PODCAST

Energy-efficient solutions for electric motors – the biggest ticket to save energy

ABB Decoded

Adrian Guggisberg, the President of ABB's Motion Services division, shares insights about the need for conserving energy to meet carbon neutrality targets in this ABB Decoded podcast.

Reiner Schoenrock: Hello. And welcome to a new episode of ABB Decoded, the podcast that tries to press pause on your fast-moving life and shine a light on the technology and trends that are reshaping our world. I'm your host, Reiner Schoenrock and in this episode we will be discussing why addressing the energy efficiency of the electrical motion installed is more important than ever. And I'm sure we will not stop there at the installed base, as latest estimates say the demand for electric motion is to double by 2040. To further elaborate on that topic, I met with Adrian Guggisberger, the Division President Motion Services at ABB. Hello Adrian, nice to meet you.

Adrian Guggisberg: Hi Renner. Thanks for having me.

Reiner: In a nutshell, Adrian, what do you do at ABB and what does motion mean in your case?

Adrian: Yeah. Maybe I start with what motion means. At Motion we say we keep the world turning while saving energy every day. And what that means is basically, you know, wherever you watch, where you see something moving, being it in the morning the train, if you get some fresh air in a heated room, and there comes a cool, air in, or if there is water from the tap, most likely there is somewhere an electrical motor which drives a fan, a pump or drives the train. So electrical motion is everywhere in our life. And that's why we say we keep the world turning.

And then saving energy every day, that's our mission, that's what we are trying to achieve. We believe that with our technologies and the way we do things, we can save energy every day. And more than ever before.

I'm leading the Motion Services Division. This is the division which takes care about all the installed base and helps the customers to get most benefits from the installed base of electrical motors and variable speed drives.

Reiner: Okay. And Adrian, what do you see as being the biggest market shifts and trends that have an impact on the industries today?

Adrian: I would say there are many things happening over the last couple of years. But I would say the biggest thing it's really about the awareness which is rising on carbon neutralities. As a world, we need

to reach this goal. We need to reduce the global warming. If we don't do that I think as a- human being, we have a big problem in front of us. I think it's the biggest challenge in front of us. And I have seen this is really raising on the agenda everywhere, in large companies especially, but also governments.

Reiner: So, could you share with us how a potential road map could look like for companies striving to achieve carbon neutrality and become more sustainable?

Adrian: Yeah. I think maybe taking it from the big picture and just referring to IIE. You know, the agency which is kind of publishing the view on this. I think there are two big things which need to happen. The first thing is we need to change the energy sources to renewable energy. What that means is kind of wind energy, solar energy, and so on. But it also means that combustion engines need to transfer to electrical engines. And then the source of the electrical energy needs to come from the renewable sources. That's one area.

But that will not be enough. I think that we will not be able to manage to, to supply all the energy which we are- which we are using today. So, energy saving is the second big thing, what we need to achieve. We need to take much more care about the energy, how we use it and when we use it.

Reiner: So, then I understand you correctly that we have an urgency today to improve the energy efficiency of the applications driven by electrical motors.

Adrian: That's absolutely true. And then there is also a huge potential in this. To give you a bit of a perspective, around 45% of all the electrical energy is converted by electrical motors into motion. That's almost half of the energy you generate as electrical energy. And now what we see is if we apply latest technologies, we could save about 10% of this energy. And obviously this is huge. This 10% energy savings, this would equal that we could switch off or turn off globally around one third of all coal fired power plants, which would have a tremendous impact on the carbon emissions.

Reiner: So how could we as a society get a grip on that? Would you consider the current global and local regulations supporting this pressing issue at a mature stage? Or would authorities still need to elevate them for the carbon neutrality targets to be achieved?

Adrian: I think this is a very, very important topic. I think to make things really happening, I think regulations, they are really key. That they are supporting this. They put the bar at the right level but also give the incentives to do the right thing. Now what we see is a very good development in the regulation and it comes to installing new equipment. So, energy efficiency classes are demanded to go up. Obviously it's not going to the high end, to the best possible yet, but I think we are on the path to get there.

Now that the area which is not addressed yet to the level it could be addressed is the installed base which is out there. We have more than 300 million of installed motors around the world. And many of them, they are running with very poor efficiency. And here the regulations are not yet as strict. It's really much more focused on new installations. And there we see a big opportunity.

The second trend maybe also to mention it's not only about, you know, the direct impact, on energy savings, but it's also the impact on waste. We talk a lot about circularity. Today more a buzzword, but in the future I think it will be absolutely relevant that we reduce also the waste in whatever we do, being it when we maintain things, when we build things, that materials can be reused and stay in a circular economy.

Reiner: Thank you, Adrian. Now let's look back at the impact the COVID situation had on industries. Because it had a major impact in the past two years on the way industries conducted their operations. So, what would you say was the major technological shift that appeared because of the pandemic?

Adrian: I would say, the major part, what we experienced in, in our service business was the acceptance of sharing data. Actually the acceptance of using some of the available technologies. I mean, we all experienced it, probably the ones which are not even in a service business. But how many of us were sitting in front of our screen at home, using Teams to interact every day with our colleagues? Something we have not done before this pandemic. But now it's normal.

And many similar things happened also in, in the service side. I'll give you maybe one example. We are using remote visual guidance. So basically just a simple app on the mobile phone which allows with the camera of the mobile phone to watch what happens on site and then directly guide the person on site to do the right activities. While in the past, we were sending a person to the site, maybe even need to go into an airplane. Again, creating more pollutions. And now we are doing it just remotely, which is faster, which is lower at cost, and, and typically, you know, it's even also less stressful for the people.

Reiner: So, then also in the Motion business, the digitalization has an impact already on how you conduct your business. So how can digital solutions contribute to the sustainability targets?

Adrian: I think the first and foremost, whenever one wants to change something, whenever you want to-have an impact, it's transparency. Everything starts with transparency. And in my view, digital enables us to get a much better transparency. So, transparency, for example, in what is the energy consumption of certain applications? Where are the potentials to save energy? Where are the potentials to do better? So, transparency's increasing significantly when we apply digital solutions.

The second thing it helps us to make better decisions. Because it shows us the options. It shows us what we can do. And we can also simulate or emulate, however you want to call it, what would be if something is done.

And then I would say that the third thing, as I mentioned with the example before, we can actually reduce the need of physical presence, which reduces the traveling, which increases the speed of how we can do things.

Reiner: Now Adrian, I think the difficult question here is how are you going to make this happen? Because at the beginning of this chat, we talked about the installed base of more than 300 million motors. So how are you going to put digital solutions at work?

Adrian: In our business we believe very strongly in plug and play. So, what means plug and play? I think we benchmark ourself with kind of business to consumer type of business. Things must be easy. Some of our competitors, they would use automation solutions in order to digitalize things. So, we need to have an automation engineers which deploys a solution, installs a solution. And I think that's going to be cumbersome.

What we're trying to do is everybody can do it. You know, make it as simple as possible. You plug a sensor on a motor and you can connect it with an app, and with two, three clicks and then you get the benefits. I think this is really lowering the barrier. And, we believe that if we can do that at the very low cost, the very low barrier, and in a very simple way, we will be able really to scale up the solutions and really start, you know, to apply the solutions on many, many motors out there.

Reiner: So, let me ask you this detail about how can we imply the solution. So, who is this? Is this the customer? Is it us, ABB? Or is it, a partner, a service provider? Who in the value chain is going to put the digital solutions at work?

Adrian: I think it will be a mix. It will be a mix in between operators which are owning the equipment, between service providers which are partners for us, and in some cases even ourself doing it on behalf of a customer in order provide maybe even a full service to them. So, I think it, it will be a span. But what I believe what will really change is that we try to bargain on give me this part or give me this repair work, towards maximizing the benefits. So, while maybe in the past, you know, there might be companies having just one objective which could be, okay, let me try to operate at the lowest cost. I think in the future there are multiple goals. There is maybe the goal of saying okay, I want to operate at possible lowest cost. Same time I would like to save as much CO_2 emissions as possible. And I want to reduce the waste in a circular way. Now you have multiple goals where you need to balance where is the optimum and this can only happen through partnerships.

And what we also think is the next step of the partnerships is really also towards changing a bit of the business model. Which means we are going more towards an outcome-based type of business model where we as a provider of the solutions guarantee even an outcome.

Reiner: So, I guess this is not just theory. You certainly can give us an example out of practice.

Adrian: One example is really where we impacted the energy efficiency. We just launched a new solution. We call it the Digital Energy Appraisal. The Digital Energy Appraisal is basically something which is using the same data as we use for asset health management but we are based on data. We can kind of give a view about what is the potential energy saving on an application or on a solution if we would do an upgrade to the latest technology.

Now when we developed this solution, we were in a piloting phase, for more than six months, almost nine months. And one of the customers where we piloted this Waggeryd Cell in Sweden, they applied the solutions. They used the data. And guess what? Immediately we could discover the 10 applications which have the highest potential to save energy by upgrading to latest technology. And they decided for six out of the 10 immediately to do the upgrade. Because it was a no brain for them, both on the saving on the energy cost, but also do the right thing in terms of reducing the waste and reducing the carbon emissions.

The second example I would like to make is Statkraft in the UK, where actually they installed a synchronous condenser. This is an application where we stabilize the network. You need these type of applications when you have a lot of renewable sources in a grid. With them we have a service agreement for 10 years where we guarantee an availability of the equipment. Why we do that is basically we know this equipment way better than the operator and the owner. And by applying digital solutions and our expertise, we manage the risks much better of any unpredicted downtime.

Reiner: Adrian, when you talk to your customers, I'm pretty sure they have one question. And that one question is the return on investment. Do you have an idea, an example, about the return on investment and how fast it can be achieved?

Adrian: Absolutely. And now, I must say with the present development of the energy prices, I would say, things are even much faster than whatever I give you now as numbers. I think in the past if you take energy prices over the last year, we would have a kind of upgrades which would have a return of investment between one and three years. That's a very typical number. It depends a little bit of the operations. But if you have a typical load of fans or pumps, you know, where you have a flow application, it can be in this range of one to three years. Now with the present development of the energy prices, this is just way faster even.

Reiner: So, our episode today is coming to an end now. What would your final conclusion be on the energy efficiency topic that you would want the audience to remain with?

Adrian: I think it would start with the big picture. I think carbon neutrality's not an option. I think we as human beings, we need to reach that goal. That's my number one. The number two, to reach that it's about changing to renewable energy sources and it's about saving energy. Without saving energy, we are not going to make it. And one of the biggest tickets to save energy is actually to apply efficient solutions for electrical motion, which is impacting almost 50% of the energy consumption. And we believe we can save more than 10% of world's energy by doing this with more efficient solutions. As we say at Motion, we keep the world turning while saving energy every day. I'd just encourage everyone maybe to look at our webpage and search for the Energy Efficiency Movement. Sign up for the Energy Efficiency Movement and be part of the solution. Thank you very much.

Reiner: Thank you, Adrian for all your insights and compelling examples. And now we all better understand what is at stake, how important and omnipresent electric motors are, and how industry can become more sustainable. All this is well aligned with ABB's purpose, to transform industries to address the world's energy challenges through leading technology.

And if you, dear listener, did enjoy this episode of ABB Decoded, why not like, share or subscribe wherever you get your podcasts. Until next time.