VOLVO CONSTRUCTION EQUIPMENT MAGAZINE

ISSUE 58
MARCH/APRIL/MAY 2016

spirit

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Mining in Ghana

HIGHWAY SURGERY
In the heart of Florida

PATAGONIA PIONEERS
Pipe-laying in Argentina

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Solutions are the key to success at Volvo Construction Equipment

At Volvo Construction Equipment we have a saying: there are no problems, only solutions. This issue highlights just a few of the many creative and innovative ways whereby our personnel have come to the rescue of our customers worldwide with new ideas and original solutions.

Our Inside Track interview with Koen Sips (p.6), explains how the company has also developed a range of sophisticated services designed to improve machine uptime, efficiency and safety, increase productivity and enhance fuel efficiency.

The synergy between Volvo Construction Equipment and Volvo Trucks is playing a significant role in helping a gold mine in Ghana (p.25) reduce production costs – the Volvo Group is unique in the industry in its ability to offer on-road trucks and off-road machines with their compatibility being just one of the multiple benefits.

And when times are hard, we have come up with a unique proposition that offers savings of at least 40% on the price of a new machine: Volvo Construction Equipment is going global with a rebuild program that started in the French market a few years ago (p. 30) enabling dealers to completely restore an old machine, making it as good as new by rebuilding it from the inside out.

When it comes to brand-new machines, visitors to bauma 2016 in Munich will have an opportunity to see our new EWR150E short tail swing wheeled excavator in action in the outdoor arena. It is an incredible state-of-the-art achievement – read all about it on page 38 – and the ideal excavator for the urban environment.

A Swedish railway contractor (p.34) helped engineers from Volvo CE and its partners to design and develop a rail application for the EWR150E. He says he hopes to replace existing excavators in his fleet of 20 machines with several of the new models and has already bought the first one. He also told us he plans to take his 14-strong team of operators to visit bauma where he – and everyone else – will be able to find out what other surprises Volvo has in store. Find us at two stands (indoor C4:327 and outdoor FM510) – we look forward to meeting you there.

THORSTEN POSZWA
Global Director
External Communications
Volvo Construction Equipment

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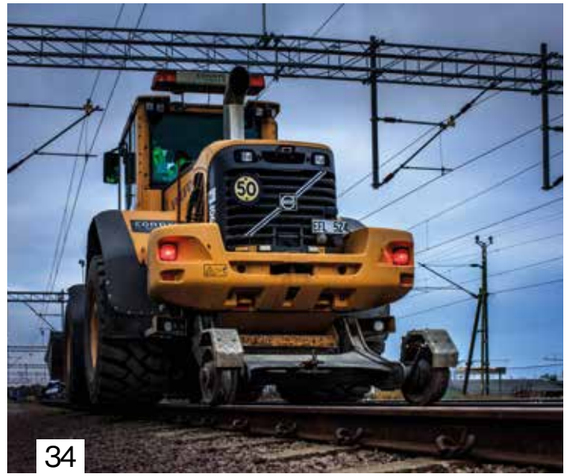
ON THE COVER

One of four Volvo PL3005D pipelayers playing a part in Argentina's energy revolution, operated by Oilfield Production Services SRL (OPS) in Patagonia © Patricio Murphy

20 ARGENTINA

A mixed fleet of 20 Volvo machines used to exploit oil and gas reserves is challenged daily by the arid and windy conditions of the Patagonian steppe



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Photographs by Sander de Wilde

INNOVATIVE SOLUTIONS

Customers get more than a machine when they buy into Volvo CE

by Patricia Kelly

The role of Volvo CE as a construction equipment manufacturer has evolved far beyond simply selling machines. The traditional offerings of spare parts and attachments, service agreements and extended warranties still exist. But the company has also developed a range of sophisticated services designed to improve machine uptime, efficiency and safety, increase productivity and enhance fuel efficiency.

"The market requirements today are very different to what they were many years ago," says Koen Sips, the vice president heading up the Customer Solutions team.

"We are increasingly investing more in the productivity-enhancing features of machines," he explains. "Through the connectivity of the machine we can actually monitor it at a distance and we can check the health of the machine," he explains. "As a result, we can offer more services related to uptime, productivity, fuel efficiency and safety – so the machine is becoming more intelligent as we move forward. And our customers can be more productive if we make more productive machines."

Volvo CE's modern machine control system allows operators to use a screen to compare what they are doing with the machine directly with engineering plans. Giving the operator control cuts down on personnel and, says Sips, also means the operator can work faster than before.

"We see enhanced productivity of about 20-25%," acknowledges Sips. This in turn means lower costs and higher profits, he says.

INTERACTIVE

Customer Solutions has a complex and multidimensional relationship with the rest of the company and is in regular contact with Volvo CE personnel throughout the world as well as the technology department and different product platforms.

"There is a lot of interaction and discussion about what we need to develop, what works and what we can improve," says Sips. "We have been working hard to develop new products and new services and a number of them are ready to be launched," he continues, hinting at a new development about to come on the market that will make wheel loaders more efficient and productive than before.

CUSTOMERS PLAY A MAJOR ROLE IN TESTING OUT NEW IDEAS

Yet, says Sips, no matter what the company does to enhance its machines, "customers still want the Volvo look and feel". Customers themselves play a major role in testing out the new ideas that come out of Volvo CE.

"We create the idea and then we go to a specific market or a specific customer to test the concept," explains Sips. "If the concept proves to be the right one we scale up, either products, customers or regions. The customer is therefore closely related to testing our concept in a real-life scenario. We try to deliver ideas and systems that can be implemented in different markets and adjusted according to local and regional needs."

TRUST

Dutchman Sips trained as an engineer and studied for an MBA, while working simultaneously as a factory automation engineer.

"I think it is important that people see business from different angles and different industries as well," he maintains. "In any industry you come across the same problems but from different angles and in different circumstances, but it is always about customers, it is always about people, it is always about organization." ➔

Sips joined Volvo CE from one of the independent Volvo dealerships.

"Dealerships are crucial to the success of a brand like Volvo in the construction equipment area because the dealers are the bridge to the customers and the customers need to have faith both in the product and in the service that is being provided by the dealers," says Sips. "So the customer wants security in terms of support after the sale. Very often the human relationship the customer has with sales people and dealer management is key to concluding the sale.

"It is vital that Volvo CE has a strong distribution network, because in the face of competition from different brands it is the service and the trust that customers have in dealerships that will drive both the sales and the market share."

The first job Sips was asked to do at Volvo CE was to promote excavators being produced by the company in Korea. Later, in commercial management, he was required to anticipate demand by making sure the company would build exactly the volume of machines that would be sold. It was a role that took him around the world.

"It is essential to build the right number of machines," he says. "If you build too many your stock goes up and your working capital goes up. It is also important to build the right type of machines and in the right locations around the world. I traveled around the world talking to plant managers about the process and making sure that there was trust, because when you are talking about volumes, and people need to invest in personnel or in production facilities, it is important that they trust the numbers that we have given them and it is important that what they forecast is real."

In his current role at Customer Solutions, Sips credits much of the success he has had in building an extensive offering of advanced services to having previously worked in a dealership.

"It helps to a great extent to understand what the market needs or how a dealer thinks. What we provide and what we develop in the global customer solutions team are actually tools and parts, and systems and approaches to market, that dealers will use to serve their customers better. It has allowed me to quickly understand whether or not ideas will work, or to capture some idea of the market, and to quickly understand what is going on.

"I get a lot of energy from talking to my team and talking to people around the world – it gives me ideas and keeps me moving forward to raise the bar constantly and offer more and better to customers," he says. "Through the people, through the offering, we are basically building the brand and moving forward."

WE ARE INCREASINGLY INVESTING MORE IN THE PRODUCTIVITY-ENHANCING FEATURES OF MACHINES

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

SAFETY STEERS HIGHWAY OVERHAUL

Florida's clogged arteries require urgent intervention from both man and machine →

by Carol Cassidy

Photographs by Brian Tietz

Ashley Laurance operates a Volvo ECR305C crawler excavator

Operator John Cooks

Millions of cars on the roads in Orlando, Florida, have been clogging the main artery feeding the heart of Disney World. Central Florida's Interstate 4 highway is so congested and constricted that the traffic is screeching to a complete standstill. A 2012 report from the Texas Transportation Institute ranked Orlando 13th in the US for traffic congestion, with more than 1.5 million daily trips on I-4. The report estimates that each frustrated commuter wastes 45 hours per year sitting in traffic.

With Central Florida attracting 59 million visitors each year, transport experts agree that I-4 is unworthy, has become decrepit, and is in need of a dramatic overhaul.

In an unprecedented partnership, three long-standing infrastructure giants – Skanska USA Civil Southeast, Granite Construction and Lane Construction, which together make up the construction joint venture SGL Constructors – are collaborating on a US$2.3 billion (€2 billion) redesign and rebuild they call 'I-4 Ultimate'.

An analysis showed that the project would take 27 years to complete with Florida Department of Transportation (FDOT) funding alone. However, a public-private partnership, known as a P3, will allow the project to be completed in less than seven years. This agreement allows the FDOT to share financial risk with a team of private companies, which finance a portion of the project.

Close to 2,000 workers will pitch in throughout the duration of the venture. The plans involve 140 bridges: 13 will be widened, more than 74 replaced, and 53 new ones will be built along 21 miles (almost 34km) of highway. Project innovations include the use of recycled materials, such as existing concrete and limestone. Carefully designed landscapes, lighting, bridges, fountains and artwork are planned to make travel on the highway more appealing.

Urban highway surgery is dangerous, delicate work. SGL's safety policies include granting every person on site the authority to stop work if he or she notices a potential safety problem. Jon Walker, Assistant Project Director for SGL Constructors SGL says, this way, each person is encouraged to look out for everyone else.

"When we're building safely and with good quality, we build productively, and meet our schedules," says Walker. "And everyone goes home the same way they arrived."

Safety also steers Volvo Construction Equipment's contribution to the project.

Eric Beer, the Assistant Branch Manager for the Orlando branch of Volvo CE dealer Flagler Construction Equipment, says SGL has ordered more than 60 Volvo machines for the job, including 31 single drum compactors – models SD45, SD75 and SD115 – and 32 hydraulic excavators that include the EC160E, EC350E and EC480E models, the compact short swing excavator ECR88D, and the short swing radius ECR235D. Beer says he anticipates more equipment will be ordered as the project advances.

The Volvo machines will work on clearing and site preparation, pipe-laying and bridge demolition, using Volvo HB450 Plus and HB2400 Plus hammers. Volvo excavator cabs are set up to make the most of operator safety, efficiency, comfort and control, with ergonomic joysticks, keypads and a digital information display.

"Safety is a huge part of what we do," says Volvo excavator operator Ashley Laurance. "You want to come to work and then you want to go home safe to the family you're working for."

Laurance operates a Volvo ECR305C crawler excavator designed for safe work in tight places. Its compact body swings only a small distance beyond its track width. This is especially important on the I-4 project because much of the work is being carried out close to local homes and businesses, and many roads will be open to traffic during construction.

Laurance says he likes the machine's stability and weight distribution. "If you're not sitting flat, or if you have a cave-in, you can actually roll a track hoe easily," he says. "The tracks are a lot wider and more stable," than other brands of machinery he has operated and he says the machines do not have the rocking effect of other track hoes. "The Volvos are not as top heavy – they balance themselves out nicely."

BOUNDARIES

Safety is also a driving factor for operator John Cooks who operates a heavy-duty Volvo EC480EL excavator. "You've got other workers around you and their lives are in your hands," Cooks says. "If you swing around, how far away are things supposed to be so that you don't hit and damage them with your counterweight? It's very important to know the boundaries of your machine."

Cooks has his own take on this human-machine interface. "You are at one with your machine," he says. Operators can press a button and do a diagnostic check, so if something is wrong with a belt tension or a hose is leaking, it all shows up. The machine senses it, picks it up and informs the operator. The system also keeps track of hydraulic fluid, oil and water levels.

Fluids and greasing are "the lifeblood of the machine", according to Cooks. The machine's automatic greaser takes a dirty job – yet critical one – off the operator's hands.

"I've been on machines where people don't take pride in their upkeep," he says. "Having to take a grease gun in the cab, you get grease all over the machine and all over your clothes. The automatic greaser eliminates that problem."

RAISING THE BAR

Philip Hernandez, one of the equipment superintendents on the I-4 job, agrees with Cooks. "Preventive maintenance goes a long way when it comes to heavy equipment," Hernandez says. He is responsible for upkeep of approximately 1,500 machines on the project. Hernandez says he works closely with Flagler CE to make sure he has the right machinery for every job, and that all equipment is in good working order.

Hernandez says he counts on Volvo's CareTrack telematics to show fuel burn rates, and to monitor fluids, which make up most of the machine's potential environmental impact. Oil, fuel, coolant, hydraulic oils and other fluids have to be kept from leaking on to the ground or into the canals around the I-4 site.➔

EXCAVATOR CABS ARE SET UP TO MAKE THE MOST OF OPERATOR SAFETY

Operator Steven Brass at the wheel of his SD115 single drum compactor

SGL's Bill Reed

SGL's Jon Walker

The project spans territory rich in waterways, fish, wildlife and sensitive environments. SGL says it is proactive in protecting natural resources, controlling spills and erosion at job sites as well as using Volvo CE's fuel-efficient, low-emission machines. More than 93,000 native plants, trees, and shrubs will be planted in concert with native grasses to create a signature corridor in the region. SGL has also established a waste reduction goal to reuse and/or recycle 98% of all construction and demolition waste generated by the project.

SAFETY AT WORK

SGL's safety-environmental manager Bill Reed is charged with protecting the work environment, and credits Volvo CE with supporting his success. As with Volvo CE, safety is a core company value and a culture, not a policy.

When SGL bought Volvo excavators, Volvo CE supplied an excavator training simulator that imitates the working environment with dynamic training exercises, explains Reed. "When we hire somebody who says they're an operator, we can test them on the simulator." Reed also says that there are not enough qualified excavator operators available, because of the enormous scale of the project. "We're using the Volvo simulator to train our operators how to run things correctly. That's highly important to the safety of this project," he says.

Reed takes his safety role to heart. "Everybody who comes to work every morning needs to go home the same way as they came in. It's highly important to me that we do things right."

For supervisors, operators, visitors and the residents of Central Florida, Interstate 4 cannot only be the highway to the world-renowned attractions of Orlando. It must also be the safe road home.

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

TRANSPLANT OPERATION

A new addition to its Volvo fleet will boost productivity at this renowned tree and plant nursery

by Nigel Griffiths

Photographs by Heinz-Joachim Petrus

Expectations are high among staff at the Hamburg-based tree and plant specialists Lorenz von Ehren Nurseries as they await the arrival of a new L120 wheel loader to join their fleet of Volvo machines. The new machine will transform and accelerate the process of transplanting the many large, mature trees cultivated by the company, including 40-year-old oaks.

The L120 will be fitted with a four-tonne, 2,000mm hydraulic tree spade, a customized attachment capable of extracting the root balls of giant trees from the soil in minutes, while keeping them intact.

Lorenz von Ehren is one of Europe's largest tree and plant nurseries and, founded in 1865, the oldest. Established by Johannes von Ehren, the son of a Hamburg sea captain, it remains a family-run company, now in the hands of managing director Bernhard von Ehren, the fifth generation.

"Today, we have more than 500,000 trees and shrubs under cultivation across 550 hectares of fertile soil in three locations," he explains. "Giant oaks are among the spectacular mature species we ship to many European countries."

With 1.5 million of the nursery's trees and plants delivered to destinations across Europe every year, thousands of its plants are on the road every day. The most challenging are the mature trees such as the oaks.

BRANCHING OUT

In 1904, Lorenz von Ehren, son of Johannes and the second generation to go into the family business, succeeded in hauling a 40-year-old weeping beech over a distance of 9km – an enormous effort at that time. Skip forward 110 years to October 2014, when a huge oak tree from the nursery was shipped to London as part of the transformation of Kings Cross station. The 63-year-old oak (*Quercus Palustris*, or pin oak) was 12m high and was sent to England by sea on a ferry.

That tree is now the focal point of the 27-hectare green site in one of London's most vibrant districts. In 2013, the nursery delivered 37 pin oaks to a country estate near Manchester in the UK. The company can boast client references from Switzerland to Russia.

"There are only a few nurseries able to provide such fully-grown trees," says von Ehren. "We are known throughout Europe, and landscape architects and even individuals come from far afield to inspect our trees and choose what they want."

Trees and plants require considerable time and space to grow. Around 170 nursery staff are involved in the cultivation of sites in Hamburg, Bad Zwischenahn and Rellingen. Among the avenues of trees and parkland are specimens that have reached the grand old age of 100 years.

UPLIFTING

During the growth cycle, the trees are generally transplanted every four or five years. This is an occasion to trim the root ball. The traditional approach to digging up giant trees at the nursery requires the use of two machines. An EW160D wheeled excavator has the job of digging around the base of the tree to free the root ball. A Volvo L90C wheel loader then takes over to lift both tree and root ball out of the ground using a standard fork attachment. The tree is then carefully secured and lowered on to the back of a truck for transport. →

Managing Director Bernhard von Ehren

This process currently takes up to one hour but will be totally transformed by the arrival of the new L120. Equipped with the giant hydraulic tree spade, the Volvo machine will lift the tree and root ball clear of the ground in less than five minutes.

The company has been working with Volvo equipment for many years and its fleet is currently made up of eight wheel loaders – models L35B, L60F, L70D and L90C – and the highly mobile EW160D wheeled excavator.

The new tree spade has four blades, capable of effortlessly extracting a 2m-wide root ball from a depth of 126cm.

Now standard equipment across the plant nursery industry, the concept of the tree spade attachment was initially developed by a specialist tree-spade designer in Nuremberg in collaboration with Lorenz von Ehren Nurseries.

The Volvo L120 is being customized with a joystick specially designed for manipulating the four tonne spade.

"The joystick is an innovation we have helped design," says production manager Kay Hackmack. "It controls each of the four blades of the spade individually while steering the wheel loader," he explains. "The spade is also equipped with a camera inside the blades to give the operator extra visibility and precision."

FAMILY TREE

The nursery has been working for some time with a smaller version of the system for handling the younger trees which need regular replanting. A 1,400mm spade attachment is fixed to a Volvo L60F wheel loader and helps free each tree from the ground in a matter of minutes. In this way, up to 100 young trees can be replanted in just one day.

In future, the nursery's much larger older trees will enjoy a similar level of productivity. "We will be able to prepare trees must faster using the L120 and the time saved will be very valuable," says von Ehren.

"The oak trees being uprooted now were planted by my father and the ones we are planting now will be harvested by my children 20 years from now," he explains, adding: "How do we know what conditions they will

Transplanted oak in London's Kings Cross

have to face in 20 years time?" For the answer, von Ehren has turned to modern science.

"We have been supporting science and research projects for many decades and urban trees are currently the focus of attention. We know that in 20 years' time we will have to provide trees which are resistant to heat, frost and climatic fluctuations."

GREEN PIONEERS

In September 2015, the nursery celebrated its 150th anniversary by organizing the Lorenz von Ehren 'Green Pioneers' Symposium together with the European Garden Awards.

"While technology, environment and fashions have changed, our basic motivation has remained the same: we love trees," affirms von Ehren.

The nursery's meticulous approach to cultivation has seen it awarded the highest 'Ökoprofit' (Ecoprofit) certificates by Germany's Regional Plants Certification Association for environmental programmes.

In November 2015, the nursery won the prestigious TASPO Award, presented by the industry news weekly for the green market, as 'Nursery of the Year 2015', to add to its collection of prizes and honors.

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UP TO 100 YOUNG TREES CAN BE REPLANTED IN A DAY

A spade attachment is used to free each tree from the ground

POWERFUL PERFORMERS

Volvo CE pipelayers play a part in Argentina's energy revolution →

by Marc Rogers

Photographs by Patricio Murphy

In 1931, after several years exploring the Patagonian wilderness, US geologist Charles Edwin Weaver wrote about a large rock formation seemingly rich in oil some 1,000km south-west of Buenos Aires. But it took nearly 80 years and the development of new drilling techniques to realize the impact that 'Vaca Muerta', meaning 'dead cow', could have on Argentina's economy.

In 2011, Argentine oil company YPF – then majority owned by Repsol – announced that it had discovered massive shale oil and gas deposits buried several kilometers underground. A year later, the Argentine government nationalized YPF and put in motion an ambitious plan to develop non-conventional production in the region.

At around 30,000km², roughly the size of Belgium, Vaca Muerta is now estimated to hold the world's second and fourth most important reserves of non-conventional gas and oil, respectively. YPF is satisfied that by exploiting even a fraction of the formation, it can cover all of Argentina's energy needs for decades.

The discovery promises to breathe new life into the province of Neuquén, where oil has been exploited for more than a century but conventional production has been in decline for years. It is also providing new opportunities for local companies such as Oilfield Production Services SRL (OPS), a local company providing a range of engineering and construction services to the hydrocarbons sector.

"Vaca Muerta has had a favorable impact in the area because it has drawn in massive investment," says Ignacio Pascual, administrative manager at OPS. "We had a big incentive because the new oil and gas needed to be compressed to be connected to the main gasoducts, and that's our field."

OPS, which began in 2001 offering small-scale civil engineering works, decided to invest heavily in new machinery to expand and capitalize on the new energy revolution. "We began with Volvo Construction Equipment around five years ago," recalls Pascual. "We tested a machine and it turned out to be really positive and reliable so we decided to keep investing exclusively in Volvo, which now accounts for around 85% of our fleet."

OPS has since expanded its Volvo fleet to 20, a mix of EC220DL excavators, L70F wheel loaders, BL70B backhoe loaders, G930 motor graders, and the new stars of the show: four PL3005D pipelayers.

PIPE DREAMS

The decision in 2014 to incorporate the Volvo pipelayers, which were delivered in 2015, was taken as part of the OPS plan to expand its operations in this activity. The company had started using its backhoes as a substitute for pipelayers, but found the process unwieldy and inefficient, especially as the scale of new projects increased.

"We had always specialized in gas compressor plants and the idea was to develop our work in pipe-laying," explains Pascual. "The new Volvo machines have helped us with that, saving us a lot of time."

According to head of logistics at OPS, Alejandro Faris, acquiring the new pipelayers has had a significant impact: "Yesterday on site we were able to introduce 2,800m of 24-inch (61cm) gas piping with just one pipelayer and an operator directing the procedure. Before, that same operation would have required a group of ten people, and it would have taken seven or eight days to complete those 2,800m."

Faris says these time savings also apply when setting up to start a new project, a key consideration in Patagonia where distances are large and the quality of most access routes to remote areas leaves much to be desired.

"The equipment we used to use had to be divided in parts, so a logistical operation for a work site could take a week or ten days," says Faris. "Now, with the Volvo machines coming fully assembled, we can have all our equipment up and running on site in two or three days."

HOME FROM HOME

It is not just the management at OPS who are celebrating the regular arrival of modern Volvo machines. As the company races to secure new contracts and complete simultaneous projects stretching to around 100km, its machine operators are working long shifts in the arid and relentlessly windy conditions typical of the Patagonian steppe.

WE DECIDED TO KEEP INVESTING EXCLUSIVELY IN VOLVO

"The machine is really comfortable, with lots of space to work in," says Claudio Veloso, one of four operators trained to use the new PL3005D pipelayers. "You are secure when working because you have great visibility, and there is no real risk of the machine rolling over."

Another of the four, Cristobal Acuña, has been operating machines with OPS for 11 years and says he cannot imagine going back to the rented equipment he started with. "It's the first time I've used such a complete machine. The seat is like a bed where you can rest during a break. There's music, real air-conditioning and a heater. I think this technology helps operators remain healthy because otherwise we would really suffer working in 30- or 40-degree summer heat."

The characteristics of the region also test the machines themselves. "Patagonia is a particularly arid zone, and sometimes quite extreme for the equipment because the ground can be very compact, very hard," says Patrick Souyris, manager at Tecnodiesel and distributor for Volvo CE in the region. "This is a challenge for the machines, especially during excavation, as well as a challenge for Volvo CE to rise →


Guillermo Fernández, YPF


Operator Claudio Veloso


Alejandro Faris, OPS


Ignacio Pascual, OPS


Patrick Souyris, Tecnodiesel


Operator Cristobal Acuña

THE COMPANY HAS PUT ITS FAITH IN VOLVO

to the client's need for cutting and digging components that serve their life cycle and maintain operational performance."

STANDING OUT

OPS is hoping its improved efficiency and dependability will make it stand out among service providers to the major oil and gas players, enabling it to win more contracts at both a provincial and national level. The signs are promising: the company says it has already managed to complete a project that would normally take one year in just 45 days, and has recently picked up several contracts with YPF to complete projects left unfinished or in an unsatisfactory condition by rivals.

"OPS has been working with us continually for two years and we keep giving them more projects because of the confidence we have in them," explains Guillermo Fernández, YPF's head of construction for engineering projects in the Loma la Lata field. "The change of machines has been really effective: Volvo has made equipment with cutting-edge technology that makes excavating work more secure with the versatility to operate in small spaces."

As the workload increases, so does the investment in new equipment. In November, OPS took delivery of a brand-new EC220D excavator, which Souyris says demonstrates the company's ongoing "confidence, continuity, and faith" in Volvo CE.

"The company has put its faith in Volvo," says Faris. "We have been satisfied not only with the equipment but all that comes with it, the mechanical service and on-site assistance. With new projects coming up in 2016, the company is prepared to improve and expand its fleet, and that's why we acquired this new excavator."

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

GOING FOR GOLD

Located in Ghana's Western Region, the Kinross Chirano Gold Mine is pioneering innovation with the help of both Volvo CE and Volvo Trucks

by Lauren Clifford-Holmes

Photographs by Madelene Cronjé

Together Volvo CE and Volvo Trucks play a significant role

The A40 articulated haulers are quick to lift and lower


Machines and trucks are working deep underground

FMX 8x4 loading up underground


Around 80 Volvo machines work at the mine

After a four-hour drive from Kumasi, Ghana's second busiest metropolis, a modern gold-mining operation with an impressive mine camp emerges from the countryside.

Established in 2005 as a small open-pit operation, Chirano was acquired by Canada's Kinross Gold Corporation in 2010. The company has ramped up production over the years, establishing multiple open pits and two underground mines. Approximately 250,000 ounces of gold are mined each year and in March 2015 the mine celebrated its 2 millionth ounce of gold production.

As a result of the negative impact on commodity prices caused by the recent adverse global economic climate, things have not been easy for the mining industry. Gold prices peaked in 2011 at more than US$1,900 per ounce and have since retreated to around US$1,100 per ounce.

"Although the industry has faced challenges, Chirano has managed to maintain profitability by making major adjustments and innovations, most notably by transitioning from contract mining to self-perform," said Kenneth Norris, Vice-President and General Manager of Chirano. By making this change, Chirano has assumed greater control of its production costs and reduced them in a variety of ways. It is here that Volvo CE and Volvo Trucks are playing a significant role.

UNIQUE

The Chirano mine has around 80 Volvo machines on site, including A40 articulated haulers, wheel loaders and backhoe loaders from Volvo CE alongside FMX 8x4 and 10x4 tippers from Volvo Trucks. There are also various support vehicles, such as water bowsers and fuel and maintenance trucks.

With thinking outside the box clearly part of the mantra at Chirano, it comes as no surprise that the mine has found another great way to revolutionize production: it is pioneering a combination of both Volvo articulated haulers and Volvo FMX trucks in its underground operations. This is a perfect example of the synergy between Volvo CE and Volvo Trucks.

Volvo CE's business manager for Central and West Africa Frank Schmitt explains that the Volvo Group is unique in the industry. "We offer on-road trucks as well as off-road machines such as the Volvo articulated haulers," he says. "This gives our customers multiple benefits in terms of compatibility as well as the lowest cost for hauling material from on site to a processing plant or waste-rock storage facilities."

The highly competitive capital costs of the machines, the reasonably priced parts and an efficient on-site service are all plus factors for Chirano Gold Mines Ltd (CGML) in opting for Volvo machines. "We get very good service and support in-country, which is key for working in a country like Ghana. Considering the demanding use, we need a lot of support from the local dealership for both parts and technical support to keep the machines running day and night," Norris explains. This is where SMT, the official Volvo distributor in Central and West Africa, comes in.

DEDICATED

Managing director of SMT Ghana Denis Pylyser emphasizes the importance of providing a reliable maintenance and repair service. Part of the SMT Group covering 26 countries →

Denis Pylyser

Raphael Komla Okai

Kenneth Norris

Frank Schmitt and Paul Arwona Bejele

in Africa and Europe, with headquarters in Belgium, SMT has three locations in Ghana. Its on-site workshop staffed by eight technicians dedicated to Chirano ensures an immediate response to any issues with Volvo machines. "These technicians keep the equipment downtime as short as possible, which optimizes the productivity of the mine," he says.

"What's unique is that the 8x4 tipper trucks are going in the underground mine and the 10x4 tipper trucks are going to the open pit. In both locations they are assisted by Volvo's articulated haulers and other supporting machines," says Pylyser. With their sharp articulation and good steering, the articulated haulers are particularly suited to underground mining operations.

Mine superintendent for open-pit operations Paul Arwona Bejele explains that "very smart decisions" had to be made to be able to keep production costs down. "In open-pit mining in particular, one of the high-cost areas is haulage," he says. "At Chirano we found it smart to go with Volvo. The fuel consumption is low and they have high maneuverability, which means we do not need to mine huge areas to be able to provide access for them. And they are quick in reaching the dumping points and getting back to the pits."

With fuel consumption being the biggest annual cost to CGML, second only to labor, the savings have been significant.

VOLVO CE AND VOLVO TRUCKS ARE PLAYING A SIGNIFICANT ROLE

"All Volvo machines are equipped with Volvo engines which have high torque at low RPM," explains Schmitt. "That gives the customer the benefit of low fuel consumption, which means lower operational costs."

The machines also operate on fewer liquids – another saving. "We have designed the machines so that they need fewer service intervals which means less need for maintenance liquids such as oil, lubricants and coolants," says Schmitt. "For example over a 12,000-hour run with an articulated hauler you need approximately one-third less liquid than competitor machines."

POPULAR

The articulated haulers are incredibly popular with operators on site. With one hand resting proudly on the towering yellow hulk of his machine, operator Collins Hudekpor explains what makes it great to work with. "You can use it very easily in narrow spaces and it is very fast in dumping. And it doesn't get stuck when we are working in muddy areas," he says. "But I think my favorite part of this hauler is that the retardation system is very effective, and you don't have to use the brakes so much when on a decline."

Bejele is another big fan of the articulated hauler. "It is a rugged, all-purpose, all-conditions machine. It is my machine of choice for the industry." Standing at the end of one of the massive open pits, surveying the machines as they make their way along the undulating rust-colored roads to tip their loads, he points out the dump capabilities of the haulers. "They are very quick to lift the body, even under load, and quick to lower as well. These are all elements that shorten cycle times which means productivity increases – it is one of the ways that is helping us survive this very tight economic period for mining operations," he says.

WE FOUND IT SMART TO GO WITH VOLVO

CONVINCED

Chirano underground mine manager Raphael Komla Okai worked on the mine before it changed to self-perform. He remembers how the previous contractors used heavy-duty machines underground, which were expensive and had high running costs. When the company made the decision to go with Volvo he had some concerns. "Initially we thought the FMX trucks were not really meant for underground operations but two years later we can see that they are really efficient," Okai says.

Those concerns were at first deemed valid in that these types of trucks would not traditionally be used underground. However, Norris had seen them operate successfully underground in Spain and Peru, and recommended it could work in Ghana too. These days no one in the mine blinks an eye when they see the FMX trucks alongside the articulated haulers steadily making their way 300-500 meters below the earth's surface.

"In Africa, we are pioneers in using these types of trucks underground and I think a lot of people are taking notice," says Norris. "That's the importance of surviving in this lower commodity and gold price cycle – you need to be innovative and find different ways of doing things."

The working life of this mine is currently projected to last until 2020, but as Chirano continues to carry out exploration and as additional reserves are found, that life of mine has the potential to be extended – and Volvo is credited with playing a part in making that possible. By reducing production costs, Chirano has been able to look at fresh opportunities to mine new gold resources that might have not been profitable to exploit before now. "That's a big advantage for us," says Norris. "Lowering our costs to mine gold by using a more efficient and overall lower-cost piece of equipment opens doors and opportunities to extend mine life."

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

AS GOOD AS NEW

Machinery rebuilds are an intriguing option in tough times →

by Dave Keating

Photographs by Erik Luntang

Sebastien Imbert (left) and his boss Marc Botin, CEO Solomat Location (centre) with Laurent Pesty of Kléber Malécot

CEO Stéphane Malécot of Kléber Malécot in the workshop

France's construction sector is facing hardship. The overall economic crisis has meant that fewer projects are getting the green light. At the end of 2015, the French market declined by an estimated 22% compared to the previous year, while labor shortages and higher construction costs have left unfinished projects across France.

For vendors of construction equipment, the slowdown has been particularly tough. When clients need less equipment, sales drop. So what can a customer do when the time comes to replenish stock, but the orders do not justify the expenditure?

This was the dilemma facing Solomat Location, a medium-sized rental company based outside Orléans, which rents out all types of construction machines from 17 depots in central France. Solomat had recently ordered a number of new machines, including two new Volvo excavators – an EC300E and an EC380E, both with extended warranties. But four of the company's Volvo articulated haulers, models A30D and A30E, came to the end of their lifespan last year and also had to be replaced.

Given the economic situation, the purchase of four more construction vehicles was going to be hard to justify, even though the existing equipment was no longer working.

Solomat shopped around a few dealers for competitive quotes. But when they came to Kléber Malécot, a medium-sized family-owned Volvo CE French dealer the company had worked with for three decades, they were presented with an intriguing proposal.

"It is a tough time for our customers, obviously, so we knew that we needed to propose a new kind of offer," says Stéphane Malécot, the owner of the dealership. "So we offered them a rebuild."

Solomat accepted the offer, and work began.

GOING GLOBAL

The rebuild is part of a new program Volvo CE has put together to enable dealers to completely restore an old machine, making it as good as new by rebuilding it from the inside out. Intended as a complementary offering, it is an attractive alternative to buying a new machine during hard market conditions. Unlike a repair job, a rebuild completely replaces the engine and other essential parts. And, if the customer chooses the most complete rebuild package, the dealer can also restore the interior and exterior cosmetics of the machine as well as the mechanical components to make it look like new.

"This program started in the French market a few years ago, and now we are consolidating it and making it available worldwide with the Volvo stamp of approval," says Yasser Oweida, global manager of the Volvo Certified Rebuild Program. "Our unique selling proposition is to offer our customers a saving of at least 40% on the price of a new machine."

Kléber Malécot will rebuild four machines for Solomat, with the first three expected to have been completed by January 2016, and the fourth ready by March – just in time for the start of the spring construction season.

COSMETIC SURGERY

A dismantled articulated hauler certainly shows signs of a long and arduous life, especially compared to shiny new vehicles. But once rebuilt, it will look as good as new. Solomat opted for the complete package, including cosmetic rejuvenation. The choice was between the basic machine performance package, the Volvo Certified Powertrain Rebuild, or a fully-fledged Complete Rebuild, which includes overhauling the cab and restoring the exterior as well as the powertrain rebuild.

Marc Botin, the manager at Solomat's main facility near the town of Sens, can see the many machines waiting to be rented from his office. "We decided to go with the more complete package because we want our machines to look nice," he says. "It's for the workers as much as for the clients." Vehicle operators get excited about having a new machine, or in this case, a new-looking machine. And yet, the machine will keep the same controls and operation, so there is no need for operators to learn a whole new system.

The machines are worked on an hour away at Kléber Malécot headquarters. The rebuild starts with an empty shell, stripped of the engine. The practical hardware is worked on first, followed by the cosmetic work which will probably start a month or so later.

INSURANCE

Although the articulated haulers due for rebuild sit among machines that are in for regular repairs, the plans for these machine are much more involved. Laurent Pesty, Kléber Malécot's technical director who handles the rebuild process, says they have developed a standardized process. "First we check the machine to estimate the work required," he says. "We've done 12 rebuilds and now have a real evaluation procedure to see how we can optimize the process."

Of course, it is not always easy to convince customers that a rebuild is the best option. Customers have concerns about insurance validity, and about their machines being out of commission for several months. Pesty says these issues can be overcome by offering insurance specific to the rebuild, and by doing the work in the winter when there are fewer construction orders.

The dealers, too, can have some concerns, Pesty admits. After all, if they start offering attractive rebuilds, customers might not want to buy new equipment any longer. However, given the current economic climate, their choice may be somewhat limited.

Malécot says he thinks that offers such as these are ideal during what is a difficult time for the construction sector. "It is a perfect product in times of crisis," he says. "If I was a customer, and I had a look at my total cost of ownership, I would do rebuilds."

END PRODUCT

By early 2016, Solomat was due to have 'as-new' machines, freshly painted with new safety improvements such as orange safety bars and rear-view video cameras. Yet, because they are not actually new machines, they do not have to comply with new regulations that might involve further costs for the customer.

Malécot says he is hopeful that he will sign a new deal with Solomat next year to rebuild four more vehicles. For his part, Solomat's Botin is optimistic about future collaboration. He acknowledges that trust is essential for such a big project – and he feels that trust with Kléber Malécot and Volvo CE. "Something like this needs confidence," he says.

As Volvo CE looks to replicate these big rebuild contracts worldwide, fostering this trust between dealers and clients is key to making more deals happen.

Photos of the completed rebuilt machines can be viewed on the *Spirit* Facebook page after March 16

ON TRACK

Customers help Volvo CE develop special applications →

by Richard Orange

Photographs by Gustav Mårtensson

Volvo CE's Perjohan Rosdahl (left) with Conny Andersson and one of his Volvo rail-adapted wheel loaders

There is a clattering sound, muffled by cold, damp air and then a train sweeps past, decked out in the pastel blue of Pågatåg, the regional operator in Skåne, Sweden's southernmost county.

"Some of them go at 200kmh," says Conny Andersson, the owner of contracting company Connys Entreprenad, which specializes in railway work.

Thankfully, there's a good 50 meters and a sturdy safety fence separating Andersson from the railway line linking the historic town of Helsingborg with Malmö, Sweden's third largest city.

Andersson is visiting a railway depot near Helsingborg where he has won a contract to lay an extra 300m of track. He is demonstrating how his Volvo L90F wheel loader can operate on the railway tracks, thanks to a number of adjustments to the model developed by Volvo CE's Special Applications Solutions team.

Railway contractors are a special breed – they have limited access to the tracks for renovation and repairs, usually for just several hours at a time, and often in the middle of the night, at weekends, or on public holidays. Breakdown comes with punitive costs, so reliability matters.

Mounting the wheel loader on the rails takes barely a minute. Daniel Nilsson, one of 14 machine operators working for Connys Entreprenad, manipulates the machine on to the tracks.

"You need to drive a little backwards and a little forwards, and keep an eye on the wheels all the time," Andersson explains, as Nilsson positions the vehicle.

"Volvo wheel loaders are just extremely good," he says. "That machine has worked 8,000 hours with very little downtime or breakdown." He points to the rail wheel bracket: "It's important that it doesn't take up too much space, it has to be very compact," he explains, indicating the gap underneath the chassis. "It is permanently on the machine, so you need to have ground clearance on both road and rail."

ON A ROLL

Two bogie assemblies, mounted on the front and rear frames, are hydraulically lowered on to the track, with the rail wheels taking increasingly more of the machine's weight until the rubber tires have optimal contact to power it. Nilsson is then able to drive the wheel loader up and down the track using the rails.

"That's the way you operate one of these," Andersson says with satisfaction as the machine rolls away. "And if we were using an excavator, that is also exactly how it would climb on the rails."

The process can be affected by a number of different factors at any time, such as a load in the machine bucket, and these are the kind of details that have to be taken into consideration by Volvo CE – with the help of its customers.

For Perjohan Rosdahl, a commercial project manager with Volvo CE's Special Applications Solutions, engaged 'pilot' customers like Andersson are essential if the company is to support its clients with unusual requirements by customizing Volvo CE machines for specialist applications.

"Conny Andersson is at the forefront of developing this rail application," says Rosdahl. "He keeps us on our toes – he is constantly looking for improvements that will increase efficiency, as do we."

Andersson has been collaborating with engineers from Volvo CE and its partners to help design and develop a rail application for the new EWR150E short tail swing wheeled excavator (see p.38). He hopes to replace existing excavators in his fleet of 20 machines with several new Volvo models and has already purchased the first one.

With three Volvo rail-adapted wheel loaders – bought in 2008, 2010 and 2012 – Andersson's first Volvo machine, acquired in 2006, clocked up a creditable 18,000 hours before going into retirement.

ADAPTING WHEEL LOADERS FOR RAIL HAS PAID OFF

The adaptation of both wheel loaders and excavators for on-rail work responds to the needs of specialist contractors, yet the conversion does not prevent them from being used in conventional applications when not needed for on-rail projects or if delayed or hampered by weather conditions. The flexibility of owning 'two-machines-in-one' ensures that customers have full machine utilization and maximum return on investment.

GROWING INTEREST

Andersson's interest in construction equipment started on nearby farms as a youngster.

"My father drove a tree harvester, and my grandmother had a farm with a number of tractors. When I was young, and started working on a farm, the neighbor had a backhoe loader."

By the age of 24, Andersson – now 35 – had launched his own contracting company. Two years later, he bought his first machine; several years on, he won a contract to build 16 train stations connecting towns and villages in the nearby countryside to Malmö and Copenhagen, a job that was finished in 2014.

Adapting wheel loaders for rail has paid off for Andersson. Currently with eight contracts on the go, he says there is often a serious shortage of machines for the type of work he is asked to do.

"There are maybe 150 wheel loaders operating in this region, but maybe only five of them can go on the rails," he explains.

Working in tandem, two of his rail-adapted wheel loaders are capable of changing a 20-tonne set of railroad switches in an hour, a task that would take six hours with a conventional wheel loader. His rail-road machines also allow his operators to rapidly carry aggregate and other materials to locations tens of kilometers up the track from the nearest access point.

However, to be adapted for rail, his machines must meet stringent regulations, which differ from country to country and change from year to year. From 2017, for example, new EU rules will require Andersson to retrofit his excavators with rated capacity indicators, a load-management system that makes it harder to flip over an overloaded rail-going excavator.

The rules also require height limitations for excavators and wheel loaders, so that arm and bucket cannot touch the 16,000kV power lines above the rails, and to be grounded in case they do. Slew locks are mandatory, so that when an excavator is working on a track next to one in use, its operator cannot accidentally move the bucket into the path of a passing train. For the same reasons, there are limits as to how far the counterweight at the rear of the excavator can extend. The reduced tail swing radius of the new EWR150E makes it ideally suited to this application.

HANDS ON

Andersson himself spends much of his time behind the levers of a machine. In his opinion, it is where the company boss belongs.

"That's where you should be for two reasons," he argues. "It helps keep you up to speed on developments, and it's easier to get jobs when you're out in the field than if you're stuck at home."

But it does not leave him much time for rest. "Apart from keeping up with friends and family, I don't do anything else," he admits. "When I'm not out here working, I'm fixing machines. If you have 20 machines, there's always something. It's like my hobby as well as my work."

And even when Andersson takes a break, it's often in the company of his 14 operators.

"We work unsocial hours and weekends and so on, so we try to do something together every year," he says.

Last winter, they went skiing together. This year, they aim to visit bauma in Munich, but just for fun…

Connys Entreprenad owns three Volvo rail-adapted wheel loaders

Mounting the rails is swift

THE URBAN EXCAVATOR

Volvo CE rises to the challenge with its new EWR150E short tail swing wheeled excavator

by Nigel Griffiths

Photographs by Juha Roininen and Sebastian Berger

Volvo CE's Peter Bauer (left) with Robert Aebi's Peter Grünenwald

Designed for city use, the new excavator boasts the shortest swing radius in this weight class of any Stage IV machines on the market and is already receiving positive feedback from prospective customers. Developed at Volvo CE's Konz facility in Germany, the EWR150E fills the niche for a short tail machine for the urban environment.

Combining the best features of both the EW140D and the EW160E with state-of-the-art qualities of its own, a key feature of the new EWR150E wheeled excavator is the machine's short swing radius of just 1,720mm. This allows the operator to work safely in confined areas, particularly narrow single-lane roads, without interfering with traffic.

All this has been achieved without compromising on reach, lifting or digging performance. With an impressive 8.7m digging reach using the 2.45m arm, the machine has outstanding lifting capacity and offers improved stability compared to a conventional excavator in this class.

One of the key elements of the design that makes all this possible is that the engine is now at the back of the machine.

"It took some lateral thinking on our behalf to see how we could locate the engine and cooling system and put it behind the cabin," explains Volvo CE technical product manager Peter Bauer, central to the machine's design team.

"Importantly, when the 150 swings round to work on a road or pavement, the back of the machine stays on one side of the road and leaves the traffic in the lane on the other side unimpaired.

"Moving the engine to the back also improves visibility, particularly on the operator's right-hand side, and thereby →

improves safety. This configuration results in less noise around the cabin as the engine and cooling system are at the back."

TEST RESULTS

Developed in close cooperation with customers, the design and features have been refined through customer clinics and in the field by test operators across Europe (see article on p.34).

Priority has also been given to the operator experience. The cabin layout and the hydraulics are designed to give operators a feeling they have 'come home'. Operators can also bring all their tools along with them in a special tool-box drawer that slides out from the undercarriage. This is a new feature and can carry up to 120kg. There is also further storage inside the cab, as well as ample leg room.

The EWR150E has been designed with ease of servicing in mind. As soon as the machine is started, it automatically checks all fluid levels on board, including engine oil and hydraulic fluid, and alerts the operator on the electronic display should attention be required.

The boom suspension system with hydraulic circuit and gas pressure dampers means the operator can travel faster over rough terrain, while the overall hydraulic system has also been improved for greater responsiveness.

Put through its paces in Krefeld, Germany, by cable-laying contractor Gebr. Kickartz GmbH, on-site manager Thorsten Bargatsky was immediately impressed by the construction quality of the EWR150E.

Stability and maneuverability also passed the test, while the overall look and design is "pleasing" and has a "feel-good factor", says Bargatsky.

"The short swing radius is clearly a major benefit, enabling us to work in a tight residential environment without obstructing traffic," he explains. "Our operators are very happy with the maneuverability and reach of the 150. They often use the blade as an additional stabilizer when lifting, which further increases safety and stability."

Running a fleet of 22 mobile excavators, Kickartz is well positioned to appreciate the machine's qualities.

"There is more and more work for us in green zones in cities and we are finding that the environmental standards and requirements in municipal contracts are constantly being raised," says Bargatsky. "When buying new machines it is necessary to anticipate future norms and standards from the authorities. The emissions performance of the Stage IV engines make these machines potentially a good long-term investment for us."

USER-FRIENDLY

Volvo CE global product manager Marc Engels explains that the new machine is effectively a short tail version of the 140 model with the weight of the 160 model, and fills an important gap in the market.

"The 150 offers many welcome features in terms of maneuverability and visibility for the operator," he says. "The operator benefits from its performance, and it is very competitive price-wise."

Matthias Maehler, sales representative at Volvo CE distributor Swecon, is receiving positive customer feedback about the machine. Of particular importance is the power and low-emissions capability of the Stage IV engine.

"This engine is already latest generation technology compared to the competition," says Maehler. "For us, the new short tail mobile excavator is an opportunity to approach new customers and offer a practical machine for working in more restricted environments."

The Stage IV Volvo engine in the 150 uses V-ACT technology, which provides high torque at low engine speeds to lower fuel consumption.

THE SHORT SWING RADIUS IS A MAJOR BENEFIT

Peter Grünenwald, of Volvo CE dealership Robert Aebi GmbH, also highlights the value of Volvo's intelligent ECO mode, which can reduce the urban excavator's environmental impact and meet the latest emission requirements.

The machine is likely to receive the operator vote, too. "The design of the Volvo cab offers outstanding visibility for the operator, while all machine interfaces, including the joysticks, keypad and large LCD monitor, are ergonomically positioned," says Grünenwald.

OPTIONS

The EWR150E can be specified with one of two undercarriage types, tailoring the weight and drawbar pull of the machine to any application. The lightest possible configuration weighs 15.1 tonnes and features a welded undercarriage with a radial blade and an EW140-class drivetrain.

The heaviest configuration weighs 17.9 tonnes and offers a bolted undercarriage with a parallel blade, bolted outriggers and EW160-class drivetrain for a 30% higher drawbar pull.

The robust excavator axles with automatic or operator-controlled front-axle oscillation are highly durable, as is the undercarriage, which protects itself through high ground clearance and is strong enough to endure tough environments.

The machine is also compatible with a wide range of attachments. With tiltrotators and quick couplers, durable buckets and breakers, not only can the machine work in tight spaces, but it can dig, load, break and move material in the most efficient and productive way. Customers can choose from 12 different tire configurations (including single and twin), according to ground conditions. The machine is approved for road use and can be fitted with a trailer hitch that can pull up to eight tonnes with over-run brakes and three tonnes without brakes.

Kickartz's Thorsten Bargatsky (left) and Volvo CE's Marc Engels

The EWR150E works well in restricted urban areas

DIGGING INTO THE PAST

Volvo CE's iconic articulated hauler Gravel Charlie celebrates 50 years

by Cathy Smith

Picture the scene: the early sixties in the south of Sweden. A young man, the son of a farmer, is sitting at his kitchen table sketching ideas for a vehicle which could haul timber and maneuver through the trees on the snow-covered slopes for the country's all-important forestry industry.

Wiking Björn knew that to prevent the front wheels from skidding in the snow, he had somehow to synchronise the wheels of a tractor and trailer. So, he started to sketch a tractor without front wheels.

"He realised the axle was in the way all the time," according to Lennart Öknegård who is co-writing a history to mark the 50th anniversary of the revolutionary machine which became known as Gravel Charlie. "So he got rid of the axle and sketched a driven trailer with power coming from the tractor – the first hydraulic articulated steering. It was such a great idea."

It was 1964, and Björn had recently started work at Livab, a local engineering company in the village of Braås, and had managed to convince his boss that he was on to something.

Now in his eighties, and living near Braås, Björn remembers being given the go-ahead to launch what was to become a top-secret project to build a prototype. Different parts of the machine were constructed in different parts of the factory to keep the secret under wraps.

"Just two of my closest colleagues were assigned to the secret project," he recalls.

TESTING TIMES

The first tests were carried out undercover at a farm outside the plant. "It worked well for such a breakthrough machine – it was a strange feeling to operate the machine for the first time." What made the articulated concept possible was the tractor hitch, preventing the tractor from rising when pulling heavy trailers. This was patented by Livab in the early fifties.

The small team was under pressure to complete the project quickly as it was due to be unveiled at a trade show near Eskilstuna attended by none other than the Soviet President Nikita Khrushchev on an official visit to Sweden. There is no record of what the Soviets thought of this new machine – they did not buy it, but Sweden's forestry industry did.

This was the answer to a forester's prayers – the impressive vehicle had been built in just three months and had articulated steering, all-wheel drive, an operator's cab and a boom. But it needed a name and so became known as Timber Kalle (Timber Charlie) after Carl Lihnell, owner of Livab.

By now, Lihnell had signed a cooperative agreement between Livab and Bolinder-Munktell (Volvo CE's precursor), recognizing that the real potential was yet to come. It was clear that the same technology could be used to build an all-terrain articulated dump truck for the construction sector. This was going to revolutionize earth moving in steep, muddy conditions which often proved impassable to other vehicles.

TRENDSETTER

In 1966, 50 years ago, the DR 631 – better known as Grus Kalle or Gravel Charlie – was born, the first series-produced articulated hauler in the world.

THIS WAS THE ANSWER TO A FORESTER'S PRAYERS

Gravel Charlie had a load capacity of just 10 tonnes (compared to up to 40 tonnes today) but Björn's unique concept was there: based on a tractor without a front axle and a hauler coupled to it with an articulated joint. It was unsprung and lacked the operator's comforts of today, although it was fitted with a safety cab – a feature which impresses Öknegård.

"It is fantastic to see the standards they had for these products," he says. "They really cared about the safety and comfort of whoever was going to operate it. Volvo has always been a trendsetter in this area."

Öknegård, who is co-writing the 200-page history of Volvo haulers up to the present day, is not a disinterested chronicler. He was part of Charlie's story as the person responsible for administering the contract between Livab and Bolinder-Munktell to produce the articulated machines. →

Photographs by Gustav Mårtensson

Author Lennart Öknegård and the Munktell Museum's Gravel Charlie

Gravel Charlie had a load capacity of 10 tonnes compared to 40 tonnes today

Wiking Björn

His career with Volvo has spanned more than 40 years and he is now a volunteer at the Munktell Museum in Eskilstuna which commissioned the book and where one of the original Gravel Charlie haulers is on display.

"It is a fantastic story," he enthuses. "It was great teamwork. At that time there were a lot of inventors and ideas. The people involved had much broader practical and acquired skills than today, and more leeway, so they could see the bigger picture. You could not imagine a vehicle being produced from an idea to a prototype in just a few months today."

And Björn agrees: "I will never forget those days when I had the possibility to contribute with my sometimes unorthodox ideas."

REVOLUTIONARY

Of course, Gravel Charlie was just the beginning. A year later, in 1967, came yet another model – the DR 860 – which added a bogie to the design enabling loads to be kept stable however rough the driving conditions.

That was the real breakthrough, according to Öknegård, with construction, mining and quarry companies snapping up the machines. The maneuverability of the new articulated vehicle was nothing short of a revolution. Its ability to "wriggle like an eel" meant it could operate on extremely steep, difficult terrain, and was used for many complex construction projects, such as building nuclear reactors for Britain's fledgling nuclear power industry.

The Munktell Museum book will document the development of the Volvo hauler right through to the machines of today with their state-of-the-art technology which has cemented Volvo's position as market leader in the sector.

As part of his research, Öknegård spoke to Björn several times. He says he was amused to see him still sitting at his table dreaming up ideas. "He is not an engineer – he was self-taught but he is a brilliant man."

Left to right: Jörgen Forsrup, Per-Arne Pettersson, Lennart Öknegård

To commemorate the 50th anniversary of Gravel Charlie, ***Spirit*** is offering 10 readers the chance to win a copy of the book *Volvodumpra under ett halfsekel* (*Volvo Articulated Haulers throughout half a century*) by Lennart Öknegård, Per-Arne Pettersson and Jörgen Forsrup on a first-come, first-served basis. Simply send an email to volvo.spirit@volvo.com with the subject "Gravel Charlie" and state whether you would like your copy in English or Swedish.

VIDEO SENSATION

This machine operator has his own YouTube channel and can boast a loyal fan base →

by Carol Cassidy

Photographs by Bryan Regan

EVERY DAY IS FUN, EVERY DAY IS NEW

Guins films himself at work

About a million times a month, somebody, somewhere, clicks on a clip of 'letsdig18', the YouTube channel where they can watch Chris Guins moving the earth in the farms and fields around Raleigh, North Carolina, in the United States.

Guins (pronounced joo-ins) has collected more than 70 million clicks on the 1,500 video clips he has posted so far, showing him and his colleagues operating heavy construction machinery as part of the family business.

His grandfather started Guins' Excavating Service more than 25 years ago, when the Internet was an infant and before YouTube existed. Today, grandson Guins works with his Uncle John, described on the company website as "an artist in the field of excavation".

Guins grew up admiring big machines. When he was five or six years old, his grandfather would take him on his lap and let him try out the machine controls. By the time he was 10 years old, he was riding solo, and it was not long before he learned that this 'play' was work, and that he could get paid for doing it well.

LIVING THE DREAM

Guins describes his work as "the only thing I ever really wanted to do" and says he loves tearing things down – check out his video clip 'Tearing Down a Shed'.

"It looks chaotic," he says, adding: "But actually, demolition is a well-planned process, because you have to sort materials for proper disposal." Guins' Excavating Service specializes in grading and clearing land for homes and roads, and excavating ponds and lakes.

His camera work started as an afterthought. He used a still camera to take photos to document and showcase his work. One camera had a video option, and in 2007, Guins used it to shoot what he describes as a "pretty bad" video from inside the cab of his Volvo excavator.

YouTube was still relatively new at that time. The stuttering upload took more than three hours via dial-up connection, during which time he wandered off to bed, figuring the whole thing was a bust. He happened to find the clip online a few months later, and was shocked to see that almost 500 people had left positive comments.

Guins says he thinks some of his fans just wish they could have a chance to do the kind of work he loves to do.➔

Guins' YouTube clips earn favorable comments in many languages

"I'm always doing neat jobs that most people don't get to do," he says. "Every day is fun, every day is new. I don't know what I would do without it. Working in a cubicle would drive me crazy."

CARRIED AWAY

He laughingly admits he does work in a cubicle of sorts, spending nine or ten hours a day, five or six days a week in a machine cabin that measures about 1m x 1.2m. He says even when it's muddy and cold, he sometimes has to remind himself to get out and stretch because he gets so absorbed in his work.

He claims his cab "is like a Cadillac" now, whereas 20 years ago, the cabs were "bare bones". These days, Guins says, cabs are designed for operator comfort, with heated seats and a good radio. "I feel as if I'm on a road trip. I see so much stuff happen from up there."

Guins gives his legion of fans a view from 'up there' by shooting some of his clips from inside the cab. The video provides a hands-on feel of working the machine controls. Apparently, viewers really love this perspective. More than 1,700 people gave a thumbs-up to his seven-minute clip 'Life of an Excavator Operator', featuring the Volvo 210 with portions shot from the cab. Views so far on that clip alone exceed 1.3 million.

'Volvo Excavator 140 Wrestles Massive Boulder', 'Volvo 160BL Excavator Loading Big Stumps,' '…Clearing Trees', '…Climbing Out of the Pond', '…Ditch Cleaning'. A wide variety of jobs and creative camera angles give the clip collection sophistication and range. For example, one clip is shot from deep in a pit while a 14-tonne Volvo excavator digs all around the camera.

CAMERA WORK STARTED AS AN AFTERTHOUGHT

BIRD'S-EYE VIEW

The clips earn favorable comments in many languages, including Russian and German. No need to speak English to watch and appreciate these videos, which can be mesmerizing.

To keep both himself and his viewers happy, Guins recently invested in the latest video technology. He started using a high-tech drone camera to fly above his machines and film himself at work from a bird's-eye view.

The drone camera has a 'follow-me' function that works off satellites and GPS, he explains. "You hold the controller and the camera follows you."

The effect is cinematic. See for yourself by joining nearly 50,000 subscribers to Chris Guins' YouTube channel, letsdig18.

The Construction Climate Challenge is part of Volvo CE's commitment to WWF´s Climate Savers Program.

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**

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