KR steel interview transcript

Ellen: So, the main issue or one of the issues that’s been identified, is that when we fabricate the steel, we will mark it up with a white pen or a chalk pen which then identifies that steel member, but as soon as it goes for galvanising or painting, the number is gone.

And then the issue begins on site when they're trying to put all the steel together, it’s time consuming, trying to identify the correct steel parts. Very occasionally, the wrong bit of steel will go in the wrong place, so then that’s time, money [wasted].

- [interrupted because of tea/coffee] –

So, yeah, as soon as there’s a (dilly?) on site, it costs money, it costs the program. The client’s not happy. um so cost wise there’s labour, there's a plan, and we all know that if everything is running smoothly, that's great, but if there's just one anomaly or one issue, then it can just spiral and just create credit issues, so the issue is identifying the steel members and how to go about doing that.

But the problems are, like I said, as soon as it goes to get galvanised. So the galvanising treatment is when it’s for steel that's gonna be outside, so exposed to external weather or maybe in a high humidity location in a building. So that’s for galvanite.

Now, you maybe just want to watch a little video on this, like for galvanising. Steel, it goes into, its magnetised, and then almost like these tiny little bits of galvanite? metal It's like sand, glued on to the metal. On to steel. and then that’s it galvanised.

How it sticks on, I can’t remember.

it's just putting a protective coating on, but then obviously our marking is not on the steel anymore because it's covered up.

um but that is, so it's magnetised, so that's just, you might want to remember that one, just for if there was way that you were trying to identify the steel with like a tag or something.

The other treatment that steel often gets is shot blasting prime. So that is when it goes into this big metal container and it’s blasted with sand to give (a key to the steel), and then it's primed, and then painted whatever colour or specification that has been asked for, but so again, that covers up the the coating.

And then then the other treatment that steel would often get is fire putting, so PFP. That can often be quite a thick coating, so, someone suggested maybe engraving the steel, uh, which is kind of two issues there. One is the time to engrave the steel and the other one is the if it's a PFP coating, two mm thick, it could cover up the engraving. so that's another problem.

Caius: So as far as I understand, the steel beams are produced by KR Steel.

Ellen: So, we buy them in certain cut lengths and then we cut them and weld bits on and fabricate and drill holes and everything like that, and them yeah.

Caius: And then they’re sent off somewhere else to be galvanised.

Ellen: Yes, we don't do that in house. So, it goes off to be galvanised, there's a different company that it goes to for shot blast priming, and then save for PFP fire coating, sometimes that's done in situ on site, the fire coating, but generally it's done off site with another company. And then from there, from the galvanizing or the painting company, it tends to go directly to site, they wouldn’t really come back to us.

Owen: when it goes to site, that's another company in there.

Ellen: Well, that's where it goes to site and then we will be on site to do the installations. Something else that I feel is quite important it is when, when a project is tendered and then when it's awarded, our CAD detailer will draw up all the steel members. So sometimes they'll do it on an IFC. Which is a 3D model, so you can click into this model, and then you can zoom out, zoom in, tilt the model upside down, and rotate and everything like that. you kind of select just to show columns, and then all the other steel elements will disappear. So, it's the skeleton of the building, so all the steel members. you can click away, you know, so that they'll just show the columns or the beams or the cold rolled or whatever. But every bit of steel that you click on has a a code that the detailer has given it. so that's when they also do their drawings, and every bit of steel has its own drawing, and on that drawing, you'll have a code of the detail is allocated. the drawings are printed for fabrication, so then the drawings go for fabrication.

Well, materials are ordered. Then in our fabrication workshop, our fabrication guys are going right, and now we're gonna make that bit of steel. That will be the code from that drawing that they write on that bit of steel, that obviously then gets lost. As soon as any coating goes onto it.

So, if there was a coding system, that for me, the best way would be to correlate back to that. Because you don't want to just create a brand-new code. Because that the end of the project as well, there's the operation and maintenance manual, all the drawings, all the coating reports, all that goes back into that folder for the client.

So that code goes full circle from start to finish. So, introducing another number to me doesn't make sense. You might find a sensible reason or a new number to be input, but um I can't see a just on a top level, I can't see a reason to change the hood.

Caius: So we're looking to digitise this process of identifying the beams, essentially, through an app.

Ellen: Through an app or some kind of scanner, I knew my director said that it would be good if, because again, the steel will come, and then it's off loaded with the crane usually, sometimes a fortift if it's light enough. The jib on the crane kind of hovers over. and it would be good if it could go scan it and go, oh, that's the bit I'm looking for. Like, you know, if it's a rainy, freezing, snowy cold day. You know, you don't want to be going out with your phone in an app, scanning all the bits of steel. On a site, it would be good if you could do it from the crane.

Caius: the crane itself would have the scanner.

Owen: so like the crane would have a camera,

Ellen: yeah something like that.. you know, that's what I'm thinking, you might be thinking something else.

Caius: but you want to preserve the code on each individual beam. um it would be possible to create bar codes that link back to the original codes. um, but then there's the issue of having to implement the bar code,

Ellen: How is that tagged.

Caius: would it be possible essentially to ask the third parties after the galvanization after the coating, to also include the barcode.

Ellen: ooo, that would increase cost.

Caius: That would increase the cost.

Ellen: And it would be relying on a third party as well, for their accuracy, which I'm not sure we would be entirely comfortable with just because if it went wrong, they would say, well, we were just trying to help you out.

Caius: That that's true. what I had initially in mind was that, obviously the bar codes would be also, you know, the same with the steel beams. the bar codes would be created by KR Steel to be sent along with the beams, so that they would be applied after the galvanisation process.

Ellen: I think, again, you might want to look up the galvanisation process, but I'm not sure how much they can get in there, how it's laid out in there, you know, so I don't know if they just chuck it all in and then chuck it all out and go right there you go. Um, if they had to be more timely, considerate and organised in their approach that they were putting it in a certain way so that they would just as soon as they [beams] came out they would be tagging it. They would have to be more organized, wouldn't they? I'm not quite sure how how structured and organised that galvanising process is. Also, there's always lorrys waiting to offload at the galvanisers, same as the coaters. So again, if there have it's kind of quick and get it off. I think putting the onus on them to tag it, I don't think would work.

Another issue is with, you know, if you've got a steel beam, if it's columns, columns that way, it's gonna have an end plate on the end and then an end plate up here if it bolting down and then fixing to a rafter or whatever up here. So, you wouldn't really want any coating on either of the ends, but then a steel beam, you could have more steel and holes and attachments. So this way or that way, or that way. um so there's any part of a bit of steel could have something else coming off it; another bit of steel, so then it's like, if you were to manage to chip (tag) it, or somehow, you know, where would you put it?

You would probably want to put it at one of the ends, but you wouldn't want to put it right on the plate, because when that steel is transported, it’s going that way, so, if something was hovering above, you wouldn‘t be able to necessarily scan.

- Tea interruption -

Um yeah, so you then it's where are you putting the chip or how are you doing it, so maybe something that scans you know how you get your phone, you can measure from here to there, or you know.

Owen: something that takes into account it's measurement so that it can identifywith the code which one it is.

Ellen: So that, then maybe that's the way to go, so identifying the length, but then the thing is, as well, depends on how you....

Owen: When it comes, when you get your codes originally does it come with the measurements of what it needs to be? And like whether they’ll be galvanised.

Ellen: Well, the drawing would say that, but the code would only be the drawing reference. So then it would just tie back to go right, what does the drawing say. Because there's so much information, so when you get like [for example] a H-beam, so you would have a column, with plates on either side and then a fillet in the middle. So, depending on how that's lying on a lorry, it you wouldn't really go to measure, the whole scanning for the dimensions, it wouldn't necessarily work. We used to get like a PSC channel, which is a C shaped. well, channel like that. if it had been laid that way. it would only really be scanning the width and it wouldn't know that it was a C section, if it was laid that way, if it was laid that way, it still wouldn't know it was a C-section, so it wouldn't be able to necessarily scan in here. And then if there’s...

Tyler: See the, you were saying like a coat, is each, like piece of that C, is that one coat for every C, or each, like C bar different.

Ellen: So, if you, we'll just take a yeah, we'll take a standard part of building, so, let's just say it's got three bays, two columns there, and then your E-frame. So it goes like that. So, the columns, if there was three sets of columns, either side of the building, and then your rafters. Those three columns, if it was a flat, um, if you’re building onto a flat, yeah, foundation, those three columns would be the same, height, dimension, everything, generally. But they would all have a different codes, yeah, because the gridlines that grid line would be A1 here, A2, B1, B2, B1, B3. So then you be right here's column A1 which, let’s just say it was called A1 that goes on, with line A one. Column, because it could be it could be something else welded on to the gabel end, you know, for a a beam coming this way. so even though they're pretty much the same, they would be the same size and everything, one might have something else welded on or a connection for a beam coming across the way. so many variables. it does sounds quite convoluted, and it is. Um and again, seeing as fire coating, so if it's against a boundary wall, the columns on the boundary, like depending on how close you were to a building. those columns would have to be fire coated, so it would be exactly the same steel member, but this row of columns would have been sent for fire treatment, fire coating. Yeah. You lot are learning a lot about the steal industry today.

So, you got lots of variables. it does sound like as soon as there’s some kind of a proposal, oh, that might work, and then it's like, oh, would it though actually. So I'm not trying to be a negative Nancy. I'm just proposing a..

Caius: I guess not all the the beams are being fire coated then it's just those...

Ellen: So, yeah, depending on the location of the steel member, depends on the treatment it would or wouldn't have. Not all steel has any treatment. You know, a lot of steel goes as it is.

Caius: Okay, I see.

Ellen: So there are bits of steel still maintaining the code that we've written on from the fabrication stage. But it's obviously not consistent.

Caius: so, not all the steel beams are galvanised.

Ellen: No, they‘re not all shot blast primed, they’re not all fire coated. In one building you can have multiple [treatments], you have some that's galvanised, you can have some shot blast and primed. you can have different colours. some fire coated and then some just the roll of steel itself.

Caius: And whenever they do get coated, they, as you’ve said, then they get this magnet, magnetised coating.

Ellen: Well, that's for the galvanizing yeah.

Caius: That's for galvanising, not for the fire coating.

Elllen: Not for the fire coating, that is, the fire coating, if it's got a painted finish or a fire coated finish, it would be shot blasted and primed and then have whatever finish applied to it. So that's why, you know, even using like a metal tag attached to it, you know, as soon as it's coated, blasted, yeah, it's not it's potentially gonna get covered in paint. or it'll be galvanised when you will see if you won’t be able to read it. So it's almost like it needs something implanted in it, like a chip, but then money can't, you know, cost effective. A:, how do you get a chip? It's like almost every drawing that's done. it should be a chip generated to go with that drawing. how do you implant that into a bit of steel? And then it would be little, so then how do you know where the chip is? Because you you can't just say right, it always goes to the end, because there's gonna be a plate on the end. you would potentially want that chip to be identifiable throughout the lifespan of the building, even for deconstruction, because that's, you know, we're going circular economy now, so it's all about deconstruction and identifying building, materials for deconstruction and reuse. So, if that chip could be somewhere that was, you know, once a building had been deconstructed back to the steel shell, could you scan that and then.

Fraser: If the chip had a battery life or something.

Caius: I was thinking more NFC. doesn't need any battery.

Fraser: but It’s just like how do we get it in the steel.

Ellen: if you could have a 3D printer printing a chip at the same time as it was printing the drawings, that would be good. tying in with the.., because then if you had the drawing with the chip, you know how you get a some when you buy a SIM card and then you just pop out the little sim. it could be like the drawing with the chip that you just pop out and once the drawing is fabricated, it's like, like, just like tag that onto there, but how that's fixed or how it would be compromised, going to galvanising process or painting and shot blasting, you know, when you when it's in a, you know, it's in that metal space in it's blasted, you know, it's like I'm not sure the speed it.. it goes through it's totally battered, you know.,

Fraser: I feel like that chip idea, the idea of it is like pretty simple but it's just like the limitation, like how would you implement it in the steel.

Caius: I mean, initially, we understood it as an optical kind of, you know, the scanner thing, but scanner needs to see some sort of barcode of code and if they're gonna be galvanized and fire coated, then obviously the barcode is gonna be covered.,

Fraser: you couldn’t do anything magnetic like it's only for the galvanised. It has to be able for all different types of coating.

Ellen: And just the fact that we outsource those functions, that the own that we can and then we can't put the units on those suppliers, or subcontractors.

Fraser: You’ve got to manage it yourself.

Ellen: It's almost like as soon as that bit of steel has been fabricated and the fabricator signs that drawing off, that's the point where it should be tagged.

Caius: I think NFC might be the best bet, because even if it does get galvanised, the chip itself, if it's covered, it should still work.

Owen: So the chip could not work if it’s that hot, it could melt, it could break, it could even explode.

Ellen: Um, I mean, I think it was the other group I just said to that it might be worth contacting steel fabrication companies. In Sweden, you know, they always seem a bit more technologically advanced than us. um, especially because they're very circular as well. So, if identifying and chipping steel, to be thinking of the end, the lifespan of that steel. It's probably something they may be already thought of. There's also the main steel clears like BHC in Glasgow. You know, they're doing ten times more steel than what we're doing. So, their problem is multiple if we have this issue, then they definitely have the issue. Have they got a resolution? I'm not saying go in, steal their idea. not saying that. Um, but don't say that you're working with KR group. just that you're working with Robert Gordens as a research project. um but maybe they've tried things that haven't worked, because when I did a research project with Zero Waste Scotland, I was speaking to the suppliers that had dealt with this. It was a circular economy project. It was dealing with um waste. So I was speaking to the people that produced the waste to say, have you thought of a resolution and that they were telling me things that they tried that didn't work, so at least you know, it doesn't work.

Caius: eliminated some ideas.

Ellen: So I think that would also be, let's think, a good idea to go in contact the big steel fabrication companies, um even AGC up at fours actually. I've never asked that question. It’s only from this conversation today that I felt, oh, have we ever went out to competitors to say, have you done this? or have what you tried? Um, I think that's really good start because research.

Fraser: the other issue probably to do with like chips, like if you're embedding it in metal, [the metal] is dense. like, it's not bent, how would you, would you still be able to read it. If it’s embedded in the mouth, or maybe the only...

Owen: I do have one question it's not to do with anything. It's just more on the project, will it just be you we’ll be dealing with, or will there be anyone else that we?

Ellen: well, it wasn't meant to be me that was here today. It was meant to be our director Kenny. um, but then he just wasn't gonna have the time to spend for the morning here, so I'm the project of procurement manager, but I've worked KRSteel for six years, so yeah, it probably will just be me. um Nicola, the other director. She might get involved. um, you've got my email address. I'll certainly, if there’s things that I'm not sure of where I think that will benefit from other people looking at it when I'll share it with the directors for their input and comments.

Owen: do you have any expectations from us in terms of the project.

Ellen: just to devise a solution that's gonna be awesome and then we'll just sell it goodly and we’ll be millionaires. Buy an island.

Tyler: Sounds like a plan.

Ellen: It seems achievable. So, don't let me down, guys.

Owen: Any questions for us?

Ellen: Um, No, I think the more that I talk to these groups, the more that I'm kind of identifying this is the start to finish, um, I guess just highlight again that it's basically as soon as that steel’s fabricated, that's probably when it needs to be tagged because then it goes to various locations. it can sit in our yard as well, until it's ready for delivery or to go in to get coated or whatnot, um, it would be, I can’t remember if I've already said this or not, I'm thinking with that, did I tell you about the IFC model. Yeah. So, if you could develop something as well that would be, this is just an extra, that it would align with the program, so when it is a steel project once it’s awarded then we all design a program, saying that’s how much bits of steel is gonna be installed per day, obviously, it depends on the weight of the steel and the location, so, like two tons steel columns, we would potentially be like 10 of them a day. Whereas light section, cold rolled steel, we would be installing like 50 members of them a day. So it would just be maybe a calendar where you would have the target of what was a program versus what was actually installed.

Tyler: like when you’re identifying it and away to use it. it would change it off.

Ellen: Yes, go that's installed. So at the end of that day, it was like, yes, all these elements installed. and then you would see the program and go oh, there was meant to be ten installed that day, they've done eight, so immediately we'd flag that we're a bit behind program. So we need to try to catch it up a bit, and um that way it would be a red flag so that we could notify clients, say, oh, there’s delays or probably not notify the client just goes, guys speed it up on site, you know, uh, we're behind.

Tyler: So with the app or whatever we end up with, everyone on the site would use that.

Ellen: I think it would be good if there was like an installer part and then a more in depth for the ops manager for office. to kind of see behind what's really going on. like, not on a snoopy way, but just you want to keep it as simple as for the site guys because a lot of the guys, especially in steel are old school, they don't even really want to use an app, they don't want to install an app on their phone. um they're just kind of like, you know, this is how we've done it, this is how we've always done it, and we're not changing, and they're not really always willing for a change. so if you can make it simple and user friendly as possible, for the front end bit that would be for the site guys, then that would be the target. find being a bit more convoluted for office space time. It was just like a technology thing as well, you know, even I can see a difference between, like, your age group and myself that I'm kind of resist against technology, I'm like, I don't want no. I know. And this is guys that maybe and then another decade or two older than me on site, so, you know, there's even more resistance, so it's just, let's say, it as you can make something, everyone hates change. so if there's something change, but it's easy to use and just rolls then on. It's more likely to be used. It's okay..

Tyler: So, see on the sites would they all be able to connect to wifi or something.

Ellen: I mean, they all have iPads, so they all generally do have [connection], and they operate off the cloud, so, which I don't like the clouds to be honest. I don't like that our documents aren't there. Because if the internet drops, you can't access anything. big problem.

Caius: Right, okay, so you're using a third-party cloud service to store all the data basically, the databases.

Ellen: I’ve spoken to the IT company, I'm like, because there's a lot of hacks going on at the minute with, um, like our suppliers and people, companies that I knew. And I'm like, what happened, is all of our stuff backed up? It's on the cloud. Yes, it is. They told me it's backed up, so I said, if we did get hacked and someone came in and was like messing about with our files. So if someone deleted all that, is it somewhere else? Yes, you all time, back up, yes.

Caius: And you've also got the on site servers that store all the data for the beams and all the codes.

Ellen: no, I think that's all the cloud. Everything is on the clouds. which I don't like.

Caius: Okay. So everything is done through the Internet...

Ellen: Yes, that was a change that we did about a year and a half ago. I've never liked since then, but this is me being old, resisting against technology. but it's because I find it risky, you know, there's so many companies getting hacked, and you have all the cybersecurity, its a bit of a facade, because then you get hacked, and you're like, but I thought you were safe. Oh, yeah, I was like, how did they get in? Well, just the old fashioned way just like, through an email, you know, that way, and I was like, okay, that doesn't seem very safe. So, um, and like I say, we are at newburgh and the Internet isn't always great. It's a new office, and I think that as the business is growing quite rapidly, the Internet doesn't meet our demands, so it drops frequently, and then we all of us can't do anything. So whereas if old school, where you had your files on a file, you could do I'll just go and work on that Excel spreadsheet or something. but now you can't.

Caius: So you don't keep hard copies anymore.

Ellen: Not really, because again, the government, I don't if yous aware of that, but the government is totally pushing paper free. you know, they're funding, they're funding R&D and funding projects or, can you reduce your paper? So again, I don't like that either.

Caius: Yeah, doesn't sound very smart to be fair.

Ellen: it's just where is the back up? Where is the..

Caius: There should always be a hard copy somewhere.

Ellen: If someone decides to switch the internet off, we're all in big trouble. Universities, parks.

Caius: No matter what solution we come up with if you don' not have access to the cloud and the database, you're not gonna be able to identify the columns.

Ellen: yeah, don't get me started on EV. Oh, anyway, so I digress. um any other questions? for now? Do you feel kind of clear on.

Caius: we definitely have a clearer image of what we're dealing with now. solutions. I think I'll take some research.

Fraser: At least we could like, definitely do... [too much noise can’t make out the rest].

Ellen: I really do think it would beneficial like, to contact the like I say that the steel companies and set about yeah, and just companies in Sweden or these kind of technology advanced countries and um see if they've got anything that could help. We've been linking in with the university over there. I don't know if RGU has links with a university over in Scandinavia anywhere. Yeah, and see if they've had the problem or if we've got any solutions or ideas. So I think something like this is all about collaboration, you know, it's it's all very well you put your team, but I think it's critical to reach out to an industry and yeah, universities.

Caius: So, we're not looking for any specific implementation of the scanner, so to speak, you know, whether it's optical, whether it's through a mobile phone or an iPad, either way it should be okay.

Ellen: I mean like say, this is brand new, it's very complex project, and a complex problem. so I think for you guys, it's anything that you can kind of create.

Caius: We've got quite a bit of room to move around..

Ellen: yeah, like I say, every kind of suggestion that you guys are saying, I'm like, well, then that's there's the galvanizing or there's the coating and then, you know, it's kind of steel's chucked about a bit, so, um,

Fraser: at least you know there’s still progress, we know what doesn’t work.

Caius: I only ask because um when we got our brief with uh the information on it, it was supposed to be an optical scanner, essentially.

Ellen: Which I think that's why the directors were thinking optical because of the crane hovering about above and then that's yeah, that's probably where they're thinking. how if there's a solution there, that work like that, because I think you could then have a hand optical scanner, couldn't you? um so maybe maybe that is the direction to go.

Fraser: Once again, the problem was just all on the actual steel itself.

Caius: Yeah, trying to figure out whether it's a chip or..

Fraser: Optical scanner probably would be relatively easy before you scan where, like once again, so that it can't be magnetic, because that'll only work for one out of like four types.

Ellen: I think if you kind of go down when you contacting other countries as well, it's like just we're kind of looking at circular solutions for um deconstruction of buildings, like, full life cycle building. from start fabrication to the end of life and deconstructing and how that would organize the steel really nicely as well at the end for re projects. Okay. Well, thank you for your time. Welcome, nice to meet you.