

Steve Welch

Hello and welcome to Silent Designers and the last episode in this season. Our podcast is about the under the radar design activity that goes on in so many organisations, even though it's not necessarily seen as design or apparently done by designers. Each month we have an expert guest on to share their knowledge, talk about what they've done and the impact that design has had in their particular domain. I'm Steve Welch from Innovate UK, and I'd like to introduce my co-host Katherine Wildman, founder of B2B copywriting agency Haydn Gray. Katherine.

Katherine Wildman

Hi Steve, thank you very much for the introduction. In today's episode of Silent Designers, we're going to be exploring the theme of Net Zero and Sustainable Technologies, and we're going to be talking to the award winning chartered engineer Yasmin Ali. Yasmin is a Hydrogen Project Development Manager at RWE, the leading supplier of renewables worldwide, and she's also the author of Power Up, which looks at global energy systems and the energy transition that's going to be published next month. Yasmin, thank you so much for joining us.

Yasmin Ali

Thank you for having me.

Steve Welch

Yes. So thank you for joining us and hey, let's start easy. How about you tell us about, a bit about yourself and the area of innovation that you work in.

Yasmin Ali

Sounds good. So I'm Yasmin Ali. I'm a chemical engineer by background, and I've spent the last 13 years or so of my career working in the energy sector. So I started off in fossil fuels, in coal and gas, fired power generation and oil and gas. And then I transitioned very much like the energy system into more renewable jobs. So I spent some time working for the UK government, designing and running energy innovation programmes, which was quite a lot of fun. And then from there I joined working as a Hydrogen Project Development Manager. So my area of innovation at the moment, I would say is hydrogen. And even though I work on developing commercial projects, so perhaps not innovation as one might think of it, is a completely new area for us here in the UK and across the world in certain ways. So I do see it as innovation.

Katherine Wildman

That brings me beautifully into my question, Yasmin, which is can you tell us how you use design in this area and why it's important for your innovation?

Yasmin Ali

I think of design not, maybe not as many people think of it. So that, where design conjures up images of fashion or maybe graphic design, I think of it more as a thinking process to come up with a way of maybe solving a problem or achieving something that hasn't been done before. So with these hydrogen projects, we start off looking for customers. So people who are out there - industries or people that are running a fleet of heavy goods vehicles, for example, who are looking to decarbonise and I'm looking to see whether hydrogen might be a good fit for them. And then from that relationship start to develop what a project might look like. So how much hydrogen is needed? What bits of equipment would we have to get in there to make that happen? And then there's quite a lot around all of that that needs to happen. From all of the safety measures that we need to put in place, the regulatory requirements that we have to meet, planning, permission, environmental permits. Yeah, all of that and funding as well. So hydrogen is more expensive to produce than conventional fuels that are in use today, so we need government funding and bringing all of that stuff together in a way that hasn't really been done before, requires quite a lot of thinking, coming up with processes and ways of doing things to build these projects successfully.

Steve Welch

It's really interesting, of course, and what a great example of something where that holistic thinking is needed because there are so many apparently disconnected people that you have to work with and \_ things that you need to fit in around. What do you see in, you know, from your perspective or RWE's maybe is the most useful deployment of hydrogen?

Yasmin Ali

We're focusing as a starting point on industry. So large manufacturers of, I don't know, chemicals, for example, who use natural gas today to generate high temperature heat. They need it 24/7. They need very large quantities of it. So that's a good starting point for us, places where hydrogen is already used. So refineries already use what's called grey hydrogen. When you make hydrogen today, I think it's around eight kilograms of carbon dioxide is emitted per kilogram of hydrogen. So if we can supply low carbon hydrogen, we're immediately cutting emissions. So I mentioned refineries, but also ammonia production. So ammonia is produced and generally goes on to become fertiliser. Hydrogen is needed for that process. So again, if you can take out that grey hydrogen and replace it with green or blue, low carbon hydrogen, you're immediately cutting emissions. So those are the current areas of focus. But then looking forward, there are many others we're looking at. So I mentioned heavy goods vehicles. We think that electrically driven heavy goods vehicles are difficult because the batteries would be too heavy for that size of truck and also aviation. So the aviation sector are \_ looking at hydrogen fuelled engines. Probably not anytime soon, but coming in the next 20 years or so, from what I've seen.

Katherine Wildman

And as a project manager for RWE, what does that involve? What's your day to day, week to week role?

Yasmin Ali

A lot of it is around building relationships and bringing different people together. So I mentioned working with hydrogen customers. So we do spend time thinking about what types of end users that will be for hydrogen and thinking about how we can get in touch with them. So I will often go along to events and intentionally bump into people, that I want speak to. And then from there it's about working with them to develop a project together. So for example, I'm doing some work with the Port of Tilbury, looking at hydrogen production there in the shorter term, perhaps to decarbonise some of their port equipment. But in the longer term, because the port is close to London, which is a large energy demand centre, there are other possible users of hydrogen that will come along in the next ten years. So if I just use that project as an example, building that relationship with the customer, but also working with the engineers within RWE who are looking at more of the detail around what type of electrolyser is most suitable for this project, what pressure is the gas needed at, so what compression do we need? Storage of hydrogen. Is that needed? How big? All that kind of thing. And bringing all that together, alongside the money side of things. So, where's the funding going to come from and how are we going to make up the, \_ any shortfall? And the planning permission side as well. So the bringing in the councils, you get the idea. It's quite a wide range of things that we need to bring together to make these projects happen.

Steve Welch

Yes, indeed. And it sounds like you often have to talk about potentially quite technical and complex issues with people who are new to them, or maybe it's not part of their day to day work. Do you find design thinking gives you some different approaches or is helpful in some ways in how you communicate with fresh people?

Yasmin Ali

I try to think of who, so I start with, who's is my audience and then decide what to say based on that. So if I'm talking to the engineering team, I can use jargon and they'll understand what I mean. If I am speaking to, for example, somebody from the port who's, has a more commercial focus, then I do try to be more conscious of how I'm communicating. So yeah, I think maybe just , I haven't really thought about that before in a design thinking kind of way. But yeah, it does make sense.

Katherine Wildman

You've developed a science communication career based on your ability to translate these complex technical topics. Is that what led you to write a book, to give a wider understanding of what's happening in the field of energy?

Yasmin Ali

Partly, yes. So I enjoy my work. I love being in the energy sector. I love being part of this community that's trying to decarbonise the world and transitional energy systems to something more sustainable. I can't think of any better place to be really. It feels like I've got quite a meaningful job, so I really enjoy that. But I also love writing and I've been doing bits of writing since university, really, and I was trying to find a way of bringing those two things together. So the most obvious thing to do, if you like writing, is to write a book and I work in the energy sector. So that's where that came from really.

Steve Welch

From the other talks you've given, and I guess because you're embedded in this, what do you think is the future of hydrogen?

Yasmin Ali

I think it will play a part alongside the other renewable energy technologies. So we know we've got wind and solar out there. There's lots of costs associated with, when the wind is blowing \_ but the system can't take that electricity and those wind farms have to shut down. This is in the UK and I think it happens in other places as well. So we could use that curtailed wind as it's called, to generate hydrogen which could be stored for use later. And so that's, it could play a role as a way of balancing the energy system. But I think and I don't see why it wouldn't, that low carbon hydrogen wouldn't be used for industry, as I've mentioned, where hydrogen is already used. That seems really obvious to me and we should just use that, or do that right now. And then thinking about some of those harder to decarbonise areas. And so I always say if you can electrify something, do that. Don't go the extra step of using electricity to produce hydrogen to then use that hydrogen. But it's not always possible to electrify everything. So maybe the, those heavy goods vehicles will need hydrogen because they can't be electrified. And aviation is very difficult and I don't know where it's going, but it seems like hydrogen will have a part to play there. And likewise with shipping. So shipping fuels and this is another area that is, it's not quite clear which direction that industry will go in.

Steve Welch

That's very interesting. And I often observe around what we do in \_ design, how the incumbent technology, the stuff that people have out there and people are always using, even when it's not as good, ends up getting right in the way of getting something new taken up. Do you see this as being a problem for hydrogen?

Yasmin Ali

Not a problem as such. I think it's human nature isn't it, \_ so people want to take the easy path. And one subject we haven't talked about is hydrogen for heating, which is quite contentious in the UK at the moment. But again, I can see hydrogen maybe playing a role in heating in some places. If you can't electrify the heating of a certain home, then it doesn't really leave you many other options. So there might be pockets of homes in the UK that are heated with hydrogen and that from a change of habit perspective is actually quite easy because you swap out your natural gas boiler for a hydrogen boiler and then use it in exactly the same way. Whereas with a heat pump, for example, the way that the home is heated is slightly different from what I understand. So there is some habit change required there.

Steve Welch

There's a quite positive view there because there are obviously also some advantages in the sense that I suppose some installations, for example, where you have your gas delivered already to \_ an extent, what's in the cylinder doesn't matter to you.

Yasmin Ali

Yeah, for my consumer perspective, you're still turning on your radiators and getting heat without really having to think about what's happening down \_ the other end.

Katherine Wildman

This, the change from one to the other brings me nicely to my next question, which is, you made a decided pivot in your career from the more traditional conventional power generation, oil and gas, into supporting the development of new and renewable energy technologies. Was there anything outside the general shift in industry for that? Was there anything personal that triggered that change?

Yasmin Ali

I really enjoyed my time in oil and gas and had incredible colleagues who are very knowledgeable and I learned so much from them. But what I did always feel guilty because I'm from Iraq originally, so my life has always been somehow shaped by oil and gas and the political impacts of that on the country that I was born in. So yeah, there was always like a little bit of guilt in the background, and I think I want to use my life to do something that I feel is good. And I'm not saying that fossil fuels are bad because they've got us to where we are today and we still need them. I mean, \_ if we just turned off all fossil fuels overnight, we would be pretty screwed, to be honest. So, but yeah, I just felt like it was the right time for me to move from that sector and to something that was a bit more forward thinking.

Katherine Wildman

It seems to be one of the themes from this series is we're talking to people who are (it's a very cliched phrase) that cutting edge of the field that they're in and looking at future opportunities and emerging trends and building on those, which is why I think the design aspect and the innovation aspect is so interesting. We're coming to the end of our time today Yasmin frustratingly. Thank you so much for being with us. I know Steve has one final question to ask of you.

Steve Welch

Well, yes, it's a bit of a, maybe the hardest question yet, but as an innovator, what one piece of advice would you give somebody who wanted to think about incorporating design?

Yasmin Ali

I was thinking about this before we spoke, and I think it would be: think about design differently. So as I mentioned at the beginning, you might think of the word design and immediately jump to designing dresses or posters or something, but it is about that thinking process and being creative and solving problems that are in front of you. And I think everybody has the ability to do that. So you just kind of think of it in a different way and you can incorporate it into probably anything that you're doing.

Katherine Wildman

That's incredible. Yasmin thank you so much for your time. Good luck with the book launch and thank you so much for sharing your insights and advice with us today.

Yasmin Ali

Thank you for having me.

Steve Welch

Yeah, and thanks for me too. This is such an important topic. I'm glad we've had some time on this. And I might have to follow up as well, if that's okay. Now this podcast has been produced by the Design in Innovation Network, which is sponsored by Innovate UK. If you want to find out more about design and innovation and gain access to other interesting people, just sign up to the network. And if you really like what we do, this March, we'll be taking Silent Designers live with an in-person panel session that's going to be a lot of fun and we'll be covering some critical topics. If you want to find out more, you know what to do. See you next time.