File name: CE Marking Mechanical -edit_2.mp3

Moderator questions in Bold, Respondents in Regular text.

KEY: **Unable to decipher** = (inaudible + timecode), **Phonetic spelling** (ph) + timecode), **Missed word** = (mw + timecode), **Talking over each other** = (talking over each other + timecode).

Moderator 1: Good morning everyone. My name's Colin Graham, I work in the Technical Advisory Unit within Invest Northern Ireland. I'd like to welcome you all to the CE Marking Mechanical Engineering webinar, which is gonna be focusing on the requirements of the Machinery Directive largely. So, as some of you will know, we've been running these events for many years, but the, they've actually only grown in popularity since we've moved them online following COVID. And what we're doing today is delivering the event, as a hopefully convenient and practical half-day even. So, you'll be-, you'll be finished and away by about 1 o'clock today. So, we're so pleased we've got over 120 people registered to join us online this morning, coming from a wide range of companies all across Northern Ireland and indeed beyond. As I say, we're aiming to finish around about 1 o'clock and we're gonna have a break about 11:00am, to give yourself a break from the screen and get a coffee or whatever. If you've any questions at any point during the webinar, we could ask you if you could enter those into the tab at the side of your screen, the chat area at the side of your screen. We're gonna pause at the end of each section to review your questions and post them to try and give you some answers, and-, or at least answer as many as possible for you. The other thing I wanna point out before we kick off is that we will be sharing the, the PowerPoint presentation and the, the video recording of the webinar this morning, so keep an eye on your email following today for that. But just to let you know that's gonna be provided. Our main presenter today is my Invest NI colleague, Pearse McAnallen.

Pearse is a mechanical engineer by background and he's worked in a number of major manufacturing and service industries. Since joining Invest about sixteen years ago, he's worked extensively in helping Northern Ireland companies, particularly SMEs, to address the requirements of the Machinery Directive and other directives. So, he's gonna bring strong, practical working knowledge of CE marking to today's webinar. So, I hope you'll find that this, this morning's information useful and relevant to what you do. It's time to get started now and we'll hand you over to Pearse.

Moderator 2: Colin, thank you for the introduction. Folks, as, as Colin said, my name is Pearse McAnallen and I work in the Technical Advisory Unit in Invest NI. I get asked-, I visit a lot of companies regarding CE marking across a broad spectrum of directives and I get asked a lot of questions. And I'm, kinda, maybe basing this presentation seminar on, around those questions. Hopefully, answering the common ones and also putting a few more things in. Our goal today is not to make you CE marking experts. As Colin says, it's-, we're condensing into half day, but what we're trying to do is broaden your knowledge and, you know, give you a flavour for a lot of areas

and things that you should be doing, and then hopefully that'll, that'll speed up your journey. The other thing is, I apologise to any of the experts online in particular areas, I have to, kinda, take each area back, right back to the start. So, I'll be doing that. As you notice, there's a, a couple of breaks during it and there's a-, sorry, there's one break at 11:00, we'll definitely have that break at 11:00 and then we're, sort of, going for maybe three to four batches of question time. The earlier ones tend to be quieter, but please do put your questions in the chat box and we'll go through them all. We'll take breaks and we'll go through them all.

So, I'm gonna first of all start with a bit of background on CE marking and also the UKCA mark. So, CE marking is only obligatory for products which, for which EU specifications exist and require the affixion of a CE mark. So, to affix a CE mark to anything, you need to have a, a European, an EU specification for that, and that must require a CE mark. The CE mark will be affixed by the manufacturer or their authorised representative, and I'll explain what those are later. And by affixing the CE mark, the manufacturer indicates that they take responsibility for the conformity of the product, with all applicable requirements set out in relevant-, in the relevant legislation.

So, in other words, the CE mark is almost like your brand to say, 'Look, I, I'm taking responsibility for conformity of this machine.' This is another common on. It is forbidden to affix a CE mark to a product for which the EU specification does not exist or does not require the affixion of the CE mark. Very common issue we see. Things with a CE mark, customers, you know, you as a supplier have been asked to CE mark something and not given any other information. So that's, that is quite common, but-, and that's where, you know, we-, hopefully some of the information we give today and later on will allow you to go back to them and get a bit more information, explain things to them. Some products are subject to several EU requirements at the same time. You must make sure your product complies with all the relevant requirements before affixing the CE mark. Some common ones are Machinery Directive, low voltage EMC, it can fall under it all. And again, we can give a few examples of that. So, the UKCA mark, we'll not mention the Brexit word, but this is where it, kinda, came about. The UKCA mark is the conformity mark in use for products when placed in the market in GB, England, Scotland, Wales, not Northern Ireland, we CE mark. The UKCA regime as been operational since the 1st January 2021. The UKCA mark applies to most products, for which CE marking can also be used. In other words, they just transposed all the directives and regulations across into, into GB law to start with. By following designated standards, which the UK introduced, replacing EU harmonised standards, there's a statute of presumption of conformity that the product meets the essential requirements set out in GB legislation, that apply to the product covered by the standard. And then for products that can use a UKCA mark and in Great Britain, these must meet EU rules in Northern Ireland, including a CE mark.

So, in other words, the UKCA mark does not apply in Northern Ireland. You will see products dual marked coming in, you can look on a lot of power tools, a lot of things coming in, can see the UKCA

mark and the CA mark. But if you're buying it in Northern Ireland, it should have a CE mark on it. So, I took an extract from the dot gov-, dot gov dot UK guidance. So, as you can see, hopefully you can see that on the left-hand side, but placed goods on the Northern Ireland market accepted as a CE mark, and-, or there's another very rare mark, which I'm not going to talk about, but it's called the UKNI mark. It's extremely rare, it's only if something has third party approval and it's only going on the market in the-, in Northern Ireland. So, for Machinery Directive it never, never applies. In fact, I've never seen it apply to anything. So, placing goods on the Great Britain market, so what they're saying is UKCA or CE and the CE was supposed to be stopping accepting it the end of 2024, but I'll explain that has changed. And then there's another, kind of, goods called qualifying goods, or you can place CE marked on the GB market and it's the unfettered access. Again, it's, kind of, been negated by the next slide, I'll explain what's on it. And of course, placing goods on the EU market, it's CE mark. So, they only-, oh and by the way, the-, you can't have the UKNI mark on something which goes onto the, the rest of the European Union market. So, it's just-, but again, I've never seen it, so it doesn't apply. I've seen it in food and I've seen it on vehicles, but not on machinery. So, just to-, the CE mark is common across all jurisdictions, EU, GB and NI. The UKCA mark only applies in GB and GB has extended its acceptance of the CE mark beyond 2024. And, so again, I've cut an extract out of the UK-, the gov dot UK. So, basically, what they say it is, business department announces the indefinite CE mark recognition beyond 2024 deadline.

So, as part of the government's drive for smarter regulation, the extension will cut (ph 08.51) business costs and time required to place the products in the market better for customers. If you notice, the, the Labour government has now added a, a big box in the middle to say, 'This was published under the cynic government, in other words they're, kind of, saying, 'We agree with it but it wasn't us who done it.' But that's the way-, that's the situation at the moment. What I would say is I would expect there to be further negotiations. As you can see, Labour etc. when they've come in, have, have been talking to the EU. And I suspect that will continue. So, it's, kind of, a case of watch that space. I put on the, the doc-, the gov dot UK link. I would always say to people to keep an eye on those links and they do give updates. So, it's just around the CE mark and UKCA mark, do keep an eye on that, because that does change. The other question I get asked a lot is more from the point of view, sometimes we will get a, a Northern Ireland manufacturer who has been turned down or turned away by a European customer saying, 'Oh, you can't CE mark, you're not allowed to CE mark.' This document, I've put a link to it there, but it's from the European Commission and it was issued back in 2020. And I know there's been some updates from-, on the protocol etc. but this document, these kind of things that I've highlighted still stand. As far as the European Union is concerned. Products placed on the market in Northern Ireland have to comply with the applicable EU legislation. So, in other words, we accept the CE mark. Product manufactured in Northern Ireland and shipped to the EU is not an imported product, for the purpose of labelling, identification of economic operators responsible person.

So, in other words, our-, Northern Ireland manufactured goods are traded as European goods in the EU. And the other thing that we were left with was porters, authorised representatives and other responsible persons may be established in Northern Ireland. In other words, you don't need

an authorised representative. So, the, the, I suppose, the example that came out of Brexit is the GB manufacturer does require an authorised representative there. Not technically on European soil, so therefore they're treated like a third country, a bit like, you know, the Chinese etc. So, they do require an authorised representative based in the EU. So, if you ever get asked that question, you know, your-, this is the document that I would-, I always tell people to send to their customer and that gives the customer a bit of confidence in your-, So, so, once we've taken right back to the start and we'll say, well which, which products-, which directives can apply to a product? And at this stage, I'm, kinda, gonna apologise for the-, for the agricultural theme that you'll see through, throughout this seminar. My boss keeps me going and it's, there always seems to be an agri product somewhere in there. So, it's, I'll, I'm gonna use a few, sort of, examples just to show you what, what can be-, what directives can apply. So, the common directives we come across, the one we're talking about today, is machinery. Low voltage AMC and radio equipment. We don't-, those tend to be bought in products but they do apply, sometimes we make products and lots of companies here do make products that those apply to construction products, very common one here, and pressure equipment sometimes medical directive and toys. So, those all-, not, there is caveats to why, when you put a CE mark on on that, so I'll, I'll explain those later, but they generally-, they require a CE mark.

So, products that fall under European legislation that don't require a CE mark, the obviously one is the General Product Safety Directive, which is actually coming under a big vision now as well. So, there's lots of products fall under it, and then vehicles don't require a CE mark, they require an E mark, or large E or small E, you'll see on, on vehicles. The General Product Safety Directive is the catch all. So, it doesn't fall under another directive, it falls under general product safety. So, people say, 'Well if I don't fall outside the-, call outside the Machinery Directive, I don't need to do anything.' You do, and as I say, it's General Product Safety, or one of the others. But if, if machinery applies, General Product Safety doesn't apply. So, here's the quiz, a very hard quiz. How many require CE marks? So, we've a skip, we've a, I suppose, a curtainsider, semi trailer, a tractor, and a teddy bear. Believe it or not, the only one which requires-, of those that require a CE mark is the teddy bear. So, a skip, although lifting accessories and attachments fall under the Machinery Directive now, a skip does not. The skip is considered part of a load. There are standards around skips, around the strength of a skip, but it doesn't require a CE mark. Again, with the semi trailer, you-, vehicles are, people always say this one, but vehicles are exempt from the Machinery Directive, however, the machinery elements of a vehicle is not. So, there are moving parts on a vehicle, for example, a lift axel on a lorry, you-, we'd say, 'Well that's a moving part, but those are exempt from the Machinery Directive. But things like, you know, if you had a beaver tail, you know, hydraulic tail doors, stuff like that, those do fall under the Machinery Directive, and I explain a wee bit more about that later. Tractors don't. Tractors have a special directive for themselves, they're called T1s or T2s.

So, it's the vehicle category they fall under. Lots of other things around tractors fall under it, but tractors themselves don't. So, again, here's another one, so the bicycle, the excavator, the lifting attachment and a manually, just a manually-, manually tipping skip. And again, the only two, so an

excavator is not a vehicle, an excavator is a machine. So, it does fall under Machinery Directive. Falls under a lot of other directives as well, fall under noise emissions, there's a whole raft of directives for excavators, not that anybody's making them here. And then lifting attachments, and we'll talk about those later. So, you're saying, 'Well that's not a machine,' no it's not. But those were specifically brought under the Machinery Directive, because they'd, they'd no other directive to fall under. And again, a bicycle is back to that thing of human power. Now, if there's a battery on the bicycle, if it's one of those new electric bikes, that's different. But we're just talking about a pedal bicycle at this stage. So, you'd say, 'Well that's a trick question.' How many require a CE mark? It's the same thing. But what I wanna, I suppose, point out here is that on the left, the climbing frame, if it was in a domestic environment, so if you're selling it to someone with a house, it falls under the toy directive and requires a CE mark. If you're selling the same climbing frame in a commercial environment, in other words, to a council playground, maybe even a school playground, it falls under a particular standard, 1176 and does not require a CE mark. It does require to be safe, but it's not the toy directive. So, what I'm, kinda, saying there, this is a bit of a rare one, but the same product can require different marking, depending on its environment and intended use.

Again, the people in the toy, you know, that make these things, would, would be-, would have knowledge of this, but it just-, it's to point out that there can be different scenarios. And then what you also get, lastly, is you get things which fall outside the Machinery Directive, but something needs to be done, and this, this particular-, so what this is, it's non-integrated work platforms. In other words, there's no controls on that work platform that you-, hopefully you can see it, the cage, which is on the forklift, but there is very specific guidance and there's a full guidance document from the HSE and if you go onto the, the, the website and the-, in the South of Ireland the RSA have the same, or pretty similar document. And then it's actually mentioned in the guidance document, the European guidance document for the Machinery Directive. So, these, they can't meet the requirements of a machine, but they felt that because they were quite common they had to do something about it. So, again, there are a number of those published guidance documents from the HSE you'll find on particular products. So, so, the good thing is, they have a very specific guide, it's quite detailed, about the locks, about the, where you attach the chains on, etc. So, it's good to have that, but it does not require a CE mark. Still requires to be safe. Few common misconceptions. If there's a CE mark on, it's, it's safe. Fixing a CE mark to a machine is less than 1% of the process. People say to me, 'Oh, my machine's CE marked.' That, that's all it is, it's literally a mark. It's, it's what's behind that process, and that's what we're trying to explain today, is we're trying to give you a bit of information on what's behind that process. And again, my former colleague who used to deliver this, Alan Edgar, used to go heavily on this one, but Alan would always say that CE plus CE does not equal CE.

So, if you pull a lot of CE mark components together, it doesn't necessarily mean that your machine is CE marked. Because what you have to look at is the, kinda, fit for purpose and matching of components and so, in other words, if you were putting in a motor and a contactor and they're both CE marked, but the contactor is not rated high enough for the motor, well then, you know, you

could potentially cause issues etc. So, it's just that thing of you have to look at, as your machine as a whole and carry out certain processes to ensure that the, your CE mark is, is, is done correctly. And the last one here is beware of advice from the non-committal experts. I go out to a lot of companies and I hear about, 'A man told me,' or 'I was told.' I never meet this person, they never seem to turn up when I'm there, and I'll, I'll say to people, 'Did they write it down?' 'No.' 'Did they give you-, did they send you a guidance document on why you shouldn't be doing that?' 'No.' So, what I would say is, you know, at the end of the day, you're responsible for your machine and if you do take advice from people, they should be able to back it up. Whether that's Invest NI or consultants or other people. You know, there should be some back-up from it. And yes, there are people who are very knowledgeable out there and will give you advice and that's great, but if someone's telling you that you don't need to CE mark it and if you paint it blue and reverse it out the gate back, you know, it's generally not true. And we all know that anyway, but there are some, some great experts out there on, in these fields. So, just beware of that. So, what I'm gonna talk about next, I'm slightly ahead of time here, so that's not a bad thing. What we're gonna talk about next is the compliance process.

So, in other words, we're, we've done a bit of research, we've looked at what directives can apply, so what we now will look at is, well, how possibly could I comply with that process? So, we identify the applicable directives, regulations and harmonised standards. Now, the basic difference, when people talk about directives and regulations, directives are issued by normally the European Union, if it's issued as a directive. And then each individual country when they pass it into law in the individual country it becomes a regulation. That's not always the case now, as we'll talk about later, in the new Machinery Regulation, it's coming out as a regulation, so the, the countries, the individual countries have to take it as is. There's gonna be very little country change. That's, when I'm talking about a directive and a regulation, I'm more or less talking about the same thing. And I'll explain a wee bit more about harmonised standards later on, but you all have seen your, kind of, your EN standards. So, so as I say, you identify, potentially, the directive, regulations, harmonised standards, it can be a number of them. You, you verify the product specific requirements. Back to that thing I was talking about earlier, is there something that you're doing that, you know, makes that you need to do more or there's very rarely you need to do less. In other words, you need to do something different. Is there a reason, maybe, you're putting it into a school, you're putting it into a public area, you know, what is it that you need to do different? And the other thing is, the next thing you need to do is identify whether an independent conformity assessment and notified body is necessary.

Now, when we're talking about machinery, it's generally not and, and I will give you a list of the, the machines that do but there are lots of companies in Northern Ireland have notified bodies involved for their products. And that, I suppose, construction products would be the common one. So, you need to determine whether a notified body is necessary. You then are meant to test the product and check its conformity. Again, that, that totally depends on the complexity of the machine. If you're building a single ram log splitter or you're building, as you do, a twenty or 30 ton screener crusher with a number of conveyors, totally different-, as in, totally different length of process you're going through there. Compile and keep available the technical-, the required

technical, technical documentation, so again that's your technical file. So, you compile all this, and we're gonna explain more about how you compile that, and then you issue a declaration of conformity or a declaration of incorporation. And again, I'll explain later the difference between them. If either are required. So, if, if you went through that process and you discovered that you fell under the general product safety directive, you wouldn't issue either declaration. And, and I'm saying declaration of incorporation, but there are other declarations and stuff out there, and I'll explain those later. So, there are certificates and declarations. But machinery is declaration of conformity or declaration of incorporation. And finally, you apply a CE mark if any of your directives require it. Not every directive requires that you apply the CE mark. So, you can fall under directives and not require a CE mark. But again, you do require to go through the rest of the process. Then that is there.

So, your approval routes. It's not always the case, but, I, I've just, kinda, broke these out. So, self certification. Generally, machinery. Pressure equipment for what most people do here, I mean, there are people here who have third party approval for pressure equipment, it's, it's quite divided, it depends on the-, on the type of your pressure vessel. And yes, there is a lot of third party approval required. Our directive is mostly self certification, and general product safety directive, I think is always self certification, I'm not sure there's ever a notified body required to that. So, third party approval, AMC, definitely, I don't think you can do it without it. Low voltage is a bit of a mix. There are some products don't require it but there, there is a good few that do. Radio equipment directives always. Construction products is, is always, to my knowledge, and then again medical directive is, is always third party approval in with that. I maybe should put a third section, maybe say definitely in, definitely out, or, or maybe. But again, you, kinda, get the gist of what, what you can fall under. And you can fall under multiple directives. Again, common one that would fall under multiple directives is a roller shutter door. It falls under the Machinery Directive, most likely fall under the low voltage directive because it's powered, and it'll fall under construction product regulations, and it requires third party approval or a notified body for the construction part of that.

So, it's the, the Machinery Directive part of it is self certification, but whenever you go to do your third-, get your third party approval, they'll look at your technical file from your Machinery Directive and your low voltage. And again, I just picked out, there are a number of standards apply to roller shutter doors, I've just picked out a couple there that, that apply, they're the common ones that apply to roller shutter doors. And powered gates are pretty much the same for that. So, again, there's an example of something which falls under a number of different directives and those directives have a different approach as to third party, not third party. So, again, that's the thing of looking to see what your product falls under. When can Machinery Directive require third party approval? Well, there is a list and if you wanna go to the back of the machine directive, there's a list of 23 products. I don't know if any-, I know maybe of the odd roll over protection has been done for, for vehicles that people have done in the past, so, roll over protection structures do require that and do require testing. But again, a lot of those others, like chainsaws, sawing machine stuff, lots of people use them here but I'm not aware of too many people that make any of those. Locomotives

and brake vans, if you're making trains again, they mostly bought in. So, what I'm-, the reason for putting that slide up is I'm just saying it's, it's very-, it's not common to have third party approval for Machinery Directive. Now. There's upsides and downsides, I suppose, to that. The upside is, well, you know, I don't have a third party standing over me and I can-, I can do, you know, I can get on with it. And that's, kinda, why the Machinery Directive was primarily third party, it was to get products to the market quickly and, I suppose, help innovation and stuff like that.

That was the theory behind it. The only downside is, you don't know when you're wrong. The only time you'll be told you were wrong is if something goes wrong and, and the HSE or HSA or somebody lands on your door and, and starts to question you on it. That's the only time you'll really know you're wrong. But, you know, if third party was to come in and audit you, they'll say, 'Look, this isn't complete, you haven't done this, this, this, you need to do this and come back and complete it.' But, I suppose, a third party will also caveat it and say they're only responsible to a point. So, benefits and no benefit, but I think under Machinery Directive certainly, that original ethos that the European Union had to drive productivity, to drive innovation, you know, get machines to the market, I think that, that kind of, that still stands as to what their, their theory was behind it. So, we're here today to talk about the Machinery Directive, and after about twenty slides, I'm eventually gonna start telling you about the Machinery Directive. Just what I will say about the Machinery Directive, the Machinery Directive from a CE marking point of view, it cares about the operator, it cares about the user, and it cares about anyone within the vicinity of the machine that can get hurt. The Machinery Directive doesn't really care about run time or productivity or-, it's not trying to stop it, but it's not there to enhance any of those. The Machinery Directive is about the safety of the machine. So, I suppose you're ultimate goal is to build a machine which works, first and foremost, and is safe, but then, once-, as long as you know it's safe, then you try and build a machine which is better for your customer, better productivity. We've seen the improvements over machines that've been leaving Northern Ireland over the last number of years, you know and it's, I mean, it's amazing.

But what I would say is, the Machinery Directive does not help you to do that. It helps you keep safe and that is the primary, primary function of it. So, which products fall under the Machinery Directive? (audio distorts 29.40) apply, so obviously, machinery, and I, I'll go through these individually in the next few slides and I'll talk about-, I'll talk about what, how-, what each one is and, and kind of, how it applies to that, so that we do-, so machinery obviously, interchangeable equipment, safety components. And again, there is a list of safety components at the back of it and, and, I'll bring that up later. Lifting accessories, chains, ropes and webbing. So, again, those are not machines, they're clearly not machines, but they were brought in on the Machinery Directive to give them some-, a home as such. There was no separate directive for them. The one I'm not gonna really talk about is removable mechanical transmission advice, the PDO shaft might be an example, but again, nobody is making those here, to my knowledge. And the last one then is partly completed machinery, which I'll actually say is the hardest one to do. People say, 'Oh, it's this thing where you don't need to CE mark it, and you create a declaration incorporation. In my view, it's actually the hardest one to do, for a number of reasons. So, the definition of a machine as laid out in the

Machinery Directive, is an assemble-, an assembly fitted with or intended to be fitted with, a drive system or other, other than directly applied human or animal effort, consisting of linked parts or components, at least one of which moves and which are joined together for a specific application. So, in other words, there needs to be a number of parts, there needs to be some sort of joints in there, it needs to move, and it needs to be for a specific application. And the human and animal effort, there used to be a good picture of, of a horse-drawn thing, so again, it has to be other than human or animal effort.

So, interchangeable equipment means a device which, after placing in the service with the machinery or tractor, is assembled with that machinery or, or tractor by the operator himself in order to change the function or attribute a new function in so far as equipment is not a tool. Main thing about when you're looking at what is described interchangeable equipment is, it's something that the operator does. So, in other words, the operator takes off one device and puts on another quite quickly, and there's lots of quick attaches, you know, as in I'm, I'm thinking of skate steers (ph 32.12) and tally handlers and stuff, you know, the drop off, sheer grab, then put on another device, you know, the bail grab etc. So, those are the kinds of plough, those are the kinds of things. So, the operator does that, not, not the equipment supplier. So, a tool. So, I, I couldn't find a formal definition of a tool in the Machinery Directive. But a tool normally means, terminal part of a machine, in direct contact with the part or material to be worked. In other words, it's at the end of an arm or something like that. That's generally what the, the tool is. Generally, tools do not have (audio distorts 32.53) risk, and moving parts are (audio distorts 32.57) direct human effort. So, it's back maybe to the tipping skip. It's not exactly a tool, but it's that thing of it's human effort to tip it, it's not-, it's not powered. If you put a ram on it, it's interchangeable equipment or a machine, but if you-, it's, if there's no ram and it's human effort, it's tool. And it can be part of a load as well. Tools do not modify the basic function of construction equipment if fitted. I'll show you examples in a minute, but it doesn't, in other words, it doesn't totally change what that machine can do. Interchangeable equipment would.

So, partly completed machinery. Again, I do not come across this very often, when, when I sit down and talk to people, it turns out it's not partly completed machinery they're building. So, I get asked a lot about this, but partly completed machinery means an assembly which is almost a machine but cannot itself perform a specific application. A drive system is a-, is a partly completed machinery. Partly completed machinery is only intended to be incorporated into or assembled where the other machinery, or other partly completed machinery or equipment. Thereby forming machinery. So, in other words, it's just a part, it's never a whole. You know, people say to me, if they're building something but it's going into a line, well if it's a-, if you could put a plug on it and plug it in and it works, it, it's a machine. You know, yes it is going, it is gonna be part of a line and a bigger machine, so you can incorporate a machine into another machine. Maybe, like, an overband (ph 34.37) separator or something, you know. That, that's a machine, you can lift that off and send another, another machine, you just plug it in, away it goes. You might control it from your machine, start stop it, and that's fine, that's a different, different thing altogether. But it still can be put on the market as a machine. So, partly completed machinery cannot completely fulfil the

extensive health and safety requirements set out in annexe one. Since the-, since certain of the risk may result from the fact that the machinery is not complete, or from interference between the partly completed machine and the machinery assembled. So, what it's basically saying is, you can't fulfil-, you don't know what this machine is totally going to do, because it's not complete.

It's whenever it's complete that it starts to become dangerous. So, this is why I say to people, if someone's asking you for something, some part of a machine and says, 'I want that CE marked,' and that's common. You can't do it, because you don't know what the end machine is, so you can't put a CE mark on it. You can give them all your technical information, you can give them your drawings, your calculations, give them whatever they want for their technical file. But you can't-, you don't finish it, you can't CE mark it. However, the manufacturer partly completed machinery must state in a declaration of incorporation which of the essential health and safety requirements it has fulfilled. That's why a declaration of incorporation is a different looking document to a declaration of conformity. You do have to put the ES-, EHS or on it, and you have to list them out as to which ones you have complied with. So, it, it takes a wee bit longer. Because, again, the person who's at the other end needs to see those. So, partly completed machinery, the manufacturer partly completed machinery or (inaudible 36.22) placing in the market, sure that the relevant technical documentation is prepared. That's now saying you, you give them, you probably give them more documentation than, than, than with the machine, because they have to put it together. They need to understand a little bit better. Assembly instructions, so you definitely need a set of assembly instructions. Some machines don't because some machines just come complete. You don't need to assemble them. But the declaration formally, and again, the assembly instructions and the DOI shall accompany the partly completed machinery on 'til it's incorporated into that machine. So, what the, the end user who puts it into their machine, they'll take that, your information, and put it in their technical file. So, I have a bit of a flow chart.

It's not perfect, but it's that thing of, so it's an attachment, does it have moving parts? Except moved by human effort, no. Well then it's a tool. Yes, it does have moving parts, other than human. Who assembles it? So, if it's the manufacturer or supplier, it's partly completed machinery. And if it's the operator, it generally is one of two things. It, if it changes the function of a machine, it's interchangeable (mw 37.39). There's this very rare one where it's an integral part of a machine, so we are supplying something which only, kind of, works with that specific machine, but you can't CE mark it, you know, it does fall under that. It, it's a bit of a rare one, it-, again, I've never seen it but it's that, kind of, last caveat where you say, 'Look, I'm supplying this,' maybe something like a ripper attachment for a dozer or something, you know, something very, very specific. It might fall into that category, but anyway, the only one that actually gets a CE mark is interchangeable equipment. I've put up a couple of pictures there, so a tool is a bucket, whether that be tractor, skid steer or excavator, it's just a plain bucket. That's a good example of a tool, and I talked about earlier, coming into contact with, at the end of the alarm. That's what the tool-, the tool is doing the work. Interchangeable equipment then is your, kind of, your bale grab or there's a lot of stuff now coming in the index, excavators (ph 38.36), there's more and more seem to come on the market every year, but the likes of those grabs, you know, tree shears, all that kind of stuff is

interchangeable equipment, and that's-, so it changes the function of a machine from a digger to something which can cut trees down, which is, you know-, so that, that's where interchangeable equipment comes in. So, one of the other things on the list was the safety component. Again, I wouldn't really dwell on this, not many people here make safety components, again, the rural (mw 39.10) protection falls into that category. What things like that, guards from-, if you sold guards for machines, if you specifically made guards, those would fall under it. E-stops fall under it. Restraints to keep persons in their seats. So, safety component means which serves to fulfil a safety function, which is independently placed in the market. So, if you're making the guard and putting on your machine, you're not-, you're not supplying safety components, in other words. So, if it's going with your machine, that's grand. So, that's the independently placed in the market. The failure and/or malfunction of endangers the safety of a person.

So, I suppose that's really the ethos of a safety component. You know, because things can fail on a machine but they won't make it dangerous, but if a guard fell off or if an E-stop failed or a seatbelt failed, well, that would make-, that would cause danger. And then, the last thing is, which is not necessarily in order for the machine to function. So, when you build your machine first and are maybe doing very early trials, you may be missing a lot of these before-, you know, hopefully not for too long, but it's that thing of, you know, you build your machine and then you, you start to look at your risks and you apply the safety components to your machine to make your machine comply with the machinery directive. But, again, not many people here make safety components, but there is a list on the back of the, the annex for, for what they are. But, sorry on the last one, it didn't really give you a good example of-, let's go back a wee second. I meant to say, so to give you an example of a, a partly completed machinery. I don't have it up there. Maybe the likes of a skip body for a lorry. So, in other words, they can send you over something you'd fit to a lorry like that. A robot. Can anyone-, (ph 41.03) believe or not, if you send a robot out with no software, or whatever, the robot's not going to do anything, and also maybe, like, an engine. So, in other words, an (mw 41.11).

So, that partly completed machinery. Again, it is rare. It is rare. So, the lifting accessories do fall under Machinery Directive. So, it means a component or equipment not attached to the lifting machinery. So, lifting machinery, forklift, crane, etc, stuff like that. You're going to go overhead-, various overhead winches, etc. Allowing the load to be held which is placed between the machinery and the load itself. So, a, a cable-, I suppose maybe a cable on a winch wouldn't fall into it, but it would fall into the machine but the actual-, if you-, the hook and, you know, the slings etc. You see number 3 there. So, that is lifting accessory. So-, and the-, so it's not part of the load itself. Or which is intended to constitute an integral part of the load. That's what I said before. You know, if something is part of a load it's not a lifting attachment. Number 6 there, if you can see it, the lifting ear, if you place that on the market separately that is a lifting accessory and requires CE mark. But if you weld that in to your actual thing, and you'll see it in the second, it's not. It becomes part of-, integrated into the load. (inaudible 42.36) . So, slings, their components are regarded as lifting accessories. And again, so the document on the-, on the right-hand side what you're looking at is the machinery group issued guidance on lifting accessories as to what's in and what's not.

So, things like, as I say, the things before a lot of them are in. A lot of these are, like, a reusable bag, (mw 42.58) aren't. Lifting accessories, they're deemed as part of the load. Now, with a lot of those like the foundry crane ladle there and our concrete bucket you-, there are standards around those and there are standards around the, kind of, the lifting bits of those. So, you need to ensure that those are safe. It's not that these things don't need to be safe. It's just that they don't fall under the Machinery Directive. But you do need to ensure they're safe. There are-, there is a standard for skips. There's maybe a couple of standards for skips. And again, shipping containers do not fall under Machine Directive but there are-, there actually is third-party approval for shipping containers, Lloyd's approval etc. So, just because it doesn't fall under the Machinery Directive it doesn't mean that it doesn't require to be safe. And the other thing is pallets. They're just part of the load. That's what they are. When I'm referring to-, a lot of stuff I'm magically pulling out today and making myself look very good is the Machinery Directive guidance document. It's actually been updated quite recently in, in, in April of this year. What I'd suggest is if you're building machines you should have this downloaded or you should have access to that link. You should go and look at it. It's, I don't know, how many pages it is. I think it's-, have a look on there. 442 pages. The directive's only about 180. So, there's a lot of guidance in there. What-, the guidance on the previous slide those images are in there. There's lots more guidance. The one about the, the, the lifting basket. The-, it's mentioned as to why it doesn't fall. So, every year they add more and more and more guidance in so I would recommend anybody to go and pick up, or sorry, download that. It's free of charge. You go to that link or if you just type in 'Machinery Directive guidance document,' it'll come up on Google. And download it from the European-, there's a few other sites hold it but download it from the European Commission website. Highly recommend you have that.

So, basically what I've done out there is I've, kind of, set the scene as such. So, we're going to now-, if there's any questions that Barry has in the chat, we're going to check them and then we're going to move onto the technical files. I don't know (ph 45.16) if there's anything come in yet, Barry.

Moderator 2: Thanks very much, Pearse. We've had a-, just a couple of questions in and the first one Colin covered just in his introduction. And just a reminder that we will be sharing a copy of the presentation slides and recording of this webinar over the course of the next while once we get it processed and uploaded. So, couple of questions. First one is, 'Would automation equipment designed and built internally and are used to manufacture products require CE marking? These won't be sold but will be used.'

Moderator 1: Yes. They'll be used.

Moderator 2: I don't know if you need me to repeat that.

Moderator 1: No, no, no. I know exactly what it is. No, yes, they totally, totally fall under the Machine Directive and do require CE mark. The fact is they're being used so they're a production machine. Even if they're a very rarely used production machine, they require a CE mark. The fact that they're being used internally, even if you're a one-man band, they require to be CE marked. They do fall under the Machine Directive. So, yes. Now, it probably isn't that hard to do. And probably as I would suspect people are very diligent when they do these things. So, there's no reason why they can't do it. And it shouldn't be too onerous a process. But the short answer is, 'Yes.' The only time I have ever seen in the Machinery Directive, sorry in the Machinery Directive guidance notes, they talk about maybe a machine going for a trade show or something like that. So, if you're maybe building something like that where it's a supervised, you know, no one can touch it only maybe technicians etc. it's very rare. And that is only for a very short period. So, by the sound of things that machine's in production so yes it requires a CE.

Moderator 2: Super. Thanks very much. And the next question asks, 'Can I confirm that the LVD falls within the Machinery Directive?'

Moderator 1: No. It's totally outside it. They're 2 separate directives and the products that fall under low voltage-, so you get products which are low voltage only. But you do-, I suppose, maybe where the confusion coming there is you do get products which fall under both. So, if you build a machine with electrical components, which a lot of machines have, you'll fall under the Machinery Directive, but you'll also have to cover off the Low Voltage Directive. Because you have things like your contactors, your control panel, your-, all those, kind of, things which tend to be in a machine all under the Low Voltage Directive. So, they're not separate, sorry, they are separate but they can be listed under the same Declaration of Conformity. So, in either words, you could have Machinery Directive and then Low Voltage listed. But you treat them-, you treat them separately. Under, again, Low Voltage (mw 48.04). And I know Colin's going to mention it at the end but I would suggest, you know, come along to the electrical seminar which Colin will give you the dates for. And that'll explain that in a bit more detail.

Moderator 2: Super. And just one other point, it's maybe a comment or a clarification rather than a question. It says, 'Third party approval is not required to EMC and LVD compliance. And also for the EMC directive testing is not mandatory for compliance.'

Moderator 1: Well, that's (inaudible 48.37), Colin. No, it, it, it depends. I mean, there is-, there is third-party approval required for certain components. It depends what it is. So, you, you do-, there's a lot of components fall under low voltage which don't require third-party approval, I, I would say that. There's probably a lot more going under EMC and generally, it does require third-party approval. They can maybe give me clarity on what they're talking about there but you mostly-, if you're testing-, now, maybe, maybe there's a confusion. If you're buying in components they, they are already tested and if necessary third-party approved. So, you buy them in and you fit them into your machine. So, in other words, if you had a Bluetooth module or something like that, or a wireless module that fell under some of those directives, they would be approved. But, they

normally, to my knowledge, if (audio distorts 49.34), low-voltage, yes, there's, there's not-, there's quite a few components that don't require it. So-, but you don't require another approval on top of that, you buy the component in.

Moderator 2: Okay, that's all we've had in so far. Just a reminder that if you do have questions, we've three more opportunities to, to pause and, and go back in to questions and-, so just do submit your questions in the chat and, and we, we'll put them to Pearse and the team at the appropriate breaks but other than that, we're good to go, Pearse, if you're happy to, to move on to the next section. And there will be a break following that.

Moderator 1: Yeah, no problem, as I say, I am gonna run up to probably just before eleven o'clock here. If I get to 11:00 and I'm still talking about-, if I still haven't finished something, I'm probably just gonna stop and we'll pick it up after because it does cross over. So, moving on, moving swiftly on, your technical file. So, when I'm out with companies and, again, I had a chat-, I had a chat with Colin (ph 50.37) a few weeks ago about this, so the contents of a technical file are, are, kind of, always something we're asked about, you know, 'What's in it? What should be in it?' So, I'm, kinda, gonna base the, the rest of the presentation almost or, or the rest of the webinar around the contents of a technical file. And I'll explain, so there's lots of things we need to talk about in here but we'll, we'll do them on the basis, as in we're going through our technical file, so again, we're, we're listing out-, now, this is taking it out of the machinery directive guidance and a bit of stuff that I've done. These are the things that should be in, they don't have to all be in. You could have twenty categories, you could have six categories, but the information that's here, you need to have all of it in your technical file. So, just going down through them, general description of machinery, drawings, calculation, test, the EHSRs, which is quite a long bit in this presentation, risk assessments, we'll give examples of how to do it and then, at the end, I'm gonna to give a practical example of doing a risk assessment and doing the EHSRs.

Standards, again, I'll talk about what the standards are, what can potentially apply, some common ones. Technical reports, so, up at the top, you've got your test, which generally might be some in-house stuff that you would do. This would be your, your, sort of-, your third-, not even your third party, just your externally-, so your machine may not require third-party approval but you might get some reports done, like FEA (ph 52.15) or some hydraulic report, you know, tests or whatever. So, you might do-, get some external reports done on the machine. Instructions, very important part, and this is, kind of, how do I write instructions, what's supposed to be in instructions. Supplementary information is your, kind of-, your third-party information, as in your supplier information, who supplies stuff into you. Declarations and marks, again, we talk about declaration of conformity and incorporation and the actual CE mark, and then your manufacturing processes, and again, after the, the-, later on, my colleague, Jackie, is going to give some information of how to update your technical file and, and looking at your manufacturing processes. So, what I used to say to people when I went out maybe ten, fifteen years ago, I told them, 'Go get yourself a file, go get yourself ten, twelve dividers and start to put stuff into it and create folder and that.' Now, it's probably more a case of you say, 'Look, create an areas or create-, you know, there's lots of ways

you can do it with shared drives or SharePoint etc. but you create a specific area probably, you know, digital area, and you start to either drop in documents in the certain folders or you drop in links.'

You don't have to actually put all the pieces of paper together but what you've got to do is make sure you've covered all these areas and make sure you have access fairly quickly to all these areas. My headings aren't mandatory, don't get that wrong, but it would look something like this. I mean, you can-, you can do your own headings but all this information has to be in it and some people do less, people do more. So, the first one is your general description machinery. What this is, I suppose, if, if you're-, I was-, so, what I would say about a technical file is you don't give this to your customer. Your technical file is your document, so you give your customer the machine, obviously, your declaration of conformity or corporation and a C-, and plate a CE mark and you give them instructions but you don't give them your technical file. It's your document, but what the technical file is for is, first of all, for you to ensure you've done it right, and secondly, if there ever was a case where you needed to be inspected or there ever was an incident or accident, this is what the HSE, HSA, German authorities, whatever, will come looking for it. They'll come looking for your technical file, so you need to have. So, the general description machinery is, if someone was to sit down and look at that, it, kinda, gives them an idea of what they're looking at. It's to give them that bit of initial scope of the machine, or if you have a new engineer come into your business or if you have an external consultant coming in to help you, they will look at this and say, 'Right, what's this machine about?'

So, general description, your overall drawings, as in, you know, you've seen them there, your-, sort of, your dimension drawings, your length, your width, your height but they're not detailed. You can put the next bit-, the drawings of control circuits, hydraulic circuits, pneumatic circuits, you can put them in here or some people maybe like to put them in the next detailed drawing section, totally up to you. The reason I would say put them in here is, again, it gives someone an idea of how complex this machine is. If they open a file and there's, like, ten pages of hydraulic circuits, you know there's a lot of hydraulics. If there's lots of control circuit-, if everything's on-, if all three of those were, kind of, on one page, you know, you could have something as simple maybe as a, a-, back to that, kind of, single rod (ph 55.53) log splitter or something like that, so again, very simple. And then it says 'pertinent descriptions and explanations necessary for understanding the operator's, you know, machinery', so again, it's just maybe if there's something different or whatever you need to do to operate this machinery, is it submersible, is it-, you know, does it fly, whatever, so just-, that, that's a very broad statement. But it may-, you may put nothing in there but you might put something in, just your brochures and your literature, again, just to give a general understanding of what's there, what this machine is.

So, drawings, calculations and tests, so what this is, it'd be your full detailed mechanical drawings, and again, you wouldn't put those on the file. You will just have a reference or links to those, but

again, with those, there needs to be control, you need to have version control etc. in there, and that's something about-, towards the end, when they talk about your production process. You need to ensure that your drawings are controlled, and if a new update is brought out, it's approved and it's sent correctly to the shop floor. So, in other words, there's no-, nobody's using an old drawing, you know, five revisions back, on the shop floor, that sort of thing, but that's to do with your revisions. And again, with the drawings, you can put in your hydraulic, pneumatic, electrical circuits in here. That's fine if you want to put them in here, as long as they're in one of the two. And then it talks about the technical information required to check conformity of the machinery with the ESB HSRs (ph 57.30) . So, what I'd say is, in this section, it's generally your calculations, your tests, certificates maybe if you get, like, certificates from a hydraulic equipment supplier who's done tests or something like that, even when he went into (ph 57.46) other places but it's not really search (ph 57.48) . But what I would say is, when you're doing tests, there's nothing wrong with just including videos and photos. You know, if you're doing a, a test on a machine's stability and you take a video of it, it's probably better than photos, you know, so tests can be videos, photos etc. let's face it, long, wordy documents are not really very readable, whereas a number of photos, short video and a bit of an explanation is probably a good test result.

Again, what you can be looking at is you could take a machine back in after six months and look for crack, look for wear, you know, look for that, so that, that's the sort of things you would keep in here. So again, you're proving your conformity by doing these kind of tests. This, this is a bit of a long section, it goes on quite a bit but we'll, we'll talk about it in a bit of detail. Very important, I don't see these often enough when I go out, people actually don't know they exist but this is what you definitely need to do. You should have this section done. So, the EHSRs, the responsible person must ensure that a, a risk assessment is carried out to determine the health and safety requirements. We'll do the risk assessment detail later. The machine-, machinery must be designed and constructed taking into account the results of the risk assessment. So, in other words, the risk assessments tell you to put a guard or put a safety device in, you need to do it but the (audio distorts 59.20) process of risk assessments and risk reduction referred to above, 'the responsible person, person shall determine the limits of the machinery, which will include the intended use and any foresee-, reasonable foreseeable misuse'. What they're saying is there, you have to-, if you build a machine, you have to determine, you know, 'Is this-, does this lift fifteen foot high, 30 foot high? Is it a ten-tonne machine? Is it a five-tonne machine?' And other, kinda, limits, you know, that's in it. But also you got to look at reasonably foreseeable misuse. So, in other words, if you had a moving part high up and you determine, in your standards, that you don't need to guard that because it's above a certain height but there's a ladder built into the machine for getting access, is it foreseeable that someone will climb up that ladder and put their hand up? Yes. So, things like that, you know, so, there's lots of things where people, you know, you can't say that people wouldn't reasonably foreseeably misuse. Now, totalling (ph 01.00.23) other, you know, derogation of duty, I suppose, by an operator is a different thing. So, you need to identify hazards that could be generated by the machinery and associated hazardous situations. So, is the machine going to do it but there are other hazards routing (ph 01.00.40) around maybe it can create? And then, when you have risks, taking into account the severity of possible injury or damage to health and probability of occurrence. Again, that's something that I'm going to show you at-, a way, one way to do risk assessments later on. There's no-, there are a few ways you can do these. Evaluate the risks with a view to

determining whether risk reduction is required in accordance with the directives. You know, do you need to reduce the risks? What I always look at is, you know, I-, we've all been to the underground in London, you know, and you walk up and there's no barrier. There's a big electric line on the ground, you know, and there's no-, I know people have fell-, fallen in and etc. But what I am saying is if somebody's expecting something, like, people are going into the tube station expecting to get a train. They're expecting to walk on the platform and they're expecting trains to turn up. And most of them know that there's a big line down there. So, what I'm saying is-, I'm not saying you can't ignore the risk. What it is, it depends on how much the user knows. So, you have to look at how you're reducing that risk to an acceptable level. You can never eliminate risk, you can only reduce it.

So, it's that thing of, 'What do I need to do to reduce that risk.' And to eliminate the hazards or reduce the risks associated by these hazards by application of protected measures in order of priority established in the sections. We (ph 01.02.12) got cut off there but-, so what it is, you know, you start to eliminate the risks, take the most dangerous ones and then work your way through the risks to get that done. So, this is what the-, so the ES-, the EHSR they're in the machinery directive, they're in the machinery directive in this document, they are free to download. And, I mean, there's lots of paragraphs and explanations and stuff come with them. And so, for everyone there are six sections to the EHSR. Number one is mandatory, for everyone. And then if you follow under any of the other categories you need to look at those. So, most people fall under one and stop. There are a few people, as I say, I've seen fall under three and maybe four. But mostly it's number one you have to do. And that's the only one. I'm not going to talk about two, three, four, five or six today. I mean, they're there you can go and read them. But I'm only dealing with, with section one. So, section one is broken into seven areas. General remarks, again, that thing of you're, you're, you know, sort of, setting the scene and stuff like that. It, it tells you, I think I have it later on, I have the slide of what the actual general remarks are. So, you're, kind of, setting out your scene and your risk assessment in general remarks. Control systems. Again, we'll go into it in more detail.

So, you have protection against mechanical hazard. And then that's-, that is guards and other ways to guard. Protective devices. And then required characteristics of guards and protective devices. So, a guard is-, a protective device is something other than a guard. So, a protective device is like a-, maybe a light curtain or something, you know, like that there. Or an E-stop or something. In other words, if someone reaches over and breaks the machine it'll stop. As opposed to a physical guard which stops you touching the machine. Then you have lots of other hazards in there. It also looks at your maintenance. So, it, it sets out what your obligations, I suppose you would call it, are on-, to do with maintenance. And the last one is information which will cover your instructions. So, if we take general remarks. It sets out definitions, principles of safety integration, materials and products, lighting, designing of machinery etc. So, it sets out lots of, you know, lighting. I mean, what, what it is with it-, with these, some of this don't apply. And if they don't apply you just tick the side of the box. You just tick, 'Not applicable,' you know, for your report. So, you do that. So, I'll just go back there, one second. So, design of machinery to facilitate as handling. So, again, if you're putting either lifting points or if you're lifting up a forklift, you're needing slots for a forklift it tells you

what you should be doing. Ergonomics, operating seating. So, in other words, creative position in seating. That bit is to do with the actual functionality of the machine. You shouldn't have control panels too hard to reach. You shouldn't-, you know, if someone's standing operating you shouldn't make it that it's, it's impossible for them to, you know-, they're sitting too far away etc. So, it's, sort of, comfort for the operator is what-, is what that, sort of, section is about.

So, then, if we-, (inaudible 01.05.55) . So then, you have a section on control systems. So, control devices. Starting, stopping. It explains what a normal-, so, your normal stop is, you know, someone presses stop on the machine and it stops and it shuts down. That's the machine shutdown. You have an operational stop, which is where someone stops the machine. Maybe the-, it's a line, maybe it's there (ph 01.06.25) to stop the machine. They do some-, they press, 'Start,' the machine starts again, it doesn't reset. So, you can't have those. Again, you've got to look at the risks. Is that okay? Is that okay? You know, how knows it's starting and stopping? You have the emergency stop which is-, does what it says on the tin. It stops. It must stop. And it has to be reset before starts. And, again, the next seminar on electrical safety will go into a wee bit more about, you know, E stops and control circuits and stuff like that. Then the other one is on the assembly of machinery. And again, that's to do with (mw 01.07.05). It's your-, I suppose your partly completed machinery would, sort of, fall in there. So, in other words, if you put something-, another piece of machinery in your machine, it should stop. When an E stops it it should stop as well. It shouldn't, you know, an inherent risk to operators. In other words, it doesn't stop or it treats the thing different. So, assembly of machinery for the purpose of stopping, it should stop and it should be controlled by your machine if it's fully integrated into the machine. And then you have selection of controller operating (mw 01.07.39) and failure of power supply. So, failure of power supply, again, is what happens if the power supply fails. Is there-, I remember a long time ago working on a machine and we figured out if you-, power supply failed, the air dumped. That was fine. It was fine. Dump the air. It's okay. But what we actually realised that one of the heads was being held up under (mw 01.08.02) pressure. And if we dumped the air in that section it could come down potentially on the operator's hand. So, we had to build in a separate circuit to actually ensure that the air stayed in that section but dumped out of everywhere else. So, again, you have to look at what would happen in the case of a failure of the power supply. So, then it's protection against mechanical hazards, risk of loss of stability. So, things like, you know, could it break up? Could the machine fall over? You know, you know, with a lot of first restrainer (ph 01.08.41) type machinery, you know, there's a lot of, you know-, is there a stability issue? And again, that's the other thing when you're setting the machine up, that, you know, you should have, you know, if it's, kind of, like a mobile machine, you set it up. It's that thing of, of stability etc. that it should-, it should, you know, be safe when you set it up. Break up during operation. Again, if there's flywheels (ph 01.09.03), if there's etc, so that, that something won't break up-, break off it. Again, ejected objects, you know, if you're crushing stone and there's stones flying out of it, that's if, you know, you should be maybe-, so you have to maybe run your tests to see how high you need to put a guard on that stops ejected materials coming out of that, you know, coming out of it. Things like that there. Again, that's probably where you'd need to run a test. There's no point putting a big massive guard on if you don't need it. Surface edges, angles, very self explanatory, people shouldn't be cutting themselves. Risks related to combinations of machinery. So, again, this is where you-, where you're suing maybe a number of machines together. So, it's a case of, you know, if there's-, if you-, you have to look at, kind of, all of

the risks involved with combining parts of machinery or maybe it's a different element. How do I put this? If you're maybe changing a head on a machine that does a different function. Something like that there. Risk related to variations of operating additions. Again, that could be temperature related. That could be within the rain, that could be, you know-, there's lots of other operating additions.

Risks related to moving parts. So, again, that's wearing guarding (ph 01.10.27) etc. Choice of protection against risks of moving parts. So, you're moving transmission parts and you're moving parts in involved in the process. So, transmission part generally spins. Whereas you've other maybe, you know-, you could've parts which are maybe pick and place. You could've lots of parts which are, are moving. So-, excuse me. So, it's, kind of, your choice of what, what is going to be. You know, how you guard against that. And then risk of uncontrolled movement. So, when something stops, it's meant to stop. It's a bit like that thing, if you don't have the brake applied currently on your car there's a risk that it could start rolling down a hill. So, it's that, kind of, thing of you have to look at potentially uncontrolled movements. And then it talks about the actual characteristics of guards and protective devices. So, just your general requirements. Again, what I suggest is-, I can't go through all this today. But what you need to do is, kind of, go through it, look at these actual sections and it'll, kind of, become self explanatory as to what's-, you know, what you need to do. So, again with guards, you have a fixed guard, you have an interlockable moved guard and you have an adjustable guard. So, you know, that can be-, so, fixed guard, you bolt it on, it's there. You can have an interlockable guard where you lift the guard and if you lift that something tells that machine to stop etc. So, again it's looking at the different ways you can (ph 01.12.11) do. And it talks about the characteristics. It's to be robust, securely held in place, all those, kind of, things.

Again, I don't have time to go through all this today but it's just to give you a flavour of what in there. It's quite self-explanatory. You just go through it and you see does it apply. And if it doesn't apply to your machine, it doesn't apply to your machine. You just put, 'Non applicable.' Then you've risk to other hazards. Okay, electricity supply, again that's very obvious. You know there's lots of things around safety, electrical safety of machines. And again depends on your machine, depends on your voltage. The other one's static. I have come across this in the past where static electricity has built up a lot in machines and static can be dangerous for a number of reasons. We've all had static shocks but static can cause other issues. So, again, you know, some things need to be grounded especially. Energy supply, other than electricity. So, that's pneumatic retention energy, pneumatic hydraulic, lots of other energy sources. Errors of fitting. Again, if somebody fits something wrong, will that cause an issue to do with safety? Extreme temperatures, fire, explosion, noise. Well, again it's-, you have to look at all of those, kind of, things. Again, if it doesn't apply, it doesn't apply. But you've got to look at it. Again, there is noise directives, separate noise directives about levels of noise in machinery and when you should be using PPE etc. But basically, it's for the purposes of noise, you know, it's, it's-, it is a hazard at the end of the day so you've got to do something about it. Whether you guard it out or whether you reduce it on the machine with canopies etc. or whether you do it with PPE etc. And it continues on, risks, vibration, radiation,

external radiation, laser radiation. Again, these are things that don't. But then you start maybe getting back into things that do apply.

Emissions of hazardous materials and/or substances. So, again, if you have a lot of hazardous material, do you need to put in safety devices to catch that material if it potentially could leak? Risk of being trapped within a machine. And then, risks of slipping, tripping, falling. So, those, kind of, areas again is to be around general-, (ph 01.14.32) well, it can be around operation but more of it can be related around actually maintenance of the machines. So, again, you've got to make sure that people don't get trapped in the machine. And it's that thing of the maintenance is that, kind of, lockout, tag-out type thing. But also in operation-, sometimes people do need to be close to a danger area of a machine but again you've got to make sure they don't get trapped in it.

And then maintenance. I suppose one of the things about maintenance is you've gotta make it easy for people to do and you've gotta bring out-, you've gotta make your maintenance points accessible, and the more often maintenance has to be done on a point, the more accessible you've got to make it. So, in other words, greasing, I suppose, is one of the most common ones. Grease points should not be buried in under machine that operators have to crawl into, you know, there are lots of ways now and there's lots of auto greasers, but also there's lots of ways to bring your grease point out which is more obvious and more accessible, so, that would be the obvious one. And, again, it talks about cleaning of internal parts, you know, there are lots of machines which the operator or the technician has to clean that on a regular or semi-regular basis. So, again, if it is regular, you know, it should be very simple for the operator. They shouldn't be having to climb over anything. So, it's that, kind of, operator intervention. You've gotta make your machine easily maintainable, accessible and, you know, safe as well at the same time, because if you look at the production thing, you cannot be shutting machines down all the time. You know, so, in other words, it's that thing of you quickly clean it and get it back up, or, possibly clean it while another part of the machine's running. Again, that's up to you to determine that risk.

So, information on machines, warnings of machinery, again, they do recommend that it can be as pictorial as possible. There's lots of pictorials because there's a lot of people who work and, again, in different languages in different countries, so, you've gotta make the machinery-, or, sorry, you've gotta make the information so that people can understand it. And warnings as well as that shouldn't be-, how would you put it? They shouldn't be confusing, you shouldn't have two warnings that say two, kind of, conflicting things. So, it's, kind of, keep it simple and tell people to keep away. And we're gonna do this today, we're gonna look at the marking of the machinery which is the CE marking, etc, and stuff like that, and we're going to look at contents and instructions in a bit more detail later. So, that's your ESHRs. That is what is in it. Obviously (ph 01.17.21), now what I'm gonna do is take a few of those sections and maybe go into a wee bit more detail on it. So, risk assessment, this, kind of, comes from 1.1. So, it gives you the definitions of things, so, what is-, how are danger zone fairly exposed person, an operator, etc, risk guard. So, there's the definition of a

guard versus the definition of a protected device. So, again, that can be used in conjunction (ph 01.17.53). Intended use and reasonably foreseeable misuse. This is something that very (ph 01.17.58)-, comes up a lot in the machinery directive, you've gotta look at that reasonably foreseeable misuse. And people always say, 'Oh, well, I can't guard (ph 01.18.05) of stupidity.' So, I suppose it's finding that fine line between, you know, what they could reasonably get wrong or, I mean, if people climb up on top of machines and get ladders, bypass interlocks, that's not your problem, that's their problem. But it's that kind of thing, it's reasonably foreseeable misuse.

So, again, this is the sort of paragraph that you will see within the ESHRs that are laid out, what it is and what you need to do about it. So, must be designed and structured (ph 01.18.40) fitted for its function, could be operated, adjusted, maintained without putting persons at risk, that's what we were just talking about, when these operations are carried out under conditions foreseen but also reasonably foreseeable misuse. The aim of the measures taken must be to eliminate any kind of risk throughout the foreseeable life time of the machinery including phases of transport, assembly, dismantling, disabling and scrapping. And what it's basically saying is, you know, if a machine is moved around from yard to yard, so, if it's some sort of portable equipment, you know, it's something sticking (ph 01.19.14), whereas, if something is fixed in a factor it's gonna take less abuse. So, it's that kind of thing of this you try and eliminate the risk. Now there are things which the operator-, sorry, the owners of the equipment should be doing. So, they should be inspecting machinery on an annual basis or six monthly basis on their PUWER or LOLER. So, in other words they're inspecting machines that things haven't fallen off half broken, pins haven't worn. So, what you're meant to do is send the machinery safe and easily maintainable and you tell them how to maintain it and you tell them what to look for. But again the operators and owners have responsibilities too. You can't foresee a machine ten years down the line, you know, you can't really foresee what someone has or hasn't done to that machine. So, this is about selecting the most appropriate method.

The responsible person must apply the following principles, and then whenever reduce risks as far as possible, you can never eliminate-, well, it says eliminate but it's very rarely you can totally eliminate a risk. Take the necessary protected measures in relation to this risk, so-, and then inform users of residual risks due to any shortcomings of the protected measure, indicate any particular training require and needs to provide personal protective equipment. So, that's back to the thing of is you're gonna have a mix of yards, you know, instruction and training. So, in other words there's lots of machines that people see out there, look at a harvester out in the field, look at-, you know, so, they are dangerous if you walk in front of them, but at the end of the day the driver driving them should be trained, you know, to look out for people and objects, etc, and stuff like that. I mean, an excavator is a very-, can be put in a lot of-, lots of dangerous scenarios, but, again, it's that kind of training (inaudible 01.21.15) , etc. You know, there's a certain amount of knowledge/instruction only certain people trained at certain levels should be using the machine. So, it's a bit of a mix-, a mix of all. So, principles of safety integration, when designing and constructing machinery, when drafting instructions the responsible person must envisage, back to this thing of reasonably foreseeable misuse. The machine must be constructed and situated to prevent abnormal use that

would endanger risk. Where appropriate construction must draw the user's attention to where-, which experience might have shown that might incur (ph 01.21.50).

So, in other words if maybe-, back to that example of machinery on the side of a hill, you know, that if you have level of legs you can say, 'Look-,' You can, sort of, show the diagrams. 'This is what's level. This is what's not level.' Don't do it beyond this, kind of, angle. Stuff like that there. So, it's that, kind of, thing of showing them, you know, and saying, 'Look, there are scenarios where you need to watch out for them.' Machinery must be designed and constructed to take account of constraints, it's the operator subject as a result unnecessarily (ph 01.22.21). Yes, so, in other words if an operator is wearing PPE and, you know, so, maybe that's, kind of restricting them in a certain way, so, you have to maybe, kind of, allow for that. Maybe if they're wearing gloves, no very small find adjustment, you know, knobs or whatever. Machinery must be supplied with all the special equipment and accessories to enable the, the adjust continues. So, that would be a view of a specialist tool required for your machine. I mean, they're rare enough, but it's a bit like when you get the, the tool that comes with the grinder. I see now a lot of grinders are doing away with that tool and they're changing the actual knob to be self loosened. So, it's that kind of thing if there's anything special you need to send the, the operator. So, this is getting into risk assessment. This is probably the bit that I was trying to get at, I was. It says-, it talks about you need to do a risk assessment.

So, what I-, what I see when I'm out there, and this is, kind of, my personal experience when I do companies, is risk assessments are probably not in a lot of cases machine specific enough and they haven't-, there's not enough done on particular areas. People-, I go in and people say, 'Oh, yeah, we do risk assessments here in the factory all the time and we just apply that.' And, and you see maybe one or two pages of very very basic risk assessment, but they haven't went to a particular, you know, moving part, or they haven't went to a particular area of the machine and actually discussed it in detail and said, 'This is why we put a guard on, this is why we did this.' You know, it's very generic. So, what I would say is you need to be more specific with machines. You need to look at guarding. You know, you can look at-, you can look at maybe having one for, you know, guards of a certain section of the machine and put them all together, but you need to be more specific if you can about their risks. So, the EHSRs require risk of assessment-, risk assessment to be carried out but no method is specified. So, machinery directive doesn't give you a method. There are a number of methods out there. Now there is one standard that probably you'll see on a lot of machinery and a lot of use and it's 12100 safety machinery, general principles for design, risk assessment, risk reduction. So, if you get that standard and you read it it talks about the basic-, it specifies basic terminology principles and methods for achieving safety and it specifies principle risk assessment, risk reduction.

So, in other words it, it gives you methods. Now, I'm gonna give you-, I'm gonna use one method today. There are lots of methods out there but this is just one to show you a way to do it if you don't

have a way. So, you must identify the hazards. That's anything that causes potential harm. Then you must assess the risk, which is the likelihood of a person coming into contact with a hazard. So, you could have a hazard, but someone's never gonna come into contact with it. So, you can look at that. The number of persons exposed. With a lot of machinery, you know, you're talking more than two people, but again it's back to that thing, if this machine was in public, whatever, you could have 100 people, that changes the numbers a lot. How often will they be exposed to risk? Is it daily? Is it annually? Is it, you know, whatever? So, again, you take those factors into account. And, again, as I said, there's lot of methods to look at risk assessment. We're coming near the end of this section, so, I'm just gonna complete it. It's only another couple of slides. So, the primary hazard analysis uses a hazard rating number and uses four factors. So, the four factors it looks at, again, that thing, likelihood of occurrence. So, it's impossible-, well, okay, things are never impossible, but, you know, there are things where a risk is certain. In other words, if someone puts their hand in there, they're gonna get a-, lose a finger, or they're gonna get trapped in that fly lead (ph 01.26.20). So, it is certain. And a lot of things fall into the probability area, so, it's probable it's gonna happen.

Breaking the day (ph 01.26.28) of exposure. Again, you know, if it's something-, if someone's doing annual maintenance and that's the only time they're ever exposed, you would treat that risk to something that's happened constantly. So, it's back to that thing, if something's out in public, you know, and it's swinging around and stuff, that, that is (mw 01.26.44), so, you've a higher risk, a-, or a higher risk number. And, again, degree of possible harm, if something is only gonna scratch you, if something's only gonna-, you know, that's different from loss of limb, fatality, etc. So, you have to look at that as well. Like we've all been out there and done work on machines and bruised our knuckles and done that. Yes, it's not ideal and there's people who wanna fill in accident forms, etc, but, you know, that, that is something that, that can happen with machines. But if you're starting to get cut or starting to feel, you know, ill health effects, or definitely breaking bones, you know, thing, but-, so, again, it's back to that thing of the degree of possible harm. And then the other thing is the number of persons. Now, you have to say if one person gets hurt or twelve people get hurt, it's everybody's bad, but I suppose what they're-, what this, this is for is if it's something where you have one or two operators who are experienced and are-, know they're gonna be there, you know, are always there, that's very different from 50 people who are walking past this machine for the first time.

You know, and back to thing of the trains and the train platform, you know, the number of people is sky high but, you know, the likelihood is varied (ph 01.28.07). So, again, it's that thing of where is this machine? What's it gonna be used in? If you've a factory with 50 workers or if you have a farm with one worker who is the operator, the user, the everything, you know, that's, that's why the number of people matter. So, when you multiple the numbers together you come out with a hazard-, a hazard rating number and that hazard rating number is something you need to do something about. So, we multiply the four numbers together, and I will do a example towards the end. I will do an example for you. And then you come out with a number and you determine is it acceptable or not? And anything significant or above, you do something about. If it's lower-, if it comes out that the risk is lower and it's gonna-, that's okay you could-, well, what you should do is

you should document that and say, 'Look, we determined that that was low. We, we decided that we didn't need to do anything about it.' And by the way, ten engineers have done ten of these, they've never come out at the same number, but they'll fall roughly into the same ball park area. They'll fall into the, you know, the first three, the middle two or the top three. They'll fall in somewhere there. So, it's, again, it's just a line in the sand that you want to do to do that. So, what we're gonna do now is we're gonna take some questions.

Look at that, 11 o'clock exactly. (talking over each other 01.29.38) I know. I know. You'd think I'd been planning this. So, we'll take any questions and then at the end of the questions Barry will tell us how long of a break he's gonna give us and when to be back. So, if you wanna go ahead with any questions then, Barry (ph 01.29.51).

Moderator 2: Okay, yes, so, there, there is just a couple of questions and we'll squeeze in those before the break. Someone's asked, 'Is it possible to get a-, an example of a technical file that has been completed already?' Is there such a document or an example that exists, Pearse, that, that we're able to share?

Moderator 1: No, I don't. I only really have-, I only-, personally I only have the-, you know, the outline of one-,

Moderator 2: Yes.

Moderator 1: And I have some information that goes into it, but, no, I don't, and I've never seen one online. I think you can buy them. There are people out there sell them, but I don't have one. But, but it's those-, if you look at this presentation in totality, I'm going into detail in each section, so, no, it's not a practical example, but it's, kind of, examples-, it's detailed within each area of, of the technical file.

Moderator 2: And, and a reminder that, that we will be sharing a copy of the slides afterwards as well.

Moderator 1: Yes.

Moderator 2: One question, so, it's a long question. I'm gonna read it slowly for my benefit more than yours, Pearse? 'How would the CE mark work for an agricultural trailer which has bought in parts-, which has been bought in parts, so, realms (ph 01.31.00), axle, etc, that have their own CE mark? Does the manufacturer of the trailer need to have an overall CE mark on the-, on the trailer,

and would your technical file have the calculations from the purchase parts, or, would you need to complete these on your own?'

Moderator 1: Okay, it's easy enough. Well, it's easy when you know how. So, first of all the components you're banning aren't CE marked, the components you're banning are E marked. So, your axles, your, your coupling, your legs, they're all E marked. So, that trailer primarily falls under vehicle legislation. So, the first thing you need to do is comply with vehicle legislation. Now, there's no mandatory-, so, if that is an agricultural, it's a category R or S. Probably a category R trailer, and there's no mandatory testing or type of approval before you put that trailer on the road. However, you do need to conform with Constructions and Use in the UK or whatever, and the same with the South of Ireland there's a guidance document from the RSA regarding agricultural trailers. So, that trailer primarily needs to fall under vehicle legislation and comply with that. The machinery part of the-, so, if that trailer tips or if that trailer has a hydraulic tail door, etc, it will fall under the machinery directive. There is a standard for tipping trailers. I think I might have it later on in one of the-, in one of the declaration conformity things. If I don't I'll, I'll dig it out during the break. There is a standard, so, you should follow that standard. But this person is probably sitting at the other end going, 'I wish I'd never asked this question.' You, you follow that standard for tipping trailers. I mean, it's quite simple, there's nothing really to it. Tipping trailers are meant to have things like a prop and stuff like that.

So, back to the original question. You buy in your components. You make sure they're all correctly E marked. Then you buy in probably other components to the likes of hydraulic rams and stuff, which aren't CE marked but you should ensure they're fit for purpose for that machine. You pop them altogether and then you don't need to-, in the UK and, and Ireland you don't need to issue a certificate of conformity for the trailer, but you do need to ensure it complies with road legislation. And then on the CE marking side, yes, you will complete your declaration of conformity for the machine-, under the machinery directive and you would follow the standard for tipping trailers. So, you would say, 'Complies with the machine directive based on the following harmonised standard.' Which would be for a tipping trailer. So, short answer is yes, and if that person wants any more detail if they drop another thing back into the chat box, Barry, you can get them directly in contact if they want more detail on that.

Moderator 2: Yes, that's perfect and, I say, if there's any questions that, that we can't answer on the-, on the webinar, we will have contact details of everyone who's asked a question so we can follow up with those post webinar as well. Someone has just squeezed in another question. Do you want to take it now, Pearse, or are, are you ready for a break?

Moderator 1: Yes, yes, go ahead. No, no, no, go ahead.

Moderator 2: Okay. 'I have a project that requires a tool set to be collected from a machine at a

height of around 6ft. Can a designed attachment by myself be connected to a bought-in CE marked lift, or does it count as an attachment?'

Moderator 1: Your attachment is between the lift and the load, so, you're saying the load is whatever you said at the start there. Whatever is between the two is the lifting attachment. Now, it doesn't necessarily mean that you can't do it yourself, but you would need to go and look at the guidance on lifting attachments. So, you can, I mean, but it's-, it, it-, so, the machine that you're talking about is the load. The lift is the lifting machinery and what's in between the two is the lifting attachment. You can make your own. Some people do. But what you would need to do then is go and look at the machinery directive bit on the-, the bit on lifting attachments and see how much you would need to do. So, it can all still be self certification but the bit between the load and the machine, the lifting machine, is the lifting attachment (inaudible 01.35.26) .

Moderator 2: And then I'm squeezing one more in-,

Moderator 1: Okay.

Moderator 2: But finally, 'Do attachment suppliers for diggers or forklifts need to be assessed by a notified body?'

Moderator 1: No. No, they don't. (mw 01.35.39) and I'm, I'm using a very broad brush there but, no. So, in other words if you're supplying-, the saw heads for diggers is the one I always get asked about because people see saws in the-, in the section to do with third party approval but it's, it's things like chainsaws, planers, discs and circular saws. So, no, so, if you're building that or if you're building a tree shear or if you're building buckets, no, you don't need third party approval because they are interchangeable equipment if they're moving and they're, they're a tool if they're a bucket. So, no, you don't need third party approval. However, if you are supplying directly to say maybe JCB or something like that, or (mw 01.36.24) or whoever, they might assess you, but that's, that's between you and them if you know what I mean.

Moderator 2: Yes. Super. That's, that's great and I think you've definitely earned a glass of water and a-, and a bit of a break. So, are you happy to take-, to take the fifteen odd minutes, Pearse?

Moderator 1: Yes, yes, you give a time, Barry, and we'll come back for that time.

Moderator 2: Well, it's very close to ten past, so, we'll give you seventeen minutes. So, ten past now. We add fifteen minutes onto that. So, if my maths are correct we're talking 11:25 for a-, for a restart?

Moderator 1: Yes, that's perfect for me.

Moderator 2: That sound okay. Okay, folks shall we see everybody back here at 25 past sharp.

Moderator 1: Thank you. (silence 01.37.07-01.37.20)

Moderator 2: Okay. Just 25 past. Pearse, if you're happy to get going again and, so, you should have control there, just if you move onto the next slide I'll be 100% sure. Brilliant.

Moderator 1: Yes.

Moderator 2: Okay, whenever you're ready.

Moderator 1: Yes, I'm good to go. Okay, folks, so, we're, we're just passing the half way mark now, so, what I'm gonna do in this-, in the second half here is I'm gonna finish off the, the contents of technical file, go through each section and give you explanations. Then my colleague, Jackie, is gonna give us a talk on-, to review the technical files. I think we're taking some questions just before that. And then I'm gonna come back and do a last few pieces, one of them being where I will give you a practical risk assessment and I will actually try and show you how then that links to using standards and filling in your essential health and safety requirements. Right. So, standards. So, United Kingdom is a member of CEN and CENELEC and also ISO. CEN is the European Committee for Standards-, Standardisation, and CENELEC is the European Committee for Electrotechnical Standardisation. These are associations that bring together the national standardisation bodies of 34 European countries. Nothing to do with the European Union. Well, it, it is and it isn't but it's much-, it's much bigger than the European Union. Britain stayed in it after, was in for a year and stayed in it since Brexit, so, they have standards update-, they will be updating their standards, which is a good thing. So, the ISO is International Organisation for Standardisation and has developed over 25,000 international standards that apply across 171 member countries, so, you'll see standards like ISO 9001 that has been agreed across Europe and beyond and US and further.

BSI is the UK's national standards institutions (ph 01.39.29) body. It is the one stop shop for all stakeholders and is the main focal point of access to the conservative (ph 01.39.37) system, which comprises regional European and ISO standards. It is the responsibility of CEN and ISO members, national members, so, this is BSI, to implement standards and international European standards as national standards. So, in other words they're created as a standard and then in front of the EN you'll see BSIE in-, so, in other words that's just where the member state has brought it into their

national standard and has updated their national standard. There are some differences people talk about. There are differences and stuff, they're few and far between, but there can be some, some differences (mw 01.40.20) but generally the BSEN standard is the same. The national standardisation bodies distribute and sell the implement, implement international and European standards and it's also they have to withdraw any conflicting national standards, so, where they have a duty who-, you'll see standards will-, can be in draft, can be under review, withdrawn or current, sort of, the states of the standard. So, they're meant to-, they're meant-, so, BSI or in the south the MSAI will pick-, will implement the new standard and, and (mw 01.40.59) the old one-, remove the old one. So, that's, that's the background to standards, where standards come from. So, the machinery manufactured in conformity with EN harmonised standards are best practice and so provide a presumption of compliance to the EHSRs.

So, what, what they're, kind of, saying is that if you have a standard (inaudible 01.41.26) specific stands, but if you have a standard you can almost over rule some of the EHSRs. For, for example, in the EHSRs it says, 'Safe working loads should be tested one and a half times safe working load.' But if you read the standard for a block grab, a block grab will say, 'Test if four times.' So, the standard overrules the EHSR. It's all-, generally always higher. Harmonised standards provide techno specifications that enable the machinery manufacturers to comply with the EHSR. So, in other words they, they, kind of, work together. If you follow your standard you should be compliant in EHSR. Since harmonised standards are developed and adopted on the basis of a consensus between interested parties, their specification provide a good indication of the state of the art at the time they're adopted. So, in other words, you know, if you look at any of the committees for these standards you will see, you know, slurry tank manufacturers on the-, on the committee. For the standard you'll see (mw 01.42.27) manufacturers on the committee, etc. So, they are meant to get-, keep the standards up to date and bring them in as they come in. The evolution of the state of the art is reflected in later amendments or revised provisions of the standard. So, you will see standards where they're quoted as a standard and then you'll have an A at the end. So, in other words, there's been an amendment to the standard. And then, you get a complete revision of a standard which is a completely brand new standard. So, you will-, I'll show you a few numbers later and hopefully it'll make sense. So, there are three distinct types of standards. So, you have A-type. I talked about one earlier. 12100, applies to all machines. B-type (ph 01.43.08) promotes safety. So, B1 are particular aspects of noise, safety, distance. Those are the ones that'll tell you how big a guard (ph 01.43.17) should be, how long a human arm is, is or should be thought of. And then, B2s are safeguards. So, your things like your access control interlocking devices, stuff like that will fall under your B2s. So, those-, you, you won't be manufacturing those. What you'll be-, you'll be using those products in your machine. And then your C-type is specific to a machine. So, I give a few examples here. So, A-type is your 12100. That'll apply to almost every machine I think. It's, it's-, some part of it is going to apply to a machine and it gives you generic risk assessment advice. So, your B-types, your hydraulic fluid power, your pneumatic fluid power, there's one for guards there and machines. There is another one for safety and machines, control systems. So, they, they you know, will relate to a lot of machines. If there's no pneumatics in your machine it won't apply. But if there's no-, so-, and what-, for example, with hydraulics what you would generally see is if you buy in components they will be-, so, in other words, if someone makes you up a power pack they will follow 4413. In other words, they'll set their overloads, they will do all that, they will put in the returns etc, the pipe

sizes. They'll design to 4413. And then you would incorporate that into your machine.

And then type-C are specific to your machine. And do we have it on there? We do. The question I was asked earlier, if you look at the bottom of the list. EN1853 is agricultural machinery trailers. So, there is a standard for trailers. I've-, just to show you I've stuck in some BSs and some ENs and then you've ISOs and stuff. So, it's just, you know, you'll see them written in various forms but they're all the same standard at the end of the day. But it's just the country, you know-, they-, this is a-, BSI has implemented that in the UK. So, that, that's your standard. The one thing I would say is, you know if you have a C-type standard it makes life easier. If there's a particular C-type standard for your machine your life does become easier. Because it will be very specific on that machine and it'll tell you lots of things that you should be doing. And it'll tell you gaps, distances, sizes, whatever on that machine. Like, if you read the one for slurry tankers or trailers, as I was saying, the one for the tipping trailer. It will tell you where the prop should be. It'll tell you how the prop should be stored in the machine. You know, it'll be very specific to it and you literally follow that. So-, and it may give you a range. So, it'll say, 'It has to be,' you know, '450-, between 450 and between 650 mil from the back.' And, you know, so it'll give you-, but as long as you're within that range it'll-, you're okay. The other thing I would say about standards is if you quote them you've got to have them. If you quote a standard on your Declaration of Conformity, it's meant to be kept in your technical file. And the revisions, (mw 01.46.37) talked about revisions. So, what-, the revisions on the files, it's meant to be in there. If the HSE or others did come calling and you quote a standard they're going to say, 'Well, let me see your copy of that standard.' So, you do need to have it.

Procedures should be put in place to review standards and update and implement changes. So, standards change but sometimes there's not-, it may not apply to you, the changes. But sometimes big updates come in standards where they do say, 'You must put this. This is, like, an update for this type of machine.' And you have to put those in from that date. So, you do need to keep aware of standards. The only thing I would say from reading standards is go to what's called Annex ZA in the standard. If you go to Annex ZA it'll generally state the EU directive that it can be used to prove conformance to. So, for example, those roller shutter doors, they mentioned the constitution product directive. If you go to the slurry tanker one it will mention the machinery directive. And it'll give lots of EHSRs. It'll give lots of numbers about which ones you should be-, so, there's a lot of details in the Annexes of standards is what I would say. And anyone that's ever read them you'll know that and see that. So, again, in my last piece of the presentation I'll be showing how I use the separate paragraphs and standards to meet the requirements for-, I'm going to do another dribble bar again, (mw 01.48.11) theme but we may as well keep it up. So, that's standards. They're out there. You can search for them. You know, it is sometimes hard to find a standard because it isn't always obvious in the title that is applies to your machine. But, I mean, it's something potentially we can help you with but others can help you with, find your standard.

So, technical reports and certifications. So, these here is what I would say this section as opposed to your reports that you've done in one of the earlier sections, these are reports that have been carried out by-, it could be by you. But it also by an industry expert or a notified body if you required it. So, example would be noise testing. So, if you buy in an engine and it will have a certain noise rating. When you put your canopy over that engine, you change the noise rating. So, what you've got to do is test your machine. Potentially if your machine requires it you've got to test your machine for noise at certain distances. And if anybody's ever been involved in that there's-, they have methods to do that. So, you would get a third-party report-, this isn't third-party accreditation. This is just purely a third-party report of noise. If you did get your whole machine EMC tested for some reason, if it was going into an aircraft or if there's other reasons why the whole machine requires it, that will be in there. So, these are not-, and again there is supplementary information which is another section, which is what I talked about earlier. Your components that go into machines, that would be in a different section. So, if you buy in a Bluetooth module, if you buy in a wireless module, if you buy in other stuff. If you buy in an engine, if you buy in something you would keep those. So, this is really for technical reports carried out on your whole machine or on parts of your machine.

I suppose the other thing that could be in there is the likes of an FEA, structure analysis, stress analysis, those kind of things. So, if there's a particular-, back to that thing of lifting of machinery, you know, you need to get some FEA carried out on a machine to prove compliance. Again, you may not need an outside expert to do it. Your own engineers could run it in the add-on in solid works and you might deem that that's enough. And if that's enough, that's fine. You're saying, 'Look, we, we inspected. We ran solid works, you know, FEA on it and we felt that we were well within any, kind of, limits for strength.' And that, that could be fine. That's enough. But, again, maybe if it's something where you're lifting this in over houses, you might want a specialist engineer who specialises in this to run a full stress analysis on it. So, one of the-, we, we-, in the SH earlier we talked about instructions for machinery. So, it is something that you're meant to apply-, supply with your machine is the instructions. All machinery must be accompanied by the instructions in the official community language or languages of the member state in which it's placed on the market and or put into service. So, there are three community languages. So, there's English, French and German. Excuse me. So, the fact-, we create them in English. So, we fulfil one of the-, one of the-, tick one of the boxes. We, well, we create it in a community language. But if you were sending this machine to Italy you're meant to send the instructions in Italian. You're meant to get them translated.

Unfortunately, the poor Italian manufacturer, if he was putting a machine-, if he built the machine in Italy and issued it to an Italian customer, he would have to actually issue it, or they sorry, they would have to actually issue it in Italian. And also English, French or German. Because it has to be issued in one of the community languages. The instructions accompanying machinery must be either original or translation. I see actually, we're going to talk about it later, but the new machinery regulations do away with this. But you're meant to say that the original, the English and then you're meant to put on if it's Italian, or German, or French to say that it was-, it is translation.

And if-, you're meant to send the original with the-, with the translated version.

So, again, it's just, kind of-, not nitpicking but it's just what you're supposed to do with instructions. The guidance on the content of instructions are contained in the HSRs in section 1.7.2. If you have your C-type standard, it will also give you probably quite detailed information on what should be in your instructions. Instructions should be clear and concise. Long, wordy instructions, we've all got them. We've all-, you know, we've all had them. They don't-, they don't go well. They don't read well. Pictorials, photographs should be used to reduce long passages of text. I say to people, you know, 'If you're going to write a set of instructions, start at the start.' So, if you had-, you know, if you had a slurry tanker, first thing is how to connect a slurry tanker to the tractor. You can take photographs of connecting the hook, connecting the pipes, connecting the PTO shaft, connecting the electrical connections. Then, the other thing is you would have a set of instructions about how to fill the slurry tanker, how to empty the slurry tanker to feed and then you would have then how to unattach the slurry tanker, take it all off, store it in the same place. And then, the other things you would have in would be you would have a section on frequently asked questions or problems. In other words, what if it becomes blocked, what if it becomes this. You know, and that's the same for any machine. You know, how do you-, how do you get it from a blocked position or how do you safely reduce the pressure or whatever. So, those are the, kind of, things that should be in an instruction manual. Instructions should be included for assembly, operation, and maintenance. Sometimes you don't need assembly. If a machine goes out complete, you don't need assembly instructions. And always need operation instructions. So, in other words, start, stop, use, whatever the case may be.

Again, excuse me, having something as simple as a log splitter, I mean, you could literally stick the instructions on the side of the log splitter. 'This is up. This is down. Two hands in operation (ph 01.54.44).' That's it. It doesn't need to be any longer. Maintenance then, it's back to that thing on the maintenance section of how you maintain the machine, machine, what should be done daily, you know, weekly, monthly, annually. All those kind of things. Again, it's back to that thing of how do you keep this machine in safe working condition? In other words, do you need to change blades? Do you need to change work parts? Do you need to change anything? On a trailer, for example, if you have a towing eye is there a point where that towing eye wears out? What's the, kind of, gap or, sorry, what's the, kind of, depth? So, in other words, if it starts off at, excuse me, you know, 80 mil and 45 mil, is the mil-, minimum thickness allowed, that should be in, like, an annual or a monthly thing, where you give them a specific measurement. And sometimes you do that with machines, you give them a specific measurement. So, the instructions must specify the adjustment and maintenance, operation must be carried out and indicate the frequency. That's what I've just said. You know, things you adjust daily or weekly or monthly or whatever. Instructions must list the elements or part of the machine that must be regularly checked. Just what I've said. (inaudible 01.56.02) checks in terms of duration or number of cycles. So, we've all seen it where you can have a-, you can put it by annually or you can put it by number of hours. So-, and if you're putting it by number of hours you, kind of, have to maybe have an hourly counter on the machine.

So, if you're saying you're running a, a crusher and it should have its, you know, box or something (ph 01.56.26) changed at 5000 hours or 1000 hours, well then, there should be an hourly indicator on the machine that's probably run off an engine. Instructions must specify the necessary methods and procedures to be followed in order to ensure the adjustment, maintenance and operation can be carried out safely. You tell them how to do it. The appropriate protective measures and precautions to be taken during maintenance operations must be indicated. The instructions shall be included (ph 01.56.52) as appropriate. It's back to that thing of the tipping trailer. You know, if you're maintaining or if you're changing the RAM, well, you're meant to engage the prop. So, you're meant to tell them, 'You lift the trailer up. You bring out the prop. You drop the prop. You reduce the pressure in the RAM,' etc., etc., etc. Whatever you need to do. So, it's the same thing if you're jacking a vehicle up or whatever, you're meant to indicate where you jack it, how you jack it, if it should be empty, full. Things they've got there. So, it's those, kind of, protective measures. And the other thing is if you need to protect-, if you have some, sort of, as we talked about earlier, force other than electric, so if you have a spring which is holding a lot of force, you should warn the technician, 'If you loosen that this is going to let go with some force.' So, again, that, kind of, thing where there is an inherent risk or another risk to it. So, that-, that's instructions. I mean, somebody asked the question earlier, 'Is there a sample of a technical file?' I always get asked the question, 'Have you an example of set of instructions?' No, I don't. But what I would say is if you read a C type standard or even read the machine record literally go down the list and you will start to see what they require you to have in.

But hopefully there, that last bit-, those last few slides, if you, kind of, follow those you start to looking at saying, 'What do I need to be in my instructions for operation, maintenance, you know, assembly, disassembly, etc.?' 'Cos sometimes machines do need to be assembled and disassembled for transport, etc. You know, you have some machines that, for example, combine. For road use you, you take the head completely off the machine and you put it back on the field. So, again, there's, there's lots of-, you know, you need to give instructions on how to do that. So, supplementary information, again, I talked about this a few times as to what goes into this but copies of the tech EC conformity documentation of machinery and other products incorporated into the machinery. So, this is things like if you have your declaration of conformity from your low voltage or EMC. So, you're buying in electrical components, you're buying in hydraulic components, you're buying in air operated components. You keep documentation on all that, kind of, stuff. You don't need to keep every document but you do need to keep-, you know, if you're using a type of valve you would keep one for that type of valve, etc. And, again, if there's-, if you buy in something that goes into your machine which is, like, a part machine or a whole machine it's copies of instructions from that, from the actual supplier. So, again, if anything's, kind of, incorporated into that. So, for example, you might have a touchscreen on your machine and what you might want is there'd be a set of instructions come with that touchscreen about how to get into other menus. So, you have your-, evidently your dashboard, etc. on it but you may have where the technician or whatever needs to get into that touchscreen to get into that, you know, maintenance mode or they need to change something or-, so there'd be an instruction book.

You don't need to rewrite out the instruction book for the touchscreen. You just supply that. You keep that but also maybe that's something that you want to supply out with your machine. Some of this, you keep in. You never supply out some but you will supply out with your machine as part of the instructions. And any other information from your supply chain is necessary to prove compliance and machine directive. That can be anything. I mean, there's lots of things. They might send you a structural test, they might send you, you know, again, the hydraulic-, this is probably a common thing where you would put in your information from your hydraulic supplier if they're supplying you power packs, etc., RAMs, stuff. So, you might have information on the maximum pressures and stuff from the RAMs, what they can take, what they-, you know, what's their max pressure, etc. So, any of that, kind of, supplementary information, you keep in. Remembering, you keep-, this is your technical file. You keep it. So, everything goes in here for you and this is for you to prove compliance but some of it may go with the machine. So, in other words, a bit like the, you know, set of instructions for the touchscreen, might go-, you might put it into the manual and send it as is with the machine. So, again, (inaudible 02.01.32) but you keep it all. Declarations and marks. So, we've talked a lot about the declaration of corporation, declaration of conformity. So, the declarations-, so, the machinery directive requires either a declaration of conformity for a machine or declaration of corporation. They're two different documents. They're similar but there is distinct differences between them. The other thing what we talked about earlier, there are other declaration certificates that do not relate to machinery. So, vehicles have a certificate of conformity generally and construction products have a declaration of performance.

I have seen machines come out with a certificate of conformity. I've seen a lot come out of training (ph 02.02.25), by the way, with a certificate of conformity. They get it wrong. You know, if you're buying in-, and this is for maybe for your own use, if you're buying something in, you know, (inaudible 02.02.35) the certificate. So, again, beware of what you're bringing in. And, again, if you're bringing in part machines or part-, this is what you should be looking for. So, the declaration of conformity, I'm going to give an example of one in a minute which may explain a lot of this but the EC declaration of conformity, that must be drawn up by the manufacturer of machinery or the authorised representative in the EU. So, we're assuming that's always yourself. You don't need an authorised representative. And that must be accompanied-, it must accompany machinery until it reaches the end user. In other words, you send a copy of it. The EC declaration of conformity is a legal statement by the manufacturer or its authorised representative that testing to the machinery concerned complies with all the relevant visions of the machine directive. Basically, you are saying, 'I am telling the user that this complies with the machine directive.' It's back to that thing of self declaration. You know, it's that thing of keeping the economy moving. You know, keeping industry and innovation and stuff moving. You buy in a machine, if you see a declaration of conformity you don't have to go in and look at the nth degree of that machine but at the same time if it raises concerns you should.

So, in other words, if you're buying something off Siemens or Fujitsu or Kubota or whoever you're

pretty much going to take it that they know what they're doing but if you're buying something out of China or you're buying something out of India-, and I'm not, by the way-, I'm saying they're just the companies. You can buy something from the UK equally or Germany that isn't right but you should know what to look for. And the same at the other end when someone's buying in your machine it should give them confidence that you know what you're doing and that document says a lot. And I have had companies come to me on the phone, who have had queries from the HSENI, the HSE UK, the HSA in Ireland, have said, 'Look, we've been doing sections in-,' at one there was, 'We were doing inspections in, in a machinery dealer and we'd seen that their machine wasn't correctly marked and we'd seen that your declaration of conformity was incorrect.' So, that's what they will look at. If that machine was correctly marked and had a correct declaration of conformity they'll not look much further. You know, they don't have time and whatever but they're assuming you've done it right. So, this is what you have to have on your declaration of conformity, business name, and address of manufacturer, where appropriate their authorised representative's name. It's always you. (ph 02.05.14) Name and address of person authorised to compile the technical file. It can be just the same person. They must be established in the community. It's back to that thing of you can only compile it if you're in the European Union. Description and identification of machinery including generic denomination, function, tech model, (ph 02.05.32) serial number and commercial name. So, your brand name, it should be on there too.

A-, again, this (inaudible 02.05.40) but a sentence expressing-, expressly declaring that the machine fulfils all of the visions of the directive and, where appropriate, a similar sentence declaring the conformity or other directives and relative provision (ph 02.05.52). So, in other words, you're saying, 'I conform to the machine directive, low voltage directive, pressure directive,' whatever directive. If it was machinery and low voltage for the roller door there would be-, a separate certificate would go out because the constitution product directive shouldn't be listed on a declaration of conformity. It should be listed on its own. So, there'd be two-, there'd be two conformity documents go out. And, again, if you had, where appropriate, name and address of notified body, in most cases we won't have that. Name and address, identification of notified body for full quality assurance of system. Where appropriate a reference to harmonised standards. So, again, quote your standards. If you've used a number of standards you quote the standards you've used too (ph 02.06.41). Again, that gives your, your end user confidence that you know what you're talking about. Where appropriate, give reference to other technical standards and specifications. I mean, it's, it's just, kind of, an open statement that if there's something else you need to be referring to. The place and the date. So, you need to say where it was signed and, and then the identity of the person. The identity of the person, a question I get asked a lot, 'Who can sign it?' It should be the managing director of the company really or a very senior director in the company should be signing this. It shouldn't be-, generally it shouldn't be engineers because the point of you as an engineer might move on in two or three years. So, the engineer and the others and the designers and whoever else in the company give the managing director confidence that he can go ahead and sign that document.

He may not be technical at all. We all have worked with people who-, they're business people,

they're not technical but you as engineers, etc. should give them confidence to sign that document. I'm gonna give you a couple of examples here 'cause maybe it just-, it, kind of, will make a wee bit more sense as to what we're talking about. So, declaration number, you don't have to give it that. I'm just saying it's an EU declaration and we're talking, 'This company's ATT,' is the company name or whatever. So, agricultural Tipping Trailers. So, it could be-, it's just your internal number. You don't need that on but it just means you can reference it if somebody asks you. We, the undersigned, name, address of manufacturer. By the way, you stop your address at the Northern Ireland. You don't put, 'Northern Ireland, United Kingdom,' because then that starts to confuse people that you're possibly GB. So, you stop your country as Northern Ireland for the purposes of CE marking. Declare under our sole responsibility of the following machine (ph 02.08.34) product description, Agricultural Tipping Trailers, model and number. You can put a range of, of models under the one direct-, under the one declaration of conformity. So, your twelve tonne, your fourteen tonne, your twenty tonne, could go on but what you probably shouldn't be putting on-, you probably shouldn't' be putting on your-, you know, if it was a totally different type of trailer. So, if it was a forestry trailer and a dump trailer on this you could argue not everything in the-, in the technical file will comply to them all but you say, 'Look, it was a dump trailer. It's this section. It's whatever.' So, you can put a few on. (inaudible 02.09.20) directive based on the following harmonised standards. So, there's two agricultural standards and there's a hydraulic fluid power standard.

And then, therefore complies with essential requirements of those directives. And then, you put your technical file number, location. So, I'm saying just as above. Limitations of use, you don't have to put that on but it's agricultural construction. Then, the name and person, binding the manufacturer or authorised representative, signature, name, function, owner, location, date of issue. They also want to see a signature, so it's not you should scan and sign. Their, their signature should be scanned and put on the document. Again, I've just given another example there for a slurry tanker. So, as you can see, single axle, twin axle, machinery directive different-, some standards are the same but different standards and technical file numbers are different. So, again, you can see, the one thing I didn't do there was I didn't put on-, I could have had machinery directive and low voltage, so is in conformity with all the following relatively new legislation. You could have had machinery directive, low voltage directive, (audio distorts 02.10.33) directive potentially all on that.

So, declaration of incorporation, a different document, I would advise try and stay away from this. Try and-, I mean, people do have to do it, they're rare but they do have to do it. It's a bit more onerous on you, so, again, business name and address, name and address of authorised person, description, identity of part, and it can be (ph 02.11.00) machinery, including denomination, function type, serial number, commercial name. And then, this sentence declaring that you're-, you've fulfilled the relevant thing for appropriate completed machinery, other directives. Strange one but it-, you have to put in an undertaking to submit in response to a reason request led by a national authority's relevant information on the partly completed machinery. And this shall include method of transmission, so you'd say electronically, post, whatever. So it, it's because it's more

onerous that, that something could potentially could go wrong with this machine, it's not complete. Therefore, you haven't fully tested it, so a bit onerous that they-, the German authorities or the French authorities might want to see some information.

And a statement that the partly completed machinery was not to be put in service until the final machinery into which it has been incorporated and declared with the provisions of the directive, the place and date of declaration and then, the identity of the person. Sorry, I just went back up, one second. Yeah, so slightly different document, an onerous example of one but it's similar, but slightly different. So, right at the outset of this talk, I said somewhere I believe that marking-, CE marking is less than 1% of the procedure, so out of 140 slides I've dedicated two slides to it, so I'm slightly over the 1%. But my point is that the actual marking and the plating is a very small part of it. I know that there are machines out there that have just got plates and marks and nothing else, but that's a small part. So, what goes onto your plate as far as CE marking is concerned is, 'Must be marked visibly, legibly and indelibly.' So, metal plate that's been riveted on, et cetera. And the following, the business name and address, I see lots of people now putting QR codes, et cetera on it, which is great and the authority's (ph 02.13.11) representative. Designation of machinery, the CE mark, show that in a second, designation of series or type, serial number and year-, sometimes they don't have serial numbers, but I'd, I'd expect they would have. The year of construction, you have to have the year of construction and that's the year that the process is complete. If you're building it over two years, it's the year it's about to roll out the door. And it's prohibited to pre-date or post-date machinery for this marking.

So, there we go, there's the CE mark. That's what we've been working towards, there's a specific font, you can go down onto, onto the European commission website and you can download that. The actual-, where you can view the, the actual kit map (ph 02.14.09) or whatever free of charge. I mean, if you're getting your plates made up by somebody, they'll, they'll have those but make sure it's the correct font. Again, that's with the Chinese giving away, the E tends to be too close to the C, et cetera. So, the last bit of the technical file before we move on is the manufacturing process. So, why would the manufacturing process be in there? Well, for series manufacture, they document the internal measures that would be implemented to ensure the machinery remains within conformity and the provisions of the directives. So, what it is, it's if you're making number one or number 100, you have to ensure that you make those machines the same, you know, you can repeat your process. The other thing is then that you have to show evidence of quality control and repeatability. I mean, that can be something as simple as a job card so in other words, for smaller companies, evidently, this is a very different process but if you have one or two people in a company, you know, you're saying, 'Well, look, we can prove it with very little documentation.' And that's, that's okay, you just have to prove it, simple job card. I mean, if something starts out-, so if you start that back to the agri thing, back to the trailer, you start out the dump trailer. You say, 'Okay, well, it's a fourteen-ton-,' sorry, it's a twenty-ton therefore, it has to be a tri-axel, not a twin axel but other things, like, is there a hydraulic tipping door on this? Yes, no. You know, is there a higher-rated pipe on this?

You know, so in other words, that's what your job card is when you send that out to the shop floor to be built, it should take into account all of those, kind of, you know, different sizes, shapes, like, your hydraulic pump, whatever it is. Internal change control, Jackie's going to talk in a wee minute on her presentation just about a few of these things but basically, again, small company, two or three people, you make a change, it's easy to control that change. Bigger company, 100 people out on the workshop floor, how do they have access to the latest drawn-, the updated changes, you know. So, there has to be internal change control and again, that's, that's done maybe in very-, how you do that. But if, if a machine rolled out and there was an issue, and the issue came back to, 'Oh, well, we changed that-, we changed that, you know, bracket to a stronger bracket but that didn't get communicated to the shop floor and therefore, would I put the wrong bracket?' It's that kind of thing and that caused an accident, so that's when they would come back in. So, you're showing control. And then, the other thing is you have a quality system 9001, you don't require it but if you have it, great, that probably covers off most of this-, most of this section. What I would say about technical files is technical files must be kept up to ten years after the final series of manufacturing. So, you need-, if you stopped making them in the morning, you would have to keep that technical file till the 14th of November 2034 because those machines are going to be out there and in service, and someone, in theory, could be coming back looking for it on that.

So, on that note, I think I'll take a few questions and then, Jackie is going to deliver the next part of the presentation.

Jackie: Super. Yeah, well-earned break coming up but before you do that, Pearse, we have a couple of questions that have been submitted so the first one is do you have to comply with standards if you're complying with the appropriate directive?

Moderator 2: Yeah, and so the standards show compliance to the directive, the directive will, will-, it's not that it sets it out at a high level but a directive tends to be less specific because machinery directive covers thousands of machines. So, a standard is specific to your machine, so you have to comply. The directive is used-, sorry, the standard is used to ensure compliance to a directive. So, directives are broad, standards are specific. So, again, back to that thing, if you have a specific standard-, you have a specific standard then you, you, you can show compliance. So, yes, you have to comply with the standard and the other thing is the likes of controls so in other words, you mightn't have a specific C-type standard for your machine, but you will have specific standards for control and logic, and all of that. And you should comply to those standards and again, that's something that'll be talked about in the next seminar in a bit more detail.

Jackie: Maybe just a couple more questions. It says, 'If you put multiple machines under a DOC, does that mean one CE plate?' So, it's multiple machines under a DOC, does that mean one CE plate?

Moderator 2: Well, yeah, if they-, if they're-, you can if those aren't individually put on the market.

So, if you build-, those three-, in theory, if you have four machines come in to make one machine, which can happen with the latest conveyors and stuff like that. But they're only considered as one if there's one overall control system. So, if those machines are independent control systems, they're independent machines. And we have seen that where you have to go, we've all watched Gold Rush, you have to go and switch off the conveyor, switch off the pump, switch off the, you know, the, the, the, the out-feed conveyor, the in-feed conveyors, the actual machine itself. Those are independent machines, they all require individual CE marks. If one button, if you press one button and the pumps shut down and 30 seconds later the machine shut down and the in-, that's one machine. So, really what I'm saying is one mark will do it if they're all controlled together but if they're controlled separately, they need separate marks. I mean, so yes, I've seen machines, walked in and seen four or five machines in a line with CE marks. Even though they're all controlled together, you can still have CE marks on each individual one. So, I suppose the answer to the question is it really comes down to how the machines are controlled.

Jackie: Super, and we've one more question before we move on to Jackie. Is a reference number to the technical file required on a declaration of conformity?

Moderator 2: No, it's not. It's only-, it's only for internal use and I only put that there just to maybe make an example to people to say, look, if you have twenty machines and maybe a few different iterations, and somebody phones you up, you could say to them, give me the-, they might say, 'We have a trailer here or we have a crusher here, we have whatever, and it's a mark (ph 02.21.24).' But if they say, this is the technical file number, or if an authority contacted you. So, no, you absolutely do not but it's only for your-, maybe your own internal use. And again, it's a track revision so you might have technical file 001-4, so in other words, it's the fourth revision of that thing. So, it may be on your technical file but it's not on your declaration form. So, no, you don't need it on your DOC.

Jackie: Super, and just, I suppose, that's the end of this question session, we have one more opportunity to put any questions to our contributors just before we finish around about 1 pm, but Pearse, you get a bit of a break now. Rest your voice and Jackie, we're over to you now. I see you should have control of the slides now if you want to just click on to the next slide, just to be 100%. Perfect, okay, Jackie, it's over to you.

Jackie: Great, thanks, Barry. So, I'm going to just cover some best practices for conducting an annual review of your CE mark and technical file. So, it is essential to keep this document up to date, not only to ensure compliance with the relevant standards and directives, but also to accurately document any changes that have been made to your product. So, I guess first off it's, it's the document itself, so as Pearse touched on earlier, it is important to have a clear document structure. So, good idea to structure it logically, you know, breaking it down into clear sections so, you know, as Pearse went through the product description, risk assessments, test report standards and this just makes it easier to locate and update the information as and when you need to update it. The version and control system, again, just you should implement a clear version control system for the technical file so that each update is uniquely identified. This allows just for easy tracking of changes over time and ensures, I guess more-, most

importantly, that the latest version is used. And this, kind of, would also help I guess to streamline future audits and inspections of the document by having this in place. Changelog, you should maintain a comprehensive changelog that details the nature of each modification so this, you know, would also include the, the date of the update, the person who's responsible for the changes. And by having this, it just enhances transparency and accountability. Then, on the digital accessibility so it's a good idea to have the file stored digitally and this-, it just ensures that it's easily updated and accessible if requested by a regulatory authority.

So, for digital storage, it is advisable to use, you know, backup solutions to prevent data loss but also unauthorised access. So, when you're doing your review, it is a good idea to collaborate with, with different teams so if you look internally, you could engage with, you know, R&D, quality, production and this just allows for each team to provide insights on different aspects like design changes, testing, regulatory compliance. And it is a good idea maybe to assign a responsible person or a team for the file management just to ensure that no crucial information is missed. Then, if you look externally, you should get input from your supplier and subcontractors so if any changes had been made in materials or components from the suppliers, you should obtain, you know, the necessary documentation from them. So, that could be, you know, declarations of conformity, testing data, and these updated documents should be in your technical file. And I guess this is especially important if new materials, they might affect compliance and standards like ROHS, REACH or other specific product safety standards. So, then documenting your design changes and modifications, so technical changes, you should document any changes that have been made to the product. These could include, obviously, design changes but also, materials, components or manufacturing processes. And you should evaluate whether these changes impact the, the CE conformity. You may have to conduct necessary testing so if significant modifications have been made, you may need to perform additional testing to demonstrate ongoing compliance and you should update the technical file with any new test reports or performance data.

Then, onto your, your technical drawings and documentation so your technical drawings, you should confirm that they're accurate and reflect the current design. You know, make sure your revision history tables are updated and that you're using a consistent revision numbering or naming convention so, you know, Rev A, Rev B, version one, version two, and this is just to avoid confusion. So also, with your drawings, you should ensure that previous versions are archived in case you ever need to reference them later on. Review your BOM or your bill of materials so make sure it's current and includes all components used in the product, and you should also remove any obsolete components. Then, with your wiring diagrams and schematics, make sure they're all, you know, up to date and reflect the current product setup. Again, you should maintain a detailed revision history for all diagrams and schematics. And, you know, by doing this, it's just it's crucial for traceability in case of audits or, you know, potential product recalls. So then onto the regulatory and standard changes, so you should check for changes in your directives or regulations. Changes, I guess, to directives don't happen very often but it is still best practice to check if there's any updates or amendments that have been made just to ensure ongoing compliance. With your harmonised standards, these can update more than-, more often than the directives so you should verify that the standards referenced in your technical file are still valid. If no updates or changes have been made, you should confirm your product and documentation align with them.

And you should verify if any significant updates in any of the guidance documents that they may affect your product's CE marking. Onto risk assessment, so you should reassess potential risks that could be associated with the product especially if new risks have emerged from, you know, customer feedback or incidents that may have happened over the year, and ensure the existing risk assessment reflects the most recent data and analysis methods. Then, you should update your mitigation so if any new risks have been identified, you should document any additional mitigations or safeguards in the technical file. On your supporting documentation, so labelling, you should confirm that the labelling complies with the current requirements. So, this could include, you know, affixing the actual CE mark, providing any necessary safety symbols, and also, you know, update any manufacturer details. So, if you've moved premises in, in the last year, for example, just make sure that all of that has been updated. On your instructions for use, ensure your user manuals and instructions for use are accurate and comprehensive. These should be updated, updated to reflect any new warnings or instructions. You know, as Pearse mentioned earlier, all machinery must be accompanied by instructions or manuals in the language of the member state in which it's being used or put into service. So, if your product is now being sold into a new-, a new EU country, you may need to get that translated. Then on the declaration of conformity, just make sure your DOC is, is still valid, reflects the current status of the product, and just make sure it references the correct directives and relevant harmonised standards. We don't seem to want to move page everybody (ph 02.30.52). There we go. So, on the internal and external audit, so, it is a good idea to consider conducting internal audits of the technical file to ensure that it is fully compliant. So, this would just help to identify any gaps, outdated information or areas that might need improving, and then by preparing for notified body inspection. So, if your machinery require, or your product, requires third-party assessment or certification, you should prepare for any potential inspections by a notified body.

So, by designing your technical file to be audit-ready at any time, it's just ensuring that all documentation is in order for a potential audit or, or an inspection. You should also consider international compliance. So, if your product is being sold outside the EU, you should ensure compliance with local regulations. So, so really ensure that any updates to your C mark and technical file align with the documentation that is required for other relevant certifications. So, like, for the UKCA for the GB market, looking there, you've got the FDA or UL for USA, excuse me, RCM mark for Australia and New Zealand. So, really, it's just keep your documentation updated and consistent across different regulatory systems and be aware of any specific requirements. We do-, or we will be discussing international compliance in our next upcoming webinar which is on the 21st November. Again, it will be another half day session, and you can register for this on the Invest NI website. That's back to you, Pearse.

Jackie: Excellent, we're just going to take control of the slides off you, Jackie, and then we will give them back to you, Pearse, and that should be you now. If you just click on the screen, you should have control. Super, okay, over to you.

Jackie: Yeah, thank you. Jackie, thank you for that bit there then. It will save me talking for ten minutes there, and let me get my, my breath back, but again, what Jackie was going through, very interesting, very

important. You know, there's constant updates coming out there. They're not coming out there every day, but they are coming out there every year, so you do need to keep abreast of them. And, you know, if, if things do update, you do need to keep on top of it. So, after we've, kind of, told you a lot of theoretical stuff, we're gonna tell you something that still is theoretical, but what I'm trying to do with this is I'm gonna finish out with a practical example of, of an issue raised on the slurry tanker dribble bars back in 2018. So, the HSE raised the-, raised an issue that said, 'Inadvertently deployment of folding elements of fertiliser distribution.' That was the issue. Now, what it is, the-, it evidently caused an issue because there was an accident, unfortunately. Someone was quite seriously injured and, and lost their life on this one, but I suppose what I'm trying to do with this is I'm going to try and show you how to do your risk assessment-, carry out your risk assessments and then look at how to mitigate those risks and use standards and use specific sections in standards. It's a wee bit detailed, but hopefully you can follow it.

And the reason we've got a picture of a dribble bar is my boss said the last couple of times that not everybody would know what a dribble bar was. I think they should but I, sort of, agree with him, so there we go. It's, it's like this. So, you have a dribble bar that can be up to twelve metres wide, these things. You can get various combinations of them and also they can be just on the back of a three-point linkage, it would be the same thing. So, it's the inadvertent folding out. So, in other words, when this travels on the road, it all folds up and folds in, but what happened in the accident was it-, one side of it inadvertently unfolded, and I think there was an accident on the road. So, what are we gonna do about it? Well, we're gonna conduct an initial risk assessment. We're going to conduct compliance assessment using the relevant standards. We're gonna determine control measures, and we're gonna to reassess the risk, and we're gonna update the relevant ESHRs in our ESHR report for the Machinery Directive. So, again, with a lot of times with risk assessments, you really should see the before and after. So, in other words, if you were talking just about a spinning shaft, you would do the before, big risk with that, put on a guard, that's your remedy, and then you would re, redo the risk assessment and your risk would be down to virtually zero.So, there should be before and after in most risk assessments.

So, conduct, we'll conduct the initial risk assessment. So, here we go. We'll just-, we'll, we'll give it some sort of structure. Again, you can do this in whatever format you want. I'm gonna use this hazard number. So, I'm gonna use the method of the four numbers, and it's gonna give me, like, a hazard rating number. That's my method. So, what I do is I give some detail on what the machine is. So, it's a dribble bar. It's the one that goes in the tanker. It's the six, twelve and-, six ten and twelve metre version. Our supply? It's given supply from the tractor hydraulics. So, then I go on to, 'What is the nature of the hazard?' So, it is what they've actually said. 'The machine could, in certain foreseeable conditions, allow the vertical folding element to freely move from transport vertical to the horizontal working position, generating a risk.' In other words, down comes one of the arms or both the arms. So, I'm going to look at my four numbers. Again, I am scoring this. If I'd done this, or Jackie done this, or Colin done this, we'd come out with slightly different numbers, but we would be in and around the, the, sort of, the, the ballpark.

So, what's that? Knowing the information I know, what's-, and my current design, it's an even chance it

could happen. How effectively it could happen? It could happen daily. That tanker will be on the road daily. You could argue and say, 'It will happen hourly,' because the tanker is maybe doing frequent trips up and down the road. You know, it's unfolding, but we'll say daily. We'll just-, we'll give it that number. So, we've got a five and we've got a 2.5. Degree of possible harm? Well, it is a fatality if it did hit-, strike a pedestrian or if it struck someone in a car. There is potential to cause a fatality, or it could also cause a fatality to the driver if he caught a pole, and it put him off the road or whatever, so there is potential for fatality. Number of persons as risk? I'm saying it's three to seven persons, so in other words, I'm saying that the number of occupants in the vehicle are-, it's more than one to two people. If there are occupants in the vehicle, it's, sort of, three to seven. It's not-, yes, it could hit a minibus, it could, whatever, but I'm, kind of, using that for a figure. But again, what I'm trying to get across is here how do you-, how do-, if you look at different scenarios, how do you come up with a number? So, you're thinking, 'Well, it's more than just pedestrians, it's the contents of the car, therefore, it's three to seven. So, we're back to my risk assessment.

So, I'm going to fill in-, I'm going to fill those numbers in. The five, the 2.5, fifteen, two, I hope my maths is right, but that does come out at then 375, and if I go down then to my table and I look where 375 falls in, it falls in to the very high category. We said before, anything above significant, we need to do something about. So, we need to conduct a compliance assessment using the relevant standards. So, I-, in my research for this, I found three standards that apply for this machine. There's the Agricultural Machinery, part 6, which is the Safety of Sprayers and Liquid Fertiliser Distributors. So, it is actually very specific to this machine. Also, part 1, as you will see when I go through, part 1 of that which is the general requirements, is referred to. It actually is referred to in six and then because it's on a slurry tanker, if it was just the dribble, if it was, sorry, the three point linkage version, the dribble-, the slurry tanker wouldn't come into this. So, I find three standards and I need to then go and look in those standards for relevant paragraphs or relevant statements. So, part 6. So, this is it and says, paragraph 4, these are directly pulled out of the standard 4.3, 4.3.2. 'In case of a part folding, unfolding operation, the control shall be of a whole run type and the manual control should be located outside the swivel zone'. And the same statement is repeated in the slurry tanker thing.

So, basically that's the first thing. That's telling me that I can't have a latching valve, or I can't automatically unfold this. So it's not really related to the accident, but that's telling me that I can't press a button and unfold this boom. So, another-, so, I go into the 707 standard. There are-, this spreading or injection boom is mentioned in the slurry tanker standard. 'In case of a part folding, unfolding operation, the control-,' so that same statement repeated. Repeated out of the other one. 'A device shall be provided to prevent the boom from moving within transport position'. So, it's told me when it's in transport, I have to have something secondary to prevent it from moving, and it's saying if that's a locking device and the boom folding, unfolding action, shall be controlled separately. So, if there is a locking device, let's say I make it hydraulic, and I, I again press a hydraulic ram, my first action of that can't be to unlock the locking. That has to be a separate lever on the tractor. So, you could have it (ph 02.41.30) or you could have it. So, if you're going for a locking device, then it has to be separate controls, so two separate booms on the tractor. If the locking device is hydraulic, the valve is not fitted directly to the cylinder to comply with this.

So, it's basically-, it's telling me something very specific about this locking. If this locking device is a hydraulic valve-, so in other words, if the valve that we're relying on-, so let's say we're relying on a valve not a specific pin or whatever, so we're saying it's like a, kind of, non-return type valve. If that valve is not on the cylinder, so in other words there's a pipe between it and the cylinder, it shall comply with this here. So, let's go and look and see what 1.-, 1,1.3 is. So, I go then back to my other standard. So, again, one standard tells you where to go in the other standard. 'Hydraulic locking devices shall be located on the hydraulic cylinder, are connected to a hydraulic cylinder by a rigid or flexible lines. In the latter case, if it's a flexible line, lines connecting the valve to cylinder shall be designed with standard pressure release four times the rated maximum hydraulic pressure'. So, in other words, for that particular hydraulic locking device, and we're talking about a non-return type valve, it's saying that you might need a specialist rated hydraulic pipe on there. If your other pipes are rated at three times or two times, they're not acceptable, or you can put a, a solid pipe on. So, what I'm saying is it gives you very specific instructions what to do. The other thing is, 'this rated maximum hydraulic pressure shall be specific in the operator's manual'.

So, in other words, you need to tell them what that is, and the conditions for replacement of flexible line shall also be given in the operator manual. So, back to that thing of, again, we're, kind of, completing the circle here. For the likes of maintenance and specialist maintenance, so if you're saying you're replacing that hydraulic line for wear and tear, you have to tell your operator that particular line has to be replaced to the particular specifications. So, again, your instructions is all about being specific to your machine and your machine requirements. So, folding elements. 'Folding elements designed to reduce transport width and or height shall have a means of retention in the transport position either positive mechanical lock', we've been all over that, 'or by other means either hydraulically or gravity'. So, gravity means it can go over centre with it, and I have to decide how far over centre I go with it. So, I could do away with the hydraulic valve. I could do away with a mechanical lock and would, but then it says, 'The means of retention shall be position-, sufficient to retain the folding element in transport during travel. The change from transport position to working position and vice versa, shall be possible without exposing the operator for crushing or pinching'.

So, in other words, if an operator has to get out, and pull a pin out or put a pin in, you shouldn't put them somewhere that he's gonna get caught or she's gonna get caught. And in the case of a mechanical or hydraulic locking device, 'the unlocking and unfolding elements of it shall be controlled by a means separate, separate actions by the operator'. So, in other words, back to that thing. Two separate spools on the tractor. The operator releases the valve or releases the pin and then the operator unfolds it. So, it can't be a single-, it can't be done by a, you know, in other words one pin comes out and the other you hold down the valve. So, with that thing, you've got to separate out your actions. So, another, again, I found another section related to it in part-, standard, the part one standard, so support for service and maintenance. 'Required device should be applied outside the hazard zone with a different colour'. So, what it's saying is if we need to do maintenance on this folding thing, the device should be-, like, I'd say the hazard would be of a different colour surrounding the structure, if sufficient strength described (ph

02.45.50) to retain the machine and be designed to prevent inadvertent locking.

So, really what they're saying is this is, kind of, getting into the maintenance side of things that it should be-, that the whole of the machine, up or down, or whatever the case may be, mechanical locking device is the preferred option when working below a raised part or structure as it's more reliable and has been designed to withstand the force. So, what it's saying is this is, kind of, getting into the-, this maybe isn't to do with the folding and unfolding normal operation. This is a new design. If you make changes, you have to make sure then when it's fully unfolded and you have an operator under this potentially, that it can withstand the forces. 'Alternatives are gravity locking mechanisms or hydraulic valves. Hydraulic means of retention are chosen. They need to be an additional to any hydraulic locking devices on the tractor'. So, in other words, if you're relying on the tractor hydraulics, you need minimum the tractor hydraulics holding it up as well as the gravity mechanism as in (ph 02.46.53) going over centre. I apologise for the way I've been getting very detailed here, but I'm just trying to, kind of, prove the point, that the standards are quite detailed and if you get in and if it's your area of expertise, these should be making sense to you.

Again, if you're building any type of machine, if you're building log splitters, if you're building, you know, screen (ph 02.47.16) or crushers, this will be your thing, so therefore, this should make a lot of sense to you. 'The hydraulic locking valves or tractor (inaudible 02.47.22) should not be taken into consideration'. Yes, so you don't rely on the tractor overloads as such. You can't leave it hanging on the tractor hydraulics is really what it's saying there. By the way, standards can confuse you. Sometimes they can be a bit, how-, not-, contradictory's not the right word. Sometimes you've got to really read them and come up with the best solution. You know, there's a lot in standards, so what I'm saying is you've just got to, kind of, go through it and make sure you cover all the areas. Sometimes they can be slightly contradicting each other. Not in a bad way, but just you maybe have to do more than one thing to fulfil the requirements. So, let's determine the control measures and we'll reassess the risk. So, again, we go back and we do another risk assessment, but this-, well, this, sorry, would be the second half I suppose as such is this is the recommended control measures.

So, we're saying, 'We designed the following, following sections of boom to travel 30 degrees.' I don't know if 30 degrees is right. I'm just saying that you as an engineer will determine what degrees would be enough to go past centre (ph 02.48.37) and rest on mechanical stops. In other words, it comes over and it rests hard on the stop. 'Add valves to the folding rams.' In other words, those valves we talked about, we're going to put those in the folding rams that again counts-, it counts-, Sorry, one more second here, (inaudible 02.48.59) lost on your screen. So, it's, sorry-, I'm just going to go back, one more second. 'Add the valves to the folding rams, add the horizontal locking rams, they're red in colour. 50mm pins.' Again, you make the decision on if you were going to go for those maintenance type rams, its a different colour. You make them red in colour and if you want to put a retaining pin on the end of the ram, you would determine the size of the pin. So, 50mm, 75, whatever you come up with.

'Separate hydraulic controls in the tractor for the locking rams.' We talked about that before. You know, two different pins. Then I'm going to, 'Update my instructions for operation to highlight the need, ensure the area is clear, external personnel.' That was mentioned before, if the person can become trapped, so we updated those instructions, 'And it includes specific hydraulic locking valves instructions and associated pipework.' So, in other words, back to what we said before is that if, if that special pipe needs replaced, you need to indicate in your instructions that that pipe is a special pipe. The other thing is you can indicate that on the pipe as well. You know, I'm not an expert on hydraulic pipes, but I'm sure there is a way to indicate thereby a label or a tag on the pipe. So, what the control measures-, we list out our control measures whatever we've decided to do. This may mean-, may not be the working solution that works. Like, if there's anybody on who deals with dribble bars, you may have done this totally different to me. But, you know, you've read the standard, you've come up with your solution and you've documented what you've done. So, that's probably what-, yours is probably more, a more realistic answer. But for the purpose of this presentation, I am pretending to be the expert. So, you do that. So, the next stage then is I re-score it.

So, we scored it the first time. We come up with that number. It was 350 or whatever it was. So, what's the possibility-, the likelihood of it-, the likelihood of occurrence now? Well, it's never impossible. I mean a lot of things could go wrong to make it happen, but it is highly, highly unlikely. The frequency exposure is still daily. That doesn't change. Sorry, the degree of possible harm? It's actually still the same. I mean if all this inadvertently did happen, it's still a fatality. But what we are really, just to go back, on the number of persons doesn't change, the only number we've really changed is the likelihood of occurrence. We have reduced that down to six. It's possible in, like, ultra extreme circumstances because at the end of the day, if this does fold out, it's still the same number of people and there's still the same outcome. So, we really have to stop this unfolding unexpectedly. So, we go back, and again, we've, we've got our control measures in. We've now re-scored. So, we've now got our score. So, we've changed from 375 down now to 7.5 is our new number and if I go into the new number and check what that is, that's low. So, I've brought that down from very high to low. And again, that's only one element of this machine.

This is back to what I was saying before is you should have multiple risk assessments done for your machines for certain areas. I mean some were very simple, some were very quick, but others are not. Others take much more time, you know, to process. So, that's it. So, then what we need to do, sorry, I'm just checking. I'm seeing an error message, Barry. Is that on your screen or is that on my screen, all these?

No, I'm not seeing any error message.

Jackie: On yours?

No.

Jackie: Okay, okay, must be on mine. Okay, I'll sort it in a second. Hopefully it doesn't go blank on me.

Does it go to your webinar error message?

Jackie: No, no, no, no, no. It's actually just a monitor off thing. It thinks I'm not using the monitor.

Oh, okay.

Jackie: Okay, so we need to update are ESHRs, that's what we need to do. So, what we're going to do is we are going to go into the relevant sections, and we read through the sections, and we look for sections that are relevant, to, to us-, to, sorry, the thing that we are doing. So, the first one says, 'Machinery must be (inaudible 02.53.54) constructed so it's fit for function and,' here's the bit, 'Can be operated, adjusted and maintained without putting persons at risk.' That was mentioned in the-, in the thing. And the other thing it talked about then is, 'Measures must be taken for (inaudible 02.54.11) including phases of transport.' So, in other words, we must look at risk during phases of transport. So, that risk section that I made up was, was-, I called it DB24. Dribble bar 24. You will see there for dribble bar 10. So, in other words, what you do is you do a table like this, or you even write it on the actual directive. You put in action, and you refer to a risk assessment number. So, in other words, you don't need to rewrite the whole thing out. You just say, 'Look, go and read risk assessments number ten and risk assessments number 24.' Then, on the, excuse me, the, the next one is, 'Inform users of residual risks and shortcomings,' whatever.

Again, we talked about it's to do with the risk assessment, but the risk assessment we mentioned was going to update the instruction manual. So, we said, 'Look, for that particular bit, go and read instruction manual sections 4.4 to 4.8,' and that's what it asks you to do. Then for-, so again, you come through them. I'm going to do 1.1.5. It talks about 'be careful of the handling and transporting it safely'. So, again, that risk assessment. Look through that, there could be other risk assessments. 'During transportation of machinery and the components, there must be no possible movements of sudden-, the possibility of sudden movements under hazards due to instability as long as the machine and its components are handled according to the instructions'. So, again, we are fulfilling the HSR that applies to this machine, and we have instructions, and we have a risk assessment. That does it. And then it talks about where weight, size, machine, various components (inaudible 02.56.13) moved by hand. There must be lifting attached'. That's actually something that Christian mentioned the question about before. They would have to fulfil this particular EHSR for their thing. So, in other words, they would have to say that it's been, been designed to get such attachments and been shaped in such a way standard lifting gear can be attached. So, again, we've addressed that in ours. So, again, I'm just gonna continue on down through my list.

'Control system must be designed and constructed, constructed in such a way to prevent hazardous situations from arising'. Again, that was back to that thing of the two different control levers, using two control levers. So, again, wrongly, right or not, there's a separate control lever for this and a separate control lever for that and just refer to the risk assessment. By the way, as I'm going through this, I'm only highlighting the bits that E, ESHR has done relating to folding and unfolding. You, you could be covering all of these or some of these. So, it's, sort of, seeing which ones you're doing. Again, 'no moving part of the machinery or piece to help the machine must fall or be ejected'. So, again, the falling but recovering of. Again, I've now moved on to section 113. 'Machinery and component must be fitted, must be stable enough to avoid overturning, falling or uncontrolled movements during transport, assembly, dismantling and other actions'. So, again, it's exactly what we're trying to do. That risk assessment describes how we're, how we're trying to do it. 'Eject-, falling or ejecting objects'. Again, same thing. So, as you can see, covering an awful lot of these statements by the risk assessment. Contents of instructions. So, moving right on to 1.7. I'm highlighting how I'm making the descriptions and explanation necessarily for use, maintenance or powering (ph 02.58.18) machinery.

So, I'm saying it's in the instruction manual to do with the locking device, and it's also mentioned in the risk assessment. So, just to finish off on that, the-, I know it's maybe-, long-winded is probably not the right word for that, but I hope that has, sort of, brought together how you use standards to meet the ESHRs in your-, in the machinery directive. So, in other words, the standards are governed in what your answer is. Excuse me. Look, if someone says, 'Well, is it 10mm or is it 20mm?' 'Well, the standard told me it was 15, so, that's what I go with'. So, standards do tell you the answer, potentially. So, I'm just going to tidy up with a couple of things at the end before we take more questions and I completely lose my voice today. There is an update. Jackie talked about it earlier. Directives and regulations don't update that often. So, since 1990, whatever, when the machinery directive come in, it's never been fully up-, there's never been a new version, and there's been new versions of other directives, but we are getting a new Machinery Regulation, as it's going to be known. So, on the 20th January 2027, the Machinery Directive 200642, will be replaced by the new Machinery Regulation. There is no provision to use the new Machinery Regulation before this date. I don't see how it will do this but at the moment, you can't.

Sometimes there with directives, they will say, 'Look, you've got to lead in period of a year where you can use either or and then change,' but they're saying it's 19th January it's Machinery Directive, on the 20th January 27, it's Machinery Regulations. With the new legislation framework, that's just the way they're writing directives now. So, low voltage etc. have all been changed to this kind of framework. Changes, I mean in future seminars, we're going to be talking a lot more about this, and probably come 2026, it will be most of the presentation, but it integrates provisions for machinery with safety functions that are AI part. So, in other words, it's going to-, it's going to look specifically at how AI-, so, if you're going to integrate, let AI control some of your safety functions, it's going to specifically task you with making sure that you meet those requirements. 'Integrates provisions for cyber safety and for compliance, compliance and relevant software data and safety control systems'. So, what they're, kind of, bringing in now is if your machine is linked to a network, it can be hacked is what they're really saying and that can be is-, it can be by your competitors to steal your data, but as far as the machinery regulation is going to be concerned, it's more going to be concerned is well, can somebody switch it off or change control to do

that?

So, in other words, you're going to have to show how you're going to protect your machine from a cybersecurity point of view from people hacking them and changing them. Another one, safety components, and that could include software. 'A conformity assessment is acquired-', oh aye, this probably is a fairly big one. The current Machinery Directive doesn't really deal with modified machinery. It's more done under, kind of, (inaudible 03.02.13) and a few other things, but it looks like, and I haven't read the detail on this, but it looks like the Machinery Regulations is going to deal specifically with machines undergoing major modifications. So, in theory, you could have to re CE mark a machine which you modify. Who does that? If that is somebody they-, if you're a manufacturer, and they bring you back in to do it, I assume you do it. But if they do it, then they have to, so there's going to be something on that. 'And clarifies conditions under which the instructions for use of the declaration of conformity can be provided in a digital format.' So, we're eventually moving into the digital world where we'll be able to provide instructions. You can currently provide them at the minute electronically, but they still have to go out in a paper format as is stands at the moment. But in the future, at the end of the day, what they will probably want to see on machines is QR codes etc. Somebody can click on and instantly get a hold of the manual for a machine.

Now, Barry, that is my part of the presentation complete. If you want to take some questions (inaudible 03.03.26) . Colin is going to finish it off and give us some information about the webinars, but that's me done, except for questions.

Brilliant, well we do have one question in, and it says, 'What is the best message to get notified when standards get updated?'

Jackie: There's a couple of ways you can do that. You can become a member of BSI and they will update you. So, if you buy a standard off BSI, probably off NSAI or some of the other ones that people buy off now, the Estonians (ph 03.03.59) etc, you will get notified directly, but the other thing is, that's back to what Jackie was saying is standards-, directives really don't change quickly. Standards change but they don't change that fast so you will see under revision. So, what I would suggest someone does in a smaller company or whatever it is, you just have someone that annually or six monthly, you'll only be using two or three standards, they just go onto the BSI website, and they look for their standard numbers and see where they're at and if it says 'under revision' it means that some sort of revision is going to come out, but that won't be probably for a year. And the other thing is the good things about standards, if you pay a wee bit extra, you can see the, the new version with updates. So, in other words, it will show you revisions. So, if, you know, if you've ten sections and five of them haven't been touched, they'll just be the same. But if five have, they'll show you the old, and they'll show you the new. So, unfortunately, yes, if you're a member of BSI or whatever, they'll send you updates, but if not, it's just a case of doing a quick check yourself annually a bit like what Jackie was talking about.

Super, thanks very much, Pearse, and that is the end of the questions. There was only in final for this section, so I can't see any more coming in at all. So, I think maybe, Colin, we'll hand over to you just to do a final wrap up.

Jackie: Yeah, thanks Barry. So, we're just going to finish off, I really want to thank Pearse for all the effort he put into the presentation, and thank Jackie for the other excellent presentation. I think that came together very well, and hopefully you will agree. Many thanks to Barry for hosting the webinar and for posting the questions, and thanks to everyone who registered and attended and stayed with us through the webinar. It's still very high numbers there online. Keep an eye on your email, we will be emailing out the PowerPoint presentations and a video of the presentation, so keep an eye on your email for that. And as you can see on the screen there, we have two other similar webinars coming up very soon. The first one is next week, 21st November, on Global Technical Compliance. So, if you're looking at selling in markets beyond the UK and the EU, the Local Technical Compliance Seminar is well worth registering for and attending so you can get up to date on some of the requirements in bigger global markets, the US, Australia, etc. So, that's on the 21st November. And then a week, or almost a week later, on the 26th November, we've got the CE Marking Electrical webinar which will focus on the low voltage requirements in the EMC directives so-, which are both free to attend, and you can register right now to attend those at investni.com/events.

So, that's-, those are coming up, both free to attend as well, so both half day seminars, so I hope some-, we'll see some of you there, and I know some of you have indeed already registered. So, thanks everyone for attending today, thanks for all the interaction and all the questions. Keep an eye on your email for the PowerPoint and the video and then apart from that, that's it. Hopefully, we'll see some of you again next week, and that's the end of today's webinar. Thanks everyone.

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