VOLVO CONSTRUCTION EQUIPMENT MAGAZINE

ISSUE 60
SEPTEMBER/OCTOBER/NOVEMBER 2016

spirit

ELECTRIFYING INNOVATIONS

Volvo CE's prototype cab-less, driverless hauler

Photograph: © Gustav Mårtensson
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The genius of invention

"Discovery is seeing what everyone else has seen and thinking what no one else has thought."

It is just this kind of open mindset that the members of Volvo's advanced technology team bring to their jobs every day. They ask themselves – "How can we create machines that are safer, cleaner and more efficient? They also ask – "Is there a better way?"

Rapid advances in technology are being harnessed to deliver these improvements, whether it is improved human-machine interfaces, autonomous operation, machine-to-machine connectivity or alternative power systems. All of these innovations were on display at Volvo's recent Exploration Forum, held in Eskilstuna, Sweden – the birthplace of so many innovative solutions during Volvo CE's long history. The event showcased the latest prototypes currently being investigated by Volvo CE's white-coated inventors.

As you will see from the main feature on page 10, all of these machines push the boundaries of engineering, automation and electrification. Whether or not the prototypes actually reach the market remains to be seen, but what is beyond doubt is that certain features will filter down and, in response to extensive testing and customer feedback, will establish themselves on Volvo CE's innovative products of the future.

Innovation is not just a 'nice-to-have', it is a fundamental part of what Volvo CE is. Practical, business-enhancing innovations are an important part of what attract customers to the brand. Our customers are consistent in their praise for the fuel-efficient, technologically advanced and increasingly safe machines we provide, as well as appreciative of Volvo CE's continuous environmental awareness. The company is an industry leader in promoting the sustainable use of resources, highlighted in the article on page 40.

The more arduous the conditions, the more important these brand attributes become. Heavily dependent on the safety and reliability of their Volvo machines are the operators working in the frozen wilderness featured in our spectacular photo shoot from Canada on page 26. These are modern-day pioneers who must deal with the hazardous conditions of a shifting glacier on a daily basis.

We will keep innovating at Volvo CE, and always try to lead the industry in finding better ways. As the French thinker Marcel Proust once said: "The real voyage of discovery consists not in seeing new landscapes, but in having new eyes".

TIFFANY CHENG
Global Director
External Communications
Volvo Construction Equipment

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ON THE COVER
The Volvo prototype hybrid wheel loader with the cab-less, driverless hauler © Gustav Mårtensson

VOLVO CE SPIRIT MAGAZINE
September/October/November 2016 ISSUE NUMBER: **60**

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BACK TO BASICS

Insights from the man responsible for plotting Volvo CE's future direction

by Cathy Smith / photographs by Juha Roininen

Thomas Bitter says he wants to get back to basics at Volvo Construction Equipment. For the head of the recently created Marketing and Product Portfolio that means two things: greater customer satisfaction and greater profitability. And Bitter sees no contradiction between the two.

He believes it is a question of knowing what matters to customers and not simply innovating for the sake of it.

"At one point in time, we discovered that a major part of our ranges were not profitable – not to the extent that we wanted."

He puts it bluntly: "We're a highly technical company so if we don't have good engineers we don't go anywhere. But we have to start to make a trade-off between all the things we would like to do and the things that it makes sense to do."

MAKING SENSE

It is the job of Bitter's new department to see the big picture and to decide "which things it makes sense to do". He says that by putting together a team which combines mainly sales and technology expertise alongside other functions – he describes it as an "unbiased" group – Volvo CE will be able to make wise decisions about where to invest for the future.

"Today, we are strong in developing engines and machines and drivelines and transmissions. Tomorrow, it may be more communication or data management. Connected machines are much more efficient than stand-alone ones."

Bitter says the buzz phrase of the moment is the 'Internet of things'. "Everything will be connected. If it works for your phone and your car, imagine what it does for an excavator on a job site," he enthuses. "The question is do we spend more research and development money on these technologies ➔

Thomas Bitter, Senior Vice President, Marketing and Product Portfolio

or continue to spend a lot of money on traditional ones? Unfortunately, the answer is not one or the other."

Bitter believes this question will be easier for his more 'neutral' department to answer than the former approach, which kept technology and sales apart.

What he is sure of, though, is that in certain markets the inclusion of new technology and connected machines will no longer be simply a differentiator for customers, but will actually be a deal maker.

He gives the example of a quarry where site operators are looking for efficiency not just in a single machine but across the entire operation, and that could come with connectivity between excavators, wheel loaders and trucks.

"If you can only imagine that these machines are connected then you can optimize the flow of the hauling units. You can accelerate a truck or slow it down and the impact on fuel efficiency is greater than anything we can do by developing new engines."

KNOW-HOW

For Bitter it is about matching the traditional know-how with know-how that Volvo CE does not necessarily have in-house and the company will need to strike up new partnerships.

Collaboration and teamwork are important to him. Being brought up in Berlin, a city divided by a wall, has left its mark. He went on to work at the CERN laboratory in Geneva, studied for an MBA, and then his career took him into product development for Mack Trucks in the United States and Renault Trucks in France.

He joined Volvo CE 13 years ago, spending part of that time based in Singapore. This peripatetic working life is in stark contrast to the confined years of his youth and which, he says, has made him appreciate the importance of a wider perspective. "I believe the strengths of delivering certain projects come when people work together. It's something that I find very motivating."

COLLABORATION AND TEAMWORK ARE IMPORTANT

The Marketing and Product Portfolio team are not just looking at where to invest for the next generation of construction equipment – they also want to satisfy their customers today who are working with existing machines.

Here again, Bitter believes that rather than always focusing on the next new product, good services are essential and dealers need to be given the right tools to deliver customer satisfaction. "So if there's a shift that has to happen in our company it is from the search for a new product all the time to product maintenance – taking care of what we have."

The new team only started work in 2015 but if they get it right it should mean satisfied customers and satisfied shareholders. It cannot get fairer than that.

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CareTrack is the Volvo Construction Equipment telematics

EXPLORE AND INNOVATE

Volvo CE customers help shape tomorrow's construction machines

by Jim Gibbons / photographs by Gustav Mårtensson

Volvo CE prototypes put through their paces: the hybrid wheel loader and the cab-less, driverless hauler

In order to produce what customers will buy, it is crucial to listen to what they say they want. That may sound obvious, but it is the guiding principle behind Volvo Construction Equipment's research into electrification and autonomous vehicles. Volvo CE really wants to hear from its core customers – what they say may determine the next steps in the process.

Much insight and input comes from discussions with customers, according to Johan Sjöberg, a specialist in site automation. "We often talk to customers, especially key account customers, and get a lot of inspiration from them, from any problems they're facing. We bring these issues home and discuss them together in order to come up with new ideas on how to solve them."

The objective of September's Exploration Forum in Eskilstuna, Sweden was to bring Volvo CE key account customers and the media face-to-face with new solutions that could soon be doing their hard work with little or no human help.

WORKING ON IT

"This is a good opportunity for us to connect on the subject and talk about it," says Jenny Elfsberg, Director of Emerging Technologies at Volvo CE, talking about the ongoing research program into tomorrow's construction machines and how they will benefit customers.

"We are doing it because we believe in it, believe in electrification, and believe in automation. We believe it will make their work better, eventually helping the whole industry perform better and treating the planet better," she explains.

Elfsberg was speaking at the Eskilstuna test ground where Volvo CE's driverless wheel loader and cab-less hauler were being put through their paces. These are still experimental concept vehicles, not quite ready for the market or the workplace, although the next generation is just a hair's breadth away.

Presenting research material to participants in the Exploration Forum is expected to lead to further work being carried out in closer collaboration with customers.

"The reason we need to do this is that it all requires new competencies, partnerships and new processes," says Scott Young, program manager for electromobility. "And this is where we have to work together to find the most efficient and best way to bring the right solutions to the market for the customer."

Some of those solutions are close to completion – the technology is highly advanced but there remain a few wrinkles to be ironed out. Volvo CE seeks its customers' views on what they want, and what they think will work best and responds to their particular needs in the working environment.

"The products on show are not yet on the market," says Elisabet Altin, Director for Communications Technology. "Some of them may never reach the market," she admits. "By definition, innovation is something which is actually on the market, which is why we refer to 'exploration' rather →

Dave Ross

Jenny Elfsberg

than 'innovation'. We're exploring different concepts, conducting research along the lines supported by customers – productivity of course, but safety, too."

CLEANER, CHEAPER, SAFER

"We have talked to customers and the key demand is that the solution must be safe," says Uwe Müller, chief project manager for the electric site. "They have stated quite clearly: 'our people need to be safe and to feel safe'. That is really, really important to them." It is an aim that has underpinned the drive for greater efficiency and environmental protection. "People want to go on site, feel safe and work in that environment, so our target is to make it even safer than it is today."

Safety can be secured in different ways. Since a construction site or quarry can be a dangerous working environment, what better approach could there be than removing the need to work there at all? And that is where autonomous machines come to the fore. That does not mean worksites will be void of people, but according to research engineer Torbjörn Martinsson, they can stay safely out of harm's way with electrification and automation bearing the burden.

"With Volvo's advanced engineering we can do that now," he says. "And to some extent we're doing that with the electric site project – we go in, electrify but also automate production; not just single machine operation, but the complete process."

Jobs in the quarries and on the construction sites of the future are likely to be different and more pleasant, says Martinsson. "Instead of sitting in a machine for eight hours and bumping around, you'll sit in an office and deal with several machines, so your work will be more skilled," he says reassuringly.

Another advantage is that the technology is cleaner, which makes machines cheaper to operate. "Our experiments show that we can reduce the amount of CO_2 by 95% on a site using electrified machines and autonomous machines," says Dave Ross, Vice-President for Advanced Technology and Verification, "while at the same time raising the profitability by 25%. Or you could say reducing the total cost of ownership by 25%."

And all without sacrificing the work rate: the new machines on the demonstration site can still shift around 900 tonnes each hour, according to Müller.

FLEXIBILITY

Electrification is a great enabler from both an operational and design perspective, according to Young. "As one of the technical solutions it allows us a lot more flexibility in terms of product design and the way it works within the system – so, thanks to the way the product works in a customer's system, we gain more flexibility in its usage and greater efficiencies."

VOLVO CE IS PAVING THE WAY TO THE WORKSITE OF THE FUTURE

Of course, there is still a lot of work to do, but Volvo CE is paving the way to the worksite of the future. Martinsson explains: "First, we have the functionalities which are already in the machines – and are becoming smarter. Next we introduce the so-called automation, so the machine can do simple iterative operations. Then it will become independent: it will think, it will reason, things like that. So we could say that when we come to the third step we'll probably see a big change in how the machine will look."

With the advantages offered by electrification and autonomous machines, in terms of meeting environmental concerns, lowering CO_2 emissions and noise pollution, reducing operator costs, improving safety and providing a more pleasant working environment, this is one revolution that is unlikely to meet much opposition. As the American journalist Lincoln Steffens wrote of another, rather different revolution: "I have seen the future; and it works" – or it will very soon. ➔

Tomorrow's construction machines will help the industry perform better

Jimmie Wiklander in the cab of an adapted A25F hauler but the computer does the driving

Volvo CE's prototype autonomous wheel loader

It is a sight that takes some getting used to: a fully-loaded hauler without a cab, and therefore without a driver, trundling off to its next destination on its own. No human effort required: the machine does the thinking.

Volvo Construction Equipment's Joachim Unnebäck sees the cab-less, driverless hauler as the dump truck of the future. "It's not even hugely complicated," he says. "It's autonomous, but it's also an electric vehicle and when we go with electrification and automation we see that we can take away many of the machine's pieces and parts and simplify the base. We only keep the bare necessities, such as the big bucket, the simplified frame and the electric drivetrain. But it's totally different – it's a very simplified base loader with a simple drivetrain."

NO HUMAN EFFORT REQUIRED

– an operation it does on its own. It is fast, efficient and requires no human agent.

The new autonomous machines will prove safer for people working on the job site of the future. Torbjörn Martinsson, a research engineer, demonstrates another prototype, this time a wheel loader, a specially adapted L120E which requires no driver at all. Still diesel-powered at present, it thrusts forward, lifting a bucketful of rocks and gravel and tipping it nearby. As it goes forward a second time, Martinsson steps in front of it. The vehicle halts, remains still and sounds its horn repeatedly to warn him. As soon as he steps out of the way it continues its maneuver. With sensors such as these, the new-generation vehicles are able to avoid accidents more effectively than a human driver can.

ARTIFICIAL INTELLIGENCE

The machine uses artificial intelligence and is designed to work on fairly level sites, unlike the bigger articulated haulers, and on repetitive jobs.

"We have batteries on the machine which we recharge very often but very quickly," says Unnebäck, a specialist in autonomous vehicle systems. "We can refill the battery storage within one minute." In fact, the vehicle runs on a cycle of about six minutes, five of those spent on loading, travelling and dumping its load, and one on being recharged

HYBRID

The hybrid wheel loader under development at Volvo Construction Equipment is powered by batteries and a diesel engine can be operated in virtual silence. While the diesel engine is very small, the combined peak output of engine and batteries is much higher than that provided by the diesel engine in a conventional wheel loader of comparable size.

"The system is completely decoupled," explains Andreas Hjertström, chief project manager for the hybrid wheel loader. "The machine's batteries can provide full power to the loading unit and the propulsion system at the same time."

Not only do the batteries provide high power, but they also enable energy recuperation. "During braking, the electric motors work as generators and charge the batteries", Hjertström continues, "and when we lower the bucket it also generates power." This reduces the power needed from the diesel engine, lowers fuel consumption significantly and limits the environmental impact. "We are testing the hybrid, comparing it to bigger machines and can see that we beat them in productivity and, of course, fuel efficiency," says test engineer Mike Skantz.

THE MACHINE DOES THE THINKING

Skantz has been working with this hybrid loader over the last few years and highlights another striking aspect of the machine's power delivery: "At full throttle the hybrid machine can be completely silent but you still have all the power you need".

When the hybrid loader runs with the diesel engine switched off, it still has higher power capacity than a conventional machine. In this almost silent mode the machine can operate at full productivity for 20 to 30 minutes.

Even when the diesel engine is on, the hybrid machine is quieter than a conventional machine which needs a much bigger engine. This is an advance likely to make construction machines more welcome on urban sites where noise and pollution can be an issue. In addition to saving fuel and reducing noise, the downsizing of the diesel engine results in a more compact machine installation which gives much better visibility from the cab.

UNDER CONTROL

Meanwhile, an adapted A25F articulated hauler demonstrates how it can be maneuvered around a complicated course without an operator. It moves quickly and confidently without the man in the cab touching the controls. Jimmie Wiklander is a specialist in embedded software, but it is the bank of special computers that do the work. "They need to be able to do image processing," says Wiklander, "and to calculate and track objects, for safety reasons, so the computational power is much higher in this machine."

It certainly has to be for such a large vehicle moving through what could be a hazardous site, using GPS and LiDAR which performs 3D laser scanning. "We have different kinds of sensors," Wiklander explains. "The GPS system can actually locate the machine, with centimeter accuracy – if anyone is standing in front of it then it will stop automatically because we have to ensure it is safe."

Visit the *Spirit* website or download the *Spirit* app for the video report

WINNING A LANDMARK JOB

Due diligence and collaboration create a winning formula for this family business →

by John Krantz / photographs by Robert Polett


Rick Mixson (right) with Landmark project superintendent Mark Mitchum

From left: Landmark's Rick Mixson; Mitch Bailey, ASC; Cindy Mixson, Landmark; Larry Carroll, VFS

"As soon as this job came open for bid, I had the feeling that we had to win it. I went around the office and told everyone: 'This job is ours'." It was a bold declaration. The $69 million (€60.56m), 726-acre (293.80ha) site-work project at the future home of the first US-based Volvo Cars plant was far bigger than any Rick Mixson's Landmark Construction Company had completed in its 50-year history. The bid was open to every other earth-moving contractor in the south-eastern United States.

Despite this, Mixson was intent on winning the job. History shows that when the president of Landmark sets his sights on a job, his team is a force to be reckoned with – and one that other companies do not want to bid against. Behind this determination, and ultimately his company's success, is a driving force: family.

Founded in 1965 by Mixson's parents, Fredrick and Ann, the company has grown from humble beginnings as a small grading contractor to one of South Carolina's most successful utility, concrete and site-work contractors. With Rick and his sister, Cindy, at the helm today, the company has navigated tough economic conditions and emerged stronger. They attribute this steadfastness to a critical financial eye, a thorough approach to job estimating and a family mentality that extends beyond blood to a core group of long-term business partners.

"We look at things differently since the recession," says Cindy. As vice president of the company, she plays a role more typically associated with a CFO title. "It's changed the way we acquire equipment, the way we look at jobs and who we involve in the process."

SURPRISE

Based on the initial public information, the Landmark team was expecting the job to be in the $30 million (€26.33m) range – still a big step up from a typical $10 million (€8.77m) project. After a pre-bid meeting in which participants were able to ask questions of the project owners and their engineering team, it turned out to be much more.

"The meeting was open to any company capable of getting a big enough bond to complete the project," says Rick. "Eight or so serious contenders showed up, and by the end of the meeting, half of them had bowed out."

Rick left the meeting undeterred and the Landmark team sprang into action, dedicating 10 full-time team members to the estimating process for the next month.

"First, we needed to look at the site and determine exactly what we were up against in terms of soil conditions – what were the unknowns, and what potential contingency plans would need to be in place," says Rick. "Second, we needed to determine how we would build up our fleet to get the job done on time and budget."

Critical to these investigations were some of Landmark's long-term partners.

The combination of subtropical climate, high-clay-content soil and lowland topography in Charleston, South Carolina, is a perfect storm for unstable soil – a key concern for Landmark going into the bid.

"We spent weeks digging test holes and collaborating with soil engineers to determine a game plan for stabilizing the soil. We determined option one would be to move the dirt, dry it out, compact it and bring it up to elevation. Option two was to mix cement into the soil to stabilize it. In the end, we had to plan for both."

Next on the checklist was equipment. The first place they turned was ASC Construction Equipment, their long-time Volvo Construction Equipment dealer.

TEAMWORK

Landmark and ASC have worked together for 20 years, and building a fleet to meet the demands of a specific Landmark job was nothing new for either of them. But this time around, the stakes were incredibly high.

"A job this size can make or break you as a business," says Cindy. "We had to make sure the fleet was perfectly suited to the work and that the financing structure allowed us to be both competitive and flexible."

ASC started the process by enlisting the help of Volvo CE. "Based on project specifications and Landmark's plan of attack, Volvo CE used site-simulation software to analyze the most efficient sizing and number of machines, taking into account their production capacity and speed," says Mitch Bailey at ASC. "Together, we ran through a number of different scenarios and, ultimately, we came away with the most efficient combination: we knew they'd need 30 Volvo machines in total."

The largest job in Landmark's history would not only max out their current Volvo fleet, but would require the fleet to nearly double in size with the addition of 16 new machines. Included in the necessary heavyweights were Volvo EC480E excavators and Volvo A40G articulated haulers for the heavy load-and-haul work, as well as Volvo EC380E excavators for completing ponds, storm drainage and finishing work. Given the one-year project time line, a significant fleet expansion did pose some risk.

"The question naturally became: 'What do we do with all these machines when the job ends?'" says Cindy. "From a financing perspective, we needed something that came with all the benefits of leasing over renting, but allowed us flexibility to scale back and relieve our cost burdens when the job was done."

In search of a solution, they turned to their equipment-financing partner of nearly 20 years, Volvo Financial Services (VFS).

"We were able to develop a flexible leasing program for Landmark that was customized to this specific job," says Larry Carroll, regional sales manager at VFS. "It's structured like a traditional lease, but offers an early walkaway option at 12 months, so they're given the choice to either return the machine at the end of the job, continue on with a traditional lease or purchase the machine at fair market value – whatever makes the most sense for their workload a year down the road."

With due diligence complete, and a fleet make-up and financing structure determined, it was time to make the leap of faith. "$69 million," says Rick. "We put it out there and waited on the edge of our seats."

Having initially received word that another firm was the lowest bidder, it turned out that the terms of that bid did not meet the project owner's needs.

MIXED EMOTIONS

"All of a sudden, we started getting phone calls," says Rick. "I knew it came down to the fact that we were so thorough in our due diligence. We did all the upfront work to develop contingency plans, which solidified confidence in our team." →

For Cindy, the news brought a mix of emotions. “My immediate reaction was to celebrate. We were really excited,” says Cindy. “Then it hits you – okay, now we have to get this job done, and the clock is ticking. I’d be lying if I said I wasn’t a little nervous.”

The decision by Volvo Cars to build a production facility in South Carolina was spurred in large part by a surging demand in the United States. An aggressive project schedule was put in place – with initial land clearing starting in July 2015, Volvo Cars is aiming for the first automobile to roll off the assembly line by late 2018. When complete, the factory will be capable of producing 100,000 cars per year, creating 2,000 jobs initially. The impact of the plant is estimated at approximately $4.8 billion (€4.2b) in annual economic output.

Needless to say, there is a lot riding on this project, not only for Volvo Cars and the surrounding community, but also for Landmark. “We have no option but to stay on schedule – our livelihoods are on the line,” says Rick.

CHALLENGES

Running in five phases, the job entails transforming the sprawling, heavily wooded site into a ready-made, buildable property, complete with roads, ponds, elevated building pads and storm-water infrastructure. Doing so requires moving a lot of dirt in record time.

“In peak production, we’re moving up to 100,000 cubic yards (76.45m^3) of soil during a six-day working week,” says Mark Mitchum, project superintendent at Landmark. “That’s the schedule we have to stick to – rain or shine.”

And 2015 brought a lot more rain than shine. The year marked one of the wettest on record for the region – something that could have incurred delays from a lesser contractor. Fortunately, between equipment and contingency plans, Landmark stood ready to meet the challenge.

“Often, there’s not enough time to dry the soil in between the rain, so we’re using a Volvo A25 truck equipped with a spreader to mix cement into the soil before we compact it with our Volvo rollers,” says Mitchum. “The Volvo A40s are helping keep us on schedule during heavy rain. With their light footprint, they never bog down in the mud and we can run them at full capacity.”

Of course, dirt can only be moved if the equipment is moving, which is why Landmark and ASC developed a customized service agreement specific to the job.

“They actually set up a canopy on site, stocked with all the common replacement parts, and they’ve had a full-time mechanic on call for us,” says Mitchum. “They’ve also taken care of all planned service intervals on evenings and weekends, so that it doesn’t disrupt our operations. The service has been impeccable.”

IMPACT

As the job nears completion, the Mixson siblings are aware of the impact this high-profile project will have on their business – and what it has taken to get there. “It has really put the family business on the map. General contractors and our customers will look at us differently now,” says Rick.

It has changed how Landmark looks at itself, too. “Some might look at such a big job and think that it’s a lot of risk for the business, but if you go in identifying what all those risks are, and you prepare for them, there’s really no reason we can’t tackle a huge job like this.”

This landmark achievement opens a new chapter for the business – one that will undoubtedly continue to be driven by the family mentality.

“It takes a team,” says Cindy. “We make a good team at Landmark, but it can’t be done without our team of partners. We consider Volvo, VFS and ASC our extended family.”

Visit the *Spirit* website or download the *Spirit* app for the video report

VOLVO CE USED SITE-SIMULATION SOFTWARE

REACH FOR THE SKY

Volvo CE's latest demolition machine is proudly sticking its neck out →

by Cathy Smith / photographs by Juha Roininen

THIS IS PRECISE DEMOLITION

Operator Aalt Witman (left) with Duco Pater, Regional Sales Manager, Kuiken


Passers-by are fascinated

Aalt Witman laughs as he describes the butterflies he felt in his stomach as he was about to start up the newly delivered Volvo EC480EHR ultra-high-reach demolition machine for the first time.

The Dutchman might have 23 years of experience as an operator but the boom he is more familiar with is just 11 meters long, not 28 meters like this one.

"It was a real challenge" he says. "The first time you look up into the clouds, it's just…wow…you get a real fluttering in your stomach, but it gives you such a kick."

This is the first of Volvo Construction Equipment's new E-series ultra-high-reach demolition machines to be working in the Netherlands. Yet after just a couple of days in the cab, Witman is confidently tearing down what was once the maternity wing of Weezenlanden Hospital in the northern Dutch town of Zwolle.

Local residents, walking or cycling by, stop and watch from behind the metal grille of the demolition site – sometimes as many as 50 people at a time are gathered. Passers-by are fascinated by the long-necked machine, looking alarmingly lifelike as it pecks away at the masonry. Where the brickwork is particularly tough, the crusher head chews and gnaws harder and a large chunk of wall collapses to the ground leaving a gaping hole in the building, suddenly revealing the hospital stairway inside.

"This is precision demolition," observes Erik Zwerver, the commercial manager of Boverhoff, one of the largest demolition companies in the Netherlands. "Everyone thinks demolition is dirty and rough but it's like building backwards – you have to be very precise."

Zwerver says the Volvo machine's specifications, including an engine system that meets the demanding Stage IV (EU) and Tier 4 Final (US) emission reduction requirements, with its accompanying low noise level and improved fuel efficiency, gave it the economic advantage over potential competitors as far as Boverhoff was concerned. The hospital's town-center location means the work has to be done with minimum inconvenience from dust, noise and vibration to people living nearby. The height of the machine enables the buildings to be brought down in 'small bites' and in a few days' time the delivery of a multi-demolition extension boom will increase the working height even further to 31 meters.

MEMORIES

This is currently one of the biggest demolition sites in the Netherlands and is noticeably changing the skyline of the town of Zwolle, in what is one of the largest growth regions in the country. In place of the 1960s hospital, nearly 300 new homes will be built. For some of the demolition crew it has been an emotional job. As Erik Zwerver points out, "Everyone has footsteps in the hospital – both good and bad memories."

One of the crew had to dismantle the morgue, which was where he said goodbye to his father. Another, happier story was that of a worker who demolished the hospital room where his mother-in-law had recovered from serious illness.

For machine operator Witman, there is no time for sentimentality. For him, the first priority is staying safe and, as he puts it, getting home each night to have dinner with his family, which he says his new machine helps him to do. He likes the high-visibility cab, the extra cameras and the 30-degree tilt which makes looking upwards more comfortable. An 8-inch monitor in the cab enables good communication between machine and operator; another great feature is the total moment indicator, which flashes a warning if the machine is in danger of destabilizing.

For Boverhoff, the selling features of the EC480EHR were not just the increased height and heavier tool weight (3.5 tonnes) but also the fact that the machine was purpose-built for demolition by Volvo CE. And since Boverhoff specializes in demolishing big and complex structures, often in urban environments, the machines need to be easy for the company to move from site to site. The new electro-hydraulic system with retractable undercarriage and hydraulically removable counterweight makes road transport much simpler, too.

BATS ALIVE

There were also environmental considerations. Before work could begin the company had already cooperated with the authorities to rehome a colony of 5,000 bats, which had taken over the disused hospital buildings. Once the demolition started it was the turn of the machines to show their eco credentials – the low-emission engine in the new E-series machine has surprised everyone with its low noise level and low fuel consumption.

Boverhoff owns more than 20 crawler excavators in the 30 tonne class and higher, 16 of them Volvo machines, some of which are also working on this site. An additional Volvo EC380E is on its way to Boverhoff and the company also owns four Volvo wheel loaders. All Volvo machines were supplied by the Volvo CE dealership Kuiken. Duco Pater, the regional sales manager, has come to see the latest addition to the Boverhoff fleet in action.

Pater watches the delicate movements as the jaws of the machine clamp on to the edge of a hospital window and pull down more brickwork: "This guy really knows what he's doing," he marvels.

"Boverhoff is a real ambassador for Volvo CE and it is very nice to see what you have sold actually start its work."

Visit the *Spirit* website or download the *Spirit* app for the video report

HAULERS ON ICE

Volvo articulated haulers carrying supplies and equipment over a glacier to a remote underground gold mine in the Canadian province of British Columbia close to the Alaskan border are fitted with tire chains for the perilous crossing →

Photographs by Talon Gillis

A fleet of Volvo Machines, including four articulated haulers, two wheel loaders, and three excavators, are owned by contracting company Tsetsaut Ventures, named after the Tsestaut Raven Clan which has occupied the sacred headwater region since time immemorial.

This Volvo EC220D excavator is used all year round and in all conditions to preserve the glacier highway and keep the road open. Ice is more challenging to work with than dirt. As the day warms up, the glacier erodes, and creeks in the middle of the road turn into small rivers, diverted to drainage ditches. These need daily maintenance and the operator must fill and seal cracks while being careful not to remove too much ice.

Volvo CE dealership Great West Equipment of Terrace, BC, working with Tsetsaut Ventures, modified several articulated haulers, including this A40G, by removing the dump bed and fitting it with a deck. The haulers load up at night and drive in convoy over the glacier to the mine in the morning. They reload with refuse from the mine and then make the return trip.→

Tsetsaut Ventures was started by Tsetsaut descendant Chief Darlene Simpson of the Tsetsaut Nation and her husband George Simpson. Through Tsetsaut Ventures, the First Nations supply the gold mine with machines, manage work camps and provide peripheral personnel. The company has become the largest employer in the region, which has one of the highest unemployment rates in the province, of both Aboriginal and non-Aboriginal people.

Shawn Matheson, sales representative for Great West Equipment (left) with Tsetsaut Ventures excavator operator Richard Pattison responsible for glacier maintenance, who says his remote job working with glacier ice is a “once-in-a-lifetime” project. Tsetsaut Ventures specializes in maintenance and freighting on the glacier highway, pioneering reliable access over the glacier.

William Joe is one of a team of ten articulated hauler operators at Tsetsuat Ventures working shifts to make sure the mine is supplied seven days a week. The distance across the ice from load to unload is 10km and a one-way run takes an hour. Operators make an average of three or four trips per working day.

Operators are modern-day pioneers and must be constantly observant and on the lookout for potential danger. The weather is volatile with more than 30m of snow per year and the glacier moves constantly, changing from day to day. Operators learn never to trust a pothole.

JOB SATISFACTION

Praise from a UK demolition team does not come much higher than this →

by Tony Lawrence / photographs by Dean Atkins

Ian Watkinson

Matt Wright


Peter Lees


David Skillings

"top-quality machines are key for us", "everything we do starts with safety", "we recycle all the materials", "back-up and service is paramount" – and he could be quoting directly from Volvo Construction Equipment's core values.

WARRANTY

Things really changed for him when he bought his first EC700 to tackle a big job in London. "It had done about 3,000 hours, and we also bought a hammer to tackle meter-thick reinforced concrete slabs and foundations. It was a breakthrough. The job went really well and the machine never missed a beat. We then knew we had the firepower to sort anything out."

He also recalls receiving some good advice. Bill Holcroft, Volvo CE's sales manager for the north-west of England, recalls: "I persuaded him to take out his first full service warranty. This type of work is very, very hard on machines, so breakdowns come with the territory. And if one machine breaks, it has a knock-on effect on the whole operation.

"Previously, he had had problems with back-up for his non-Volvo machines, because his local dealers kept changing hands. With his warranty, though, he was dealing with the Volvo service network right across the country. We do everything for him now. He said it was the best advice he ever got."

Indeed, things rarely get tougher than demolition work. Skillings now has seven, specially reinforced Volvo excavators of various sizes. Over the years, they have worked on a huge variety of projects, ranging from office blocks, factories and paper mills to power stations, nuclear bunkers and bomb-proof hangars at US Cold War airbases.

Skillings tends to deflect credit for his company's continued success. "I am blessed with good men," he says. "They all want to do well for the company – it's all about doing a good, safe job. It's about quality not volume, and job satisfaction. I listen to the guys. They have to be happy with the equipment. We have a very low staff turnover."

SAFETY

Site manager Peter Lees has worked alongside Skillings for almost 30 years. He has loved excavators since he was at school. "You can't not like a Volvo," he says. "They are so reliable and so user-friendly. This is proper work, so they will have problems, but the key is to fix them quickly. And Volvo fix them quickly."

Operator Matt Wright is a relative newcomer, having done four years with Skillings. He highlights the "super-smooth hydraulics and the responsive controls and the cab comfort – I'm generally working on concrete but the cab dampers and the air-seat mean there are no aches and pains at the end of the day – and if you don't get tired you don't make mistakes".

Ian Watkinson, who operates the EC700C and is another 30-year demolition 'veteran', concludes: "I love them, they're fantastic. They sit really well, whatever the terrain. They make you feel safe and they're a great tool to have in your arsenal. Turn on the key and the machines starts – instantly and every time.

"If David replaces the Volvos with other machines, well, I'm gone!"

YOU CAN'T NOT LIKE A VOLVO

One minute there is a five-meter high wall of reinforced concrete dominating the jobsite, the next minute it has gone. After a moment or two of resistance, the structure starts melting away, like a slab of butter on a hot day.

"Proper kit, that is," says David Skillings, in his broad Lancastrian accent. "The machine's never been beaten by anything it's tackled."

The Volvo EC700C excavator, supported by an EC300E, are both owned by Skillings Crushing Company Ltd and they are dismantling four clean water-storage tanks near Doncaster, in the north-east of England. The foundations are also being drilled out as the site is prepared for housing.

The excavators, armed with quick-fit, hydraulic rotating pulverizers or 'munchers', look like two Tyrannosaurus Rex dissecting a carcass. While the 70-tonne machine brings down the walls, the 3¬0-tonner crushes the concrete into smaller pieces and carefully picks out and removes the mangled steel reinforcing bars. It seems an apt image except that T-Rex weighed in at under 10 tonnes and was a mere four meters tall – the EC700 has a standard reach of 11.46 meters.

Later, the concrete will pass through one of the company's crushers to be ground down into aggregate for reuse on site. In all, around 5,000 cubic meters of concrete will be processed. Each year, the company, which specialises in demolition and remediation projects throughout the UK, deals with around 400,000 cubic meters of material, weighing 800,000 tonnes.

Skillings started the Burnley-based company with his wife Jan almost 20 years ago. He set out as a one-man band after spending his early career working for other firms, built up the business and now employs 17 staff as well as running a fleet of 20 machines, including excavators, two crushers and a bulldozer. He was never going to do anything else. His father ran a plant hire company before moving into quarrying and his son was driving excavators and bulldozers around by the age of 11.

LUCKY BREAK

"I was lucky," says Skillings. "When I started out alone, the idea of building new homes on brownfield sites was just taking off. I was well connected to a contracting remediation company, so there was plenty of work from the start."

His first Volvo arrived in 2005. "It was a 45-tonne excavator, an ex-demonstration model and at the right price," he recalls. "I had been buying cheaper, new machines until then, but prices had gone up so I thought: 'Why not buy the better equipment?' I knew all about Volvos since I had always used their dump trucks and Åckerman (later bought by Volvo) excavators. When I eventually replaced that first Volvo, I sold it to a quarry – they've still got it."

In truth, Skillings was probably made for Volvo, just as Volvo was made for Skillings. Listen to him speak:

Wenming Li (left) and Zenchao Wang

ACHIEVING TRACTION IN THE USED EQUIPMENT MARKET

In China's evolving economy, forward-looking companies such as Volvo CE are driving change

by Michele Travierso
Photographs by Daniele Mattioli

At the turn of the century, the Chinese economy was humming along, growing at double-digit pace. Thanks to the huge government-led investment in infrastructure – road networks, railways, water systems and mining to fuel it all – Volvo Construction Equipment grew a healthy 30% year-on-year for around a decade. Equipment flew off the shelves, with more than 30,000 Volvo CE units delivered during that period.

In 2011, China alone absorbed close to 40% of the global demand for new excavators, with approximately 178,000 units delivered. Then, in 2012, history's largest money-spinner came to a grinding halt. Foreign direct investment and exports – two pillars of the Chinese economy – started to stutter and the country began to experience growing pains.

Since then, Beijing has been trying to shift the main growth from investment, to consumption of services, using various carrots and sticks to steer the gigantic economic machine. And, at Volvo CE China, they have noticed the difference.

First, the commodities bubble burst. "We can't quite say 'the age of the big machines is over', but other products will have better prospects," says Francis Sum, president of Volvo CE's sales region China, referring to lower demand for the large excavators and articulated haulers used in mining operations. "The transition, however painful, is inevitable."

"Last year, the overall drop in China's total market volume was around 70%," explains Leo Zhao, vice president of used equipment, sales and operations for Volvo CE China. That said, even "in a low, challenging market like this, the country still absorbs 45-50,000 new units a year," he adds.

DEMAND

In short, both Sum and Zhao agree that these momentous economic shifts are changing two key factors: the size of the equipment being used and the way it is sold – or rented. Sum explains that the first change is happening before their eyes. In 2016, for the first time, "we saw the market for compact machines – those weighing 10 tonnes or less, grow much bigger than that of heavier general-purpose equipment, which traditionally has been much stronger." ➔

Francis Sum, president of Volvo CE's sales region China

Pei Zhu

From left: Jack Wang, Kelvin Yu, Zenchao Wang, Zhiming Wu, Qingsong Wang, Leo Zhao, Vincent Ma, Dan Zhou, Wenming Li, Michael Xu, Liqun Wang, Shoutuan Yang

Besides using smaller machines, the market is reacting to tighter money supply by buying second-hand or renting. According to industry insiders, the used-equipment market is three to four times larger than that for new units – although there are no official statistics to confirm this. Volvo CE is tackling this virtually untapped market by stepping in and taking control, bringing to the game the values that have made Volvo CE famous: quality, fuel efficiency and durability.

Volvo CE has set up a buy-back program to help its dealership network avoid being inundated with requisitioned equipment. "When government investment began to shrink, the banks started to tighten financing, which caused some of our customers to default," says Zhao. "There was just not enough construction going on to sustain them all." So when they could not repay their loans, they returned the machines. Dealers are suffering from this, he continues. "Ultimately, with the program, we improve dealers' cash flow and their profitability."

PRICING

Valuing second-hand equipment of any kind is tricky, let alone machinery of this size. "Pricing used equipment is never easy," says Kevin Yu, head of used equipment evaluation and operations. "We follow global buy-back metrics, and apply them to the realities of the Chinese market."

On the evaluation site, Yu and his team carry out simple repairs, such as changing side doors, or parts of the undercarriage most vulnerable to damage. The Shanghai headquarters houses two workshops, one for used equipment and one for remanufacturing components (*featured in **Spirit** issue 52*). Both are spotless, by workshop standards. Work benches are covered with every engine component imaginable – some just need cleaning while others will be retooled or replaced. Yu says that reassembly normally takes about one to two days.

VOLVO CE IS TACKLING THIS VIRTUALLY UNTAPPED MARKET

The difference between China and the rest of the world is still striking. In developed markets, a sizeable percentage of the machinery is sold to rental companies. Of course, renting allows end-users to free up capital for other uses and lowers maintenance costs, since any major overhauls are usually undertaken by the rental companies.

In China, the rental trend is just beginning – it has been hampered by various taxation and accounting rules – but thanks to a series of contingencies, Volvo CE is particularly well suited to exploit this. Traditionally, the Chinese have frowned upon renting. People still associate ownership with wealth and renting with being poor. This mentality has existed in private companies, too.

RENTABILITY

Nevertheless, the rental market is growing. Shanghai Pangyuan Machinery Rental Co. saw its turnover increase in 2014/15, when sales of new machines dipped. With a workforce of approximately 4,000, they have 32 rental centers in the whole of China.

By comparison, the world's largest machinery rental company, United Rentals, boasts 888 rental centers with 12,500 employees located across the United States and Canada. Bridging this gap is a huge business opportunity which Volvo CE wants to be part of. "This is something our dealers will have to do," explains Zhao. "It takes manpower and you have to be close to the potential buyers, too." The company is also developing more incentive packages, such as financing support, Volvo Financial Services and special pricing to encourage dealers to be proactive.

Volvo CE has one great advantage in the rental market: its equipment has a much better fuel efficiency than that of its competitors. "When you're renting, you're more worried about running costs than purchasing costs. When your monthly fuel bill is 10% to 20% cheaper, you start to notice," explains Zhao.

At the moment, second-hand sales still offer the greatest opportunity. But how does someone sell a 10-tonne second-hand machine in China? No sales channel is spared in a country where consumers are able to buy pretty much anything through their smart phones (which currently number more than half a billion in circulation) including, it would appear, second-hand excavators.

Via the country's most popular mobile application, Wechat (or Weixin, as it is known locally), potential customers can connect to Volvo CE's official account. Users find details and pictures of second-hand machinery, reconditioned by official Volvo CE dealers and, with a simple click, can connect via messaging or call local depots to arrange a visit and a test. In a few cases, used equipment is also sold outside the country, especially to Africa, where large (often state-owned) companies have large infrastructure projects.

At the end of the visit, one question remains: is business ever going to be as good as it was before? "We should be better than we were – and we will be, without doubt," concludes Sum. "The external environment is the same for all of us, the only difference being how quickly and how well we adapt."

CONSTRUCTION GOES CIRCULAR

Green manufacturing and life-cycle planning are the new buzzwords as industry adapts to the circular economy

by Nigel Griffiths

The COP21 climate summit in Paris last December showed how business and industry are getting strongly behind moves towards 'green' production, smaller carbon footprints and better resource use. While politicians have wavered about climate change, much of industry now embraces the idea of the 'circular economy' and a full life-cycle planning of its products and processes. In fact, major players in the construction sector, such as Volvo Construction Equipment, have been leading the field in promoting the better use of resources.

One of the strongest voices calling for climate action and resource efficiency has been the European Union. It has drawn up a comprehensive strategy for refocusing European economies around the idea of the circular economy, cutting energy consumption, reducing emissions and using resources sustainably. A core element of this relates to the construction sector.

"Research shows that the building sector is one of the biggest resource users in our society," says Josefina Lindblom, environment policy adviser at the European Commission. "Construction uses about 50% of our extracted materials and more than 50% of our energy. One-third of water goes on buildings in one way or another, and more than one-third of our total generated waste is construction and demolition waste."

While everyone is promoting green buildings there seems to be no common understanding of what a green building actually is. Everyone has different ideas, according to Lindblom. "Many people just focus on the use phase of a green building, but we think it should be a wider approach that looks at the full life cycle – extraction and production of the materials, the construction, use of the building and its demolition," she explains.

In 2014, the Commission published a strategy document on 'Resource Efficiency Opportunities in the Building Sector'. This identified the need for a common European approach to assess the environmental performance of a building throughout its life cycle. To achieve this, a three-year study is currently under way to identify a common EU framework of indicators to assess the environmental performance of buildings, which is to be adopted in 2017.

GOOD INDICATION

Groups of industry stakeholders have been working closely with Commission experts to help guide the process. A public consultation is being carried out and a set of common indicators will be presented by the end of this year.

"We aim to develop a tool with a handful of indicators to allow reporting between the actors. By having a common language – core indicators – we can help influence decisions along the value chain," says Lindblom. "By agreeing on a common language and indicators, we will have comparable data that will help support the business case for green buildings. It will also support the transfer of good practice in the mainstream market. We aim to provide something simple to use that is suitable for the standard, mainstream market."

Sweden has taken the lead in pushing for better resource efficiency in construction. The Royal Swedish Society of Engineering Sciences (IVA) has undertaken a ground-breaking study which showed that the carbon footprint of Sweden's construction sector is as great as that of the whole automotive sector.

In large infrastructure projects, the biggest generator of carbon emissions is not construction vehicles – machinery, excavators, haulers, lorries, etc – but the production and use of construction materials – concrete, cement, asphalt, reinforced steel, etc, which account for almost 50% of the carbon emissions produced by a project.

This year, armed with this evidence, Sweden has taken action at national level by setting carbon emission requirements for large infrastructure projects (more than €5 million). This measure came into force in February and requires a 15% reduction of carbon emissions by 2020.

WE CAN HELP INFLUENCE DECISIONS ALONG THE VALUE CHAIN

Many countries now require an assessment of the environmental cost of construction projects for public projects. For Europe's largest infrastructure project, the 230-km high-speed rail (H2S), carbon impact assessments are closely integrated into all design, procurement and construction processes, as a government requirement.

France now has an online carbon calculation system known as the éco comparateur (SEVE), which can be used by contractors bidding for public works projects. In the Netherlands, the Ministry of Transport, Public Works and Water Management has introduced a green procurement process which uses DuboCalc, an environmental assessment tool to compute the environmental effects of the complete project life cycle. A contractor's bid will today comprise its solution, its price offer and the environmental cost indicator value that is calculated with DuboCalc.

EARLY ADOPTERS

In 2014, Volvo CE initiated the Climate Construction Challenge (CCC) to bring together the key players in the construction sector to reduce the carbon footprint of the entire construction process.

"Through the CCC, we have created a platform for dialogue with industry, academia, government and NGOs which is promoting sustainability, life-cycle and resource-efficient thinking throughout the entire construction industry value chain," says Magnus Bäärnhielm, CCC project manager.

Josefina Lindblom, environment policy adviser at the European Commission

Magnus Bäärnhielm, CCC project manager

THE SCIENCE OF SUSTAINABILITY IS GETTING CLEARER

As part of its work program, CCC has commissioned research projects in key areas, in particular circular business models, resource and energy efficiency, collaboration along the value chain and innovation and emerging technologies.

Volvo Group as a whole has teamed up with the highly respected environment body the World Wildlife Fund to support its Climate Savers program and to set and meet company-wide goals to reduce carbon emissions.

"The science of sustainability is getting clearer, which makes it easier to communicate and create awareness," says Volvo CE President Martin Weissburg.

"We need to work together on a collaborative basis to make sure that governments, the market place and all participants are driving the mechanisms and the units of measure to make it more obvious what needs to be changed and to put some rules around this so that change occurs."

WELCOME TO THE CONSTRUCTION INDUSTRY CLIMATE INITIATIVE

The Construction Climate Challenge is hosted by Volvo CE to promote environmental awareness in the construction industry. We aim to create a dialogue between industry representatives, academics and politicians, as well as providing funding for new research and sharing existing knowledge and resources to help the industry make a difference for generations to come.

Volvo CE has long been committed to reducing harmful emissions from its products and facilities. But climate change is too big of an issue to be dealt with through the resources of one company alone. As acknowledged in 1972 by former Volvo Group President and CEO Pehr G. Gyllenhammar: "We are part of the problem – but we are also part of the solution."

Read more about the Construction Climate Challenge here: **constructionclimatechallenge.com**

CONSTRUCTION CLIMATE CHALLENGE™

HOSTED BY **VOLVO CONSTRUCTION EQUIPMENT**

Project Pescar scholars

LIFE-CHANGING OPPORTUNITY

A Volvo CE dealer is reaching out to troubled young people

by Sam Cowie

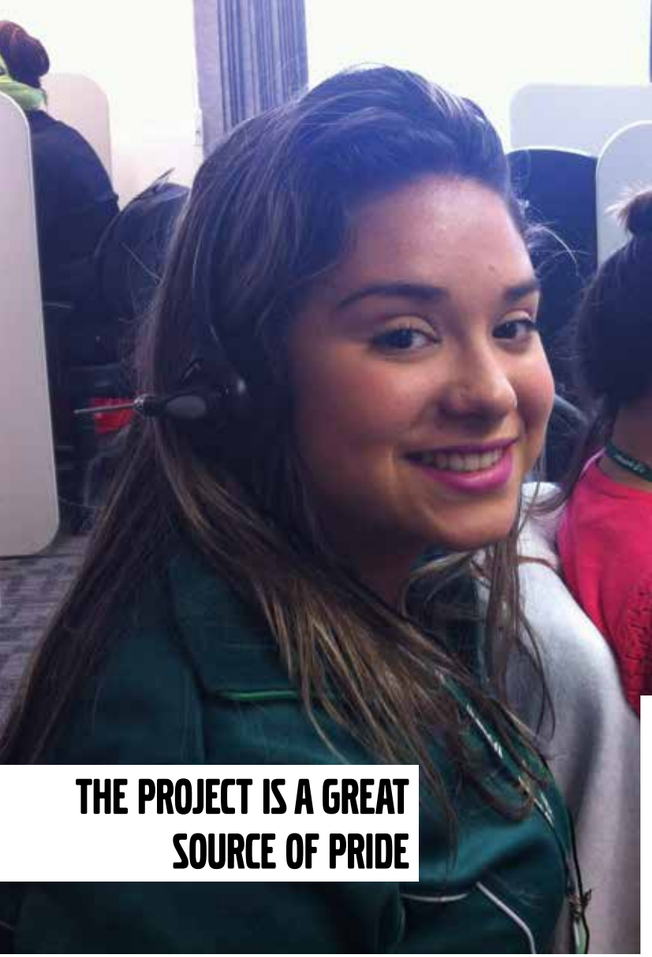
Photographs courtesy of Projeto Pescar

For Rodrigo Linck, owner of Brazil-based Volvo Construction Equipment dealership Linck Maquinas, a successful company is about more than just profit. It is all about giving back. "We believe that a company has a social function," he says. "It has knowledge and values to pass on."

The team at Linck Maquinas is responsible for *Escola Tècnica Geraldo Linck*, a school named after Rodrigo Linck's late grandfather, who founded it in 1978, where vulnerable teens can study to become professionally qualified to give them a chance of a prosperous, self-sufficient future. The idea for the school came after the founder witnessed a young boy robbing an old woman.

The school, located in the Southern Brazilian state of Rio Grande do Sul, was the first of what would go on to become *Projeto Pescar*, a franchise of corporate social responsibility ventures. Today, it has more than 100 branches throughout Brazil, along with others in Argentina and Paraguay.

Vulnerable youngsters, aged 16-19, are chosen from needy communities according to how at risk they are, and attend the school during the evenings. Project Pescar provides ➔



THE PROJECT IS A GREAT SOURCE OF PRIDE

practical training to help them enter the job market when they graduate. Furthermore, according to Linck, the project teaches them the value of hard work and citizenship.

"The project is really changing lives – it not only provides a professional referral but changes the way young people are thinking and behaving," he says. The motto of the 'Fishing Project' is "don't give fish, teach to fish", and to date nearly 10,000 young people have qualified for the job market, thanks to Project Pescar.

AT RISK

With abundant natural resources and a diverse and sophisticated services industry, Brazil has the third-largest manufacturing sector in the Americas and the Brazilian economy has been predicted to become one of the five largest in the world. The crime rate remains relatively high with UNICEF estimating upwards of 10,500 children and adolescents killed every year, and the country witnesses more than 50,000 homicides annually. However, there are huge differences between the crime rates in different Brazilian states, with the majority of victims poor young black men, living in vulnerable communities such as *favelas* or in the periphery regions of metropolitan areas.

Now, more than ever, in the midst of an economic downturn, the importance of Project Pescar should not be underestimated.

The Geraldo Linck Technical School helps young people avoid Brazil's poverty and violence traps by setting them on a path to self-sufficiency. The youngsters attend classes in technical studies, such as mechanics and electronics, as well as administration and commerce.

Thanks to the school's outstanding reputation, businesses in the region recruit candidates directly from the school and, according to Linck, 100% of the young people in the class of 2015 had been employed by the end of the course – some of those by Linck Maquinas.

"After nine months, I could see the other side of life," says Jorge William Bogiel Da Silva, who joined the school in 2009, aged 17, and today works as a salesman for Linck while studying for a business management degree. "What really made me a better citizen was working with other professionals within the Linck company."

IT IS ALL ABOUT GIVING BACK

Rodrigo Linck

SMALL BEGINNINGS

Linck Maquinas was founded in 1955 when Geraldo Tollens Linck decided to start his own business, with a small amount of start-up capital and a second-hand Volkswagen Beetle, working out of a small garage. He died in 1998, leaving behind a business respected at the national level in the heavy-machinery market and a legacy in the form of Project Pescar, which continues to change the lives of thousands of vulnerable young people in Brazil every year.

"The project is a great source of pride for the entire team here at Linck, especially for me. I have the privilege of witnessing each day the fruits of my grandfather's initiative," says Linck.

For him, there are many special moments in the project, but each graduation ceremony stands out. "During the graduation it becomes clear that the project not only forms young professionals, it also transforms lives," he concludes.

MINE CRAFT

Moving up in the world

by Michele Travierso / photographs by Daniele Mattioli

Born and raised in Dehong, a town on the China-Myanmar border, Yu Wei Quan is a softly spoken 29-year-old machine operator at the Jinning phosphate mine near Kunming, Yunnan, a mountainous region in south-western China. The Jinning mine is one of four open-pit mines owned by the Yunnan Phosphate Chemical Group Company, itself a subsidiary of China's state-owned Yunnan Yuntianhua Company Ltd *(see **Spirit** Issue 59)*.

The mine sources the phosphate that China has needed to feed its population over the past three to four decades, it being a staple of modern sustainable agricultural techniques. Yu's role is to move the ore and the broken pebbles from the top of the 2,450m-high mountain to a collection site at the bottom of the pit.

The border town where Yu comes from, some 900km away from the outskirts of Kunming where the mine is located, is well known in China as the epicenter of a thriving jade trade. Sourced and cut in the hills of Myanmar, jade has enjoyed a semi-holy status among the Chinese who use it for jewelry and ornamental sculptures.

"When I drove home during the last Chinese New Year, I went into Myanmar with my father," says the amiable Yu. "I like to help him out with his business and, who knows, maybe one day I'll run my own," he adds with a smile. Getting to know jade "is a good hobby and can be a good business, too".

OPPORTUNITY

However, although Yu is still undecided about his future, he is no novice at the mine. He has been with the Jinning phosphate mine for almost eight years now. In 2006, after a friend mentioned there were job opportunities at the mine for those able to follow training, he enrolled in a vocational school in Dali, a famous tourist destination in the region. "I knew that the mine's HR department went there to hire recent graduates, so I decided to try my luck," says Yu.

In July 2008, he was hired right out of school, where he learned to drive and repair heavy-duty vehicles. A few months earlier, the Jinning mine's parent company had →

started to acquire Volvo articulated haulers, so he drove nothing but Volvo haulers. Purchasing decisions are made by the company with input from operators working at the mine, who opt for Volvo machines for reasons of efficiency and safety.

Familiar with the mine's fleet of 40 Volvo A40 articulated haulers - a combination of D, E and F series - Yu speaks about each series with confident knowledge, but also affection. And he is not shy in pointing out his favorite either: "I like the F series the best!" he says enthusiastically. Asked why, he's quick to praise the machine's climbing power and comfortable cabin. Although the roads that connect the open-pit mine to the collection area are steep, the mine's fully-loaded haulers maintain a brisk pace uphill.

FULLY-LOADED HAULERS MAINTAIN A BRISK PACE UPHILL

Yu is also content with his working conditions. "The mine operates on three shifts," he explains, "but even when we have seniority status, we are assigned to each shift on rotation." Upon arriving at the mine, usually a few minutes before the previous shift ends, Yu meets up with the previous operator and quickly checks the condition of the vehicle. "There might be issues or I might need to refuel, but the handover process generally only takes a minute," he explains.

He goes on to reveal the advantages of each series, saying how he learned – and taught others – the 'personalities' of each machine. He says he is "one happy driver, because I spend my days on a safe machine and not everyone can say that in this industry".

Volvo machinery delivers superior performance, unrivalled back-up and is the first choice for operators. But they are not our words. We've spoken to real Volvo customers, operators and enthusiasts. They've told us their experience – scan the QR code or join the #50YearsAH discussion online to experience it for yourself.

http://opn.to/a/SP_Exp_A

BEING THE FIRST **KEEPING THE LEAD**

Volvo Construction Equipment

VOLVO