

MEET #1-2020 SANDVIK

A CHALLENGING START

"I'm convinced that when we work together with our customers, partners, and suppliers, Sandvik will successfully get through these difficult times." Meet the new President and CEO of Sandvik, Stefan Widing
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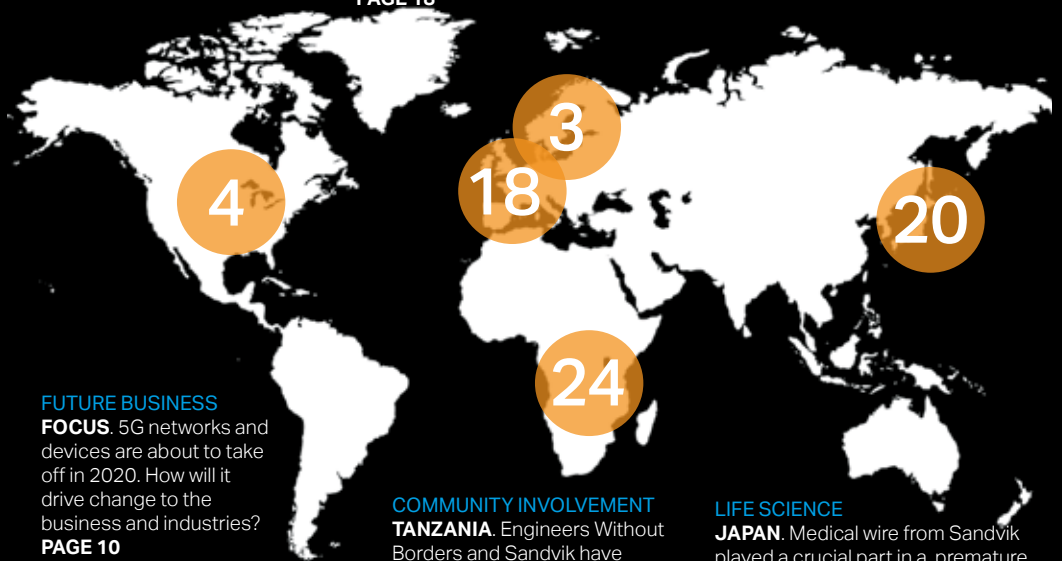
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DISCLAIMER

Some images within this magazine were produced before the introduction of social distancing requirements.

NEWS

MEET THE PRESIDENT

of Sandvik Coromant in our podcast series. When Belgian Nadine Crauwels took on the role, the company welcomed the first non-Swede and first woman to the position. Find it where podcasts are found, or at home.sandvik/en/stories/podcasts



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The Meet Sandvik magazine will be published twice a year, instead of the previous three editions. All year round you'll find our best stories at: home.sandvik/stories



Alfred Kaskela, Moa Karlsson, and Oscar Persson at Göranssonska Technical High School in Sandviken study the effects of solar power.

"THIS IS FOR REAL!"

HOW DO YOU make sustainability more than a buzzword? At Göranssonska Technical High School in Sandviken, Sweden, where Sandvik is a majority owner and which bears the name of Sandvik's founder, Göran Fredrik Göransson, the answer is on a roof where 330 solar panels were recently installed. The panels are forecast to provide 12 percent of the school's annual electricity needs, but the point of the installation is including the reading and measurements in the student projects on solar energy.

"There is so much talk about sustainability. That is good, but you want to work with it, live it. That is

the best way to learn," says student Moa Karlsson. "This is for real," says fellow student Oscar Persson.

Mats W. Lundberg, Sustainable Business Manager, Sandvik Materials Technology adds: "Educationally, the project involves science, technology, economics, innovation and more. Students can choose which angle to pick and base their studies on real and live facts. It is close encounters with impactful technology rather than buzzwords that enable young people to truly understand the opportunities and challenges involved in creating a sustainable world." ■

PURCHASING POWER

IN 2019 SANDVIK ANNOUNCED a total of nine company acquisitions, four of them end 2019/early 2020. Thermaltek is a manufacturer of high temperature furnace systems and metallic heating elements headquartered in North Carolina, USA. Sustainable industrial heating is a strategically important growth area to Sandvik's Kanthal division.

Sandvik also acquired Summerill Tube Corporation, a manufacturer of high precision tubes based in the US. Since 1892, Summerill has delivered seamless and welded tubing in stainless steels and nickel alloys to highly demanding industries including aerospace, transportation and petrochemical.

Sandvik also reached an agreement to acquire US-based Melin Tool Company, a manufacturer of solid carbide tools. The acquisition further strengthens Sandvik's round tool offering,



especially for the aerospace industry and the US channel partner market.

In Mexico, Sandvik agreed to acquire the cutting tools division of Quimmco Centro Tecnológico (QCT). The acquisition enhances Sandvik's capabilities on the growing Mexican market, serving customers in a wide range of industries, including aerospace, automotive, energy and transportation. ■



CHIEF TECHNOLOGY OFFICER OF THE YEAR. Jani Vilenius, Director for Research and Technology Development at Sandvik Mining and Rock Technologies, has won the CTO of the Year 2020 Award in Finland. The jury consisted of leading Finnish technology influencers and behind the award stands Technology Industries of Finland, Business Finland and consultant Spinverse. Read more about Jani Vilenius on page 14.

CENTER NUMBER 20

AT THE END OF THIS YEAR, a new Sandvik Coromant Center will open up in Mebane, North Carolina, in the United States. Sandvik Coromant has 19 such centers spread out all over the world where participants get hands-on experience from skilled experts on state-of-the-art machines and digital machining techniques. The tool manufacturer already has a production unit in Mebane, an area heavy with aerospace and automotive manufacturing. ■



AWARDED CAMPAIGN

The branding campaign Let's Create where Yngwie Malmsteen failed to break the world's first 3d-printed smashproof guitar generated a huge interest. It has also received several awards, such as the Swedish "The 100 Watt" and the Magnet Award. ■



NEW TITANIUM POWDER PLANT INAUGURATED

DEMAND FOR TITANIUM powder for additive manufacturing is increasing. To meet this demand, Sandvik inaugurated its highly automated titanium powder plant in Sandviken, Sweden, late last year.

"The additive process results in far less material waste than traditional subtractive techniques, while also encouraging new levels of design freedom," says Mikael Schuisky, Head of R&D and Operations at the Additive Manufacturing division in Sandvik. ■



A NEW GENERATION OF TALENTS ONBOARD

The fourth 18 months Global Graduate Program, Sandvik's global trainee program, started in October 2019. Ten young professionals from China, India, Finland, Sweden, and US will get to explore and know the company, and after the program will be offered a position in one of the business areas.

"Access to young talent with new skill sets and outlooks on the world is critical for our success as a company," says Anna Larsen, Program Lead at Sandvik. ■





A challenging start

Stefan Widing's first months as President and CEO of Sandvik have been eventful. The new Coronavirus is affecting the whole community and Sandvik is fully focused on adapting its operations to the new conditions. But Stefan Widing is convinced that collaboration and hard work will successfully get the company through the pandemic.

How has Sandvik been affected by the coronavirus so far?

"During the first quarter of 2020, we saw limited impact but it will be more challenging moving forward, with the world economy reeling, reduced demand as well as closed factories and borders. To address the effects of the pandemic, we are taking extensive measures."

What are these measures?

"The first step is short-term savings, for

example through reduced working hours for employees. But, we are also looking at long-term structural measures if the business climate continues to be challenging. All divisions have contingency plans, which they are now putting into practice. Some measures will be tough but they are necessary. I am convinced that when we work together with our customers, partners and suppliers, Sandvik will successfully get through these difficult times."

STEFAN WIDING

Background: Joins Sandvik after thirteen years working at Assa Abloy, most recently as manager of the HID Global division. Holds a Masters in engineering, specializing in physics and electronics, as well as a Bachelor degree in Business Administration.

Leadership style: Believes in decentralization and allowing a lot of freedom and responsibility. Results-oriented, structured and analytical.

Family: Wife, two sons and a labradoodle.

Interests: Spending time with family and taking the kids to their sporting activities. When time allows it, reading books, listening to music, going to the gym and walks.

What are your first impressions of Sandvik?

"In the first month, before the coronavirus, I spent a lot of time getting to know our different business operations and meeting as many people as possible. I've visited our plants in Sweden, Finland, Germany and the US. I have gained a deeper insight into how extremely exciting and global Sandvik is, with great technology, highly competent employees and strong market positions."

You have a solid technical background. What are your thoughts on what we need to do in order to be at the forefront of technology and digitalisation?

"I believe that the technological leadership of Sandvik is crucial if we are to maintain our position as the customer's first choice. We must be leaders within our core business, whether it be cutting tools, new ways of developing mining technology or materials expertise. We must also continue to develop and expand new business models and digital technologies, and I know that we already have a number of ongoing initiatives. This is something I will focus on further."

Can you see any obstacles to achieving this?

"I don't think that the technology is going to be difficult. We can, like most other companies,

develop the technology. The big challenge lies in finding new flexible working methods and ensuring good customer experiences. This requires a structure that supports the business and the development of new business models that help the sales teams to sell new solutions. This is what will determine if we are successful in the digital transformation, and it is an area where I can contribute."

Sandvik has been in the process of decentralizing its corporate structure since 2016. What do you think about this?

"I'm convinced that a decentralized business model is the right way to go and we will continue moving in the same direction. Decisions will be better and faster when they are made closer to the customer and our operational responsibilities should lie there too."

What are your views on sustainability in business?

"I'm impressed by Sandvik's sustainability work and we will continue to integrate sustainability even further in our operations. Being a leader in innovation and sustainability is key to attracting the right talent, to remaining our customers' first choice and to continuing to be of interest to investors." ■

COUNTERMEASURES

In March, Sandvik communicated a number of measures to counteract the effects of the coronavirus pandemic. Short-term measures, such as reduced work hours, fewer consultants and other cost savings, are expected to generate savings of around SEK 1.5 billion in 2020. It is estimated that the long-term structural measures that have been initiated will result in costs of SEK 1.4 billion this year but savings of SEK 0.9 billion per year onwards, with the full impact likely to be seen by the end of 2021. In addition, at the Annual General Meeting in 2020, it was decided that no dividends will be paid out to shareholders.





GO TO THE FLOW

Next time you go down the Avenue des Champs-Élysées in Paris, make sure to admire the fountains on the Rond-Point des Champs-Élysées-Marcel-Dassault, a Swarovski crystal-studded work of art made possible with tubing from Sandvik.

The tubes are used inside the three suspensions, set with the luminous crystal links, as well as in the underground water supply systems, and were installed by Atelier BLAM Lemunier & Meyer in 2019.

Atelier BLAM was so satisfied with the quality of Sandvik tubes that it has entrusted us with a new order for an ongoing fountain project in Rennes, in western France.

“When it comes to stainless steel, we only work with Sandvik,” says a representative of Atelier BLAM. “We know that their tubes are worry-free in all regards: mechanical properties, corrosion resistance, tolerances on dimensions and external appearance.”

FOCUS

TIME TO UNLOCK 5G'S POTENTIAL

In 2020, the roll-out of 5G networks are expected to take off. It's time then for companies to start driving the changes to industry and society that the new technology can bring, says 5G experts.



"5G IS HAPPENING NOW," says Rowan Högman, a Research Leader for 5G Industry Collaborations at Ericsson. "Today we have 25 live networks across the world, and this year will see an explosion of devices coming out."

5G, compared with 4G, provides phenomenally improved bandwidths and much lower latencies, which means far less delay between connections. "We can't yet imagine all the different ways that 5G could change society and business," Högman says. "But whenever you introduce new technology, that means fundamental change. People will start thinking differently and introducing things in different ways."

Most of the 5G networks that are live today are in the U.S., Europe, the Middle East and East Asia, where people are already starting to use 5G phones. More European countries are expected to roll out networks this year.

CONSUMERS LIVING IN big cities will be among the first to benefit. "The places where lots of people are gathered at one time are the hot spots that motivate investment," Högman says. But 5G could also change the way that millions of factories, transportation systems and power networks around the world operate.

And 5G's lower latency, in particular, could have a big impact in the world of automation and the Internet of Things (IoT). This is because of the improved safety, positioning, device density and reliability that minimal delay will mean for operating equipment and transportation remotely.

Connectivity in mines, for example, could bring numerous safety and

production benefits. These include the ability to use sensors that measure gas in the air, movement in the mine walls and wear and tear on the equipment itself so that maintenance can be scheduled without causing disruption. The remote operation of transportation and equipment could improve productivity and reduce the need for people to actually be in the mine.

IN THE FUTURE, Högman suggests, the low latency of 5G could also allow for equipment to be operated from central points that serve multiple locations. This would increase the efficiency of machine operators, a scarce resource today in mining, but also in industries such as agriculture, forestry and construction.

With many automation and IoT use cases, including mines, 4G technology is enough to get started with, Högman says. "It just becomes even better with 5G," he says. "And 5G has brought awareness of what can be done in industry, from managing thousands of energy-efficient sensors to controlling wireless robots with one network."

Ericsson in fact expects 4G and 5G to complement each other. In 2025, for example, the company expects there to be some 9 billion mobile subscriptions, 25 percent of which will be 5G; 25 percent will be 2G and 3G together, and the remaining 50 percent will be 4G.

FOR INDUSTRY IN particular, a 5G ecosystem with relevant devices still requires further development, Högman says. There are, for instance, 1.3 billion IoT connections worldwide. This is expected to grow to around 5 billion



5G creates a huge potential for organizations to employ more wireless technology.

“We can’t yet imagine all the different ways that 5G could change society and business.”

by 2025. But in the manufacturing industry only 5 percent to 10 percent of new connections today are wireless. This creates a huge potential for organizations to employ more wireless technology to create innovative connected products, improve production processes with increased flexibility and drive down costs.

“Try to establish what will really make a difference to start with,” says Högman. “From there you can see the tangible business benefits of introducing wireless communications. Once you have the network, then you can

start adding other services that you will benefit from as well.

“And don’t wait,” he continues. “There is so much learning to acquire along the way, and you get so many ideas when you start testing things. And start bringing in partners, because you will gain from a well-functioning ecosystem, with operators managing the networks and companies providing software and devices for the different functions that you need. The way to be in the forefront of driving these developments is to start building these competences now.” ■

THE BACKBONE OF INDUSTRY 4.0

With the onset of 5G, the backbone for a long-predicted, data-driven “fourth industrial revolution” is finally becoming a reality.

ALTHOUGH 2019, was the year that new 4G networks regularly were rolled out, industry is already racing toward the future. 5G is predicted to bring improved performance to connected systems. This means that industry will be able to glean infinite intelligence about its operations that will provide critical insights into how to make improvements. 5G will, for example, offer manufacturers an opportunity to build smart factories that can adapt to changing market conditions. It will make a genuine difference to the bottom line.

“Data already drives many industries today, but it will drive all industries in the future,” says Jani Vilenius, Director of Research and Technology at Sandvik. “And it’s what you do with data that counts. If our customers are to succeed, they need intelligent equipment that is able to interface with their systems and add true business intelligence.”

INDUSTRY 4.0 WAS supposed to bring about these benefits. But turning the idea of a collaborative, adaptive, real-time industrial digital system into reality needed a truly agile communications infrastructure.

And it is the fact that 5G has been



“Improved connectivity is needed to truly utilize the data and add business value,” says Jani Vilenius, Director of Research and Technology at Sandvik.

designed from the ground up for data connectivity that is the real game changer. Faster connectivity and low to no latency will unlock operational benefits in every industry on the planet. And with test systems now in place, those operational benefits are becoming clear.

“Improved connectivity is needed to truly utilize the data and add business value,” says Vilenius. “When we add more artificial intelligence, machine learning and voice/image recognition



Sandvik's test mine in Tampere, Finland, is already 5G compatible.

into everyday systems, the bandwidth requirements mean 5G is inevitable to leverage the new capabilities.”

The improvements to network latency are necessary for the effective use of autonomous robotics technology as well other innovations such as wearables and virtual reality. It will give applications and devices the ability to communicate in close to real time. This should ease the safety concerns around areas such as autonomous vehicles, which will be able to constantly communicate with the ever-changing environment around them.

THIS WILL ALSO have a significant impact on mining operations. And Sandvik, in partnership with Nokia, is set to develop solutions based on private 4G LTE (long-term evolution, a wireless standard also known as Advanced 4G)

and 5G technology at the Sandvik test mine in Tampere, Finland.

The increasing capabilities of smart devices, and the factories that make them, will also blur formerly clear industry boundaries. Traditional manufacturing companies may soon find that they are competing as part of a much broader automation industry, for example, which will likely result in new business models.

“IT IS THE market that will drive what we offer, so we need to be smart and flexible,” says Vilenius. “At the moment we are working with 4G and 5G LTEs. It’s 4G LTE that customers are asking for today. But we’re certainly not ignoring 5G. It will be up to 100 times faster than 4G and consume less power. But it’s important to get the processes in place using the 4G LTE hardware now, and which will be upgraded to 5G in time.” ■



For many Sandvik customers, the key to getting the most out of 5G will be finding the right balance between the old and the new.

PROMISES AND CHALLENGES FOR HEAVY INDUSTRY

The arrival of 5G has been much anticipated in a variety of sectors and is expected to revolutionize everything from cars to medical equipment.

THE MANUFACTURING industry is expected to reap major benefits from the new industrial internet, which will deliver lightning-fast speeds, vastly improved reliability and much lower latency, or communication response time.

Sandvik is already working with its major partners and customers to find ways to maximize the benefits of next-generation networks.

For many of Sandvik's customers, the key will be finding the right balance between the old and the new, says V. R. Vijay Anand, Head of Digital Machining at Sandvik Coromant.

While 5G could one day make factories less reliant on having their own local networks, Anand expects that phase-out to be a gradual process and says things won't change overnight.

"There's no doubt that 5G car-

ries a lot of promise," he says.

ONE OF THE biggest benefits of 5G is the increased bandwidth, which enables networks to process up to 20 gigabytes of data each second, while reducing latency down to a millisecond.

But Anand points out that few industrial manufacturers actually need that kind of bandwidth, and that using 5G for process-

“When it comes to creating a road map for new technology, we always focus on how we can adapt these innovations into our own solutions so we can help our customers.”

ing smaller amounts of data wouldn't be cost-effective. So many manufacturing companies will still rely largely on local networks for connecting their own assets and for local automation.

“A LOT OF what we do with our data analysis is based on high-precision and quick-decision kinds of solutions, and much of that needs to be done close to the machine before it can even get into a telecom network or the cloud,” Anand says. “At least to start with, my prediction is that many factories will still use local network solutions when it comes to edge automation, and only leverage wide area networks when there is a need for multi-site integration. Another option could be to leverage narrow-band IoT technologies, which are much more efficient in terms of energy consumption, and then latch that onto a 5G network when it comes to taking the data out of the local network. So it's not one or the other, it's a combination.”

That same type of thinking also applies to machine automation, he says. The talk about how 5G will help make vehicles and other machines autonomous and create fully robotized



V. R. Vijay Anand, Head of Digital Machining at Sandvik Coromant.

assembly lines can be misleading when it comes to heavy industry and manufacturing.

“MACHINE AUTOMATION is a key part of the industry today and in the future,” Anand says. “But when we talk about automation of machines in factories, it will predominantly happen with local networks. If I have five machines in a line delivering a job, I would be more confident connecting them to a local network and automating those operations rather than connecting them through a telecom network. This is in part because of the control that it gives you, and in part because of the reality of how communications work in the factory. But if 5G delivers

on its promises for reliability and latency, then maybe one day things will change.”

That may sound like a cautious approach, but Anand is quick to point out that 5G will bring plenty of benefits and new possibilities even for industrial companies.

FOR SANDVIK COROMANT, the evolution of the IoT will lead to better solutions and more efficient products and services helped by sensor-embedded tools and machines generating real-time machining information that can complement other machining information. It is all about data and availability of high-quality data at the right time in the right place. Reliable communication is key for this.

“It's about getting real-time information about tools and then applying that knowledge and our experience to improve efficiency and productivity and reducing waste for our customers,” Anand says.

“When it comes to creating a road map for new technology and innovation, we always focus on how we can adapt these innovations into our own solutions so we can actually help our customers,” Anand says. ■



The buy-back program helps make the building and operation of Stamicarbon urea plants more sustainable. Above, a part of a urea plant about to be recycled.

NEW PROGRAM FOR RECYCLING OF STEEL

A new project has been initiated by Sandvik and strategic business partner Stamicarbon to recycle high-alloy steel. A special buy-back program for customers is replacing equipment at their plants.

IN THE FALL of 2019, Sandvik and strategic business partner Stamicarbon began a new project aimed at customers in the fertilizer segment, providing them with a special buy-back option when they replaced equipment at their plants. Sandvik and Stamicarbon would then demolish the equipment and recycle the component materials, in particular a type of high-alloy steel used in the urea industry.

"I believe that we are unique within the fertilizer segment to offer our customers this kind of buy-

back program," says Oscar Johansson, Global Product Manager Fertilizer Tubing at Sandvik Materials Technology.

The idea is that when customers in the urea industry replace new equipment at their plants, Sandvik decommissions the old equipment and recycles the materials. In this win-win model, customers get their equipment replaced without extra intermediaries and Sandvik and Stamicarbon get to buy back material in the special alloys they want.

“We wanted to find out whether we can extract valuable materials and demolish equipment on site, in a way that’s rewarding for all stakeholders.”

“When piloting this idea, we wanted to find out whether we can extract valuable materials and demolish equipment on site, in a way that’s rewarding for all stakeholders,” says Joey Dobrée, Product Portfolio Manager at Stamicarbon.

THE BUY-BACK concept also goes totally in line with Sandvik’s sustainability goal of reaching 90 percent circularity in the production. By buying back its own premium material, the exact contents of scrap can be known, which improves the raw material handling in the steel mill. Partnering with Stamicarbon is also a perfect match, as sustainability is as important for Stamicarbon as it is for Sandvik.

“Stamicarbon wants to support Sandvik in

achieving this ambition and to help make the building and operation of urea plants more sustainable,” Dobrée says. “We also see this as a valuable addition to our full lifecycle service, one that will certainly separate us from competitors. We will help our clients by taking the hassle out of the disposal of old equipment, and we can wrap this service into our proposals for replacement equipment, bringing benefits for all parties.”

APART FROM THIS program, Sandvik is proactively reaching out to old customers with an offer to buy back material from urea plants that are now shut down.

“I’m very confident in this way of working, it benefits all involved parties,” Johansson says. ■

BUY-BACK OF SAFUREX MATERIAL LONG TERM

Safurex® high-alloy duplex stainless steel is made to withstand the corrosive environments present in the urea process. The material is targeted in a program Sandvik and strategic business partner Stamicarbon have initiated to buy back equipment from customers in the industry and recycle component materials.

In October 2019, the first heat exchanger was bought back from a urea plant in the Netherlands. The outcome was very positive, and Sandvik and Stamicarbon have already decided to include the buy-back solution in all new

offerings to fertilizer customers when replacing equipment at their plants. The companies are also exploring how to cooperate on standardizing the collection and recycling of high-quality metals going forward.

The heat exchanger that was bought back happened to be the same heat exchanger used for the very first test installation of Safurex tubes. “It was an extra bonus that the heat exchanger was built with those specific tubes,” says Johansson. “Not only could we try out our new buy-back program, but we had the opportunity to

also evaluate how well our Safurex material suits the application.”

Safurex was developed in a cooperation between Sandvik and Stamicarbon. The fourth and latest generation of the material, Safurex Star, went on the market in 2018.

“It was very interesting to compare the difference between the tubes used,” Oscar Johansson at Sandvik comments. “After careful analysis, we could see that our tubes could have managed five to ten more years, but the tubes made from another material were totally worn out.”



Ryusuke Sekino weighed only 258 grams when he was born, but survived with the help of modern technology.

SANDVIK WIRE HELPED A 258 GRAM BABY SURVIVE

A Japanese baby boy weighing only 258 grams is now home and starting his life, thanks to medtech innovations. A neurally adjusted ventilator assistance from Getinge incorporating Exera® precision medical wire from Sandvik played a crucial role in the baby's lung development and thus his survival.

WHEN TOSHIKO SEKINO gave birth to a baby boy at Nagano Children's Hospital in Japan, after only 24 weeks and five days of pregnancy, the boy weighed only 258 grams, or 9.1 ounces. Neonatologist Ryo Itoshima was on duty the night of the birth.

"I got really worried when the obstetrician told me that the estimated body weight of the baby was less than 300 grams," he recalls. "Two duty doctors work in our neonatal in-

tensive care unit every night, but that specific night three more doctors came in to provide support."

The baby, named Ryusuke, spent his first months at the hospital, assisted by various life-saving mechanical ventilators, such as NAVA ventilation – an innovation by the Swedish medtech company Getinge where the patient's own respiratory drive controls timing and ventilator assistance. Exera precision

wire from Sandvik is used in this application to detect diaphragm activity and deliver breaths in synchrony with the patient's own respiratory drive.

"Non-invasive NAVA supported the baby's own respiration well and helped his weight gain and lungs to develop, especially after extubation," says Itoshima. "Without it, the baby would surely have needed reintubation, and the lung damage would be much worse."

RYUSUKE FINALLY began steadily putting on weight when he was three months old, and his lung condition started getting better as well. At six months old he was ready to go home with his parents. By this time, he had increased his weight thirteenfold, up to 3,374 grams (almost

7.5 pounds). The boy is believed to be the smallest baby boy ever born who was eventually able to leave the hospital in good health.

"We are very happy that we could help them," says Itoshima. "It is truly my favorite moment at work – when a baby leaves our hospital healthy and the parents are smiling. Little Ryusuke got to me. I almost feel like I have one more son of my own." ■

THIS IS EXERA

Exera® is Sandvik's brand for precision wire components and it has also achieved notable success in other medical devices. For example, it is used for deep brain implants for people with Parkinson's disease, continuous glucose monitoring (diabetes), in hearing implants and in pacemakers.



NAVA ventilation is an innovation where the patient's own respiratory drive controls timing and ventilator assistance.

The mobile containers enable an agile service that is easily transported from one customer location to another.



FLEXIBILITY IN A CONTAINER

Sandvik has developed a mobile container that goes where customers go, reducing waste, increasing safety and bringing both time and cost savings along for the ride.

BIGGER IS NOT always better. Companies are discovering that small production spaces, called microfactories, help save energy, space, materials, time and costs.

Microfactories are proving invaluable to local markets by being able to fabricate customized products on demand. This has been helped along by digitalization and automation, which enable many of the tasks to be conducted remotely and through a much smaller labor force than was previously possible.

Sandvik Materials Technology has placed the microfactory concept into a mobile

container, enabling an agile service that is easily transported from one customer location to another.

THE CONTAINER solution provides coiled tubing solutions to customers on site, using a digitally connected system to straighten and cut tubing to match customer specifications. Virtually any length can be cut, significantly cutting down on waste compared with delivering a standard tube size, leading to substantial material, time and cost savings.

The container solution can be deployed in all kinds

of terrain and conditions and can be tailored to suit individual customer needs. It has the potential to be manned in person or steered remotely for everything from administrative details such as certification and invoicing to technological processes such as the straightening and cutting of tubing.

A Sandvik container solution is currently being deployed in Europe for Linde, a world-leading industrial gases and engineering company that in recent years has been building hydrogen stations to fuel vehicles. To date, the company has built

more than 160 hydrogen-fueling stations at commercial filling stations in more than 15 countries, and further stations are underway.

Sandvik Materials Technology is playing an important role in Linde's expansion by supplying the company with stainless steel alloy tubing solutions through the Sandvik Mobile Service Solutions. So far, the container has traveled to a number of locations in Germany and Austria.



LINDE GIVES Sandvik the heads-up when building a hydrogen station in need of tubes; Sandvik sends a container to the station on a prearranged date. The work is generally completed the same day. At the station, the 150- to 170-meter coiled tubing is straightened and cut. "This is a production step that we normally perform at our factories but now we can carry out this step right at our customer's site and cut the tubes to match Linde's exact specifications at each location," says Haydn Eagle, Sales and Marketing Director at Sandvik. He adds that tube production, straightening processes and even the container are all patent protected.

Johannes Fritzer, Research and Development, Linde Hydrogen FuelTech, explains further. "Installations

SANDVIK MOBILE SERVICE SOLUTIONS

The on-site coiled tubing solution offers numerous advantages for customers, including:

- Easy-to-use precision monitoring and control
- A digitally connected system
- Automated tube straightening according to high standards
- The ability to cut tubing of any length, resulting in savings on materials and time
- Optional end finishing
- The possibility of deployment in any terrain including desert, offshore waters and extreme cold conditions
- High level of safety with deployment of long, seamless tubes
- Flexibility and cost efficiency.

on customer sites differ from project to project, so it is essential to have tube solutions that allow us to realize different dimensions and lengths to connect the necessary units on the fueling station site," he says.

IN ADDITION TO reducing waste and costs, Fritzer highlights further customer benefits with the convenient container solution, which has Sandvik taking care of

inventory and the stocking of coils. "From a logistical point of view the Sandvik solution eases the planning of the construction site through an unproblematic direct delivery of the needed tubes, with no ordering, storage or other logistical issues," he says. Fritzer says his department has been purchasing tubes and raw materials from Sandvik for about 15 years and has been pleased with Sandvik's new mobile solution thus far. ■



Sandvik and Engineers Without Borders are working on sanitation at local schools in Karagwe, Tanzania.

SANITATION FOR BETTER SCHOOLING

In Tanzania, Sandvik and Engineers Without Borders are working in cooperation to construct sustainable, user-friendly toilet facilities in local schools, improving everyday life for the children.

“PEOPLE HERE actually have a shortage of most things, but water and sanitation have been our focus areas,” says Marianne Grauers, Vice President at Engineers Without Borders (EWB) Sweden. She has spent several months in the rural Karagwe District working with the Mavuno Project, a local non-governmental organization,

to find ways to make water more accessible.

Thanks to the collaboration between the Mavuno Project and EWB, the villagers in Chonyonyo today get water from a source in Ihanda several kilometers away, and the school has a number of rainwater-harvesting tanks to supply it with water.

Since 2017 Sandvik has been the major sponsor of EWB. The partners have ongoing discussions about which projects to support and what form that support should take. “Our engagement in EWB is a way to position ourselves as a company and employer, since young people want to work for responsible companies,” says

“All EWB infrastructure projects are made in collaboration with local authorities, the people concerned and local craftsmen.”

Kinna Brundin, Corporate Communications Event and Project Manager at Sandvik. “It creates pride among our employees.”

WHILE SOLVING sanitary challenges in schools in the Tanzanian countryside is not Sandvik’s core business, it corresponds with the company’s corporate citizenship and ambition to create value for society through engineering. Community involvement projects at Sandvik focus on four core areas: innovation, health & safety, education, and local enablement. “Constructing safe, sustainable and user-friendly toilet facilities involves all of them,” Brundin says.

THE FIRST GOAL for the Karagwe sanitation project was to build a prototype toilet for evaluation before setting up similar facilities in public primary schools in the district. Because of the water shortage, the solution arrived at was EcoSan, a urine-diverting dry toilet. No flush water is needed, and feces and urine are collected separately. Two chambers are provided for feces, filled one at a time. To lower the pH and limit the amount of fluids, ashes and sawdust are spread on the

collected material. After six months of composting, the feces has turned into humus and the chamber can be emptied.

Johanna Burström, who studies Water and Environmental Engineering at Uppsala University and the Swedish University of Agricultural Sciences, is one of the two engineering students who worked in Karagwe to execute the prototype project. In Karagwe, she performed a survey at the girls’ secondary school to get input on how the design of the toilet could make school life easier for teenage girls, especially during their monthly period.

“We know that menstruation is connected with taboos, which is a challenge for many girls, especially in mixed schools,” Burström says.

THE SECONDARY school used for the pilot is only a couple of years old and has far better facilities than most schools in the area. Even so, one major concern was the lack of well-equipped changing facilities with the access to water where the girls could easily dispose of used sanitary napkins.

“There is no water in these rooms,” Burström says. “To be able to wash, the girls have to

get their personal plastic wash basin from their dormitory. Most public schools in the area don’t have any special facilities for girls, though, and the need for safe disposal and access to water is something we will include in our design when the sanitation facilities are implemented on a larger scale.”

ALL EWB infrastructure projects are made in collaboration with local authorities, the people concerned and local craftsmen.

“The work and the project must be mutual and shared,” says Grauers. “If not, it won’t be sustainable. Through our partners we contribute with know-how and building material that the local community can’t supply or can’t afford to supply.

You also need to provide yourself with a large dose of patience, she says. “Visiting engineers with a timeline, like myself and Johanna, don’t necessarily have the same daily priorities as the local villager whose main focus is to put food on the table,” Grauers says. “That’s why it’s so great to work with Sandvik. Sandvik has that long-term view that is needed for projects like this to be successful.” ■



“PEOPLE MAKE THE DIFFERENCE”

The Financial Times has named her one of the most influential women in engineering in the UK. She is also a much-appreciated board member of Sandvik. Meet Jennifer Allerton.

BRITAIN'S FINANCIAL TIMES recently published a list of the "100 Most Influential Women Leaders in Engineering in UK"; Sandvik Board Member Jennifer Allerton is on that list. Here she shares her thoughts on the honor and on various ways that Sandvik and the industry might move forward.

What does a recognition like this mean to you?

"For me it is something that can bring awareness to the broader public of what women in engineering can, and already have, achieved. I think it is important to show that engineering can lead to a really interesting and fascinating career, where you make a difference in people's lives and in society. A lot of the solutions to our current climate change issues will come through developments made by engineers: electric and hydrogen-powered cars, wind and solar energy, plant-based food, carbon capture – the list is endless."

She stresses the fact that as an engineer, you can look forward to a lifelong learning path.

"I have had to relearn everything I know about technology every third year, meaning you never get bored and you are always learning. I would certainly encourage women to go into engineering as a career."

During your years in business in general, and in technology in particular, what changes have you experienced when it comes to attitudes toward women in business?

"When I started in IT about 40 years ago it was a new industry; the technology was brand new, and it was about 50-50 men and women going into the profession. There were no preconceptions about who was good at IT, and companies were open-minded. As long as you could pass an intelligence test you could start a career in IT.

"About 10 years later I looked around and

wondered where all the women had gone. Many women took a career break to have children, and because things were moving so quickly it was difficult to come back in. At the same time companies were not helping with flexible work hours, childcare facilities and other types of support.

"Then, when I retired from my executive role and decided to have a career as a board member, it was unusual to have women on the boards of companies, specifically women with a technology background. Today women on boards are more common, but more women are needed as CEOs and on the executive teams. That's important because study after study during the past ten years has proved that diversity and thought leadership drives business performance."

What is the best way forward to achieve better gender balance in management teams in your opinion?

"I actually believe that women in general have better skillsets to run global businesses. They communicate better, they don't play politics, they understand people, and they have often been caretakers in their family. You don't have the advantage of being able to fire your family members – you have to make it work. So if you can run a family, you can probably run a business.

"What is important is to create a level playing field so that women can perform to the best of their abilities. That takes flexible working conditions, predictability at work and inclusion. You can't have casual sexism at work or unconscious bias – that cannot be tolerated if you want to create an environment where people can flourish.

"Studies show that you need about 30 percent representation in a group before you stop feeling like a minority, meaning it's not enough to appoint one woman and think it's done; you have to appoint at least 30 percent."



“There are so many incredibly passionate people who enjoy their roles and want to succeed and have a long career in the company.”

If you put your “experienced engineer glasses” on, what role do you see companies such as Sandvik playing in making a contribution to a more sustainable world?

“Sandvik has a huge contribution to make, and we have stepped up to the challenge. I’m really excited about the new 2030 sustainability goals that we have adopted. By publishing them and by measuring progress we will make them happen. Engineers always say that what gets measured gets done. That’s why I think we have been quite brave to publish those challenging goals when it comes to circularity and the other focus areas.”

You have been a board member of Sandvik since 2015. What was your impression of Sandvik before you joined, and has your impression changed in any way?

“I was very excited and honored when I was asked to join the board. Sandvik has a terrific reputation for being one of the great engineering companies in the world – recognized for great customer service, which was something that became loud and clear when I asked around among peers before I joined.

“Today, my impression has only become stronger. The people in Sandvik are what make the difference. There are so many incredibly passionate people who enjoy their roles and want to succeed and have a long career in the company.”

How do you as a board member see Sandvik best taking advantage long term of the opportunities from digitalization that is now occurring in the industries we are in?



“Boards typically make an impact over three to five years; since 2015, when I joined, we are now starting to see results from the decisions we

made: decentralized decision-making is closer to the customers, the balance sheet is repaired and brings financial firepower to refresh our business portfolio, and we have great scorecards in place.

“When I look to the future and to new technology, it will take place in so many different areas. 5G will have a huge impact, enabling driverless cars for example. But we must make sure we don’t adopt

technology for technology’s sake. It has to be because it makes the customers more efficient or the world more sustainable. At the end of the day, we all want to leave the world in a more sustainable position for our children and grandchildren.” ■

JENNIFER ALLERTON

Sandvik board member since 2015

Education and business experience:

M.Sc. in physics and B.Sc. in mathematics, physical sciences and geosciences. Chief Information Officer at F. Hoffmann- La Roche Ltd. 2002–2012; Technology Director at Barclaycard 1999–2002; various positions at ServiceNet USA, BOC (now Linde), Cable & Wireless Business Networks and Unilever plc

Current Board assignments:

Board member of Iron Mountain Inc. and AVEVA Group plc

Nationality: British and Swiss

Born: 1951

TAKING MEASURES

3 QUESTIONS for Tomas Eliasson, Chief Financial Officer (CFO) for Sandvik.

How would you summarize the report for the first quarter?

"There were two phases: the first two months developed largely as expected – apart from production stoppages in China – while in March it became increasingly clear that the coronavirus would have a significant impact on the global economic climate. To deal with the growing uncertainty, we needed to respond with cost reductions, which we presented at the end of March, with focus on both short-term and long-term measures."

Which measures are most important to focus on when a major event such as the coronavirus-pandemic quickly changes the whole playing field?



"Firstly, it is important to continue to focus on serving customers and protecting personnel. Then from more of a financial perspective, it is important to quickly take measures to adjust our costs, our production and our inventory levels according to the new situation we find ourselves in. It is also crucial that these measures are balanced so that we retain our competences and our market position, so that we can get through this tough period in a position of relative strength and return to

normal as soon as possible. This will give us a big competitive advantage."

Does the situation with the coronavirus affect Sandvik's financial targets?

"The financial targets we presented in spring 2019 are long-term and have not changed. Our growth and dividend targets are valid over a whole business cycle and the target of having a minimum adjusted operating margin of 16 percent is calculated over a rolling 12-months and excludes the effects of metal prices within Sandvik Materials Technology. This target was developed based on how we can perform even in a tough economic downturn, but obviously conditions are different if we have a scenario where large parts of the economic system in big markets are closed for long periods of time due to political and health-related decisions." ■

SANDVIK'S LONG TERM FINANCIAL TARGETS

Sandvik's financial targets focuses on growth whilst achieving improved performance through economic cycles. A strong financial position and dividend is also a priority.

≥5 percent
Growth through the economic cycle, organic and acquisitions.

≥16 percent
Adjusted EBIT percent margin through rolling 12 months adjusted for items affecting comparability.

< 0.5
Net gearing net debt / equity.

50 percent of EPS
Dividend through economic cycle adjusted for items affecting comparability.

SANDVIK AT A GLANCE

Sandvik is a high-tech and global engineering group offering products and services that enhance customer productivity, profitability and safety. In 2019, the Group had approximately 40,000 employees and sales of 103 billion SEK in more than 160 countries.

BUSINESS AREAS



SANDVIK MACHINING SOLUTIONS

A market-leading manufacturer of tools and tooling systems for advanced metal cutting, expanding in additive manufacturing and digital manufacturing.

SHARE OF REVENUES 40%
SHARE OF ADJUSTED OPERATING PROFIT 47%



SANDVIK MINING AND ROCK TECHNOLOGY

A leading supplier in equipment and tools, service and technical solutions for the mining industry and rock excavation within the construction industry.

SHARE OF REVENUES 43%
SHARE OF ADJUSTED OPERATING PROFIT 45%



SANDVIK MATERIALS TECHNOLOGY

A leading developer and manufacturer of advanced stainless steels, powderbased alloys and special alloys for the most demanding industries.

SHARE OF REVENUES 15%
SHARE OF ADJUSTED OPERATING PROFIT 9%

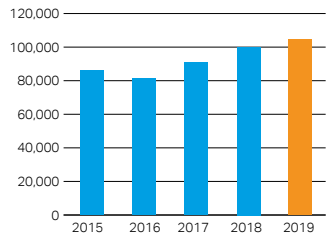
INDICES AND MEMBERSHIPS

MEMBER OF
Dow Jones Sustainability Indices
 In Collaboration with RobecoSAM

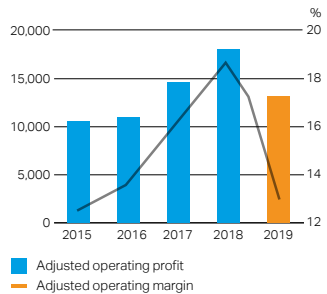


THE GROUP

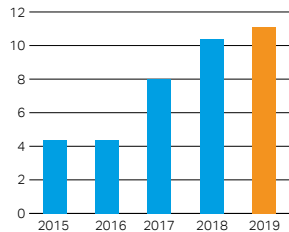
Revenues, MSEK



Adjusted operating profit, MSEK and adjusted operating margin, %



Adjusted earnings per share, Group total, SEK



MAIN CUSTOMER SEGMENTS**MINING**

We deliver drill rigs, rock-drilling tools and systems, mobile and stationary crushers, load and haul machines, tunneling equipment, continuous mining and mechanical cutting equipment, as well as various solutions to increase automation, safety and customer productivity.

SHARE OF REVENUES 37%

**ENGINEERING**

Our tools and tooling systems for metal cutting as well as advanced materials and components are used in engineering industries worldwide, improving productivity, profitability, quality, output, safety and environment. Sandvik is also a global leader in high-alloy metal powder for different applications.

SHARE OF REVENUES 21%

**ENERGY**

Sandvik offers solutions for all forms of energy production, including clean and renewable energy. We supply high-alloy products, such as seamless stainless steel tubes as well as tools and tooling systems to satisfy the industry's metal-cutting needs.

SHARE OF REVENUES 12%

**AUTOMOTIVE**

Our tools and tooling systems for turning, milling and drilling in metals raise productivity when manufacturing e.g. engines and transmissions. Our stainless and high-alloy products are found in, for example, airbags and air conditioning.

SHARE OF REVENUES 11%

**CONSTRUCTION**

We offer products and services that increase safety and customer productivity in the breaking, drilling, tunneling, crushing and screening niches of the construction industry.

SHARE OF REVENUES 8%

**AEROSPACE**

Sandvik works closely with the world's aerospace companies. As they apply new materials to manufacture airplanes that are lighter, safer and more fuel efficient, advanced tooling solutions and light-weight materials from the Group are critical.

SHARE OF REVENUES 7%



THE OBJECT | About time

Watches are the most precise mechanical device on the planet. British luxury watch manufacturer Bremont aims to keep it that way, offering a three-year warranty to every chronometer rated time piece created. Recently, Sandvik and its strategic partner machine maker DMG Mori delivered a state-of-the-art machining center to the Bremont Oxfordshire facility in the U.K. The machining center was installed with 30 specifically chosen tools, allowing Bremont to start using the system straight away, making for a quick return on investment.

“With Sandvik we were able to stream line the number of tools required, so Bremont only bought what it needed,” says Frederick Shortt, Applications Manager DMG Mori, UK.