

EDGE

A MAGAZINE
FROM SECO
#1.2012

INCREASING competition in the global wind energy market is making productivity in component manufacturing a priority.

FULL

THE POWER INDUSTRY GETS SPINNING

BLAST

STUDENTS
RACE TO
THE FINISH

FASTER
BLADE
MACHINING
IN CHINA



"We invest in the newest and the best."



NICE THREADS

DRILLING THREADMASTER (DTM) is more than a solid thread mill. It's basically a one-stop-shop that drills, chamfers and mills a threaded hole in one operation; one tool takes the place of three. Thread milling offers better thread quality and surface finish than thread tapping, and there are no burrs. DTM is available for applications in cast iron and aluminium, keeping the chips short in both materials.

TEXT: Åke R Malm PHOTO: Seco



THE PROCESS

Step 1: The tip of DTM drills a hole. No extra depth is required for threading.

Step 2: As DTM reaches the bottom, the entry of the hole is chamfered automatically.

Step 3: Threads are milled through helical interpolation.

Step 4: DTM retracts once the hole has been threaded to its full depth.

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WITH EASY-TO-USE CNC data support from Threading Wizard in the Seco Application Suite (www.secotools.com/customerzone), a perfect shape is achieved from the first thread, thereby reducing rejection costs and increasing productivity.

► WWW.SECOTOOLS.COM/DTM
Product availability: **NOW**
Order & application data: MN Update 2012

Winner of the Swedish
design award Svenska
Designpriset 2011



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ON THE JOB: PIA SJÖBLOM

Working as a CNC operator at a workshop in Surahammar, Sweden, involves constant improvement.

POWERFUL SUPPORT

THE POWER INDUSTRY IS essentially a contest about efficiency. The more net-gain energy that can be extracted from a resource – whether it’s oil, wind or solar radiation – the more competitive that energy source is. Accordingly, the whole production chain must be as lean and productive as possible to stay relevant in the market.

The machining industry plays no small part in this effort. Take a wind farm installation, for example, which must compete against other energy sources. The turbine blades, the gearbox, the bearing house – all these components have to be machined as efficiently as possible in order to keep down the investment costs of the operation.

Our products can help with that. In this issue you will see several examples of how Seco’s tools are supporting the struggle for higher efficiency in the power industry, whether it’s removing vibration in milling or cutting the machining time when roughing blades.

Ultimately, it’s our hope that our bright ideas will contribute to a brighter future – literally.

PAUL LÖFGREN
SENIOR VICE PRESIDENT,
GROUP MARKETING
 edge@secotools.com



SUGGESTIONS? Do you have story ideas for *Edge*? Send them to edge@secotools.com.



WINDS *of* CHA



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- ▶ Up to three times greater dynamic rigidity enabling machining over 5xD overhang
- ▶ Made from high tensile steel with protective coating
- ▶ Coolant supply channels through the spigot

▶ WWW.SECOTOOLS.COM/STEADYLINE

Product availability: NOW

Order & application data: Tooling

Catalogue 2012

With Denmark's world-leading wind power industry facing increasingly tough international competition, a leading Danish component manufacturer boosts its productivity with innovative technology.

TEXT: David Wiles PHOTOS: Betsie Van der Meer/Getty Images, Jørgen Jacobsen/Istockphoto and Svante Örnberg



D

DENMARK IS NO INDUSTRIAL GIANT – and is not even particularly windy – but it is the world's leading wind power nation. A pioneer in developing commercial wind power in the 1970s, Denmark is home to two of the world's biggest wind turbine manufacturers, Vestas and Siemens Wind, and it generates a higher percentage of its electricity – 20 percent – from wind than any other country.

Globally the wind power sector is growing as never before, with a record 39.4 GW of capacity installed last year; much of the technology involved was first developed in this Scandinavian country of just 5.5 million people. With China hot on its heels, Denmark's wind power sector has continued to expand at an average annual rate of 16 percent since 2000. Nevertheless, international competition is forcing the Danes to reduce costs and increase productivity in order to maintain their lead.

AH Industries has been at the forefront of the wind turbine industry since the mid-1980s, and today the company's parts are found in about 10 percent of wind turbines operating around the world. At AH Industries' plant on the outskirts of the Danish city of Kolding, milling and drilling of components is carried out for nearly all wind turbine manufacturers.

The company saw that one stage of the turbine manufacturing process in Kolding – milling of surfaces on the main bearing house, where it is attached to the main frame of the turbine – was a drag on production. AH Industries production technician Klaus Døssing says, "We didn't have any particular problems, but this step took a lot of time per piece, and it was noisy. If we tried to work faster, the tool would break because of the vibrations."

Recognising the benefits that AH Industries could achieve by eliminating these vibrations, Tom Jakobsen, Seco's International Windpower Application



NGE



We have more than doubled the insert lifetime now.”

Klaus Døssing, production technician, AH Industr.

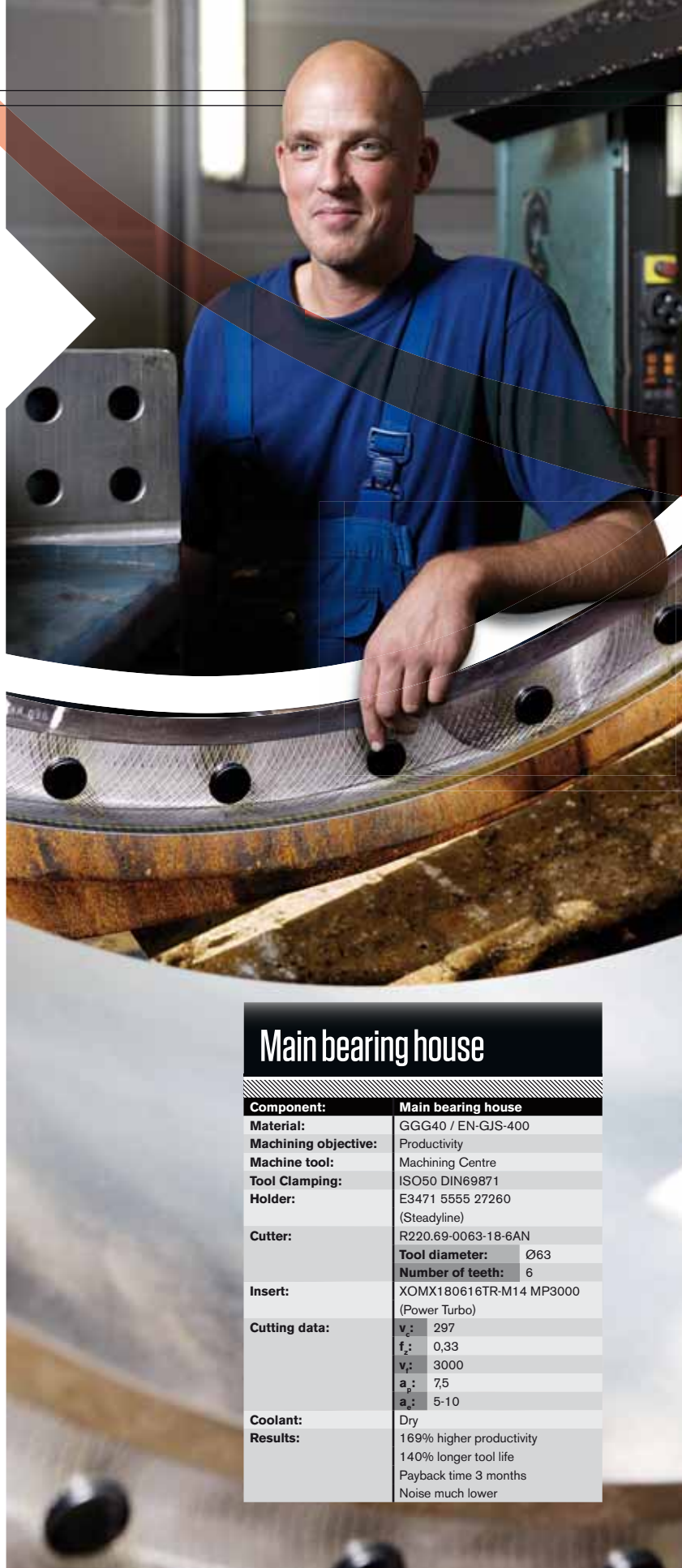
Expert, suggested a solution featuring the Steadylime vibration-damping shell mill holder. Jakobsen explains that the dynamic damping system features a vibration absorber that is positioned where the deflection is highest, at the front of the bar. This dampens the vibrations as soon as they are transmitted by the cutting tool. “It effectively eats the vibrations,” says Jakobsen. “It means you can push the tool harder and often work as much as three times faster.”

USING THE STEADYLIME TOOL has enabled AH Industries to speed up the milling of these mountings by an astonishing 269 percent; the previous milling time per piece of about 30 minutes has been reduced to about 10. Moreover, the life of the cutting head increased significantly. Døssing says, “The vibrations we experienced before were putting extra wear on the inserts, which meant that they had to be replaced more often. We have more than doubled the insert lifetime now.”

The time saved through faster machining and less wear means big savings for AH Industries. Payback time on this investment was less than three months. “I had my doubts at first, but it has proven to be a really good tool,” says Døssing. “We’ve been using Steadylime for nearly two years now, so it has paid for itself many times over.”

Jakobsen says what AH Industries has bought is not just a tool, but also support and knowledge. “The performance of the tool is very important, but today we think in terms of solutions.”

The rise of Chinese wind power companies (currently four of the world’s top 10 manufacturers) shows no sign of slowing, but increasing worldwide demand for renewable wind energy means there will still be a place for Danish expertise – as long as it can compete on price. “The more effective Danish manufacturers can be, the lower the prices they can offer their customers,” says Jakobsen. “Steadylime can help them get there.” ■



Main bearing house

Component:	Main bearing house
Material:	GGG40 / EN-GJS-400
Machining objective:	Productivity
Machine tool:	Machining Centre
Tool Clamping:	ISO50 DIN69871
Holder:	E3471 5555 27260 (Steadylime)
Cutter:	R220.69-0063-18-6AN Tool diameter: Ø63 Number of teeth: 6
Insert:	XOMX180616TR-M14 MP3000 (Power Turbo)
Cutting data:	v_c: 297 f_z: 0,33 v_f: 3000 a_s: 7,5 a_e: 5-10
Coolant:	Dry
Results:	169% higher productivity 140% longer tool life Payback time 3 months Noise much lower



Milling surfaces of the main bearing house presented a challenge to AH Industries. Tom Jakobsen, Seco's International Windpower Application Expert, suggested a solution featuring the Steadyline vibration-damping shell mill holder.

The value of wind

Global total market value of wind energy, 2011:

€66.8 billion

Predicted market value, 2015:

€111.7 billion

Percentage of electricity production, 2011:

1.92%

Predicted percentage of electricity production, 2020:

9.1%

PRODUCT DOUBLE OCTOMILL™

The new Double Octomill 05 is designed for smaller machines than those appropriate for the Double Octomill 09 (right).



► WWW.SECOTOOLS.COM/DOUBLEOCTO
Product availability: NOW
Order & application data: MN Update 2012

Short cut

A face milling tool with sixteen-edge inserts, Double Octomill now comes in a new compact size for smaller machines.

TEXT: Åke R. Malm

BUILDING ON THE SUCCESS of its highly-productive Double Octomill 09 face milling cutter, Seco has developed a smaller version of the tool: Double Octomill 05. Available in diameters from 25 to 125 millimetres, the 05 version has smaller inserts than the 09 – and half the cutting depth. This makes Double Octomill 05 ideal for milling applications in small machines, in which a cutting depth of three millimetres is sufficient.

“It’s a question of economy,” says product manager Michael Karlkvist. “In many applications you don’t need more than two to three millimetres. With smaller cutters and inserts the tool costs can be reduced without any loss of productivity.”

Inserts for Double Octomill 05 are available in four geometries for a wide range of materials, from cast iron to more exotic materials. The cutter can be fitted with a wiper insert for roughing and finishing in one go. This reduces tool stock and the number of operations for a certain application, lowering capital costs and increasing productivity. Also, having sixteen edges per insert keeps down the cost per edge.

Insert pockets on the Double Octomill 05 boast a strong centre lock screw as well as axial and radial location pins made of high-speed steel. The inserts are easy to mount correctly, and they stay fixed during operation, which is essential for maximum finish and tool life.

“Simplicity is the key,” says Karlkvist. “When the insert is in the correct position you hear a distinct click, which makes it almost impossible to get it wrong.”

The pockets have a negative angle of eight degrees to allow for double-sided inserts and stable operation. However, the geometry of the inserts creates a positive rake angle that minimises power demand, making Double Octomill 05 particularly suitable for small milling machines. ■

5 TRENDS

IN MACHINING

TEXT Michael Lawton
ILLUSTRATION Johan Nohr & Istockphoto

EVERYONE WANTS improved efficiency and reduced energy consumption for engineering products, and those demands pose a difficult challenge for the machining industry. *Edge* asked Dirk Biermann, head of the Institute of Machining Technology (ISF) in Dortmund, Germany, to identify five major future developments in the machining industry.



1

Stronger steels

“Especially for cars and trucks, there is increasing use of higher-performance steels. Steels for the motor industry now often exhibit greater rigidity, so that, for example, diesel engines can take a higher injection pressure. Engines are being downsized; smaller engines produce higher power through turbo-charging. Here, it is important to use steel with high strength and very good fatigue behaviour. Such new steels require new tools and new skills.”



Finer gearboxes

“While the number of cylinders is decreasing, the number of gears is increasing, especially in automatic gearboxes. The more gears, the more precise the transmission – and the more complex the work of machining.”



3

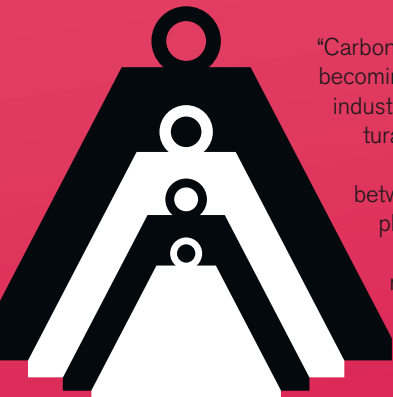
Increased quality

“There’s a need for lower tolerance levels in machining, to reduce friction and other losses. For example, more precisely matched pistons and cylinders lead to greater efficiency and lower emissions. More precisely engineered bearings lead to less friction and allow size and weight reduction.”

4 5

Lower weight

“Carbon-fibre-reinforced plastics are becoming the norm in the aerospace industry, and that means that structural parts can no longer be built of aluminium, since the joints between carbon-fibre-reinforced plastic and aluminium are subject to corrosion. Titanium is replacing aluminium, and that brings new challenges for the machining industry.”



More efficient production

“The energy efficiency of the machining process itself is also an important issue. The energy used by pumps and cleaning systems can be reduced through Minimum Quantity Lubrication (MQL), and machine tool drives can be used more efficiently by tailoring them more precisely to requirements.”





The specially developed V-twin engine is the heart in OBR's racing car.



STUDENTS ON THE FAST TRACK

At one English university, dedicated students get real-world preparation for careers in elite motorsport by designing, building and racing their own vehicle.

TEXT: Eddie de Oliveira PHOTOS: Ed Miles

For a group of students at Oxford Brookes University in England, time spent away from lectures, essays and seminars involves late nights and hard work.

"I don't go to the pub and have a laugh with my mates," says Luke Evans, a 24-year-old from Bingley, northern England. "I work till the middle of the night – but I have just as much fun."

Evans is a motorsport engineering student and former leader of the Oxford Brookes Racing (OBR) Team in Formula Student (FS), an international educational motor racing competition. FS gives students the opportunity to design, manufacture and develop a racing car from scratch. About 40 percent of Oxford Brookes motor engineering graduates go on to join the elite teams of Formula 1, Le Mans and GP2; many of them will have learned their trade on the Oxford Brookes FS team, which receives sponsorship from Seco.

The team participates in annual races in the United States, UK and Germany, and the engineering students work hard – and without pay – through term time and holidays for the ultimate reward of seeing their car pass the chequered flag first.

The project is in its twelfth year, and the current team – made up of students from 11 different countries – is led by Giuseppe Naselli, a 31-year-old Sicilian who left his job in Italy to make it in motor racing. Naselli insists that England is the best place to study his craft: "It is where motor-sport was born, and where it lives."

Naselli and Evans share a childhood dream to work in Formula 1. However, both are quick to acknowledge that motorsport engineering is far from glamorous.

"It's a really hard job," says Naselli. "It's the hardest thing I've done, but the thing which gives me the most. Even if you design just a small bracket, when you see the car moving...it's really amazing."

Justin Kite, Seco's UK Marketing Services Manager, explains that the company decided to get onboard "after meeting the guys from OBR and seeing just how passionate and enthusiastic they were."

The team is designing and manufacturing a bespoke V-twin engine with the aim of making it the most advanced motor in the 2012 competition. Seco's tooling supply has assisted the manufacture and development of the racing car.

"Seco provides us with the tools to manufacture what we need in the best possible way," says Evans. "The majority of the tools have been for



"Even if you design just a small bracket, when you see the car moving... it's really amazing."

*– Giuseppe Naselli,
Oxford Brookes
Racing Team*

The OBR team – with students from 11 countries – believes its motor will be the most advanced in the 2012 Formula Student competition.

the CNC mill, but they've also helped us out with manual lathe tools. And there's the invaluable stuff – advice."

Naselli agrees that Seco's nurturing has been just as important as its tools: "Seco is our guide and advisor. They don't always give us the solution; they give us direction for us to work out the solution. But then there are the tools... I don't think any team has carbide tools like the ones Seco has provided. They are top quality, the best!" ■



Racing school

► Oxford Brookes University is considered one of the top higher education institutions in the UK for aspiring motor racing engineers. The university's engineering autolab is in close proximity to some major Formula 1 teams, including Lotus Renault and Williams. Since 1999 OBR has scored more points than any other FS team in the UK, and has been the top UK team five times in the past 12 years. Team leader Giuseppe Naselli says OBR aims to run an electric car made with renewable technology within the next three or four years.

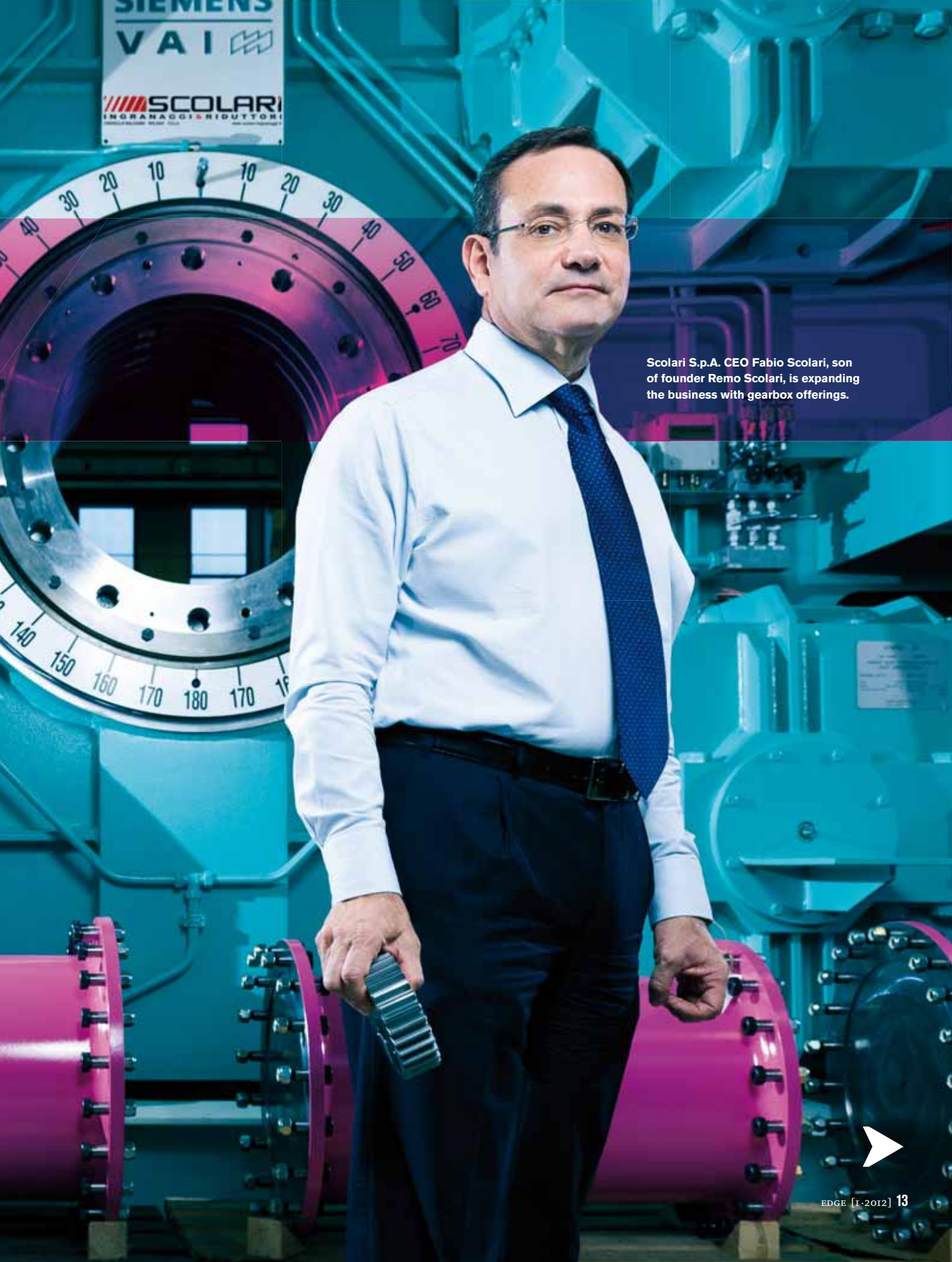
► Follow OBR on Twitter @oxbrookesracing.

GEARING UP

A Milan-based manufacturer of gears and gearboxes constantly invests in precision performance tools in order to maintain its competitive advantage.

TEXT: Claudia B. Flisi PHOTO: Maurizio Camagna

SIEMENS
VAI 
SCOLARI
INGRANAGGI E RIDUTTORI



Scolari S.p.A. CEO Fabio Scolari, son of founder Remo Scolari, is expanding the business with gearbox offerings.



IN 1960,

REMO SCOLARI had a brilliant insight. Italy was entering an economic boom, and Scolari, a mechanic trained at Alfa Romeo who had gone into the business of making winches for elevators, realised that gears are drivers of economic growth. They play key roles in mining, ship-building, cement plants, steel plants and in all energy sectors. Scolari split with his business partner and set up his own workshop in Cinisello Balsamo, 10 kilometres north of Milan, to make industrial gears.

Scolari's move paid off; the company focused on high-quality gears for third parties, and as the company grew over the years and passed to the second generation of Scolari, that focus has not changed. "We remain specialised in heavy industry, and on a quality niche appropriate to our industrial capabilities," says current CEO Fabio Scolari, one of Remo's four children (three of whom work at the company). "The difference is that today gearboxes have joined gears in our product offer, and the size of the gears themselves has increased."

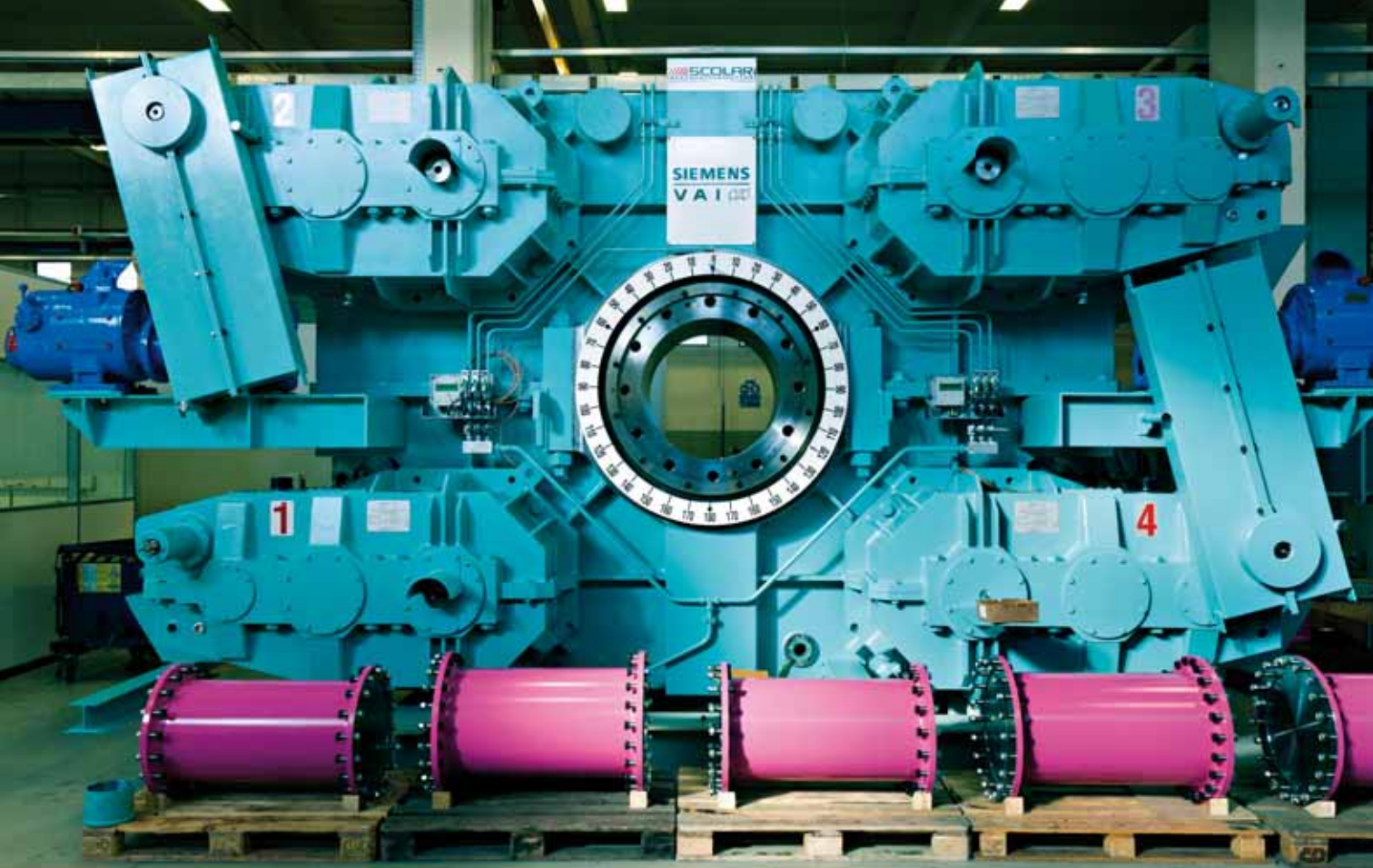
Fabio joined the business in 1978, and the strategy during the 1980s and 1990s was to increase the number of customers, improve product quality,

"We invest in the newest and the best. We are constantly investing in precision performance tools."

Fabio Scolari, CEO, Scolari S.p.A.



Scolari S.p.A. has built its reputation on high-precision industrial gears and gearboxes.



produce gears in larger sizes and improve production capabilities. In 1994, Scolari was one of the first companies in Italy to introduce the technology of profile grinding.

BY 2000 THE COMPANY had 35 employees, and nine years later it moved into a 6,000 square-metre site in Cinisello. This was 2.4 times the size of its previous facility, reflecting the need for more space to produce gearboxes for larger applications. By 2010, the company had grown to 70 employees.

Today gearboxes account for 75 percent of Scolari's total turnover, about 20 million euros in 2010. Gearboxes, like the company's gears, require high-quality, heavy-duty applications such as hob cutting, MAAG toothing and mechanical machining of large components.

When the company decided to add gearboxes to its offer, it did not have a technical department. Fabio hired one person to handle this role in 2000. Today the department has nine people – five engineers and four project planners. "We have always produced customised products, but now we can propose them ourselves instead of working only from projects supplied to us by our clients," explains Fabio.

Seco has been working with Scolari for more than 15 years, initially supplying gear milling cutters. The relationship has intensified over time as the

In recent years Scolari S.p.A. moved to a nearby facility more than double in size in order to accommodate gearboxes for very large applications. The one pictured above is used in the steel industry.

The Scolari strategy

Despite a difficult economic climate, Scolari plans for growth. Here's how:

- ▶ Develop markets outside of Europe
- ▶ Constantly improve customer service, assisting the client from project planning to installation to post-sales assistance
- ▶ Increase the speed of Scolari gearboxes for use in the energy sector, such as hydroelectric and wind energy
- ▶ Pursue joint ventures abroad. Two projects were recently concluded in India and the US, and another is being developed in Brazil.

APPLICATION HOBBIING



An inspector checks the precise roundness of a gear shaft.



A supplier such as Seco represents a competitive advantage for us.”

Fabio Scolari, CEO, Scolari S.p.A.

global market for gears has become more specialised and demanding. For example, large diameter units utilised in wind turbines, a growing business for Scolari, must be made with extreme precision.

According to Fabio, one of his company’s competitive advantages is its machinery: “We invest in the newest and the best. We are constantly investing in precision performance tools, so a supplier such as Seco represents a competitive advantage for us.”

In 2000, Scolari introduced indexable gear cutters and indexable hobbing to its production line, saving time and increasing flexibility – two important factors for a business based on customised solutions. Flexibility is key for Scolari since its business is entirely based on customisation. Currently Seco provides standard tools and special gear cutters and hobs to help Scolari maintain quality and precision in its production, speed and flexibility in its service to clients.

The importance of the entire value chain is paramount for Scolari’s CEO. With this in mind, the company recently began offering its clients post-sales parts and service, including equipment replacement parts when needed. Scolari is confident that its end-to-end, vertically integrated production capabilities position it well to ensure customer service that is second to none. ■

Pinion module



Component:	Pinion module 50 Z13 for gearbox
Material:	42CrMo4
Operational description:	Roughing
Machining objective:	Improve productivity
Machine tool:	Hobbing machine
Cutter:	335.43-0420-M50.0Z13-19327
Tool diameter:	420 mm
Number of inserts:	90
Zc:	6
Inserts:	335.40-1914-11631 (66 pcs) 335.40-1512-18578 (24 pcs)
Cutting data:	v_c: 100 m/min f_z: 0,3 mm/tooth v_r: 140 mm/min a_{s1}: 70 mm a_{s1}: 55 mm
Coolant:	No
Results:	50% higher productivity

Gear module



Component:	Gear module 16 Z70 for gearbox
Material:	42CrMo4
Operational description:	Roughing
Machining objective:	Tool life and overall productivity
Machine tool:	Hobbing machine
Cutter:	335.47-0270-M16.0ASSEM-18151
Tool diameter:	270 mm
Number of inserts:	100
Zc:	10
Inserts:	335.40-1914-19433 (50 pcs) 335.40-5014-18252 (50 pcs)
Cutting data:	v_c: 100 m/min f_s: 3 mm/WU
Coolant:	Yes
Results:	90% higher productivity

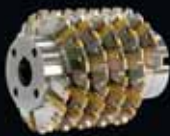
The global gear market

► The world gear market today is worth US \$155 billion, and it is growing 4.7 percent annually, according to Seco's Claudio Ghielmetti, International Applications Expert in Power Transmissions. Citing "World Gears to 2013," an industry study by the Freedonia Group, he notes that China is expected to account for one-third of all additional gear demand through 2013 and will surpass

Japan to become the second-largest national market behind the United States. By 2018, total gear sales in China will exceed product demand in the United States. Market growth is also expected to be healthy in Indonesia, Thailand, Iran and Russia. Although advances will be less robust than in developing countries, gear product demand in the United States and Western Europe will increase as well.



Claudio Ghielmetti,
International Applications Expert in Power Transmissions at Seco



Seco offers indexable carbide insert cutting hobs (left) and gear cutters (right) for the gear industry.



17,000 KWh

From February to June, the solar panels generated 17,000 KWh of electricity.

A higher power

In rural Tennessee, Seco has set up its first-ever solar panel array. The project takes advantage of energy grants to generate electricity in a sustainable way.

TEXT: Jean-Paul Small PHOTO: Stockbyte



126

Seco has set up 126 solar panels at its facility in Lenoir City, Tennessee.

IN LENOIR CITY, an American city of less than 10,000 people, Seco has erected 126 photovoltaic (PV) modules at its facility there. Funding for the installation and operation of the array was supplemented by governmental and private subsidies. In fact, a combination of energy grants – the Tennessee Solar Institute Installation Grant and the US Department of Treasury Renewable Energy Grant – paid for 60 percent of the total system cost.

The solar PV system went live in February, the first such array for Seco anywhere in the world. Here's how the process works: Power generated from Seco's solar array is sold to the utility company at a rate that is substantially higher than the market price; this is, in part, due to the utility getting power from the solar array without pro-

viding any capital investment. When Seco buys power at the market price from the utility company (the solar panels do not generate enough power for the plant's needs), the difference between what it sold the solar energy for and what it's paying works out as a discount. "With the grants and the energy rate difference, the return on investment for the solar panels will be only about seven years," says Ed Purdy, Manager of Production, Maintenance & Facilities at Seco's Tennessee location.

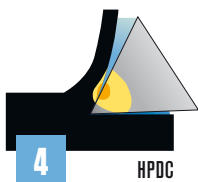
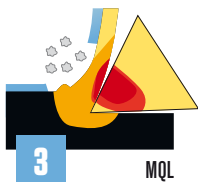
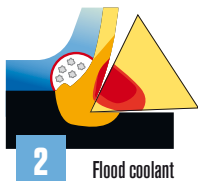
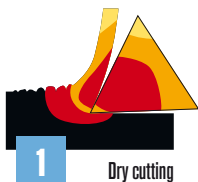
Seco is using the array as a test case to determine the feasibility of other such installations at various locations around the world. Purdy also sees it as a great tool to spread the word on Seco's clean energy efforts: "Customers visit the facility and are very impressed with the array specifically and Seco's investment in green energy in general."

Kurt Nordlund, President of Seco's North American organisation, says, "The efforts undertaken at our facility in Lenoir City are representative of our company's dedication to being an industry leader in terms of green energy production and operation." ■



Stay cool

Patrick de Vos, Corporate Technical Education Manager at Seco Tools Group, explains how coolant systems can extend – or shorten – tool life.



ALLOW ME TO MUSE HERE on the different coolant systems we see in workshops and how big their impact on tool life can be. Sometimes coolant will influence tool life in a positive manner, in other cases the impact will be negative, and in some cases there is no impact at all.

Besides mechanical overload, tool life is to a large extent determined by thermal phenomena during the cutting process. Simply put, metal cutting equals heat generation, and when this heat concentrates, the temperature in the cutting edge increases. If the temperature becomes too high, or remains too low, it shortens tool life.

Coolant is supposed to evacuate the cutting heat before it concentrates too much. For most efficiency, the coolant should be applied where the most heat is concentrated – the cutting zone. (After all, we throw water on fire to put it out, not five metres away.) This sounds easy, but getting coolant to the cutting edge means overcoming pressures between chip and cutting edge that, locally, can be in the proximity of 20,000 bar. The coolant is also blocked by an

800°C ‘steam barrier’ formed by evaporating coolant.

Alternatively, the coolant may evacuate the heat through the chips. However, workpiece materials with low thermal conductivity, for example, have very limited heat evacuation through the chips into the coolant; that’s why we have to keep cutting speeds low in such materials.

In metal cutting there are basically four approaches to coolant use:

1 Dry cutting. Do the advantages of coolant (longer tool life, lower tool costs) always outweigh the disadvantages (costs for the coolant and coolant system)? In a number of cases dry cutting is the better alternative. Some cases may also have technological reasons for avoiding coolant, such as applications with PCBN cutting materials.

2 Flood coolant or traditional emulsion coolant system. The cooling effect is based on heat conduction from the chips to the coolant. This system performs well for most traditional workpiece materials (steels).

3 Minimum Quantity Lubrication (MQL) system. Small drops of liquid evaporate in a hot environment; that evaporation process takes heat away and lowers the temperature. An MQL system is about as effective as a flood coolant system, but the consumption (cost) of coolant is much lower. On the other hand, it demands special precautions and specific equipment for health and safety.

4 A High Pressurised Directed Coolant (HPDC) system. This system increases the coolant pressure and directs it as much as possible to the target area where it is most effective – the cutting zone.

Seco’s HPDC solution, Jetstream Tooling™, is as elegant as it is efficient; it’s based on the same fluid dynamic principles observed in a garden hose. Basically, if you narrow the exit nozzle of the fluid, the exit speed increases. The watering (cooling) capacity also increases if you keep the nozzle close to the flowers. You may ask, wouldn’t that destroy the flowers? Yes! Jetstream Tooling not only evacuates heat better (achieving longer tool life and higher cutting conditions), but it also breaks long chips shorter.

For more detailed information about Jetstream Tooling, the reader should contact Seco and ask for a demonstration – it really takes the heat out of a system.

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PROBLEM SOLVER

Paramesh Navalgund was first introduced to Seco almost 15 years ago – as a customer. Today, as a manager at Seco Tools in India, that customer perspective comes in handy.

TEXT: Carl Simmons PHOTO: Atul Loke

THE FIRST TIME Paramesh Navalgund was offered a job at Seco, he suggested that a former colleague take it instead. He was working as plant manager at Omni Auto, and out of loyalty to his employer – and to a project transferring technology from Italy to India – he remained on the job.

Two years later, in 2001, Seco's expansion in India began taking off. This time, when the same former colleague tipped him off about an application engineering position based in his home-

town of Bangalore, the timing was right.

"I came to Seco looking for new challenges, and I was interested to learn about new processes and solutions and to get input from many different customers," says Navalgund. As Regional Application Engineer for India's South Region, he provided technical support to sales engineers and product service support to customers in Karnataka, Tamil Nadu and Kerala. "The majority of the work was troubleshooting, technical proposals and handling machine tool builders," he says.

Navalgund's customers included Toyota, Hyundai and the Kothari Group's Bharat Fritze Werner Ltd., for which he established products in machining lines and helped develop custom-made tools. After Navalgund re-engineered the crankshaft line at Hyundai Motor India, the customer found that cycle time was reduced by 30 percent and tool life increased by 50 percent.

It wasn't long before Navalgund was promoted to a management position, in 2004. Today he is Manager Component Engineered Tooling (CET) & Machine Related Tooling (MRT), working out of Seco India's head office in Pune. In his current





Likes cricket and Bollywood films

Name: Paramesh Navalgund

Birthday: June 1, 1972

Family: Wife (Savita), a nine-year-old daughter and a three-year-old son

Languages: English, Kannada, Hindi

Interests: Cricket (a “fast” game), watching Hollywood and “of course Bollywood” films, especially action and science-fiction movies

Best about the job: Sense of satisfaction in the job

Background: He has worked at Seco for 10 years, starting as the Regional Application Engineer for South India. Prior to that, he worked as a plant manager for Omni Auto, serviced four-wheel vehicles at Silver Jubli Motors, and worked for Kirloskar Warner Swasey (manufacturers of CNC turning machines).

“I want to go there
– to where the
problem is!”

“We are developing a lot of innovative tools every year.”

Paramesh Navalgund, Seco

role, Navalgund supports CET engineers across the country, training them and monitoring major projects.

“I feel that our internal engineers are my first customers, and I always try to attend their calls and give them answers,” he says. “If we convince our sales team and boost their confidence, then half of the work is done.”

A typical day starts with Navalgund checking customer proposals and tending to technical queries and feasibility studies. He enjoys solving problems.

“I want to go there, to where the problem is!” he says. After one customer spent two months trying to solve a machining problem, Navalgund offered to pay a visit and see things for himself; he was able to solve the problem in just half an hour.

Such knowledge comes from experience, he says. “I’ve worked with many machining activities, and this has taught me a lot. It takes patience, and there is an endless amount to learn.”

SINCE STARTING AT SECO nearly a decade ago, Navalgund has observed changes in the tool industry. “Previously, customers preferred the cheapest products,” he says. “Now the customer is more concerned about what value the product is adding, like the cost per part and hassle-free production. More and more customers prefer a single-window solution where they can get all tooling, fixturing, CNC programming and proving-out of components with quality aspects.”

Navalgund sees the tool segment continuing in this direction. The machining industry is “growing in a healthy way,” he says, and there are a lot of new manufacturing industries moving to India for its low-cost production and high quality.

“Seco has a good name in India regarding its technical solutions, and we are developing a lot of innovative tools every year, which has strengthened our market position. We can proudly say that Seco is one of the best in the tooling industry.” ■



Paramesh Navalgund says more and more customers are asking for complete tooling solutions.

Best tips for good customer service

- ▶ Listen, understand and deliver.
- ▶ Get as much feedback and technical input as possible from the customer in order to understand the requirements.
- ▶ Get clarification on answers to solution questions within your own organisation – from R&D, managers and others – so you can give accurate answers to customers.
- ▶ Go to the customer’s shop floor and learn from the employees there. Don’t hesitate to ask them questions.

CUT 50%



By turning around its machining strategy, a turbine blade manufacturer in China was able to cut its machining time by half.

TEXT: Cari Simmons PHOTO: Istockphoto

DEYANG YUXIN Machine Manufacturing Company is based in China's southwestern Sichuan province. It machines and supplies roughing blades for, among others, China's largest turbine company, Dongfang Turbine. Dongfang in turn supplies gas and steam turbines to the country's power generation industry.

Despite its frustration with local tool brands that broke or wore out quickly and caused damage to inserts, Deyang Yuxin initially dismissed Seco's products as too costly. Like many Chinese companies, Deyang Yuxin's main focus was on individual tool costs.

Seco had to convince the company to include productivity and efficiency in the equation. A Productivity and Cost Analysis (PCA) was prepared to calculate the potential savings from using sturdier, more efficient cutting tools and new strategies for machining components.

"We suggested a more powerful cutter, Power 4™, for their needs," says Seco's Joe Feng, local application expert in Power Generation. "The price is a little higher than the local brands' prices, but we knew that we could make Deyang Yuxin's productivity much higher by using the new tool."



Ideally suited for the power generation sector, Seco's Power 4 copy milling cutter solution was specifically designed for machining turbine blades.

After a number of visits and long workdays, Seco's international staff was able to physically demonstrate productivity improvements, and machining time was reduced by at least half.

"From that time on, the customer started to implement our solution, and we doubled their productivity," says Seco's Emilio Scandroglio, who assisted Deyang Yuxin as International Applications Expert in Power Generation. More than a year later, the collaboration between the two companies continues, with solution updates and improvements.

"What's taking place in China today is a shift in mindset towards considering all machining costs and not just insert or tool costs. The same happened in Europe 30 to 40 years ago," says Scandroglio.

That shift, however, seems to be limited to the private sector; Feng says government-controlled companies are less eager to become more efficient. "Private companies in China accept the need to increase productivity, but convincing government-controlled companies to do the same is much more difficult." ■

Zoom out

Seco's Productivity and Cost Analysis (PCA) goes beyond a customer's tooling costs; it looks at the total cost of production. Seco engineers evaluate a single machine tool process or the complete path a workpiece takes in a manufacturing plant. PCA software creates a comprehensive report with process information (such as tooling and cutting data) and other data, including cost per part, output per hour, tool consumption and investment cost.

www.secotools.com/PCA

Hello, operator

In the small industrial town of Surahammar, Sweden, CNC operator Pia Sjöblom is improving her skills every day to match increasing demands.

TEXT: Per-Ola Knutas
PHOTO: David Magnusson



PIA SJÖBLOM

Age: 36

Occupation:

CNC operator at a workshop in Surahammar, Sweden, that is a part of Italian steel group Lucchini

Family: Husband and two daughters, 8 and 9 years old

Hobbies:

Family and the home (“When you have small children and work full time you don’t have time for much else.”)



WHEN I STARTED as a CNC operator here five years ago, I was one of three women among about 60 employees.

Today we are eight; it’s great that more women are discovering this profession.

Here at Lucchini we work with the railway industry as a customer, mainly for the Nordic market. I do turning of new train wheels, but the workshop also machines axles and renovates train wheels and axles. We are quite busy – you can tell that there’s a lot of activity in the railway industry right now. Demand is high for our services, both for the components and for renovation. Right now we’re also supporting our Italian parent company in machining train wheels for the growing market in China.

I really like working as a CNC operator. After having worked with cleaning for a couple of years, I wanted a more industrial job. I completed a training programme and got a job directly. Working on a shift job suits me fine, and I like solving problems, such as when we optimise the specifications for a new type of wheel. Since I started, the demands when it comes to tolerance on the products have gradually increased – I appreciate this extra challenge.

Another change since I started is that we have achieved a better flow in the day-to-day work, thanks to Lucchini working with the ‘Lean’ method. Each morning we start with a team meeting to go through what needs to be done during the day and the rest of the week. We discuss potential problems and make sure that we have solutions for them. With this method, everybody gets involved in continuous improvement.” ■

► WWW.SECOTOOLS.COM

Product availability: NOW

Order & application data: MN Update 2012-1



NEW PRODUCTS GET BORING

TWO TYPES OF BORING HEADS with Seco-Capto™ couplings are now on the market: Type 750 (rough boring) and type 780 (fine boring). The heads can be fitted directly on machines with polygonal shank couplings (PSC), without an adapter. With the same features and performance as before, the new boring heads have the additional benefit of the highly-rigid Seco-Capto coupling system. The system has perfect indexing, making it ideal for multitask machining centres.

www.secotools.com/seco-capto

ROUGHING IT

JCO710 IS A NEW high-performance solid end mill specially developed for roughing and finishing operations in titanium alloys. Its wave-shaped cutting edges offer smooth cutting and efficient chip evacuation, allowing depths of cut up to 1xD in full slotting operations. JCO710 is available in a diameter range from 16 to 50 millimetres,

in four- or six-flute versions, and it comes with corner radii typically found in the aerospace industry. JCO710 is a cost-efficient option for machining high feeds in titanium alloys at relatively low cutting speeds. Made from HSS-Co steel, it is a reliable tool that provides optimum process security.

www.secotools.com/JCO710



Milling me softly

MP1020 IS A NEW cermet insert for milling applications in various steel types in which a high surface finish is required at low cutting speeds. The insert has an exceptionally fine grain structure that combines toughness with wear resistance in a unique way. Its composition is engineered to avoid any reaction with the material in the workpiece, resulting in controlled and even edge wear without any chipping. In practice this means long tool life and high operation security.

www.secotools.com/MP1020





DISC MILLING

SECO INTRODUCES a new generation of disc milling cutters, named 335.25, for large slot widths (which will progressively replace the existing 335.18). The milling insert features a V-shape concept that creates an optimum cutting geometry, reducing cutting forces and noise. Thus, cutting data can be increased for maximum productivity even in unstable conditions. The V-shape also creates a strong and reliable connection between the insert and the cutter body.

Insert corner radii are available from 0.8 to 6 millimetres, with four cutting edges to reduce the cost per part. Insert geometries and grades are available for all materials, and a built-in wiper flat produces fine surface finish, eliminating secondary operations. The cutters are available with fixed pockets with central coolant or adjustable pockets for maximum flexibility.

www.secotools.com/335.25



Tough grade

DP3000 IS A NEW Duratomic® grade in the Performax range of indexable insert drills for very high feeds and speeds. A versatile insert grade with excellent wear resistance and edge toughness, it is suitable for most materials and applications. DP3000 is a complement to the existing Duratomic grade DP2000, which can be used to optimise an operation, particularly to maximize cutting data in steel or cast iron. In combination with a strong drill body, the two insert grades offer high productivity, long tool life and excellent application security.

www.secotools.com/DP3000



THREADING MORE MATERIALS

SECO EXTENDS ITS RANGE of Threadmaster thread mills with Threadmaster 900 for materials with a tensile strength over 900 N/mm² and Threadmaster-H for materials with a hardness from 45 to 60 HRc. Threadmaster is available in sizes from M4 to M20.

Compared to threading with a tap, thread milling gives a better finish without burrs. Online user support, including CNC-data, is available from the Threading Wizard in the Seco Application Suite on secotools.com.

www.secotools.com/threading

Tiny tool

THREADMASTER MINI is a new thread milling tool for small dimensions in hard materials. This can range from dental implants to aviation components with a hardness ranging from 45 to 60 HRc. Threadmaster Mini is available for thread dimensions from M1 x 0.25 to M2.5 x 0.45.

www.secotools.com/threading





APPS FOR OPS

CUSTOMER ZONE is where interactive customer applications can be found on Seco's corporate website. The Zone just added a round of updates:

Seco Guide's filtering and search functions now include the type of operation (roughing or finishing).

The Threading Wizard offers support for an enhanced range of tapered threadmasters, high-strength steel and

hardened steel threadmasters and a M20x2.5 threadmaster. The new products include Threadmaster Mini and Drilling Threadmaster (see opposite and page 2 for additional information).

Seco will continue to update the Application Suite throughout the year. New online stores are available in Russia, New Zealand and Indonesia.

www.secotools.com/customerzone



Series additions

SECO'S JABRO™-SOLID² JS550 series is now available with an extended range of corner radii from 0.5 to 4 millimetres. It is applicable in all general machining applications as well as for aerospace applications in stainless steel, titanium and superalloys.

JS550 long versions (L) with chip splitters are stable square end mills featuring a long cutting edge, which makes them suitable for dynamic milling. This method is used for large cutting depths combined with a relatively small radial engagement at high speeds and feed rates. Requiring CAM programming, the dynamic milling method can increase removal rates up to 500 percent compared to traditional methods.

www.secotools.com/JS550

HEAVY DUTY

SECO IS STRENGTHENING

its heavy machining range with the introduction of LNMX40 and LNMX50 inserts with three new geometries for super-heavy roughing. Designated RR93, RR96 and RR97, they are suitable for applications in such heavy industries as power generation, shipbuilding, steel and construction.

For the railway industry, LNMX19 and LNMX30 inserts are added in three more new geometries for the re-turning of worn-out wheels. Designated R2, RR94 and RR97, they cover operations from light to heavy re-turning with better chip control. All inserts are available in the best-suited Seco grades.

www.secotools.com/heavymachining



FIVE FLUTES

JHP770 IS A JABRO™ solid carbide end mill designed for high-performance machining of titanium alloys, mainly applied in the aerospace and medical industry. The existing diameter range of 6 to 25 millimetres with four flutes has now been extended by a five-flute version for diameters 16, 20 and 25 millimetres. The five-flute design allows for an increased material removal rate, resulting in higher productivity.

www.secotools.com/JHP770

Check out our story on Formula Student (page 10).

THE RACE IS ON

CARRYING ON THE venerable racing tradition of the Andretti family, Andretti Autosport is one of the most successful teams in IndyCar circuit history. The team's workshop makes lightweight carbon fibre parts from moulds with smooth-as-glass finishes; that kind of precision requires tailored tooling solutions.

BY THE NUMBERS

3.0sec

Amount of time it takes an IndyCar to go from 0 to 100 mph (160 km/h)

650hp

Approximate power produced by an IndyCar

370km/h

Approximate top speed of an IndyCar

Gimme a brake
Seco's Jabro line of end mills is used to make complex moulds for brake callipers and discs.

SUGGESTIONS? Do you use Seco tools to make a compelling product? Contact us at edge@secotools.com.