PODCAST

Why digitalization is the key to sustainability

ABB Decoded

The power of data is helping to unlock the potential of sustainable technology, says ABB's President of Process Automation, Peter Terwiesch.

Reiner Schoenrock: Hello! And welcome to a new episode of ABB Decoded – the podcast that tries to press pause on our fast-moving lives 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'll be discussing a new global study of international business and technology leaders on industrial transformation, looking at the intersection of digitalization and sustainability.

The study, "Billions of better decisions: industrial transformation's new imperative," was released early February by ABB and examines the take-up of the Industrial Internet of Things – also known as IoT – and its potential for improving energy efficiency, lowering greenhouse gas emissions and driving change.

The survey revealed that while 96 percent of the participating 765 international decision-makers believe digitalization is "essential to sustainability," just 35 percent have implemented Industrial IoT solutions at scale.

The topic is an area of special interest to ABB, as a global technology leader, and Peter Terwiesch, the President of ABB's Process Automation business area, believes that sustainability goals are becoming ever more crucial drivers of business value and company reputation.

And Peter, who we'll be hearing much more from very soon, reckons that Industrial IoT solutions are playing an increasingly important role in helping industry achieve safe, smart and sustainable operations.

Let's hear some more about what Peter has to say on this fascinating subject.

Peter, by way of introducing you to our audience: you are President of the Process Automation Business Area at ABB. Can you please share some information about the size and kind of that business and about your customer landscape.

Peter Terwiesch: Look, Process Automation is roughly speaking, a $6 billion business serving the process and hybrid industries. And with that some of the critical infrastructures that help us in our daily lives to have energy, to have crucial raw materials that go into everything we use and consume. And those industries tend to be some of the more energy and resource intensive industries also. So, from a sustainability perspective, getting sustainability right for the industries that we serve is a major part of living a purpose at ABB, helping transform industries and enabling sustainability. So, I'm really excited. It's a great time to be in this business and serve these customers that is as broad as the energy

industries, mining, minerals, metals, paper, marine and ports, to just name a few, to serve these customers with automation, electrical and digital solutions.

Reiner: Peter, ABB has recently unveiled a study called “Billions of better decisions.” The study provides insights on the state of Industrial IoT and it's role in sustainability. Can you please share some of the findings with us.

Peter: I mean my absolute favorite finding in this study of nearly 800 decision makers that we made is that 96% viewed digitalization as essential to sustainability. And I think that describes it well because it means, on the one hand side, we’ve got sustainability as a new and additional challenge for business to address. But with digitalization we also have a great new tool in the toolbox with growing powers to tackle this really demanding problem and in this process also generating business opportunities, opportunities for differentiation of your offering. If you think in the steel industry for instance, green steel, if you think in the marine transport industry, lowering emissions, because after all the greenest energy is always the energy that you don't consume and we have solutions that enable just that. So, it's a great time here and great to see that so many of the respondents think alike to ourselves here, using digitalization to make operations safer, smarter and more sustainable.

Reiner: Oh, that’s really interesting what you just said Peter. Many respondents in the survey said that sustainability and digitalization are intrinsically linked. You touched on that point already but could you please expand on that a little bit further and draw some implications.

Peter: I think it was no surprise to see digitalization and sustainability intrinsically linked and if you look at that, you can come from the perspective of saying, well, we've got sustainability as a new challenge and digitalization as this new tool in the toolbox. But beyond that, I really think energy efficiency, the avoidance of energy and resource consumption enabling, then, also for instance industries that depend very much on reliable power, most process industries require reliable power, which initially sounds like the opposite of using renewables, which tend to be intermittent in their nature. And bridging that gap through digitalization, through power management, where you can basically shed non-critical loads, and in milliseconds all of that intrinsically connects digitalization and sustainability. I was positively surprised how many people have come to this same realization as we had come to.

Reiner: ABB’s study indicates that nearly three-fourths of organizations are increasing investment in the Industrial IoT as a result of heightened priorities around sustainability. What is driving this development?

Peter: I think especially in the process and hybrid industries, but also more broadly, everybody is thinking about ‘Was the sustainability imperative in place.’? What does it mean for my business? How will my business exist going forward? How can my business contribute to meeting the goals of the Paris Accord and related and derived targets? Out of that comes the need to basically make your business fit. Get your business in shape for the coming decades, where contributions will be essential and that will require investment in technologies – and technologies that are often also quite long- lived. So, now is the time to ready your respective industries for meeting this sustainability imperative that increasingly is a part of also your business license to operate, from a regulatory perspective, from a customer expectation perspective, as we all take commitments for reducing emissions on the different scopes. That immediately covers value chains and goes further back in your supply chain. So, it's really increasingly an imperative that touches everybody and there's a need for investment everywhere.

Reiner: Industry 4.0 has brought many innovations that have led to increased productivity, efficiency, agility and so forth. How do you see Industry 4.0 going forward in the context of, say, climate change or preserving natural resources?

Peter: Look, from my perspective, there's many names here and we at ABB in the early days, even talked about the Internet of Things, Services and People. And I still like that, as it says that this isn't about 100% autonomy where systems just optimize and operate themselves. But it's basically systems that enable smarter decisions including by people and they enable collaboration between people based on more and better data. So from that perspective, irrespective whether we talk about the I IO T, whether we talk about Industry 4.0 at all, whether we talk about many of the related expressions, I think what

we've seen is people have come to the realization that so much of their operational data is unused today. And the first time we looked at it, we found people are using less than 20 percent of their operational data.

And by cleansing that data, contextualizing that data, you can basically get to better insights, better decisions and through that better outcomes. So, there's a treasure trove in the data that you can basically harvest through industrial analytics, artificial intelligence, but also many of the traditional methods now applied on proper data. So, this is evolving.

And I think it's both an evolution and a revolution. So, a lot of people are asking this question-- how do you see it? Is it in an evolution or is it a revolution? I would say it's an evolution in the sense of continuing to be energy- and resource- efficient. I mean, we've always been, as ABB was, with our drives, with energy efficient motors, with our control solutions, with also in the electrification business, many solutions that enable energy efficiency and sustainability. But at the same time, substituting some of the conventional forms of energy for renewables is a bit of a revolution, because suddenly you don't have hydrocarbons that are easily also used for energy storage, but you get a totally different dynamics of the system. So, to me it's evolution and revolution, and we enable both often with the same technologies.

Reiner: We know ABB's customers—energy companies, manufacturers, transportation firms, cities—are awash in data. More data could mean more insight into operations, so how can ABB help companies to make use of the most valuable data and create more value for their customers?

Peter: Look, if it is, if you look why people don't harvest what's in their data, very often you just get the data that in its raw form is very difficult to access and put into context. So, you got different streams of information, but it's very hard to correlate them. And from my perspective, there's two things that really matter here. One is domain competence. You have to understand what's important for the specific process, for the specific industry you're serving. And then the other is the data analytics, including artificial intelligence. So, with your domain based insight and knowing what to look for and where to look for it, then basically having a toolbox that makes you efficient and that's what we do with our Genix Industrial Analytics and AI suite.

Reiner: Peter, the Industrial IoT is clearly about more than just connectivity and depends hugely on analytics. Obviously, domain expertise is crucial for success. How can artificial intelligence, for example, support better decision-making — or even make decisions?

Peter: If I look at the state of artificial intelligence, to me it''s not "the" solution that solves our problems. I mean, we have many great conventional solutions where we have an exact physical model of the process that helps us come to the right insights and conclusions. But artificial intelligence plugs a hole when you get to processes that are hard to model economically, expensive to model. But where you have lots of data to train your network to develop insights and then basically the artificial intelligence can, for instance, because it doesn't get bored by looking at data for hours and hours. Imagine kind of a rare event that when it happens you see like a buildup of material that will at some point clog your process. You see a deterioration, say the filing fouling of a heat exchanger, the growing of algae on the hull of the marine vessel. Those kind of things people would get easily bored and would not pay sufficient attention. Whereas algorithms, they're basically awake the whole time and algorithms can then basically identify even a gradually creeping trend and alert a human being to what needs to be done or take automatic action depending on what the nature of the process is.

Reiner: Thank you Peter for that insight. According to ABB's study "Billions of better decisions" the three most important Industrial IoT technologies in enabling sustainability are cloud computing, advanced analytics and cybersecurity. Yet the research also shows that companies consider cybersecurity to be the #1 barrier to improving sustainability through the Industrial IoT. What's your point of view on this Catch 22?

Peter: Look, cybersecurity is basically about having data as a trusted foundation of running your business. And in order to take more decisions digitally and to move on on this journey towards more autonomous operations, you need to be able to trust your data. So, in many of the customer interactions we are having, be they service calls, be they co-development with customers of medium- and longer- term

strategies. We look at how can we protect the integrity of the data both from a perspective of no outsiders gaining access to inside information, but also from the perspective of systems not being misled through manipulation that might occur in the data. So, cybersecurity is a base layer that needs to be put in place and that needs to be also evolved as the threat landscape evolves, in order to facilitate all the advantages that the Industrial Internet of Things can deliver.

Reiner: Peter, what can you share with us about some of the innovations from ABB that most excite you in terms of our ability to help organizations transform faster in terms of productivity, efficiency and sustainability?

Peter: Look, this would be a whole new podcast in itself if we had the time for it. But if I look, I mean, for me still, I'm fascinated by the productivity advances that robotics generate and increasing breadth of fields. If we look at where ABB Robotics business is contributing, they're expanding into areas like labs and medical, taking over routine work. And one of the fascinating findings there is that actually the more robots they are, the better it is also for employment and there's long term observations that draw a positive correlation between the degree of robotization in economies like South Korea or Germany or Japan with a high robot density and a low degree of unemployment. So that's productivity. And it's a really good thing in terms of advancing standards of living. On the energy efficiency front, I think there's no way around being proud of ABB's offering in the variable speed drives in particular. And when you think of a combined innovation like the energy efficiency highest class, the class 5 motors that are basically new types of motors that are enabled by the smarts of the drives that basically provide them with electricity. So, lots to be proud there.

And then in process automation, a long list again. But I have to say what one of my highlights is actually a small solution for a big problem. If you think of methane and natural gas leakages during production, transport or consumption, they are a dual hazard in terms of their climate hazard, because methane is a pretty potent greenhouse gas. But, of course, the gas itself can lead to direct safety hazards. And what we have with our Mobile Guard solution, of which we have a variant that you can put on drones also. You can then use our analyzer technology, in conjunction with drones, in conjunction with satellite imaging, adjusting for wind speed and very precisely pinpoint leakages of methane. And that's helping the whole value chain avoid these fugitive emissions. I think that's a super- cool technology, small piece of technology, but with a huge impact potential and also great uptake from our customers.

Reiner: Thank you Peter, that’s very interesting. Now, which of the customer segments you serve is most interested in increasing sustainability?

Peter: Oh, I think this is us asking the question like when you have more than one child, which one is your favorite child? Look, I see a serious effort in all the industries we serve to re-orient towards sustainability because, it's, I mean sustainability is environmental sustainability, but it's also the question of how will this business be around in a couple of years, in one or two decades. So, whether it is the energy industries, some of the companies that formerly were purely oil and gas companies are really making major contributions, for instance, in offshore wind, onshore wind, in solar. Some of them even in geothermal. Whether it's mining where we're looking at sustainable underground mining, so how do you reduce the energy consumption? How do you substitute the energy mix away from diesel to more electricity- with our e-Mine solutions that we're offering there, whether it's marine propulsion where we have a long standing leadership position in hybrid propulsion that greatly improves efficiency and are seeing increasingly purely electrically powered vessels for the short-haul distances. Look, I can't pick a favorite here but I can say I'm really happy about the momentum we're seeing, about the growing levels of climate literacy, about the growing talent inflow in these sectors. I mean these are some of the hardest challenges to address for our generation, so it's really good to see top talent coming into the sector, to see the technology moving and to see the impact that it generates for our customers.

Reiner: Peter, thank you for the insights into your business, but could you please give some more concrete examples of impact ABB and its technology has on some of the industries you serve?

Peter: Let me illustrate the impact of the Industrial Internet of Things on some concrete examples. Imagine, for instance, a research vessel that is out there sailing through challenging waters. Ice covered, perhaps far away from established infrastructure. This ship is in very remote locations often, but it is never alone because there's actually a network of experts that can support the vessel 24/7, look at the data together with the crew. There may be an algorithm watching certain things that nobody would pick up otherwise, but the algorithm would alert the crew on the vessel or also our experts in a collaborative operations center. So that's when I talk about the Internet of Things, Services and People. This is by connecting the systems you not only get higher levels of automation, but you also get better availability of better-informed human beings that are in communication with each other. And same thing can be said, take a container ship. I mean every year there's about 1500 containers lost at sea. And those containers of course, they have a commercial value, but they also very often mean risk exposure for other vessels. And our ABB Ability Octopus solutions, they basically monitor and forecast the motions based on the weather patterns and help the crew avoid situations where containers would risk to go overboard. So that's just another example from the marine industry.

Imagine an underground mine, and if you picture an underground mine, I mean that's a maze of tunnels. It's kilometers and kilometers of people working and then accesses. There's heavy equipment. There's people moving around. And it needs a lot of fresh air. It needs the air for the people, it needs the air for the heavy, typically diesel-powered equipment.

What we've launched there with our was our e-Mine offering. And that is really a game- changer. It’s that when you run electrically powered equipment underground and when you move equipment to increasing degrees of autonomy and control equipment from a central control room, rather than directly at the rock face, then basically you can reduce the need for ventilation, which is one of the biggest energy costs in mining, and one of the biggest operating costs even. Very often you can reduce ventilation, you can reduce the diesel consumption, you can bring in renewables. So, you changed the whole game from a sustainability, but also from an economics and a safety, perspective. So, you kill several birds with one stone. I apologize for the perhaps not so politically correct picture, but it certainly ticks a number of boxes rather than being a sustainability solution only.

Reiner: Peter, ABB launched ABB Ability Genix some two years ago to apply data analytics meaningfully, to drive decision-making, contextualizing information – how can you help to put the data into context to operations?

Peter: When you look at all the data that's out there, you first need to typically go through a step of cleansing, of removing outliers, offsets, those kind of things. And then an important second step is the contextualization of data where you use the domain know-how that you have. And that's domain know-how that exists in the heads of people but it's also domain know-how that looks in, that lives in industry-specific digitalization solutions. And in ABB Ability Genix Industrial Analytics and AI toolbox we basically have a pre- kitted two boxes for the industries that we serve so that we can very efficiently take that data that comes from multiple sources. It can come from operations, it can come from an enterprise resource planning, maintenance management kind of systems. So very different systems yet relating to the same object, and bringing that together seamlessly, for better analytics and then from there better decisions, automatic or human. That is how this works. And this is where you get to better outcomes.

Reiner: Peter, we’re coming to the end of this discussion now, but what can you share with us about the adoption of such a solution as ABB Genix?

Peter: We clearly see different speeds off adoption, and we can see that it's especially the more successful companies that are having a more systematic and deeper look into their data. And I think that's perfectly normal. As an engineer you always look for augmenting efficiency. And if you have an unused resource, which is your data, then there's a natural temptation to think about how can I use this data better for better outcomes. And this is where the Industrial Internet Of Things and the solutions we've developed at ABB really help customers use that data better. And in our observation, it's really the customers who do more with their data. They are the ones which achieve the better outcomes.

Reiner: Thank you, Peter for all your insights and compelling examples. Now we all better understand what is at stake and how industry can become more sustainable. To continue the conversation, ABB hosted an industry webinar with Peter Terwiesch and other industry experts in early March, focused on the convergence of digitalization and sustainability, and how the Industrial IoT and related technologies can help save energy, conserve resources, and improve safety for personnel and communities. You can listen to the recording of the ABB exclusive webinar by going online at abb.com and look for Billions of better decisions.

And if you've enjoyed this episode of ABB Decoded, why not like, share, or subscribe wherever you get your podcasts. Until next time.