Transcript AAB2

Interviewee (Ir): OK so the date is [redacted]. OK so thanks again for agreeing to take part in the research, I couldn’t do this without you giving up your time so thanks a lot.

Interviewee (Ie): No problem.

Ir: Yep, so I’m just gonna start off with a few questions about your job and your responsibilities and then I’ll move on to some things about policy instruments used in the data centre industry around energy efficiency, so that’s kind of the structure. So first of all if I could ask you what your job role is and what your responsibilities are?

Ie: So the responsibility of my teams is to manage the physical aspect of the data centres for [redacted] in the UK. When I say physical aspect I mean, we take care of everything that happens within the data hall, including cabling, racking and stacking, physical trouble shooting, hardware. We also own the power budget so it is our first interest to minimise the consumption, without impacting the uptime. Because we are the owners of the budget so any savings immediately reflects on our performance in that respect. We work very closely with the mechanical and electrical teams that manage the relevant infrastructure. That’s obviously very important from our point of view. And we work very closely with the architects on the IT side that design the systems that eventually get into the data centre to make sure that they’re choosing the right systems, that the airflow is right, and also we have impact in both the IT and M&E, and we sit sort of in the middle between the 2 if you like.

Ir: OK, good. OK and er, is it purely enterprise data centres…

Ie: Exclusively enterprise, yes.

Ir: Good. Yeah, so your team is responsible for the power budget then.

Ie: Yes.

Ir: And to what extent is there…pressure on the teams underneath you to manage their power consumption…

Ie: It’s part of their objectives, so we have objectives around many things we do. One of the things that their performance is measured upon is PUE, and their ability to keep it to…as close as the design PUE as possible. I understand that some of the things are beyond their control, but some of the things are well within their control, flow management and this sort of stuff. I want them to make sure that they don’t lose track of the things that they can control. And one way of doing that, one of the ways that we do that, is by constantly monitoring the PUE, and implement remedial actions or improvements on the environment to decrease PUE.

Ir: OK, that’s good. Erm, could you give me an idea of the total scale of the data centre operations in terms of either total power consumption or square footage?

Ie: So availability of power we’re talking in the region of 5MW. Racks we’re talking in the region of 1200. Devices we’re talking in the region of 12000. We’re probably around 50% utilisation.

Ir: Yeah. And is that spread across a number of data centres?

Ie: It’s spread across 6 data centres in the UK.

Ir: OK. Do the data centres have tier classifications?

Ie: Not officially so, not certified by the Uptime Institute. We compare them to the tier classification of the Uptime Institute. I would say they’re all abundantly tier 3 comparable. There are some differences but…in some aspects we might even say we’re tier 4, but as you know technically you can’t call yourself tier 4 unless you meet all the requirements. I would say if we were to undergo the certification I think we would easily get tier 3 in most of them.

Ir: OK, and what sort of PUEs do you…

Ie: Design, depending on the site is between 1.2 and 1.4. Measured we are, again depending on the sites, between 1.3 and 1.5. So we’re not too far from design. But we’re not at 100% load.

Ir: OK. What’s the situation…do you have some older data centres, some…

Ie: We have some legacy, even 10 years old in some cases, and we have some relatively new, 3 to 5 years old.

Ir: OK so nothing ancient.

Ie: Nothing too old, we removed those in the past. There were 20 years old rooms, but they don’t exist any more.

Ir: OK, right well I think that gives us a good idea of your company and your team and stuff like that. So I’m gonna ask you a few questions about the EU’s Code of Conduct for Data Centres, am I right in thinking that some of your data centres at least are…

Ie: One is, one room in one of the data centres in [redacted].

Ir: OK, and that’s quite a recent thing is it?

Ie: We got accepted…4 months ago? June or May, something like that. Very recent.

Ir: Yeah. What was your reasons for applying?

Ie: Main reason is I think the good practices are good, and I think it’s difficult, if you don’t have… getting the participant status is a journey during which you learn a lot of things, you speak with a lot of people, there’s a lot of questions in the submission form which we couldn’t answer because we don’t control those aspects. But we had to answer them, otherwise you don’t get the status. So that forced us to go outside of our remit and go and speak with people, and in some cases we got the answers straight away and some cases they had to start thinking about it.

Ir: You mean speaking to other people within…

Ie: Within [redacted] exactly, storage guys versus network guys you know, depending on what the question was. We were sort of in between all those. And I think if nothing else that started a process which is, “ooh energy efficiency”, you know, “is actually maybe something I’m considering already maybe I wasn’t considering, but now I’m gonna start considering”. So that was very useful. From a development point of view of the guys that actually run the thing, they changed people, they learnt so much in a broad spectrum of the data centre world that they didn’t even think they existed at the time, because they’re probably very focused on what their job required them to do. So that was an advantage. And I think in general, now there is the status of participant, the awareness, and the pride of keeping that status is going to drive the adoption of the… some of the practices we were already using them, we just didn’t know they were part of the Code of Conduct. Now we put one and one together, say OK we're doing this and it was a validation process for us, how far are we away in the way we operate from what the experts and the code says we should operate, and actually we weren’t too far, the gaps were really minimal. So it was a validation of, yeah we’re doing the right thing, and we wanna keep it that way. In fact one of the first things we did after we got the status was to form a task force of a representative per site, plus some other non data centre based people within my team, and the goal of this group is to be the evangelist of the code of conduct within our estate, and to get those sites that can be – because some of the sites we can’t measure the PUE because the infrastructure is shared, so they can’t be in the code for that reason – but those that can be, which is the vast majority anyway, to get them the status. And those that cannot be, still make sure that the adoption of the good practices is there. So even though you don’t have the status, you’re still operating the data centre as if you were in the code of conduct. So that’s the task force goal, and they’ve got started and they’re now starting the sort of, putting a plan together to go around and spread the word if you like. So that was…it’s a journey and we haven’t arrived. And I think, for as much as you can get to a point where all your sites are certified or have the status, the code is always going to change, it’s going to improve, so you have to keep abreast, understand what the changes is, you might agree or disagree with some of them, and therefore adopt them more or not. But at least it makes you constantly looking at a different way of doing things, it doesn’t allow you to stagnate, which I think is probably the most important thing.

Ir: So you saw it as potentially a way to kind of, potentially improve your efficiency and things like that? Or at least confirm that what you were doing was right?

Ie: Yeah, both, it was both. In my head I knew we were doing mostly the right thing. But I also thought if we don’t get some sort of validation we’re always…what we think is mostly relevant. You need to sometimes compare yourselves with another entity. So there was that, and as I said the gap wasn’t very big, and there still is a gap. Our airflow management is not the best in some places, we’re trying to address that. We would have probably addressed that without the code, but again, now we have a driver more, to actually push us to address those things.

Ir: OK. Did you think there might be any other benefits to getting involved besides on efficiency?

Ie: Obviously there is a return in terms of image, you know, it good from a corporate responsibility point of view to show that you’re really serious about your impact on the environment which is generally anyway. But because we are a power hungry industry from a data centre point of view, we should contribute to that, to the broader [redacted] cause, to corporate responsibility, for what is in our power to do. Which is, make sure we are managing the data centre the best possible way, getting energy efficiency is one of the things we want. So yeah, that is definitely another benefit.

Ir: OK. Do you have much of a sense of other contacts you might have working in the data centre sector for other companies, does that have any impact on you, other people’s opinions have any impact on you…

Ie: In what respect?

Ir: Well say other people who you have contact with who work in data centres in other organisations are saying that it’s a good thing to do?

Ie: Oh yes, without doubt. Very few out of the people I speak with regularly don’t see the benefit of that. I would say the benefit is widely understood, at least in my experience.

Ir: OK, er…how did you feel about the…overall you’ve said that as a best practices document it’s good information. What about the administrative side of it?

Ie: It felt a bit slow, in getting feedback. We ended up submitting I think 3 times, and between these 3 times I think 6 months went along. Mostly because we didn’t get immediate feedback, we had to wait months to get the first feedback, and another month to get the second feedback. And then I just got fed up and picked up the phone and says OK, now you give me feedback immediately, because I’m fed up that this back and forward takes 2 months. But I know exactly why that happens, it’s very small, almost a one man band, and you can’t expect more than that, really. From that point of view it could be better, it’s probably slowing this thing down, through no fault of anyone, there’s only so much one person can do. So it wasn’t the best experience in this respect. But other than that it’s… it’s relatively straightforward. Eventually once you get the right amount of feedback and the right quality of feedback, eventually repeating is very easy, it’s repeatable, and once you know the rules of engagement it’s very easy. But to get to the point where you know the rules of engagement can be painful.

Ir: OK. Is there anything about the scheme which you think could be improved? You mentioned if it was a bit quicker in terms of getting feedback…

Ie: Yeah the admin part should be a bit quicker. No, obviously again, I think probably reviewing the good practice a bit more frequently. And maybe not necessarily reviewing the whole thing. You might just make amendments to part of it, without having to rehaul the whole thing could probably be a thing that could be done. But in general, I don’t have any major suggestions on that point, no.

Ir: Yeah. OK. Do you have much of a sense of how much of an impact the code of conduct has had on the industry as a whole?

Ie: I think it’s… the impact is definitely there, I don’t know if I’m able to quantify it. But certainly there are a lot less ignorant people in the industry than before the code. I remember when I started, 17 years ago, there was very little understanding of the potential of, the amount of energy these buildings were going to consume. And how inefficient they were going to be. Because the focus was elsewhere. I think the code sort of made it really really clear and understandable how small changes and small… lack of process and lack of attention on some of the things could essentially cost money. And generate unnecessary capital and all the rest of it. So it did a great deal, similarly to what the PUE did. The PUE just made it immediately understandable how good or bad a data centre was. And I think that changed the way people think. And the code is a very similar thing to the PUE in my opinion.

Ir: OK. Some people have been critical about how it’s… it doesn’t have a huge number of participants, it’s been slow to get off the ground. Do you have a sense of why that is?

Ie: I think it’s mostly because the promotion is limited. There are endorsers that should promote the code, and in some cases I know of endorsers that actively promote the code, and others maybe not so actively do that part of their mission. I think it’s just that the team that manages it is almost non-existent. And it’s mostly, for me, the code of conduct has always been a passion. In every company I’ve been in, I’ve always tried to introduce it, and sometimes I managed, sometimes I didn’t. And unless you’re passionate about that, you very rarely hear from someone that says, why don’t you consider that, why don’t you think about it? Because it’s a one man band essentially, and the promotion and marketing of it is almost non-existent, so people just don’t know about it. That’s what I think it is.

Ir: OK. Is there any other kind of approaches to policy that you think could be effective in helping to drive energy efficiency measures in…

Ie: I think there is some work going on on an ISO standard. I don’t remember, is it fifty thousand and something…don’t quote me. That could also, you know, ISO certification that as we all know is gonna be a lot more difficult to achieve and a lot more difficult to retain. I can see that, especially for commercial data centres – for enterprise data centres I don’t see a great deal of benefit in getting the certification, following the guidelines, yes, there is always benefit – but yes that could give another push to the energy efficiency driver for commercial and non-commercial data centres I guess. As the code did.

Ir: Yeah. OK. I mean this won’t affect you guys as an enterprise data centre I don’t think, but there’s also the Climate Change Agreement for data centres which has come into place in the past few years for co-location sites.

Ie: Yeah, we obviously benefit from it because we use co-location sites. The sites that we use have applied for the CCA and therefore got out of the CRC. And we helped them actually meet the targets that the CCA imposed. Because it’s in our interests. Essentially the CRC would be passed on to us as a cost. And now we need to make sure that we continue to help the co-lo provider in maintaining a low PUE in accordance with the targets of the PUE. But in our in house data centres though, because they are not commercial data centres, we still pay CRC, there’s nothing we can do. For now.

Ir: Do you think that kind of approach…I suppose either the CRC or the CCA… that they’ve helped to drive efficiency?

Ie: No the CRC was a tax. It would have not delivered any benefit whatsoever to the industry, would have not improved energy efficiency in any way, because the way it was structured, it would not have actually… what it was essentially meant to do, was reward lower energy consumption. That’s not efficiency. Lower energy consumption is not efficiency. Lower energy consumption is “I’m consuming less”. But the data centre industry will always consume more, will always grow. Unless the world we live changes, yeah? And we stop looking at Facebook, and do all the stuff that we all do. Will always grow. It’s the efficiency needs to be rewarded, not the consumption. You can have an argument about consumption with a supermarket that leaves the lights on when there’s nobody there. Not with a data centre. With a data centre you need to talk about efficiency, not consumption. And that’s why the CRC was completely wrong to be applied to data centres. Commercial or non-commercial. So in my opinion every data centre should be exempt. But for now the decision has been made to just do it at commercial level, which is a step forward. But I think the CRC applied to data centres doesn’t do anything for energy efficiency at all.

Ir: Yeah, so how about the CCA…

Ie: CCA will do it because CCA…if you want to be part of the CCA as I understand it, you will have to prove that you are reducing your PUE. That will do something. If you’re not reducing it, for that reason, there might be valid reason why you’re not reducing it, or non-valid reason – you’re lazy, you’re not adopting your best practice, blah blah blah – then you go back to CRC. That is a driver. It’s not perfect, but it’s better than being penalised because you consumed more than last year. “My business is growing so I’m consuming more. But I’m efficient, I’m consuming less than I would have consumed if I was inefficient, but you’re not rewarding me for that. So what driver do I have in being more efficient?”. It’s not as tangible at the CCA I think.

Ir: OK, so do you think, so potentially then having the CCA coupled with the CRC brings something that the Code of Conduct for example, a voluntary agreement, brings something else that adds an extra driver for some data centres?

Ie: Yes, it’s one thing having a voluntary scheme that promises to improve your energy efficiency if you follow it, and the other you’re gonna get hit financially by your behaviour, your behaviour is gonna affect you financially… in any business that’s a better driver than anything else. But I think the 2 combined are… it depends, it also depends on the level of maturity of the data centre operations team and their particular environment, and how good they are at understanding the impact of the decisions they make, and the practices they adopt to the power. Some don’t have that impact, some don’t see that impact. Some don’t enough own the power budget. So the power would be different to that of a company or a team that actually is formally owning that environment, and is directly accountable for that. It depends how the company is structure I guess.

Ir: OK so that covers the main ones that are in force at the moment. A while ago in the US there was a workshop with various people from the data centre sector talking about potential policy instruments that you could use in the data centre industry. They ended up recommending things like subsidised energy audits, subsidised engineering and design services, and providing incentives for efficient technologies, and training programs and things like this. Do you have an opinion on if those sorts of approaches could be useful?

Ie: Er, in general, I think anything that improves the understanding of where the energy goes and how it’s used… and that’s the whole life cycle, it’s from the design, to the generation of the energy, the design of the data centre in its life cycle until you decommission it. Anything that improves your knowledge in any of those steps cannot do anything but helping us as an industry get better at what we do. So yes, absolutely.

Ir: OK, well just to finish off, as you’ve seen in my lab, the practical side of my PhD is all about aisle containment and bypass and this kind of thing. Do you have aisle containment installed in your data centres?

Ie: Absolutely. So we have different… we have evolved, as you would expect, so we started I think with hot and cold, depending on which… [redacted] And then we have individual chimney racks into a ceiling plenum that is obviously connected to the return of the CRACs. We obviously have challenges with that, because if, even with that method if you don’t do your sealing properly, we have issues already, which we fix but you know we shouldn’t have had them in the first place, where further away from the louver you started to see temperatures that are way above what the louver is delivering. So if you’re delivering typically at 24, 25, and at the end of the row you started to see 27, 28. And that can only be recirculation. And in fact our racks are not perfectly sealed at the front. So you start to see as the load increases the amount of air which manages to escape increases, and by the time the air gets to the last rack, it is no longer at 24 degrees. And it’s a vicious circle. So in that respect… and we have the same issue in the scenarios where we have the hot aisle contained with a corridor or the cold aisle contained with a corridor. Every single one of those installations. And the bottom line is the racks aren’t sealed properly. We have over time been forced to install switches the other way round, so they blow hot air into the cold aisle, or that don’t allow you to put a blanking plate in because of the way they’re installed or the cabling. So we just try to solve each of those issues one by one. So we just fixed one where we had a blanking plate made by measure, that recesses into the rack, and still stops… shortly I’ll have thermographic images of before and after for the racks, and we’ve baselined the mechanical consumption and AC consumption, to see if that installations of the blanking panels saves us anything. And I’m sure it will. But there are lateral leaks that we need to address. We’ve tried foam, we’ve tried stuff. But we’re very keen on making sure like… what I’ve seen today, that’s the dream! There’s absolutely no chance…

Ir: We don’t have the complexity…

Ie: Exactly and you don’t have 10 years of history to deal with in some cases. But if you reduce the amount, you’re gonna be in a better place anyway. So it’s always worth… and that’s an objective every single data centre manager I have has, which is reduce the mixing of hot and cold. Prove to me at the end of the fiscal year, with data, that they have taken initiatives to reduce the amount of leakage there, seal the flow whatever. They’re all different so they all have different issues. But they all understand that they need to show to me that they have made conscious and concrete efforts to fix it. And it will take us a number of years I think to do everything we need to do and then we’ll have to fix something else! I think that the mentality is shifting.

Ir: It’s more widely… obviously aisle containment is increasingly common now, but do you have a sense of what delays it becoming more common more quickly?

Ie: I think there’s a combination of ignorance and priorities I guess. You know if you think, return on investment for some companies may be important, for some others it’s less important. If you have a small data centre that’s consuming £100000 of energy a year… installing a cold aisle containment, the return on investment for that would be many years. And maybe these companies have other priorities where they invest their money. For them, saving £1000, £2000 a year on a power bill is irrelevant. So there is that. And there is, simply, some companies don’t understand the benefit. I see today, still, racks facing front to back, you know, and this kind of horrible things that you think would not exist anymore, they exist. And I think the main reason is the industry badly needs people who understand these things, and there aren’t enough. There are still data centres in the hands of people who don’t understand what they’re doing. Plain and simple, because there isn’t the discipline. You’re either an IT guy that got in the data centre industry by chance, or you’re a mechanical & electrical guy… you don’t have a, as far as I’m aware, an academic path to become a data centre guy. I don’t know, maybe there is, but I don’t know. So I think it’s mainly a relatively young industry and a lot of people are learning, are still learning. That’s what’s slowing down the adoption of proper containerised… or proper heat rejection, as long as you effectively get rid of it.

Ir: OK, yeah I think that’s about all I had to cover so thanks very much for that!

Ie: No problem, pleasure!