, of energy that we generate and, and, and waste. And that for us is in the form of heat that is expelled through flu gases and currently goes to waste. So, that is our, our current focus in the next step in our decarbonisation journey. We don't quite know what net zero really means for us, because you know, that is a, you know, a legislative driven target. But, it hasn't been distilled into, you know, our energy intensive businesses, like ourself, allowed to emit something because other parts of the economy or other technologies are gonna be removing carbon from, from the system. So, we've taken the view that we just need to progress on this journey as, as quickly as we can with as much help as we can get from initiatives such as this IETF funding.

Jenni McDonnell: Well, that's great and, and you're setting a great example as well, to the smaller manufacturing sites that might not have started to consider what they could do to reduce their emissions, or to become more energy efficient. And particularly, as your site, isn't part of, one of the big industrial clusters either. Are you, you're kind of, in the Midlands not, not having maybe all of the opportunities of being part of a cluster.

Alex Patrick Smith: Yeah. Well, I mean, we, we, we are in an, an area that, that used to be, you know, the industrial heartland in, in the Black Country. And we are currently out of a, an industry that, you know, used to be quite strong in the area, the last man standing.

Jenni McDonnell: Yeah.

Alex Patrick Smith: And, and, and so, you know, the brick and tile businesses that were in our area have all closed and, and, and moved away. And, or, or, or, you know, being- been swallowed by, by larger organisations, who've reorganised things. But, you know, for us, we're a family business and, you know, our, our, our capital is invested in this business, and we want to preserve it. We've been going for 215 years and we want to see a, a pathway to

a, to a viable future and that means, you know, making sure that we produce our products with the minimum amount of fossil fuel input and, and we're looking at all sorts of avenues to, to try and achieve that.

Jenni McDonnell: That's great. So, Tim, would you like to share Essar's strategy for decarbonisation as well?

Tim Shire: Sure. And, I'm picking up on what Alex said and, I think, the first thing he said was, "we see this as, as an existential threat" and, you know, in, in our industry where we're, we're making perhaps high carbon transport fuels, you know, our industry is clearly going to have to change, hugely, in the next 10 to 20 years.

Tim Shire: And, you know, potentially become a lot smaller in, in a different shape. And so, we very much see deep decarbonisation is like, is a prerequisite for survival. So, you know, we, we're very ambitious about decarbonisation. We've, we've got some sort of published targets which are for, for our operations, 50% CO2 reduction by 2030, 100% by 2040... We've got quite a lot of things in work. So, if, if everything goes according to plan, as well as it might, we, we are looking at actually, we might be able to get 90% CO2 reduction of our, of our manufacturing operations by, by the end of the decade and that's what we're sort of, kinda hoping for.

Jenni McDonnell: Wow, that's amazing.

Tim Shire: There's still, our, our products also need to be decarbonised and that's probably a whole, whole different subject as well. So, yeah, you know, and we've made pretty good steps. So, since 2016, we've reduced our, our emissions by about half a million tons per year but we're still emitting nearly 2 million tons, so quite a long way to go.

Jenni McDonnell: Yeah. But if you like, optimistically, by the end of the decade, that's not that far off really. So that was a, a great-

Tim Shire: It's not that far off and, and I mean, there's a lot of things we have been working really quite hard on that are maybe just starting to come to fruition. So, we are part of an industrial cluster, that's the high-net Northwest cluster, and so the low carbon hydrogen manufacturing will be, you know, on our site, kind of operated and maintained by us. So, that's a big piece of it. There'll be carbon capture infrastructure, so a big, a big amount of the carbon is made, you know, as a chemical reaction in our products, but with the infrastructure there, then we're, we're working through the carbon capture projects.

Tim Shire: But actually, energy efficiency is really the, the top priority because your carbon capture reduces carbon, but costs money to run. Whereas, energy efficiency reduces carbon and saves operating costs. So, you know, it's, it's kind of a win-win really. So, that's our, our, you know, the next few years, we're hoping to make quite a big dent with, with energy efficiency.

Jenni McDonnell: Well, that's great, thank you. I, I guess actually, Tim, if you'd like to carry on now, would you like to share an overview of what the IETF funding is helping you to deploy at Stanlow Refinery?

Tim Shire: Yeah, so, we've got a few things going on. So, we have applied for some grants, which are not- haven't been announced, or not fully decided yet, to look at all sorts of things. So, electrification, strategic studies looking at heat recovery use of heat pumps... that sort of thing, so, they're, they're brewing in the mix. But we, we have been awarded a, a quite substantial grant for a, a big change to one of our furnaces and the, the counterfactual, if you like, what, what we had to do anyway, we, we had a furnace on site that was, it's about 46 years old, for environmental reasons we needed to upgrade to reduce NOx emissions. There was quite a bit of maintenance and patching up needed, needed doing to it and, and that was, you know, several million pounds worth of, worth of work.

Tim Shire: And, if we did all that, we'd still end up with a relatively inefficient old furnace that's still 46 years old and is gonna need continued maintenance and isn't that efficient. So, what we really wanted to do is replace the furnace, build a brand new, new one. So, the new one is about- when it first goes in 2023, it, it'll be about 4% more efficient which is saving between 10-20 thousand tons a year of, of CO2 cause it's, it's very big but it's also gonna be set up to be ready for a 100% hydrogen firing. And so, when, when high net comes along that will allow it to become more efficient still because the, the hydrogens are cleaner fuel, and we can burn a bit more efficiently, get, get a couple more percent. But also, obviously, hydrogen's zero emissions so, yeah, we'll be able to get rid of the other 200,000 tons per year of CO2 that this emits and the grant obviously, the complete replacement, is considerably more expensive than, than patching up. And so, the grant supports, you know, pays for some of that, that difference. To enable us to, to do the, the transformational project, if you like.

Jenni McDonnell: Yeah, absolutely. So, it's helping you with the, the additional cost of it being extremely energy efficient and hydrogen ready.

Tim Shire: That's right.

Jenni McDonnell: Yeah, that's great. I mean, the fact that you have the potential to switch to a 100% hydrogen, once the hydrogen supply arrives in your area, is, it's so exciting and that's gonna make a real difference to UK carbon emissions and it shows other sites what can be done as well.

Jenni McDonnell: So, Alex, would you like to share an overview of how the IETF funding has helped you to prepare for future deployment at your site in Dudley?

Alex Patrick Smith: Yes. I mean, the, the, grant we were rewarded was for a feasibility study to analyse what's required to capture the heat from the firing side of, of, our kiln cycles and transport that heat in a, in a form that, when we started the feasibility study, we weren't sure about, but, it was to take it to our, our drying operations, with the hope that we could then remove the need for gas burners in our, in our dryers, by using the heat from the kiln.

Alex Patrick Smith: So, we studied the composition of our flu gases, the temperatures from the various kilns. How those firing cycles will, will overlap. And we've got several intermittent kilns. So, the, you know, the, the aggregation of all of that, we just wanted to make sure that in terms of availability of heat, that that was maintained throughout normal operations. We then looked at the heat requirement within our dryers and we looked at that for each hour of each day, for each dryer, seven days a week and throughout the whole year, and we've mapped the heat availability over the heat requirement, and we've concluded that there is sufficient heat available.

Alex Patrick Smith: And that led us on to the next stage, which was to design. A system that was going to enable us to, to, to capture that heat and move it around using heat exchanges and a medium pressure, hot water system that has now been designed. It's, it's been costed up, we're still subsequent to, to this grant funding project, just working on, on things actually, partly as a result of another KTN initiative which we were involved in, which was the IX challenge which has thrown up other potential companies that can help us on, on delivering this, this potential solution. So, all of this is feeding into a new application for the deployment, which we are hoping to put in, in this second phase of the IETF funding.

Jenni McDonnell: Thanks Alex. That was really great. Thank you very much for the plug for the IX challenge program as well at the KTN. For the listeners, if you're not familiar with IX, it's the Innovation Exchange. So, if you are a challenge owner and you want help to find solution providers, different companies or universities that can help you solve a business challenge, then do come and have a chat with us. And again, another great project and, and hopefully easy to replicate at other manufacturing sites as well. So, I hope both these projects have given the listeners some ideas of what they can do at their site.

Jenni McDonnell: So, now a question for both of you, there's been a reasonable amount of funding for R&D and for deployment of industrial decarbonisation over the last few years. But, given that the IETF program is due to end at the end of March and the last competition to be able to bid for support is gonna be this Autumn... What further support would you like to see from government? For instance, has this capital investment style funding been really useful? Or, maybe, would a tax incentive been more attractive to your company in order to, sort of, keep up momentum for industrial decarbonisation? So, Tim, would you like to go first?

Tim Shire: Yeah. So, I mean, we found this, this funding source to be very useful both in terms of the money, helping us get, you know, perhaps the projects we'd struggled to fund ourselves over the line. But, also, I think just the attention and the timing that the grant brings, it's sort of an opportunity that you, you could do later, it sort of gives you that incentive to do it now.

Jenni McDonnell: Yeah.

Tim Shire: So, I think, more, more of the same would be good. I mean, our, our shopping list for energy efficiency items is still huge so, so this is, this is good to continue. I think that there, there may be... Moving out into, sort of, medium term. There is still a lot that can be

done with relatively well proven technology and, IETF, as I understand, is really focused on deployment of proven stuff. I, I guess as we dig deeper and deeper, there'll be more need to perhaps underwrite some of the technology risk for, for trying more ambitious stuff.

Jenni McDonnell: Yeah, yeah.

Tim Shire: So, some kind of funding that would, would support that might, might be useful in the medium term and yeah, the, the only kind of comment from our side really on making it a better fit is... We have very limited windows when we can deploy major investments. So, we, we only shut down parts of the plant once every four years so there's the, the choreographing of feasibility studies, detailed engineering procurement of long lead items, you know? Delivering construction needs to fit in with that and we have found it a little difficult. You know, to get the right grant window and the right timing and, and the, the length of the window, cause, cause our project's often, you know, very, long gestation for building huge pieces of kit.

Jenni McDonnell: Yeah.

Tim Shire: So that, that's something that could perhaps be improved, but yeah, basically, basically it's a very good fund and we, and we'd like to see it continue. Definitely.

Jenni McDonnell: And, and particularly at the moment, I, I imagine the lead times are particularly bad at the moment with the crisis and, and Ukraine war and everything else causing problems.

Tim Shire: Yeah. And, you know, there's a lot of cost uncertainty. We've heard of things of quotes, you know, only being valid for a few hours and things like that, and then lead times have gone out and, and that is a big risk for us. If we, if, if the kit arrives months late and we missed the window, you know, it can't go in for another four years. So, it's, it's really a challenge.

Jenni McDonnell: Yeah, I can imagine. And you mentioned you would in the medium term, you could see an R&D fund being useful. So, the "Industrial Energy Efficiency Accelerator" is another fund from BEIS which is exactly for that purpose. That unfortunately is in its last round of funding. So, it's good to hear that, that type of funding is also needed, so I will feed that back.

Jenni McDonnell: So, Alex, do you, do you agree with the comments made by Tim or is there additional support maybe that's needed for smaller industrial sites in particular? Are there any gaps in the current funding because of bigger, smaller sites?

Alex Patrick Smith: I would certainly echo a lot of what Tim has said. I think, you know, we found the fund useful. It sort of acted as a catalyst really for getting everybody engaged in this, particularly getting a partner involved in a, in the project to, you know, work with us on this. And, so I think the, the fund itself has worked well for us.

Alex Patrick Smith: I think there are certain things about some of the, sort of, you know, climb and, and bureaucratic elements of, of the monitoring and doing all that sort of thing. And also, I guess, from a smaller company perspective... You put a lot of effort into the application and because it's a competitive thing, you may not be successful at the end of it all.

Jenni McDonnell: Yeah.

Alex Patrick Smith: And I think, you know, there's a danger potentially that, you know, that could be demotivating for companies who are, who are not successful because of the amount of work that, that went into it. And, I certainly would like to see the, the, a fund or a future evolution of it, you know, remain in, in, in place because I think it is support for these types of capital investments that we're looking to do that is, is, is necessary to, to make a realistic payback.

Jenni McDonnell: Yeah.

Alex Patrick Smith: And the- and there is one other thing that I look at and I, you know, from, from a UK perspective, you know, we're now part of the new UK ETS scheme and, within the first two years, so second year still running, but the government will have raised 11 billion pounds through auctions from this scheme and only a fraction of that is coming back to, to, to industry for decarbonisation and one thought I've had is that, if the amount of money that is, is taken out through these schemes from, from individual companies is returned in a form of a voucher that could then be spent on technologies or solutions that, that, that are decarbonising and, and, and obviously have to go through some qualification, but there, rather than sucking money out of businesses that could be used for investment it provides a direct panel for that to be put back into, into the right areas. I did mention that to a minister who, who said that, that hypothecation, is not a, an attractive thing for the treasury and it didn't make very good policy. But, I would disagree. I would say it makes very good policy but possibly not good politics. And I think, the, the visibility of a scheme like that, you know, could be helpful for everybody.

Jenni McDonnell: I completely agree. I, I think that's a great idea. And in fact, when I used to work in the oil and gas industry, the Brazilian government used to have a scheme exactly like that, that if an oil company invested in R&D to reduce their emissions, then they didn't have to pay as much tax or, you know, they got money back in that way, so it can be done. So, I will definitely feed that back to BEIS and see if we can make that happen.

Jenni McDonnell: Well, I'm afraid we need to wrap up now, so, but huge thanks to both you, Tim and Alex. It's been great to have you with us today and to learn about the progress that's being made in industrial decarbonisation in the UK.

Jenni McDonnell: Thank you everyone for listening. Any links mentioned today, as I say, a link to the KTN website have been added to the description of the podcast. So, don't forget to sign up, to receive newsletters and updates about the IETF funding.

Jenni McDonnell: In the next episode, we'll be hearing from some of the delivery partners of CR plus, and Enviroya, who are using their energy experience to help industrial sites to make industrial decarbonisation a reality. So, until then, thanks again for listening and goodbye.