

# MEET Sandvik

SANDVIK GROUP MAGAZINE #2-2014

#2-2014

SHAPING  
THE FUTURE

Ready for  
the new  
machine age

Tapping into the future of  
manufacturing. **PAGE 6.**



PRESIDENT AND CEO  
OF FAXANDER.

“We can  
offer more  
value to our  
customers.”

- HAWAII: A reduced carbon footprint
- YACHTING: Ship of steel
- WORLDWIDE: New Sandvik facilities
- AEROSPACE: Safe landings
- VASA: Keeping it together

# Stability to capture OPPORTUNITIES

**THE WORLD AROUND US** has been turbulent and uncertain for some time, and making macroeconomic predictions for future development can be challenging. In the midst of this dynamic environment it is more important than ever to rely on our foundation – to develop new solutions for our customers, built on our innovative spirit and our experience in developing new materials.

To handle the turbulence we hold the course moving towards our vision, executing on our strategy.

We must be flexible enough to react to changes and, more importantly, to act on and become part of those changes. Throughout our history Sandvik has succeeded by embracing change. When we understand and exploit new realities, a time of turbulence can also be one of great opportunity.

These days the digital revolution – also called the “New Industrial Revolution” or “Industry 4.0.” – is changing the world. These changes are positive, and we need to treat them as opportunities – or if you like, entrance tickets to an exciting world.

One of our cornerstones is R&D, and our long-term strategy is aimed at developing products and processes that anticipate the market’s evolving demands. Thus, as these demands evolve, we are ready for them. In this way we can offer more value to our customers. On page 6, read more about how Sandvik is part of shaping the future as the manufacturing industry becomes digitized.

I would also like to welcome two new members to the Group Executive Management Team: Åsa Thunman, our new Executive Vice President and General Counsel of Sandvik, and Scot Smith, newly appointed President of Sandvik Mining. They both bring vital experience as well as valuable expertise to our group, and they will contribute to Sandvik’s journey toward the world of Industry 4.0.

We are heading in the right direction, and the journey ahead of us is exciting.



Olof Faxander, President and CEO, Sandvik AB

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Thanks to reliable and productive solutions for aircraft manufacturing, Sandvik is taking market share in the aerospace industry.



# PERMISSION TO LAND

When arriving at a new destination, most tourists hurry to get away from the airport. On the Caribbean island of Saint Martin, however, visitors flock to the airport area. The runway is separated from the now famous Maho Beach by just a thin two-lane highway and a chicken fence, making it a superb spot to experience a close encounter with a jet. This pastime is not without danger: jet engines can

produce winds of more than 160 kilometers an hour, easily blowing sand and people away. Fortunately no major injuries have been reported, and the thrill of jets taking off and landing continues to draw onlookers.

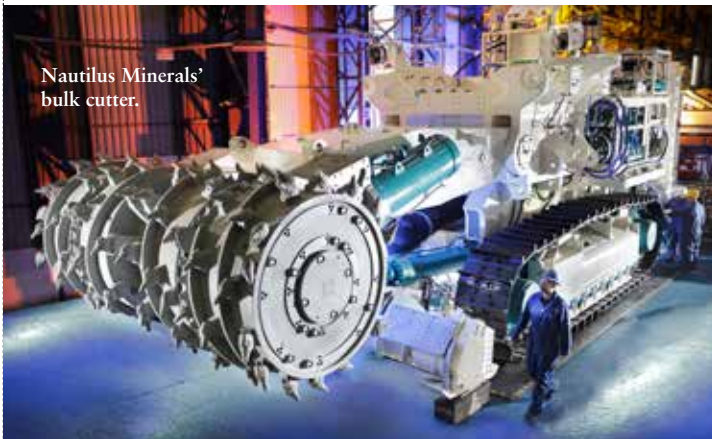
Landing, a crucial part of any flight, puts intense strain on the landing gear. The main landing gear shock struts instantaneously absorb an amount of energy comparable

to the thrusts of the plane's jet engine, which is similar to the crash energy generated in a car collision. Today the increasing size of loads and the planes themselves pose new machining challenges for producers of aircraft landing gear. Sandvik offers secure, productive and validated solutions for all the related machining operations, such as deep hole drilling, bottle boring, turning and milling.



## IN BRIEF

98% – share of ISO 14001 certified units. 27% – improvement in lost time injury frequency rate. 19.3% – proportion of women in the Sandvik Group. 11% – proportion of Sandvik customers in the energy sector. 8% – share of raw materials from recovered material.



Nautilus Minerals' bulk cutter.

## Supporting undersea mining

CANADA-BASED NAUTILUS MINERALS has been granted the first mining lease for polymetallic seafloor massive sulfide deposits in the territorial waters of Papua New Guinea, where it intends to produce copper, gold and silver. The company has just completed its first seafloor production tool, a high-productivity machine responsible for the bulk of the production. The machine's cutting drum was designed and built by Sandvik, and its design is similar to those used on large continuous miner machines.

## NEW SANDVIK FACILITIES



Fair Lawn, New Jersey, USA.

**SANDVIK WILL OPEN** no fewer than three new facilities around the world in 2014 - in the United States, Ghana and Sweden. A new U.S. headquarters was opened in July in Fair Lawn, New Jersey. The

9,300-square-meter facility contains a combination of offices, a Productivity Center and an Aerospace Application Center. In Kumasi, Ghana, Sandvik is scheduled to open a facility with modern offices, meeting facilities and a state-of-the-art workshop, warehouse and center for customer training during the fall. And, as reported earlier, a new 4,500-square-meter customer center will be inaugurated in Sandviken, Sweden, providing state-of-the-art technology and tooling solutions.

## Sandvik has been reconfirmed for inclusion in the Ethibel Excellence Investment Register.

This selection by Forum Ethibel indicates that Sandvik performs better than average in its sector in terms of corporate social responsibility.



### SANDVIK HELPS HAWAIIAN CEMENT PRODUCE SAND LOCALLY

A revolutionary VSI crusher (pictured) from Sandvik has helped Oahu-based Hawaiian Cement to supply badly needed aggregates and cement products for the island's construction industry.

Hawaiian Cement had previously been forced to import sand from British Columbia, more than 3,200 kilometres away. The company can now supply materials of the highest quality for the island's infrastructure projects and reduce its own carbon footprint by being able to use naturally occurring resources.

### SANDVIK BREAKS THE GLASS CEILING



The *Wall Street Journal* featured Sandvik's Petra Einarsson, President of Business Area Sandvik Materials Technology, and Olof Faxander, President and CEO, in an article on the gender gap in the Nordic countries.

While only 3% of 145 Nordic large-cap companies have a woman as chief executive, compared with 5% of the U.S. Fortune 500,

Sandvik is credited for its good efforts.

In the organization, the proportion of women in business area management positions has risen from 9% in 2011 to 23%.

Einarsson says she was taken aback by the massive response to her appointment. "It was clear this was not about me," she says. "It was bigger than that. People could hear the glass ceiling break."

## HIGH-PRESSURE TUBES FOR MODERN ENGINES

Environmental demand for lighter and stronger materials, able to withstand substantially higher pressures, is driving productivity in the automotive industry. Sandvik's Pressurfect™ is a range of strong stainless seamless tubes that can master pressures for today's engine designs. It has been developed for both fuel rail and fuel line applications.

The range includes Pressurfect XP™ for even higher demands. It is up to 40% lighter, with an even more advanced duplex stainless steel tube with higher mechanical strength and superior corrosion resistance.



### LIGHTWEIGHT STEEL YACHT

A steel boat prototype manufactured entirely from Sandvik's advanced stainless steel Sandvik SAF 2507™ has been presented to a specially invited group of stakeholders, including repre-

sentatives from the Swedish Armed Forces.

There are several aspects that make the Swedish steel yacht attractive for the police, armed forces, pilotage and sea-rescue services, as well as other stake-

holders. It's not only lighter than traditional aluminium boats, but also consumes half as much fuel, has major environmental benefits, and is extremely durable.



## Legal eagle

Åsa Thunman, as of October 1 the new Executive Vice President and General Counsel of Sandvik, has a wealth of experience from companies such as Elekta and Securitas.

**YOU HAVE WORKED AT SECURITAS SINCE 2009. WHAT EXPERIENCES ARE YOU BRINGING WITH YOU TO SANDVIK?**

The greatest experience is perhaps to have been working in a very large global organization. I have been responsible for more than 60 legal advisers worldwide. Sandvik is also a global organization in the process of building an international legal network in different parts of the world. My job will be to build on the company's strong tradition and try to help everyone work in the same direction, with the same core values and fundamental attitude to the risk balance.

**SANDVIK IS DEALING WITH LEGISLATION IN MANY COUNTRIES. WHAT ARE THE CHALLENGES?**

I would say there are both local and global challenges. The local challenges vary depending on the development of markets, access to commodities and so forth. The legal situation is affected by what is happening locally. From a global perspective the main legal challenge is, as for all big companies, the need for better

compliance systems. We need clear and understandable policies on how to run the business and a strong implementation into the organization. These policies must also be applied with reason, so that they give protection but still allow the business to move forward.

**TELL US A LITTLE MORE ABOUT YOUR BACKGROUND.**

I began my career as a law clerk and later became a lawyer at one of the major firms in Stockholm. Then I was asked to become the general counsel at Elekta, where I had ten very interesting years. For a while I was also CEO of the Swedish part of the company. After Elekta, I went to Securitas, where I have enjoyed four years in a service-dominated business. I have also spent four years on the board of Scania. The service business is very interesting, but I really look forward to returning to a solid development and manufacturing business. ■

“My job will be to build on the company’s strong tradition and try to help everyone work in the same direction.”



FOCUS

TEXT: ÅSA BACKMAN

# PROCESS

# THE FUTURE IS NOW

The manufacturing industry is quickly becoming digitized and automated. Soon the entire world of manufacturing will be connected in complex networks of autonomous systems. Sandvik is ready to take part in shaping the future of manufacturing.



A woman in a white lab coat is shown from the chest up, holding a glowing yellow wireframe globe in her hands. The globe is positioned in the center of the frame. Above the globe, the words "DATA MINING" are written in white, bold, sans-serif capital letters, enclosed within a glowing yellow rounded rectangular border. In the bottom left corner, there is a glowing cyan wireframe cylinder representing a database, with the words "Wide" and "Web" written in cyan text on its side. The background is a dark teal color with faint, glowing white lines and shapes, suggesting a digital or network environment. The woman's face is partially visible on the right side of the frame, showing her lips and chin.

# DATA MINING

Wide  
Web

# Data

“In the future, we might be able to go directly from the virtual world to production.”

*Pasi Kangas, Global Research and Development Manager, Sandvik Materials Technology.*

Ulf Hermansson, Strategic Technical Analyst at Sandvik Group Research and Development (R&D), creates and continually updates comprehensive interpretations of research and technological development, both within current and possible future areas for Sandvik. Based on global and independent data sources (more than 34,000 of them), he consolidates overviews, verified by specialists and experts within Sandvik’s business areas. External contacts both within academia and industry help to fill the gaps in understanding technological trends and their possible implications.

“With a rapidly growing availability of information, we face the risk of either being unable to see the forest for the trees or giving in to the herd mentality and being reduced to external reports of both uncertain quality and relevance,” Hermansson says. “We want to visualize the road ahead through our own eyes and get equipped for the opportunities and hurdles we identify.”

Adveon Tool Library™ is one example where Sandvik, in collaboration with several CAM suppliers, integrates cutting tool information into the customer’s CAM system to make it easier, faster and much more accurate to assemble tools virtually. It also generates a 3D model of the tool, enabling simulation of the machining before it actually starts to cut chips.

Another example where Sandvik uses advanced technology is the development of new alloys. Before an alloy is actually produced, it has already existed in the virtual world for a long time, where it has been tested through simulation and modeling to understand how it will handle pressure, wear, and demanding environments. When it has all the required properties, the material is produced physically.

“We have been collecting large amounts of data for many years, which helps us in making close predictions of how a material will behave in different situations,” says Pasi Kangas, Global Research and Development Manager, Sandvik Materials Technology. “The more data, the better the predictions. In the future, we might be able to go di-

rectly from the virtual world to production.”

Big data in combination with sensors is also used in the new rolling mill, where an intelligent online system adapts the rolling to the characteristics of the incoming material, which increases both productivity and accuracy.

“Sensor technology opens up unlimited opportunities when it comes to optimizing production processes,” says Jonas Jordberg, Vice President R&D, Sandvik Machining Solutions. “A worn cutting tool can alert a system that it needs to be exchanged.”

At Sandvik



The step from virtual to actual product will be faster.



Additive manufacturing, or 3D printing.

Construction, sensor technology is used for remote monitoring of drill rigs. The same solution is now used for crushers to enable conditional monitoring and remote support.

“The more tightly we can connect with our customers, the better the chance that they will see us as a productivity partner rather than just an equipment supplier,” says Joe Davison, R&D Manager, Sandvik Construction. “Advanced technology allows us to be much more proactive in how we provide service and support. We don’t necessarily set the rules, but we need to be open to the opportunities and find a balance between our own ambitions and our customer’s demands.” ■





Adveon Tool Library™ integrates cutting tool information into the customer's CAM system.

# SECOND QUARTER 2014 IN FIGURES

## INVOICING BY MARKET AREA Share of Group invoicing.



■ Share of the Group % → Change

### INVOICED SALES BY BUSINESS AREA

MSEK	Q2 2014	Q2 2013	Change %	Change % <sup>1)</sup>
Sandvik Mining	6,385	8,136	-22	-19
Sandvik Machining Solutions	7,676	7,281	+5	+3
Sandvik Materials Technology	3,866	3,967	-3	-3
Sandvik Construction	2,281	2,326	-2	-3
Sandvik Venture	1,841	1,332	+38	+11
Group activities	2	1		
<b>Group total</b>	<b>22,051</b>	23,043	-4	-6

### OPERATING PROFIT BY BUSINESS AREA

MSEK	Q2 2014	Q2 2013	Change %
Sandvik Mining	452	1,153	-61
Sandvik Machining Solutions	1,561	1,525	+2
Sandvik Materials Technology	647	409	+58
Sandvik Construction	51	141	-64
Sandvik Venture	187	-18	N/A
Group activities	-342	-249	
<b>Group total<sup>2)</sup></b>	<b>2,556</b>	2,961	-14

### OPERATING MARGIN BY BUSINESS AREA

% of invoicing	Q2 2014	Q2 2013
Sandvik Mining	7.1	14.2
Sandvik Machining Solutions	20.3	20.9
Sandvik Materials Technology	16.7	10.3
Sandvik Construction	2.3	6.1
Sandvik Venture	10.2	-1.4
<b>Group total</b>	<b>11.6</b>	12.8

1) Change compared with preceding year at fixed exchange rates for comparable units. 2) Internal transactions had negligible effect on business area profits.

**ORDER INTAKE:** 21,194 MSEK **INVOICED SALES:** 22,051 MSEK **OPERATING PROFIT:** 2,556 MSEK **PROFIT AFTER FINANCIAL ITEMS:** 2,099 MSEK **PROFIT FOR THE PERIOD:** 1,537 MSEK **EARNINGS PER SHARE:** 1.22 SEK **CASH FLOW FROM OPERATIONS:** 1,355 MSEK

### SANDVIK AND TENARIS IN STRATEGIC ALLIANCE AGREEMENT



Sandvik and tube and pipe manufacturer Tenaris have signed a new five-year strategic alliance agreement on the exclusive joint supply of corrosion-resistant alloy OCTG materials and technology to the oil and gas industry. "This strategic alliance will facilitate closer cooperation on future innovations

targeting the most demanding applications in the market," says Michael Andersson, Head of product area Tube, Sandvik Materials Technology.

### ACQUISITION OF VAREL COMPLETED

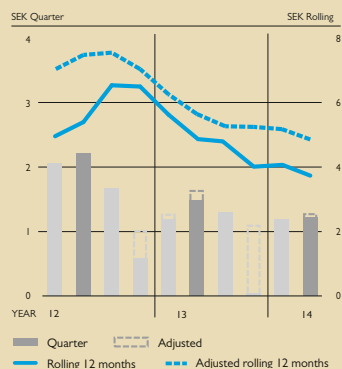
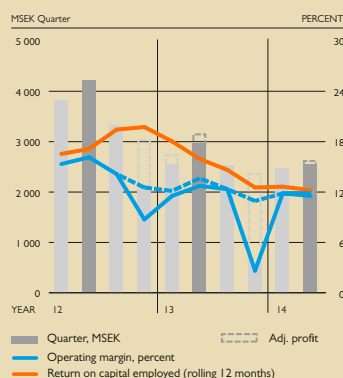
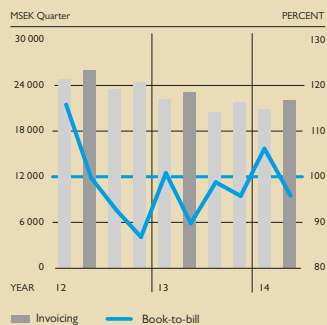
On January 7, Sandvik announced an agreement to acquire Varel International Energy Services Inc. The acquisition was completed in May. The company has around 1,300 employees, and revenue in 2013 was approximately USD 340 million. Varel will be integrated into business area Sandvik Venture and is included in the second-quarter results.

### CAPITAL MARKETS DAY IN THE U.S.

On November 17, Sandvik will host its annual Capital Markets Day in Fair Lawn, New Jersey, in the United States. The meeting will be hosted by Olof Faxander, President and CEO, and Mats Backman, CFO, along with representatives from the Business Areas.

### JOINT VENTURE WITH ZHUZHOU GROUP

Sandvik has signed a letter of intent with Zhuzhou Cemented Carbide Group Co. Ltd. in Zhuzhou, China, to form a joint venture for strategic cooperation. The Zhuzhou Group is the largest domestic manufacturer in China of cemented carbide and its compatible tools.



"The cooperation with Zhuzhou Group strengthens our position in China, one of our largest markets," says Jonas Gustavsson, President of Sandvik Machining Solutions.

#### NEW DISTRIBUTOR

Komek Machinery, the distributor for Rammer® premium hydraulic breakers, has been appointed distributor for Sandvik's mobile crushers and screens in the Urals. Through continued collaboration with Komek, Sandvik aims to provide customers throughout the region with better access to its product ranges. Komek is an established distributor of equipment and attachments for the mining, oil, gas and construction industries.

## IN FOCUS

# Mining his business

The mining industry is in a restraint mode right now. But from a long-term perspective, the demand for metals will undoubtedly resume, says recently appointed Sandvik Mining President, Scot Smith.



#### WHAT IS THE SITUATION IN THE MINING INDUSTRY?

When metal prices dropped in the summer of 2012, our customers became more cautious with their investments. As a result, a lot of projects got, if not canceled, delayed. However, as metal content in the mines gradually decreases, mining companies need to excavate more in order to achieve the same level of output. This bodes well for companies such as Sandvik, where high importance is placed on the productivity of the equipment we manufacture.

#### WHAT ARE THE CHALLENGES FOR SANDVIK MINING?

To better align our activities and opportunities to meet our end customers' needs. Our job is to develop, manufacture and deliver highly productive solutions, at the right time and at the right price. To do so, we need to be agile and flexible, not only in our manufacturing processes, but also in our product development and overall cost structure. We need to constantly adjust to an ever-changing market.

#### LOOKING AHEAD, WHAT ARE YOUR PREDICTIONS FOR THE INDUSTRY?

There will be a shift toward selling productivity to an even greater degree. The future will be ours to develop if we are agile enough to get on the right track now.

There will be a continuing need for metals as emerging countries mature and the global population grows.

Mining has an important role to play in the building of our future society. At the same time, mining is a dangerous business, both for people and for the environment. Safety is at the top of our agenda and something we are constantly working

on to improve. We are here to set the industry standard in a range of areas, including our customers' productivity, safety and our environmental footprint.

"We need to constantly adjust to an ever-changing market."



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## The world's most powerful warship

*Vasa*, planned to be the world's most powerful warship and the pride of King Gustav II Adolf, was completed in Stockholm in 1628. On her maiden voyage, she sank after sailing less than one nautical mile.

The shipwreck was brought to the surface in 1961 and restored to its full glory. Today *Vasa* resides in the *Vasa* Museum, a maritime museum in Stockholm that was constructed around the ship. More than 1 million people visit *Vasa* each year.

# Saving a national treasure

Sweden's historic *Vasa* ship is under threat from iron leakage from its steel bolts. In 2011, the *Vasa* Museum joined forces with Sandvik in a research project to preserve the wooden warship for future generations.

**VASA**, a world-famous wooden warship that sank on its maiden voyage in 1628 and was recovered in 1961, needs work if it is to survive into the future. Built from more than a thousand oak trees, *Vasa's* hull was originally held together with 5,500 low alloy steel bolts. However, during the 333 years the ship spent at the bottom of the Baltic Sea, the bolts corroded and so were replaced during the boat's restoration in the 1960s. Now, after 50 years in the humid environment of Stockholm's purpose-built *Vasa* Museum, *Vasa's* oak hull is suffering from iron leakage from the replacement bolts.



It was important to find a new material that would not compress or damage the hull. In cooperation with Sandvik, Anders Ahlgren, an engineer at the *Vasa* Museum, decided to replace all of *Vasa's* 5,500 bolts with specially

designed duplex stainless steel bolts. Before undertaking this massive project, museum officials decided on a trial replacement of 1,000 bolts. The bolts were installed in 2011 and

monitored for a year using sophisticated instruments that measured movement and pressure on the ship to an accuracy of a hundredth of a millimeter.

"The evaluations show that we are on the right track and can continue to switch the bolts," Ahlgren says. "In collaboration with Sandvik, we have managed to cope with the delicate balancing act of finding the smallest possible pressure from the bolts so that they hold the hull together without damaging it."

Sandvik has used two of its strongest and most corrosion-resistant alloys, Sandvik SAF 2507™ and Sandvik SAF 2707 HD™, for the bolts. These materials are often used in extremely tough environments, such as in the oil and gas industry. All 5,500 bolts are scheduled to be replaced by 2017 and are expected to hold *Vasa* together for at least 150 years. ■