

5 to 8 Minutes Introduction

- Collection of information about the interviewee (educational and technical background, field of professional experiences, professional years of experience, involvement in different types of projects).
- Brief introduction about the interview.

Interviewer

Now let me move to the opening questions. So [Name of interviewee 4] according to your experience, what is your opinion about the current level of knowledge in the building industry regarding the application of multifunctional facade components integrating solar cooling technologies?

Interviewee 4

OK.

And you want to know what the current knowledge is?

Interviewer

Level of knowledge and experience in the building industry.

Interviewee 4

The building industry is rather low.

And do you need more information? Do you want more information? I think I think you do, right. So my understanding is that this is something that integrates multiple systems in one area. So there will be electrical, there will be thermal, there will be energy and there is the façade. So if you look at the building industry, the knowledge is purely based on their own system. So facade builders are very good in building facade systems. Electrical engineering is very good in electrical engineering and the cooling HVAC is really good in conditioning.

But there are all separate and they don't integrate very well. There are....and so this is overall. So overall there is not a lot of knowledge of integrating those kinds of things. There are a few parties that have very good knowledge of integrating that, but overall in the building industry is low.

Interviewer

OK, I see.

OK, in your opinion, what are the motivations and concerns regarding the application of multifunctional facade components integrating solar cooling technologies? So let us start with the motivations. So in your opinion, what are the motivations?

Interviewee 4

Yeah. So the motivations I think that because of there is....it's a characteristic thing. So the facade builder needs to create a facade that's optimum in prestatie [a Dutch word that means performance] of how you call it in....let's have a Google translator....yeah that will be. So I think that the quality and the performance of the facade is driven by price and time. So to create something that is integrated, creates a lot of interfaces where the facade builder needs to manage if they integrate solar cooling, solar panels, maybe integrating HVAC that creates a lot of interfaces for the

facade builder to manage, and if he doesn't have that integrated then he can just build his facade and just place it on the side of the building. So the motivation is it will be easier for him to not do that.

And that's also with other types of buildings. So construction, integrating construction and energy system, so there there's like the concrete core cooling and heating, so placing concrete....placing pipes in concrete to cool the construction.....Always on innovations and fields where functions are integrated, there's also the forces of pulling them apart because it's not manageable by one party or one system.

I think the motivation is to just keeping your own swimming lane and go about it.

Interviewer

So yeah, your motivation is like I can understand it somehow it's a concern for you. It's not a motivation or...?

Interviewee 4

Yeah. Well, it's I thinkIf we want to really go forward, we need integrated products, but the concern I have is that the building system and the way of how are our clients are building contracts, so as insulation party, we always get a different set of requirements than the facade builder, so the facade builders is based on the construction party. So let's for example say BAM or Heijmans, there's big Ballast Nedam [Dutch companies].

They built façades and we have a contract for insulation. So there's only problems if we cross link insulation with facades because there's not a real who's gonna pay for what. So it's really contractual basis where our clients say no, you are for the building you are for installations and we keep them apart. So I think that if we want to encourage and create integrated façade products where climate comfort performance are integrated and elevated, then we also need to do something about the way we are currently building our contracts. So the contracts with our clients are also a concern for me.

Interviewer

So I can understand that the main potential issues needed to be considered for to address such concerns is to do something with our contracts or the way that we do our contracts.

Interviewee 4

Yes. Yeah.

Interviewer

So in what way for example we can?

Interviewee 4

I think that's contracts that are not based on you have to build this or you have to build that in this, so there's a design driven so that the architect design the façade and then the facade builder just needs to build the facade. So I really think that if we want to have integrated products, that's the question from the architect should be give me a product that is that is fully functional that can do this, so more performance based then design based contracts.

Interviewer

OK, so performance based contracts, not the design based contracts.

Interviewee 4

Yes, correct.

Interviewer

So performance based contracts like you mean that different stakeholders, they work together?

Interviewee 4

Yeah, yeah, for example if we have a performance based contract then you could say the facades can do this in generating energy, the facades can create indoor climate of this performance etcetera, etcetera. And then parties that have integrated facade product can say OK this is my product, it's complies with your performance requirements and this is how you can integrate it into the building. Because if we let architects design each facade and each detail, then the facade builder just is the production party of the architect. And the connections and the integration design principles are based on our architect design principles and not the product principles. I really think this should be products where we need to do our R&D in real product development, testing and then scale up the use of these kinds of products.

Interviewer

OK, I see.

Interviewee 4

And that should be more mass customization, mass production, product type products. And not how we currently do it engineer to order. So you want this façade, OK we will engineer it, we will produce it and then we will place the facade and it will be a one off because it's a unique facade with unique details and maybe based on principles of other buildings that we already built. But mainly it's engineered to order.

Interviewer

OK, but what can you tell me what do you mean by mass customization?

Interviewee 4

So I think that if you want to have a product where architects can say, OK, I would like to use your product, then you will have to give the architect design freedom on aesthetic level where he can choose between window size, panel size, aesthetic additions to the facades. But in the core principle, it should be a product that works the same.

So maybe like the car industry where you can have like 1,000,000 different types of vehicles come out of the out of the production line, but the core is the same, so the core construction of a Volkswagen or Skoda, or SEAT is the same basic core, but from the outside it looks like a different car and I think that's within facades you can also do this.

Interviewer

I see. OK, great.

Now, let me move to the following question.

Can you tell me how different types of projects such as new building construction or renovation projects may affect the application of solar cooling integrated facades?

Interviewee 4

So can you say it again?

Interviewer

Can you tell me how different type of projects such as the new building construction or renovation projects can affect the application of solar cooling integrated facades?

Interviewee 4

Yeah.

I think that renovation will be necessary and also advantageous so.

Within renovation buildings or all type buildings, there's less building height, in my experience, for indoor climate insulation. So if we can integrate those functions in the facade, then we have more space for ceilings and because normally the ceiling height is very low in these types of renovation. And we really like more space, so more high. So if we for renovation projects can integrate these types of insulations in façades, it will be very good.

Otherwise if we really want to integrate all those insulations in the ceilings, then the ceiling will get lower and then we'll have a really crowded low space for office buildings, for example, office buildings.

Interviewer

What about the new building construction?

Interviewee 4

Well, new buildings construction, I think this is really good as well of course and also from a circularity perspective, reusability, so I think that if you integrate these types of things in the facade, then the function of the building can easily be adapted. So if we can create a facade where something can be an office building, but also maybe education building or maybe care building, or maybe in the end also housing units. If that's easily adaptable in the current way our buildings are built, it's not possible, but if you integrate that's on the facade and maybe it's easy to adapt the building for that kind of functions, yeah.

Interviewer

OK. But so you talked about office or healthcare, so generally how different types of buildings such as office, residential, healthcare can affect the application of solar cooling integrated facades?

Interviewee 4

Yeah.

So I think that's each function requires different installations on different functions to be possible, but in each function or..... so residential there is a base level of comfort that you need and that's also applicable for offices, and it's also applicable for healthcare.

So if you can have like a base level, it's always the same and you can add all the function that is needed. For example healthcare needs different adaptability or maybe more performance based residential is well lower in requirements of cooling because there's less heat generated.

Office there will be more focus on cooling. Maybe education there's more focus on ventilation, so each type of use has a different application, but if you can create like a base level that is applicable for each of the functions then then that should be, yeah, perfect.

Interviewer

OK. So how different locations of buildings and climate conditions can affect the performance of solar cooling integrated facades?

Interviewee 4

Yeah. So look location is of course..

If you are in a high rise building area, there's lots of shades from other buildings that's something that I am thinking of.

Also the location of...The orientation of the building. That should also be in considering. The type of design and function of course and the location.

And I don't know that and it does. Maybe something also with sound. So I don't know how much sound solar cooling area can create. But you know it's possible.

Interviewer

OK. So generally, what are the recommended locations or climate conditions for applying facade products integrating solar cooling technologies?

Interviewee 4

OK so my thinking is a location that is possible and.

Where there's a lot of possibility of having multiple solar angles.

So yeah, maybe like a wide area and not in a high rise area. So for example.

Interviewer

OK.

Let me move to the second question, so can you tell me how different types of solar technologies such as electrically-driven, Photovoltaics, or thermally-driven, such as solar thermal collectors, can affect the application of solar cooling integrated facades?

Interviewee 4

So. What do you mean with the question? Can you expand on that?

Interviewer

Yeah, sure. So we do have a different technologies. So solar cooling is not only electrically driven PV. We have the thermally driven. So we have the different technologies. So how different type of technologies can affect the application of solar cooling?

Interviewee 4

Yeah, OK now I get it.

So I think that's also something that is maybe in an electrical sense. So what are the requirements of the products as well. So does one or the other needs more electrical energy from outside to generate the same heating or cooling. So if there's no solar energy or there is less solar energy, how much energy there still needed to still create the performance. That's something that should be. So for new buildings and we are going all electric in that sense. That could be a driver if one or the other could be chosen.

Interviewer

OK, I see.

Now let me move to the key questions. So I have questions about technical and product related aspects, questions about financial aspects. And then I have questions about process and stakeholder related aspects. And then we have just few points in the closing questions.

So now what are the potential solutions that can address challenges related to product complexities of solar cooling, integrated facades such as the required space availability or interrupting other building services?

We have different complexities such as the required space availability or interrupting other building services. What are the potential solutions that can be considered to address such challenge?

Interviewee 4

Yeah.

So I think I think that's a potential solutions could be like a plug and play interface.

That's can really be something if we have branch overview, standards where we say, OK, this is where the electrical energy comes from. This is where how we detail it and it's adopted by multiple façade builders and multiple building construction contractors. This could really be a possible solution where you say OK, this is how we do it. This is how we build it like normalized standards. Maybe have like a non, a norm where you can say, OK, this is how we do it and then in design and in principles you can say, OK, this is the area where we always reserve...and then architects can use that basis as well.

Interviewer

OK.

Interviewee 4

I think that's a possible solution.

Interviewer

I see.

OK. What are the important issues needed to be considered for the maintenance and durability of solar cooling integrated facades?

Interviewee 4

Yeah, It needs to be easy to maintain, so there's technology in a facade and normally technology is placed inside the building and can be easily maintained and serviced etcetera. So either the installation or the technology that is in the façade needs to be such a robust technology that it's not needed to be to be maintained or serviced, or it needs to be easy to access.

So my thinking is that if you need a high rise or high rise worker to access the facades to change like electrical components, that will really influence the adoption of these types of technologies.

So because building owners will say, yeah, normally I had like a ceiling where my technology was and if the technology doesn't work, I call my installation or my service man he comes clamps on the ladder services it, repairs it, and then he goes away. If those components are now in the facade and it's not easy accessible and every time a part is broken or needs to be repaired and you need like a crane to access that facade panel that that could really be a problem for....

Interviewer

So the accessibility is important.

Interviewee 4

Yes.

Interviewer

So how do you see the role of aesthetics on the widespread application of building facades integrating solar technologies?

Interviewee 4

Yeah, like I said, I think there needs to be like a certain mass customization, possibility where the same product can be used and if a building user or an architect or a building owner looks at the façade, he would maybe say this is a different façade from the other facade but in the core it should be the same facade. So I really think that should be something that you design for. You design for mass customization. You design for multiple aesthetic layers that you can add to the facade.

Interviewer

I see.

Now, we talked about different product related aspects.

Now I'll have a few questions about the financial aspects.

So in your opinion what are the main issues needed to be considered to develop affordable and financially visible facade products integrating solar cooling technologies?

Interviewee 4

OK, the main....So that's also something if you put something like technology in a facade, then a facade in the end will be more expensive than a facade without technology in it.

So creating integrated budgets where you could really check that, that's really an important part, because otherwise....

Interviewer

What do you mean by this budget?

Interviewee 4

So a building owner will give an architect a design, a problem....

Design me a building with a facade construction and then you will give an insulation consultant the design for the internal insulations and then the building owner gets from like to electrical and mechanical consulting firm. If you want to create this building, it will cost 3,000,000 and then you will get from the architect, and architect will create a building and say OK building cost of this building is like 10-12 million, and then the building owner will get that 12 million to 3,000,000 and will say OK total building is 15 million.

But if you have like a facade where technology is integrated, then you need the architect and the mechanical electrical consultant talking with each other of what is the new budget.

And what is an insulation contractor or an MEP contractor. He doesn't need to build insulation because that's in the facade and the facade.....so if a façade builders are....they have products with insulations or with technology in it or without, then the facade without technology is always cheaper, but maybe the integrated product and over the total life cycle in the energy use in indoor climates and all these kinds of things, the integrated product is maybe better. But because we look at it from different perspective from different silos, we really think OK no no the electrical is this.

So just PV is always in the area of the electrical contractor. So if you integrate PV panels in the facade, then the electrical engineer doesn't have work but he needs to connect to it. So there you create interfaces where there normally aren't interfaces.

Interviewer

OK, good, I see. But well generally what are the potential financial incentives that can support the widespread application of solar cooling integrates facades?

Interviewee 4

Yeah. I really think a product and also business model or earnings models there are built around those....on the total life cycle. So for façade or a climate as a service....facade as service, those types of business models based on these types of products will give the building owner incentive to use those products.

Interviewer

Ok now let me move to the last part.

I have a questions about process and stakeholder related aspects.

So you can see from this chart we have different relationship between different stakeholders in the facade design and construction. So in your opinion, who could be the main potential supporters for the application of solar cooling integrated facades?

Interviewee 4

So my understanding is that the client or user of investor needs to choose this product.

And then the contractor and architect need to manage everything around it. So if the client says I want solar cooling facade from this type of brand because I have chosen that and I can use it as a service and I only pay off my electricity bill towards them or it's like a lease model, they generate the energy I need, they you could create indoor climates, then architect and contractor need to facilitate the process.

Interviewer

OK.

Interviewee 4

And maybe the architects can be the one that creates the aesthetic layer and the contractor is the logistical partner that creates everything together. But I really think that there needs to be like a product that the client can choose.

Interviewer

OK. Product that the client can choose. OK, I see.

OK. So generally, can you tell me how to increase the technical knowledge and experience of architects or engineer about technical aspects related to the facade integration of solar cooling technology?

Interviewee 4

Yeah. And so it's difficult.

I really think that's maybe in education, in what are the benefits of integrating these things?

And if we can start with education of the new architects of the future, then we can build it up. And otherwise what you really see is like maybe like one or two architects that really are advanced in these kind of thinking and then build a prototype where you can really show what benefits there are, and then if that's really successful, and then other architects will adopt or maybe other clients will adopt it as well. So like really lead by example, one really good project where this is done well.

Interviewer

So one way to have a good education and the other way is that some architects, they built the prototype that can attract other people to adopt?

Interviewee 4

Yeah. And I really think that façade builders can do that as well.

Show and tell just really have a product show it, explain it and then, create an example where people can go to and say OK this works.

Really experience it.

Interviewer

OK, now in your opinion, what are the core elements needed to be included in designing standards or guidelines related to the facade integration of solar cooling technologies?

What are the core elements needed to be included in designing standards or guidelines?

Interviewee 4

Yeah, like I said before, I really think there needs to be like type of standards before interfaces with other systems like mechanical or electrical or maybe construction. So you can really say each project those interfaces are managed because if you really need to re-evaluate and reassess those interfaces, each project extra again. That can be like a burden or maybe a delay in building time.

Interviewer

OK, now you mentioned before about the mass customization, so the core is the same

Interviewee 4

Yeah.

Exactly.

Interviewer

But the outer or the external appearance is different, so this way how I think we can say it like various types of products that maybe...so in what way can the industry increase the variety of products that would attract customers?

Interviewee 4

Yeah. I really think on aesthetic layer so aesthetic way but also in functionality so creating a like a solar cooling facade for residential buildings has how far or less for added performance is lower than for example for high end office building. So if you can choose. So make it configurable so either a basic good and a very well and have the choice in between, but the core is the same.

And but maybe the technical part is bigger or there's more room for....or there's more possibility of creating more cooling or more heating. That should be I think possible.

Interviewer

OK.

What are the potential solutions that can help in improving the future interests of designers, developers and the client about solar cooling integrated facades?

Interviewee 4

Yeah. So potential solutions for...

Interviewer

Improving the interest

Interviewee 4

Yeah. I really think that a good example and maybe like a building that I guess like an architecture award where really that integrated thinking is applauded that could really help pick the interest of the industry of the facade builders, etcetera. So and maybe that can be something that like that should be inside Delft has a building on their site where each of those things are integrated where students can come to maybe something like on the Green Village or something where a lot of people can see the proof and experience what it is to have these types of facades.

Interviewer

OK, how would legal legislations affect the widespread application of solar cooling integrated facades?

Interviewee 4

Yeah. So do you mean by legal with what the government is gonna require or maybe like legal in between customer, facade, contractor, builder, etcetera?

Interviewer

Government.

Interviewee 4

OK, so I really think that integrated products that have their life cycle analysis and are in the National Milieu database. They are gonna have like how do you call it.....I think people that create like a product that have a life cycle analysis and that have all the way of having their impact totally a wired down. They have a head start I think in these kinds of future legal applications. So as of this moment, it's just a free for all and the ambition is not high enough. If the government really slows down in the MPG [MilieuPrestatie Gebouwen: Requirements in Building Regulations, Sustainable Procurement and Certification] and really reduces that, then the only way forward will be integrated products.

Interviewer

OK, got it.

Interviewee 4

Because they have less impact on environments, they have less impact on material use. They are really designed for less maintenance, adaptability, refurbishment, etcetera.

Interviewer

OK, I see. Last point.

I have questions about the processes. So generally you can see we have the design phase, production phase, assembly, operations. So do you think there are particular phases that are considered to be the most important ones?

Interviewee 4

Yeah.

Well, so I really think that the design phase. We need to design for manufacturing. So if we really want to excel in the product then you need to design it for manufacturing and assembly. So that's really.

I really think that the production and assembly phase are really important and that the design should be in surface of production and assembly.

Interviewer

OK. so the main issues needed to be considered in the design is the design for manufacturing and assembly.

Interviewee 4

Yes.

Interviewer

OK, got it.

So during the design phase, how a closer collaboration among various disciplines and stakeholder during early design stages can be achieved?

Interviewee 4

So how to improve it is I think that if we have like a core set of rules and interfaces where we can draw the facade and the design in, then we can give the architectural design in the predevelopment. We can give them the freedom to develop that within those boundaries, but we really need those design boundaries. Now the architect has no design boundaries, so he has a white paper and just starts drawing facade and then he will look after he draws his façade. Then he will look which façade fits best.

And I would say turn it around, say OK, we choose a type of facade solar cooling facade. These are the boundaries and the design freedoms where you can build in and then keep communicating with production with assembly. That's everything that you have done is possible.

Interviewer

But what type of boundaries?

Interviewee 4

Now is there for example I how many weights can the facade support. So if we want to create like a green facade with plants on it, is that possible?

So if we have like a boundary as or like these. These things can be added on to the facade or this is the max a glass a square meters that is possible.

Those are like designed boundaries that is possible.

There's no such thing as a total. So we have made total glass facades, but there's no such thing for solar cooling facade with only glass there. So you need to give them....you can do this, but this is what you can't do.

Interviewer

OK.

Who can give them those boundaries? Can these boundaries given, for example, in standards or guidelines that could be developed for them?

Interviewee 4

Yeah. So if....You could say like either you have like a facade builder that has a product and the customer chooses the facades and the type of product, and then the architect has the design build boundaries, but which can also say is that the facade builders together within a corporation say a building...so more broad...these are things that you can do and this is what you can't do because we really want to build our façade this way. And if everybody says these are the boundaries or these are

the interfaces or this is the standard that we are currently building on and it's like maybe 50 or 60% of the facade builders in the in the Netherlands will say, OK, this is how we work. Then maybe architects and construction companies will start from that point and not with a blank slate.

Interviewer

OK, I see now I have a question about the production Phase I remember you, you repeated a point that is related to the mass customization. The core should be the same. The outer should have different appearance. So this is one of the issues that are related to the production phase. You mentioned it more than one time. Do you have other things that can OK that should be considered in the production phase.

Interviewee 4

Yeah, of course. Because it's also something that's we really need to speed up the process of building good functioning performance facades. So if we can create it and build it within less time, then it's also cheaper and more affordable for our customer. So I really think that if we can create something from a core perspective that can be produced very easy with less materials and smart and can be adopted for multiple buildings, then we can invest in machines and production locations.

And standardized those processes. And currently we can't because every facade is different, so we have a what we call in as a really craftsmanship of production locations. So production locations are craftsmanships there each project is different, so the machines need to be based different. There's no assembly line. There's no incentive to get robots, or there's no....We really need to craft each facades on its own.

And if we can standardize and use mass customization, then maybe we can invest in a robot that does type of things, and then we can improve the scale. And if we can improve the scale, it can be cheaper for our customer as well, and more affordable and easier to have a building that can be Paris proof, but also affordable.

Interviewer

In the assembly phase, I remember mentioned before something that is related to the plug and play.

Interviewee 4

Yeah.

Interviewer

So do you have other things that should be considered in the assembly phase?

Interviewee 4

Yeah. So that's also something that is like a craftsmanship. If you can assemble it yourself. So if I can assemble it, it is easy to use then we can also have people that are not have 10 years of experience and technical studies. So there's not a lot of people that can build things with their hands anymore. So if we can assemble it, that somebody without a lot of education can assemble it and disassemble it, then we can create jobs where people they don't have to the knowledge of the whole process of the facade building, but if they can just create it together and create like a plug and play work process or work methods. Then we can easily easier skill, so we have to use our rare ...how do you call it...so the good technical labor is really scarce, so it's we have too little of those people. So if we want to create more good functioning facades for the Netherlands and for all these types of

buildings that need to be renovated, then we need to scale up and also attract people that are not façade experts for 10 years.

Interviewer

OK I remember the operation phase you mentioned the importance about the accessibility, the important issues.

Interviewee 4

Yeah.

Interviewer

Do you have some other things maybe you have in mind to be considered for the operation phase?

Interviewee 4

Yeah. So in the end, it's all about a customer that the person that is living behind that façade has a comfortable place where he can live where he can use the product and really....So the customer doesn't want solar cooling façade. He just wants the nice place to work or nice place to live.

So if the product can facilitate that, then he's all for it. But he won't choose it.

So I really think that's also something that we need to create a communication. Do you want affordable, comfortable place to live? Yes. Then use this product. It's not the other way around. It's not like use solar cooling facades. Because start with do you want affordable, comfortable place to live. Yeah, well. Then the only way to go is integrated solution and integrated product and we have that product.

Interviewer

OK. So you talked about the customer who use is it. Do you have something in mind about the end user knowledge for example?

Interviewee 4

Yeah. I really think that how to end user perceives the product is really important, but that's also what's the expectation of the end user and what he you will receive.

So if we have like for example a customer that ABN AMRO, which a big a concern. They have demand and standards and they really require the highest amount of comfort and possibility. And if we go to a local small business units somewhere in industry site, they have different expectations of comfort. So I really think that the customer knowledge is really based also on expectations of what they think they're gonna get.

Interviewer

I see. So before we end up, what are the main issues that are needed to be considered for the end of life of solar cooling integrated facades?

Interviewee 4

So I really believe.

That's, the facade needs be disassembled and reused on other sites as well because we can't make facades anymore for 20 years and then say OK the building is going to be demolished OK, everything to the demolishing site.

So I really think that if we can create a product that can be placed on one side for 10 years and that maybe to another place for 10 years and then another place for 10 years, this is really the future of... So reuse, designed to be reused is really important.

And if not, then at least design to be disassembled. So not integrated with all kinds of connection and how do you call it that adhesives or glues or something like that. Really design it so you can disassemble it. So at least on a on a material level you can reuse the materials.

Interviewer

I see.

So now I'm done with all key questions.

I have covered questions about technical aspects. Technical and product related, financial, stakeholders, and the processes. We talked a lot about the design, production, assembly, operation and end of life.

So I have just few things about the closing questions.

So what are your final remarks about supporting the widespread application of solar cooling integrated façades as building products in the construction market?

Interviewee 4

Yeah. So I really think that as a building system, we really need to look at energy and really think from energy and then see what is the requirement or the performance of our facade and integrated products. So and I think that we need to start in the end. We need to start with the customer. What is the ambition of the customer? How much energy does that need? How many electrical? What is the possibility on the grid because there's way less electrical energy possible for buildings that if we want to have create an all electric building. So and if we start there with the ambition of the customer and then say OK this then we can create this and then this is need to be the requirement of the facade and then this the actually the value of the isolations and the services etcetera. We need to start in the end and not in the front. And what we currently do is we start at the front of the of the building. It looks good. This is our vision. This is our aesthetic. And then we get into the race of realizing that's aesthetic, that's kind of picture. That's perfect, perfect picture and then it's like...and then maybe in the end we will come to the conclusion we can't build this because we don't have the electrical energy to create this vision. So and I really think in the future and now it's starting to catch on. But in the future we will start what is the required energy, what is the ambition of our customer and what do we need to achieve there and then what are the consequences for design. So is the other way around.

Interviewer

I see. OK.

Now we are done actually. Thank you [Name of the interviewee] for lots of insights. I really enjoyed the your insights and your ideas. So thank you so much for your insights and your answers.

I just have one thing....Do you mind to propose potential participants that can be interviewed for this study?

Interviewee 4

Yes. Do you know....