

SUSTAINABILITY

Making a global impact with the smartest green innovations.

BUILDING A CITY

Nueva Santa Cruz in Bolivia will be a home for 370,000 people.

INNOVATION

Volvo CE presents the results of the world's first 'free emission' quarry testing.

THE PROFILE

Meet Bolivian excavator operator Eovaldo Uche Moya in his new city.



SPIRIT

Volvo Construction Equipment Magazine, Winter 2019

PUMP IT UP

Hollywood action star Dolph Lundgren pushes Volvo's excavators to the limit in the new mini-movie.



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Volvo Construction Equipment



Welcome

SUSTAINABILITY IN FOCUS

I feel fortunate to work for a company that leads the way in sustainable thinking, a company that challenges the status quo and believes in its ability to build a better tomorrow. This issue of Spirit Magazine demonstrates perfectly how these aspirations are coming to life in the real world.

We start with a spectacular, yet serious take on innovation and sustainability. In our blockbuster front cover feature, we look at how Volvo CE is showcasing the durability of its excavators through an unexpected partnership with a Hollywood film star. The result is an epic mini-movie that has supercharged Volvo CE into the consciousness of consumers globally. We sneak onto the set for a behind-the-scenes look at this campaign and meet the film's real action heroes: the excavators themselves.

We are fortunate at Volvo being involved in a variety of productive collaborations with focus on innovation and sustainability. From the concept of a futuristic construction machine (the result of a unique partnership with LEGO® Technic) to the testing of the world's first ever emissions-free quarry with our customer Skanska. As you will find out when we visit the site in Sweden, this research project with Skanska shows that by embracing technology and collaborative thinking, we can tackle the environmental problems facing our industry.

Proving that sustainability is at the heart of everything we do, our award-winning Megaproject Listing visits another remarkable site in this issue as well as online.

Read about the building of a new 'boomtown' in Bolivia that is set to be a flagship example of how environmental construction can transform overburdened cities.

Did you also know that the first 3D printed homes are being built in the Netherlands? Or that our roads could double up as solar power generators? We explore some of the cleverest green solutions that are helping to reverse the effects of climate change.

I hope you enjoy this issue of Spirit Magazine as much as we have enjoyed reporting on these fascinating stories. For more exclusive content and short films, please also visit volvoce.com/spirit.

Tiffany Cheng

Director, External Communications
Volvo Construction Equipment



SPIRIT

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BOOMING CROSSROADS IN THE HEART OF SOUTH AMERICA

With the population doubling every 15 years, the Bolivian city of Santa Cruz is expanding far beyond its capacity. To cope with the development, a new city is being built. Nueva Santa Cruz is a private investment riding on the economic boom.

By **Görrel Espelund** Photos by **Alvaro Gumucio Li**

In the Andean foothills lies Santa Cruz de la Sierra. Sixty years ago a small town, just a fraction of its current size. Today, the boom town of Latin America and the world's fourteenth fastest growing city. In the middle of it all lies Lafuente Group headquarters. Together with his team, Julio Novillo, owner of the group, plays a key role in shaping what will become Santa Cruz's future.

"To me this is not only another investment. This is my life's largest undertaking and my mission. The opportunity to develop a new city only comes once in a lifetime. Nueva Santa Cruz is a calling to me," says Julio Novillo.

But to understand the future, one needs to know the past.

In the 1950s, Santa Cruz de la Sierra, commonly known as Santa Cruz, was a sleepy frontier town with some 50,000 inhabitants. The infrastructure and services were limited, there was no piped water, no proper sewage system, no paved streets and insufficient electricity. Santa Cruz, in the eastern lowlands of Bolivia, was far removed from the economic and political powers in the western highlands. This was about to change.

The citizens of Santa Cruz fought hard to defend regional interests and reclaim the revenue of the region's oil industry from the central government. It was a difficult and blood-stained fight, but the uprising succeeded and at the end of the 1950's oil revenue was channelled back into the region, making urban development possible. At the same time, there were initiatives to commercialise the agriculture and expand oil and gas explorations in the region.

In 1960, new plans for Santa Cruz were drawn up. This time, the city planners had in mind a modern city housing some 300,000 inhabitants. A planning company was hired to make a masterplan for the city and the Committee for Public Works launched a series of projects to get water, electricity and telephone lines to the citizens without help from the central government.

According to Joshua Kirshner, Lecturer in Human Geography at York University, the masterplan for Santa Cruz 'encouraged an orderly and flexible cityscape to foster economic dynamism and accommodate growth, and it envisioned Santa Cruz as Bolivia's principal growth pole.'



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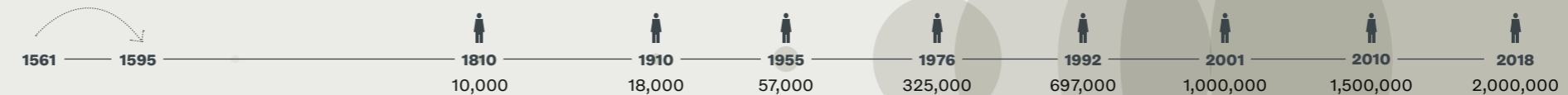
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Photo by Dave Primov/Shutterstock

01 Santa Cruz de la Sierra Cathedral is the main Catholic church in the city.
02 A panoramic view over the city.
03 In 15 years the population is expected to double.

THE EXPANSION OF NEW SANTA CRUZ DE LA SIERRA

1561 – Santa Cruz de La Sierra is founded about 200 km east of its current location. The city is moved to its present location in 1595.



1825 – After the Bolivian war of independence Santa Cruz de la Sierra becomes the capital of the Santa Cruz department.

Around 1850 to 1917 – The rubber industry leads to economical expansion and makes Santa Cruz more important and less isolated.

The 1950's – Railways connects Santa Cruz with Argentine and Brazil. Santa Cruz de la Sierra starts to expand much faster than the general Latin American city.

The 1980's – Santa Cruz de la Sierra becomes a big modern city and doubles the amount of inhabitants and triples in physically used space.

The Megaproject Listing



"Nueva Santa Cruz is designed to suit Bolivian conditions," says Hans Kenning Moreno, responsible architect for the city.

In many ways, this is exactly what happened. The city has grown with exceptional speed, not least after liberal reforms of the mid 1980's.

Today, the department of Santa Cruz is producing 30 per cent of Bolivia's GDP, its growth and per capita income are substantially higher than the national average.

The number of inhabitants in the city of Santa Cruz stands at two million and the expansion is expected to continue. In 15 years the population is expected to double. But the growth has not come without problems. The city has outgrown its infrastructure, municipal services are strained and new unorganised communities are springing up on vacant land on the fringes of the city.

Once again, it is time for an overhaul of the masterplan, but this time it will not be within the existing structures of the city. This is where Nueva Santa Cruz – a private initiative by the Lafuente Group – comes into the picture.

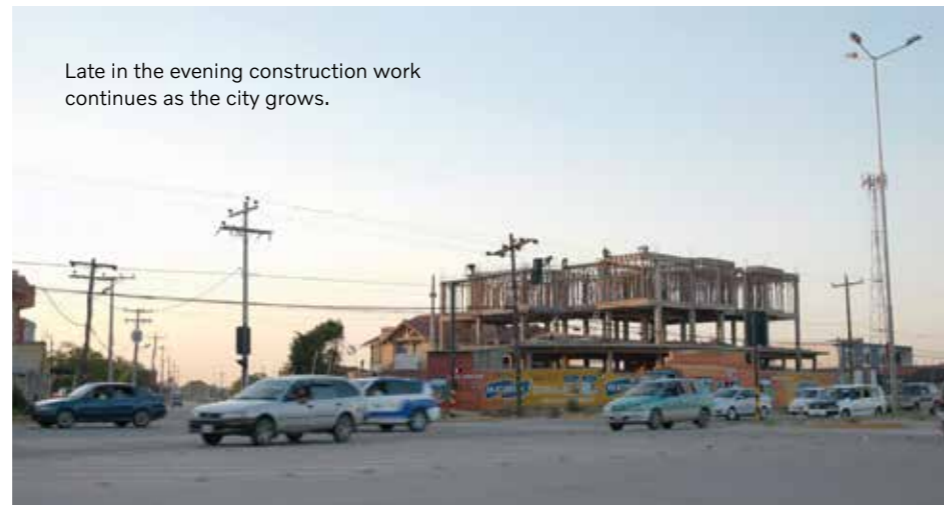
"The idea behind Nueva Santa Cruz follows an universal principle – it is easier to build something new than rebuild an old city. In an existing city it is hard to change things due to high cost, expropriation and oppositions.

In Nueva Santa Cruz, we have a great possibility to create a competitive city in terms of modern technology, urban planning and sustainability", says Julio Novillo, owner of the Lafuente Group.

Normally, the Lafuente Group – the biggest real estate developer in Bolivia – develops the land only, but this time they will develop a whole new city. Lafuente have been working together with an urban planning cooperation from South Korea and the idea is to make a green, modern and intelligent city.

"We have our vision and our dream, now we must just convince other people to come and fulfil that dream."

HANS KENNING MORENO



Late in the evening construction work continues as the city grows.



01



02



03

- 01 The flatlands around the city are rapidly transforming to new suburbs.
- 02 Man, machine and megaproject.
- 03 With a short dry season July–September, followed by tropical climate and plenty of rainfall, drainage is a key priority.



"On the surface the city might look like any other city in the world, but we have designed it to suit Bolivian conditions," says Hans Kenning Moreno, a Bolivian architect hired by the Lafuente Group to be responsible for the building of Nueva Santa Cruz.

Building of the city began in the end of 2018 and the construction will be done in phases. The whole project stretches over an area of 6,000 hectares out of which 3,000 hectares are intended for housing, 700 hectares for business activities and 2,400 hectares for urban infrastructure including green areas. When complete, the developer is looking at a population capacity of 370,000 people.

"This is a private investment so it will cost a lot of money and therefore we will build it bit by bit. We need to convince people that once it is finalized, this will be a very good city to live in. We started to build the first buildings in October 2018. We have our vision and our dream, now we must just convince other people to come and fulfil that dream."

“To me this is not only another investment. This is my life’s largest undertaking and my mission. The opportunity to develop a new city only comes once in a lifetime. Nueva Santa Cruz is a calling to me.”

JULIO NOVILLO, LAFUENTE GROUP





Originally planned as a beautiful city for 70,000 inhabitants, Santa Cruz has since long outgrown its infrastructure.

The new city will partly be powered by solar or wind energy, large green spaces are to be protected, and the city is planned in such a way that all services are within walking or cycling distance, making vehicles almost redundant.

"Our concept is to build a sustainable city, but the people of South America are not very environmentally conscious as yet. So, we are trying to fight this and adopt sustainable construction methods and technologies," says Kenning Moreno.

The new town will be located 20 minutes from the old Santa Cruz. It will benefit from the proximity to the international airport Viru Viru. From here, any major city in South America can be reached in only three hours. Also, Nueva Santa Cruz will be connected to the bioceanic road system, the main regional network of roads that runs from the Pacific Ocean to the Atlantic. It is the central position that Kenning Moreno hopes will give Nueva Santa Cruz a key position in South America.

"We are in the heart of South America and our dream is to become the preferred meeting point for the whole of South America. Bolivia is still the little brother of big countries such as Brazil and Argentina, but we could become the connecting point for all countries in the region," Kenning Moreno says.



The future Nueva Santa Cruz.

"Our concept is to build a sustainable city, but the people of South America are not very environmentally conscious as yet. So, we are trying to fight this and adopt sustainable construction methods and technologies."

HANS KENNING MORENO

2,5
BILLION

The total amount that will be invested, in USD.



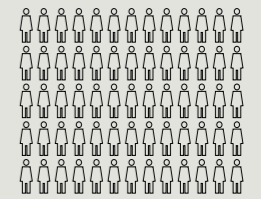
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The number of Volvo machines that will be involved in the construction of Nueva Santa Cruz. Among them compactors, wheel loaders and excavators.



2X

The population of Santa Cruz is expected to double in 15 years.



2 MILLION

Number of inhabitants in Santa Cruz now.

370,000

Number of inhabitants that can find new homes in Nueva Santa Cruz.

NUEVA SANTA CRUZ IN FIGURES

Santa Cruz has developed into a Latin American boom town. Bolivia's biggest city is growing so fast that a sibling city is now being constructed. Here are the numbers behind the expansion of South America's fastest growing powerhouse.

By Anna Werner & Kerstin Magnusson

6,000

The total hectares for the new area.



3,000

The hectares for residential areas.

700

The hectares for commercial and business areas.



2,500

The hectares for green areas.

#14

Santa Cruz is the fourteenth fastest growing city in the world.



CONSTRUCTING A NEW LIFE IN SANTA CRUZ

Working at a major site of Bolivia's megaproject Nueva Santa Cruz, excavator operator Eovaldo Uche Moya is involved in the biggest construction project in the nation's history. But Eovaldo did not only take part of building a new city – he started to build his new life too.

By **Rasmus Winther** Photos by **Alvaro Gumucio Li**



- 01** Keen soccer fan. Eovaldo Uche Moya has the flag in the cab and the crest of the national soccer team on his cap.
- 02** First steps of transformation from plan to reality.
- 03** It only takes a few moments to be impressed by Eovaldo's precision and pace.



“I believe that precision is key in my work. That and safety, to always know where my colleagues are and to collaborate with them in the best way. I appreciate that with Volvo, my excavator lets me do my job in a great way and there is always the focus on safety.”



Growing up in the middle of cattle country, in San Ignacio de Moxos in north-eastern Bolivia, Eovaldo Uche Moya did not see it as an option to stay. “I come from a poor family, so I was always thinking about moving as my parents had no opportunity to provide what I wanted there,” Eovaldo explains. Eovaldo, like many young Bolivians, sought his luck in the booming economic powerhouse of the nation – Santa Cruz de la Sierra. The influx of people to the city comes from many different places. There is a steady flow from the capital La Paz and the country's third city

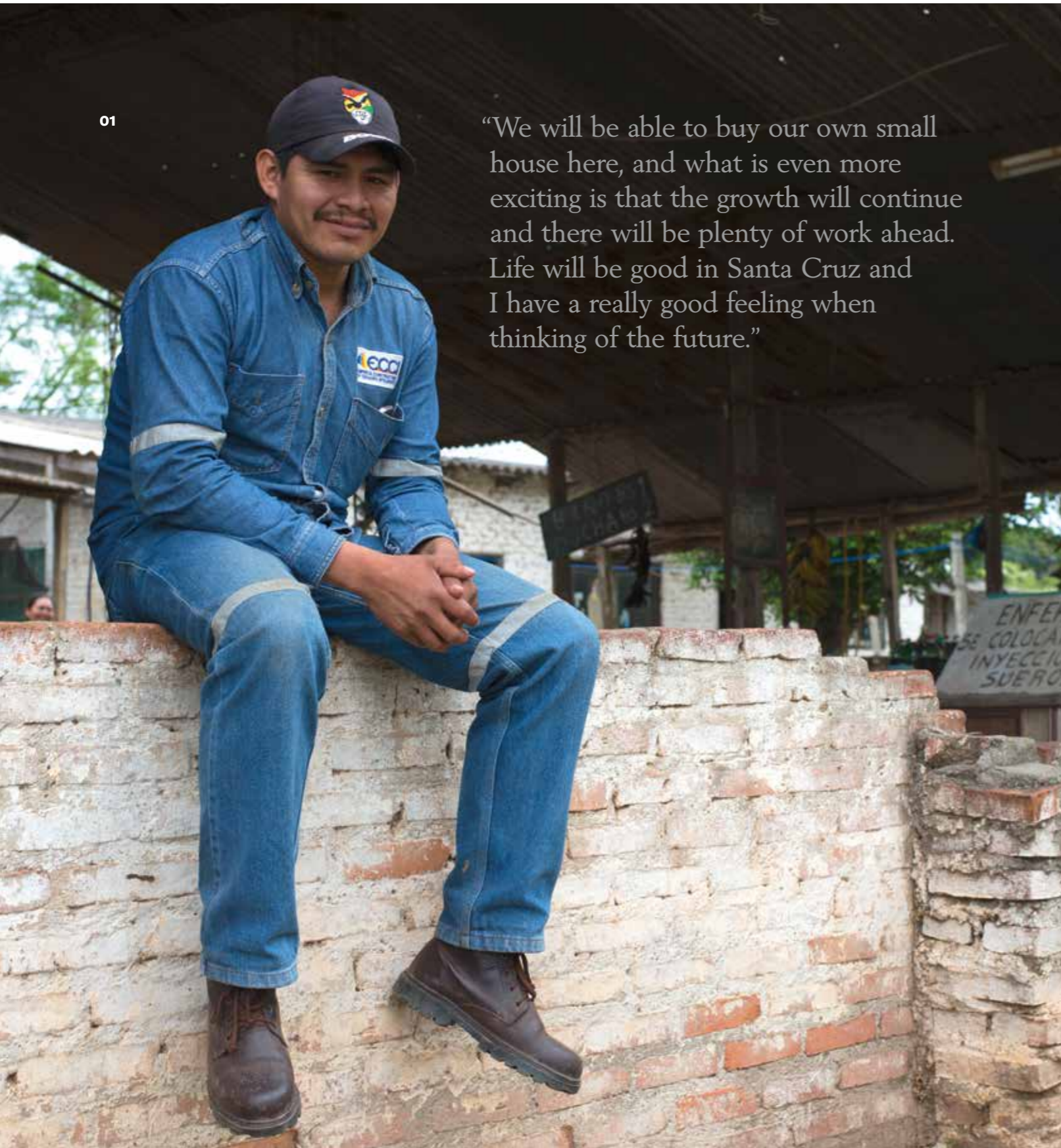
Cochabamba. But there are also Bolivians in exile, who return home to a country that has turned the tide from disruption and poverty to relative stability and growth in the past decade. **For Eovaldo, his** move to Santa Cruz was about 500km in distance, but yet a bigger transition in terms of everyday life. “My future in San Ignacio de Moxos was to work in a farm with cattle. But I wanted to do something else. Here in Santa Cruz you can find a good job and the possibility to do more.” In a city that is doubling its population every 15 years, many find that opportunity in construction, and so did Eovaldo. His talent for machinery soon became apparent and he was given a chance to learn how to operate smaller construction

equipment, and then moved on to bigger. “Experience is very important in what we do, and I would say that a minimum of two years of practice is what most companies demand of an operator,” Eovaldo says. **Today Eovaldo works** for ECCI (*Empresa Constructora de Ciudades Inteligentes*), the construction company with the main responsibility to develop Nueva Santa Cruz – a whole new city near the capital of Santa Cruz in eastern Bolivia. Arriving at one of its mayor construction sites, it is Eovaldo and his crawler excavator EC300DL that catches the eye in the huge ongoing development. With skill, accuracy and considerable speed, Eovaldo is digging a canal by the side of the main entrance road leading in to the area.



01

“We will be able to buy our own small house here, and what is even more exciting is that the growth will continue and there will be plenty of work ahead. Life will be good in Santa Cruz and I have a really good feeling when thinking of the future.”



01 Every day, Eovaldo commutes in a lonely minivan to the construction site, which when ready will be a key meeting point for the entire continent.
02 Huge volumes of red dust and soil is moved each day – the first steps of building a city beyond anything Bolivia has ever seen.



02

BOLIVIA AND SOCCER

Eovaldo Uche Moya is not alone in being a huge soccer fan. Particularly, the national team known as *La Verde* (The Green) or *Los Altiplánicos* (The Highlanders) is enormously popular. Despite an impressive home record in La Paz (3,600 meters above sea level), Bolivia have only advanced through the tough South American World Cup qualifications once, in 1994. They did however participate as invitees 1930 and 1950. So far, they boast five defeats and draw at the final stages. But in youth soccer, the super team Academia Tahuichi Aguilera from Santa Cruz de la Sierra have won the greatest youth tournaments as well as world fame for their skillful soccer. All in all, Bolivia is full of future promise – also in their favorite sport.

“I believe that precision is key in my work. That and safety, to always know where my colleagues are and to collaborate with them in the best way. I appreciate that with Volvo, my excavator lets me do my job in a great way and there is always the focus on safety,” Eovaldo explains.

Taking part in the biggest construction project in Bolivia’s history, Eovaldo still thinks a lot about his own future too. A few years ago, his parents and brother moved after him to Santa Cruz. He has

also started a family of his own with his wife, being the proud parents of three boys.

“We will be able to buy our own small house here, and what is even more exciting is that the growth will continue and there will be plenty of work ahead. Life will be good in Santa Cruz and I have a really good feeling when thinking of the future.”

As a swirling wind stirs up some red dust high up in the air, Eovaldo closes the door to his excavator and continues to build the future for his new city and for himself.



Future stars practicing for Tahuichi Academy.

THE FASTEST GROWING CITIES IN THE WORLD

Do you live in a big city? It is actually likely that you do. By 2030, urban areas around the world are projected to house 60 percent of all people. As many as one in three people will live in cities with at least half a million habitants. And the areas are growing in population, rapidly. Here, we list the fastest growing cities in the world. Santa Cruz in Bolivia makes the list at number 14.

By Kerstin Magnusson



Photo by Shutterstock

01 / BEIHAI, CHINA

Population now:
Around 1.7 million people
Annual growth 2006–2020:
10.58 percent

Like many coastal cities in China, Beihai's population has swelled with migrants from inland rural areas during the last 20 years. The reason? The government has boosted local infrastructure projects and local industry interests consequently since the 1980's. In 2008, when the recession hit everywhere, the local government made sure that the investments in infrastructure stayed steady. Beihai is not by any means a megacity – yet – but its growing pace is impressive. It tops our list of fastest growing cities by far!

Photo by Alia Dwivedi/Shutterstock



↑

02 / GHAZIABAD, INDIA

Population now:
Around 2.3 million people
Annual growth 2006–2020:
5.20 percent

It is sometimes referred to as the "Gateway of UP" because it is close to New Delhi, on the main route into Uttar Pradesh, the most populous state in India. In Ghaziabad, many important trade roads and railways meet. In itself, it is mainly an industrial city and the steel industry has always been big. During recent years, more and more construction work have been initiated that contribute to the growth in population. Ghaziabad has been connected by railway to the rest of India since the late 1880's, but the industrial boom came during the post-independence era, after 1949.

03 / SANA'A, YEMEN

Population now:
Around 3.9 million people
Annual growth 2006–2020:
5.00 percent

The capital of Yemen, and also its biggest city. Although torn apart by war and conflicts, Sana'a is rapidly growing in population. People are mainly moving in from rural areas, and the jobs are in the public sector. As a consequence of the massive immigration to the city, Sana'a has outgrown its Old City core. Sana'a is also one of the oldest populated places in the world. According to popular legend, it was founded by Shem, the son of Noah from the Bible. Besides the old parts of town, that is also on the UNESCO World Heritage List, one also finds a "new city". The old part is much smaller and retains the city's ancient heritage and mercantile way-of-living while the latter is an urban sprawl with many suburbs and modern buildings. The newer parts of the city were largely developed in the 1960s and onward when Sana'a was chosen as the republican capital.

↓



Photo by Shutterstock



Photo by CRS PHOTO/Shutterstock

04 / SURAT, INDIA

Population now:
Around 4.4 million people
Annual growth 2006–2020:
4.99 percent

In the old days, Surat used to be a large seaport, but today it is mostly famous for its diamond cutting and polishing industry, that produces a lot of job opportunities. Besides this, Surat has a history of producing textiles, including silk. It is often called The Silk City of India. On top of textile making and diamond cutting, Surat's prosperity lies in the information technology area. In May 2015, tech giant IBM chose Surat among 16 global locations for its smart cities program to help them address challenges like waste management, disaster management and citizen services.

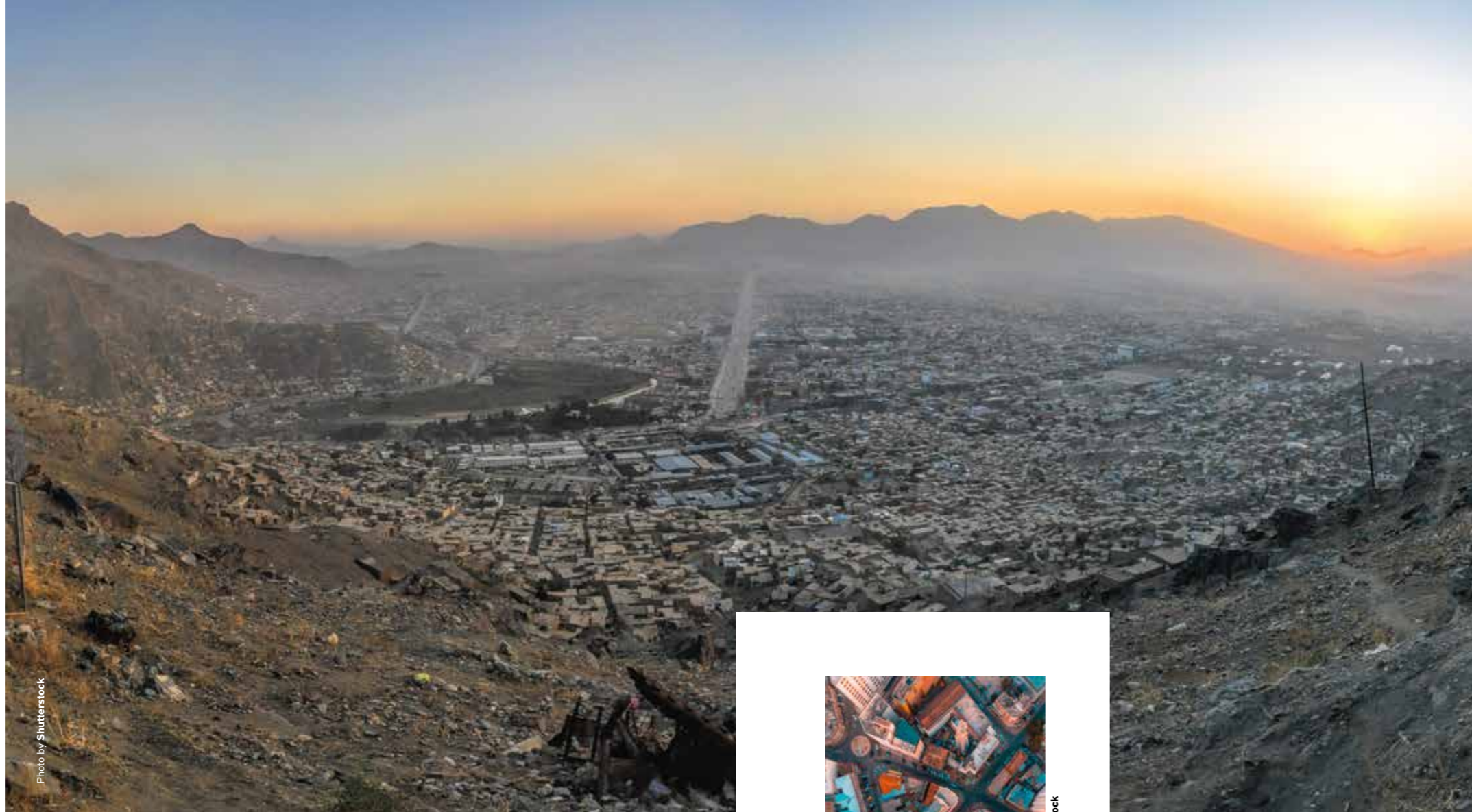


Photo by Shutterstock



Photo by CRS PHOTO/Shutterstock

11 / TOLUCA, MEXICO
Annual growth 2006–2020:
4.25 percent

12 / LUBUMBASHI, CONGO
Annual growth 2006–2020:
4.10 percent

13 / KAMPALA, UGANDA
Annual growth 2006–2020:
4.03 percent

14 / SANTA CRUZ, BOLIVIA
Annual growth 2006–2020:
3.98 percent

15 / LUANDA, ANGOLA
Annual growth 2006–2020:
3.96 percent

16 / NASHIK, INDIA
Annual growth 2006–2020:
3.90 percent

17 / KINSHASA, CONGO
Annual growth 2006–2020:
3.89 percent



14

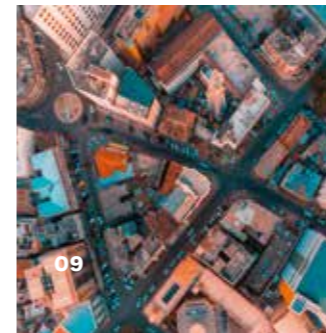
Photo by Shutterstock



05 / KABUL, AFGHANISTAN

Population now:
Around 4.6 million people
Annual growth 2006–2020:
4.74 percent

The capital of Afghanistan is also its largest city. Kabul is located high up in a narrow valley between the Hindu Kush mountains, with an elevation of 1,790 meters, making it one of the highest capitals in the world. During recent years, despite lingering conflicts in the area, the city has undergone rapid growth. In 2013, a \$1 billion USD contract was signed to commence work on the “New Kabul City”, which is a major residential scheme that will accommodate 1.5 million people. Over the last decade, the United States has invested approximately \$9.1 billion into urban infrastructure in Afghanistan.



09

Photo by Shutterstock

06 / BAMAKO, MALI
Annual growth 2006–2020:
4.45 percent

07 / LAGOS, NIGERIA
Annual growth 2006–2020:
4.44 percent

08 / FARIDABAD, INDIA
Annual growth 2006–2020:
4.44 percent

09 / DAR ES SALAAM, TANZANIA
Annual growth 2006–2020:
4.39 percent

10 / CHITTAGONG, BANGLADESH
Annual growth 2006–2020:
4.29 percent



20

Photo by Shutterstock



18 / NAIROBI, KENYA
Annual growth 2006–2020:
3.87 percent

19 / DHAKA, BANGLADESH
Annual growth 2006–2020:
3.79 percent

20 / ANTANANARIVO, MADAGASCAR
Annual growth 2006–2020:
3.73 percent

Pump It Up

THE FLIGHT OF THE EXCAVATOR

In an epic new film, a Volvo excavator has performed what is believed to be the world's first one-armed pull-up by a construction machine. We go behind the scenes during the filming of Pump It Up to meet the stars of this year's block-pulling blockbuster.

By **Daisy Jestico** Photos by **Jon Hertov**

Hollywood action star Dolph Lundgren puts Volvo's excavators to the test.



Each stunt was put through a vigorous testing process.

It is a sweltering afternoon in a Swedish sand quarry. Dust clouds are swirling around the barren landscape as a film crew zooms in to capture the moment a 2.5 ton ECR25D compact excavator hauls itself into the air using only its hydraulic boom arm. A few heart-stopping moments later and the machine is dangling from a metal frame almost 7m high, gripping the overhead bar with nothing more than a hooked bucket.

It is an incredible sight and the highlight of an intense few days of filming – and many more months of behind-the-scenes preparation. It is also one of six stunts exclusively devised for Pump It Up, a mini-movie released in October that captures the strength and versatility of Volvo CE's full range of excavators.

The film was shot over three days in July at Kjula, a 200,000 square meters site just outside of Eskilstuna, Sweden. The landscape was given a movie makeover to look like a sun-scorched desert wilderness. A line up of Volvo's finest excavators – 15 machines from the biggest to the smallest. For a company that prides itself on pushing its products to the limits, Volvo CE's cinematic offering

demonstrates what customers have known for a while – that Volvo excavators can achieve almost anything – and in doing so it has set a new benchmark for machine capabilities.

In case you have not yet seen the film, the machines steal the scene from its leading man Dolph Lundgren, when the Hollywood action hero instructs the machines to complete a series of exhausting exercises. For those less experienced with bootcamp workouts, these include push-ups, flies, rope pulls, tire flips and side-to-sides, with the jaw-dropping excavator pull-up the star of the show.

But what viewers might not have noticed is that there was a team of hard-working engineers and operators behind each and every stunt. And the operator behind the blacked-out windows of the mini-excavator as it hangs from a metal bar had arguably the most daring job on set. Stunt driver Adam Lindberg, whose day job is an instructor for the EMEA Sales Region of Volvo CE, operated the machine during the 15 takes it took to shoot.

Adam, who also helped in the week-long site preparation ahead of filming, downplayed his role in the record-breaking achievement, saying:



01



02

01 Stunt driver Adam Lindberg with on site producer Arvid Rinaldo and technical advisor Bobbie Frank.
02 Lining up Volvo's finest excavators.
03 Catching one of the last scenes before sunset.



03

Pump It Up



Pump It Up was shot over three days at Kjula, a sand quarry in Sweden.

"From the beginning I was really nervous and also quite scared, but the more time I was up there, the pressure soon began to just fall off me. I only needed to use the dipper arm and the bucket tilt – I was using the dipper arm to go up and then I used the bucket tilt to change the angle so I didn't fall off the beam."

Surely such a daring feat is a little beyond Volvo's usual brand of 'safety first'? But it is precisely Volvo CE's focus on safety that has enabled the company to achieve this stunt in the first place. Adam was supported by a team of professionals in a controlled environment – and it goes without saying that in no way do Volvo CE encourage anyone to replicate any of these stunts. Not even Dolph.

Technical advisor Bobbie Frank, who specializes in the optimal control and dynamic programming of construction machines, oversaw this particular trick, saying: "We take safety seriously, which is why we ensured the excavator was attached to a mobile crane that had chains with slack. It wasn't there to lift the machine but if something happened, we were assured that the crane would catch the machine."

In the lead-up to filming, each stunt was put through a vigorous testing process. Working with external and in-house research partners, Volvo CE calculated the exact dimensions required for each stunt and then put it through a state-of-the-art virtual reality program to analyze its real-world potential. This was done at the Volvo CE R&D department in Belley France. When it became clear that special attention was needed to execute the world's first one-armed pull-up by a construction machine, a mechanical engineering duo were called in to help modify the ECR25D.

Working from their base in Eskilstuna, machine mechanics Sofie Andersson and Tomas Nilsson took away some of the weights from the machine to make it much lighter. They then fitted the chassis

with a stronger boom from a larger Volvo excavator and increased the hydraulic pressure in the arm cylinder to the max. The fourth and final step was to reconfigure the engine. Because the excavator would be positioned at an extreme 180-degree angle, it quickly became clear that the oil within the machine's traditional diesel engine simply would not be flowing in the right direction. It was decided therefore to fit an electric engine that could power the machine at any angle.

With the machine now ready for its appearance on set, local welders Eskilstuna Allsmide then purpose-built a frame strong enough for the modified compact excavator to perform its aerial gymnastics. Ten days of rehearsal later and film crews were ready to catch the big moment on camera.

On site producer Arvid Rinaldo, who headed up the team responsible for the stunts, said:



The landscape of the site was given a movie makeover to look like a sun-scorched desert wilderness.

"These are extreme stunts and the clearest demonstration yet of the amazing potential of our Volvo excavators."

ARVID RINALDO,
ON SITE PRODUCER

"These are extreme stunts and the clearest demonstration yet of the amazing potential of our Volvo excavators. Volvo CE is well known for consistently pushing the boundaries of what our machines can do for our customers. They know that our machines are reliable, powerful and most importantly safe, but thanks to the resilience of our team of experts we are proud to showcase the ultimate dare-devil feats to an even wider audience."

The entire project represents an intense period of brainstorming, assessment and operator endurance. But long after the dust has settled from its moment in the spotlight, Volvo CE's cinematic boot camp will be an enduring reminder that even the smallest of its excavators has the muscle to put it head and shoulders above the rest.



Pump it up – watch the films

Watch the most talked about commercial in the construction business, and follow us behind the scenes for operator interviews and more.

www.volvoce.com/pumpitup



Innovation

A PLAYGROUND FOR INNOVATION

The Volvo Concept Wheel Loader ZEUX is more than a conceptual showcase for future autonomous machines – it serves as a blueprint for construction innovation.

By **Daisy Jestico**

01

Big brands love to talk about purpose, impact and innovation but it is hard to hit the mark with disruptive marketing. How can you challenge conventional ways of thinking but still lend credibility to a brand's core business? It is not as easy as it looks. And it is especially tricky with an industry as traditionally conservative as construction.

Heavy equipment and children's toys may seem an unlikely pairing but Volvo CE and LEGO® Technic have enjoyed a partnership that stretches back more than four years. Their latest collaboration began with no other brief or sales drivers except 'have fun and create a futuristic construction machine'. And it is exactly this sort of heartfelt teamwork, where both brands enjoy a separate mix of engineering skills and commercial sectors yet are entirely matched in ambition and talent, that has created something unique. The result is a case study for how to revolutionize customer productivity through collaborative research and development that looks beyond the boundaries of construction.

For the first time in the companies' history, design teams opened their inner sanctums and worked side-by-side to come up with a variety of different concepts. 2 workshops and a number of meetings during a 8 month period, at LEGO headquarters in Billund, Denmark, lead up to the engineers whittled their designs from 30-odd concepts down to one amazing blueprint for future AI-driven vehicles. And in a back-to-front case of art reflecting life, the final LEGO® Technic model and complementary Volvo concept machine have led to several potentially revolutionary patents for full-size industrial-working models.

What leant this collaboration even greater authority has been the input from a focus group of children who told high-level engineers what worked and, frankly, what did not. The kids saw the model as more than just a toy. They visualized it in the real-world and were vocal in their need to ensure autonomous technology is given a human touch. It captured a unique perspective that is rarely found in construction. In a world where our customers are learning to adapt to a more digitized world, to

attract an engaged audience through more creative marketing and to keep up to date

01 Over eight months of workshops led to one amazing blueprint for the future.
02 The Volvo Concept Wheel Loader ZEUX developed together with LEGO® Technic.



"By looking further than our own industry, we captured something unique that can genuinely change the way construction machines look and operate in the future."

MATS BREDBORG, HEAD OF BRAND AND MARKET COMMUNICATION, VOLVO CE

with ever-changing industry demands, everyone can benefit from looking beyond the old ways of working.

Mats Bredborg, Head of Brand and Market Communication, at Volvo CE, said: "It might seem unusual to have such an open collaboration, but it worked. It allowed us to test a full range of ideas across everything from functionality and scale to design and interaction. By looking further than our own industry, we captured something unique that can genuinely change the way construction machines look and operate in the future."

Does this approach serve as a blueprint for future research and development? Why not? In the end, this project proved that not only can kids be pretty insightful, but that by seeking inspiration from outside of the normal channels you can spark creative energy that results in real-world potential.



Watch the film

Learn more about the machine and the team work.

www.volvoce.com



02

CARBON EMISSIONS REDUCED BY 98%

After 10 weeks of intensive testing, Volvo CE and its customer Skanska have recorded groundbreaking results from their Electric Site research project – including a 98% reduction in carbon emissions, a 70% reduction in energy cost and a 40% reduction in operator cost.

By **Charlie Williams**

Overview of the electric site.

Vikan Kross is Skanska's second largest quarry, located just outside Gothenburg in Sweden. For 10 weeks, it has been the testing ground for Volvo CE and Skanska's Electric Site research project. Now, the results are in – and they are even better than predicted.

The results showed a 98% reduction in carbon emissions, a 70% reduction in energy cost and a 40% reduction in operator cost. Ultimately, all of this points towards the possibility of a 25% reduction in total cost of operations – and, further down the line, a future where work sites could be ten times more efficient, with zero accidents, zero unplanned stops and zero emissions. However, the 25% reduction in total cost of operations is just a prediction at this stage. As the prototype machines are part of a research project and are not commercially available, it is impossible to give a guaranteed figure.

“The targets we set out at the beginning of the project were ambitious – but we've made incredible progress, learnt a lot and seen huge potential in the Electric Site solution's environmental, efficiency, safety and cost benefits,” says Melker Jernberg, President of Volvo CE. “The results we have seen so far confirm that this research project is a step towards transforming the quarry and aggregates industry. We want to continue this good work so we are extending the testing period with Skanska until the end of 2018.”

The Electric Site incorporates electric and autonomous prototype Volvo CE machines, new work methods, and site management systems. The objective of the project is to electrify each transport stage in a quarry – from excavation to primary crushing, and transport to secondary crushing.

“With climate change reshaping our industry, we need to find new, sustainable solutions and build partnerships with organizations that have different competencies,” says Anders Danielsson, President and CEO of Skanska. “We hope this collaboration with Volvo CE will help us and our customers to reduce our carbon footprint.”

Electric Site facts

→ Electric Site is a collaboration between Volvo CE and Skanska.

→ Machines involved: one prototype LX1, one prototype EX1 and eight prototype HX2s.

→ Results:

- 98% reduction in carbon emissions
- 70% reduction in energy cost
- 40% reduction in operator cost

“By collaborating with a customer at an early stage – as we’ve done here with Skanska – it becomes much easier to develop concepts faster, which ultimately brings more value to us and our customers.”

UWE MÜLLER, CHIEF PROJECT MANAGER FOR THE ELECTRIC SITE PROJECT



Martin Lundstedt, President of the Volvo Group, Melker Jernberg, President of Volvo CE, the CEO of Skanska Anders Danielsson and the Minister of Enterprise and Innovation; Mikael Damberg.

Three concept machines make up the Electric Site solution: the HX2 autonomous, battery-electric load carrier, the LX1 electric hybrid wheel loader and the EX1 70-ton, dual-powered, cable-connected excavator.

→ Eight HX2s were used onsite at the quarry, transporting the material from the primary mobile crusher up to the secondary static crusher. When it came to energy use per ton, the HX2s proved that they could help Volvo CE take a big step towards achieving its future vision where work sites are ten times more efficient.

→ The LX1 – which organized the piles of material at the site – delivered more than a 50% improvement in fuel efficiency, as well as significant reductions in emissions and noise pollution, compared to its conventional counterparts. The LX1 is a series hybrid that incorporates electric-driven hydraulics and a significantly smaller diesel engine.

→ The EX1 was used to load the primary crusher at the Vikan Kross quarry. The base machine for the EX1 is a Volvo EC750 crawler excavator that has been upgraded to incorporate an electric motor in addition to the diesel engine. Throughout the research project, the excavator was plugged into the grid, meaning that it was a zero emissions machine. If the cable is connected, the EX1 will automatically start in electric mode. If it is not, it will start in diesel mode. It is operated in exactly the same way as a conventional Volvo excavator.

“Once the testing at Vikan Kross concludes, our focus will shift towards maturing the technologies involved in the Electric Site project and improving reliability,” concludes Uwe Müller, Chief Project Manager for the Electric Site project. “By collaborating with a customer at an early stage – as we’ve done here with Skanska – it becomes much easier to develop concepts faster, which ultimately brings more value to us and our customers.”



Prototype EX1 dual-powered, cable-connected excavator.

Volvo Concept Lab



Prototype LX1 electric hybrid wheel loader.

Volvo Concept Lab



Fleet of HX2 autonomous, battery-electric load carriers.

Volvo Concept Lab

5G VOLVO CE PILOTS PIONEERING TECHNOLOGY

Volvo Construction Equipment will be among the first in the world to trial 5G mobile technology as part of a unique collaboration with mobile operator Telia Company. The test period will be two years long and result in improved autonomous machines.

By Anna Werner

The Telia journey to a 5G partnership program represents a new era of digital innovation and aims to provide a select group of industry partners with an innovative platform to develop their own technologies. For Volvo Construction Equipment, this means pushing the boundaries for autonomous machines and developing site solutions that increase safety, productivity and uptime.

Only a handful of companies from across the Nordic countries – and from a range of different industries – will be chosen to take part in the two-year program. It is a joint collaboration between Telia with mobile telecommunications company Ericsson as technology partner.

Patrik Lundblad, Volvo CE's Senior Vice President of Technology, says: “The advantages of a faster, more reliable 5G network represent a huge step forward in connectivity. Within the construction industry it opens up great potential for processing mobile data and will inevitably impact the ways in

which our machines communicate and interact remotely. To be at the forefront of this digital revolution and collaborate on developing new technologies is a gamechanger for Volvo CE.”

This new generation of mobile network is expected to deliver transfer speeds considerably faster than the current 4G network – and is therefore capable of transporting huge amounts of data in far less time. Volvo CE will test its potential by creating a local cellular network at the facility in Eskilstuna and use it to expand the company's competences and develop its ongoing research into autonomous technology.

Calle Skillsäter, Volvo CE's Technical Specialist for Connected Machines, says: “5G allows us to transport data in ways that we could only ever dream of and can increase the possibilities for autonomous and remote-controlled machines in our future. By eliminating the potential safety hazards and downtime associated with operations like mining, we can move closer to fulfilling our ambitions to deliver zero emissions, zero accidents and zero unplanned stops.”

THE 5G FACT BOX: EVERYTHING YOU NEED TO KNOW ABOUT THE FUTURE OF DIGITAL COMMUNICATION

What does 5G mean for consumers?

5G for consumers means internet connectivity in many more objects than what we see today. Not only cell phones, cars and refrigerators can be connected with 5G, but entire buildings or even cities. The big change is going to be on a societal level, rather than for the individual.

How will 5G change our lives?

While previous technologies (3G and 4G) were driven by mobile internet usage, 5G is expected to be mainly used for the so called “Internet of things”, such as connected and self-driving cars. Smart cities, where healthcare, traffic and other essential society functions will be dependent on cloud access, can only become a reality with 5G. The well expected success of self-driving cars will only be possible when 5G networks are available. One key aspect is that the time it takes for a device to “react” will be dramatically shortened with 5G. If an autonomous car is told to break, it will be able to break much faster with 5G.

How powerful will 5G be?

The standard for 5G is not fully established, but the expectation is 10–20 GB per second. That means that an average feature movie could be downloaded in one second.

When will 5G become a reality?

5G technology is expected to be launched on a large scale in 2020–2023. But development may come sooner. USA and South Korea are among the trail blazers.

100 YEARS OF RIGID GREATNESS

Volvo's new rigid hauler, the R100E, has a strong DNA. The heritage lines dates back almost one hundred years. Here is how the rigid haulers have evolved over time. Today, the rigid hauler is better equipped to move more load with less fuel consumption than ever.

By Anna Werner

2018: R100E

Important features:

01 / HIGH PERFORMANCE AND PRODUCTIVITY

Volvo Dynamic Shift Control provides excellent automated control to ensure the essential worksite power, performance and comfort. Results in efficient fuel consumption and an ultimate low cost per ton.

Two retardation systems, either from the transmission fluid retarder or rear brake

variable pressure retarder, upholds a safe and productive performance on all jobsite conditions.

02 / SAFE AND QUICK SERVICING

Safe and quick maintenance interventions aided by methodically installed grouped service stations, onboard machine health check read outs and direct rim mounted wheels.

03 / OPERATOR COMFORT AND SAFETY

The R100E operator experience is provided by the latest designed cab with the essential ergonomics and protection.

04 / LOW OPERATIONAL COSTS

Durable design provides long component lifecycle and high machine uptime.



1974: 33-19 TITAN 350t

The largest, highest payload capacity truck ever built. Constructed in 1973. Only one ever built (constructed before cost efficiency was a priority). The Titan remained the highest capacity haul truck in existence for 25 years:

- Payload capacity of 350 short tons (320 t).
- Net vehicle weight of 509,500 pounds (231,100 kg).
- Height: 22 ft 7 in (6.88 m).
- Top speed of 29.8 mph (48.0 km/h).
- Went to work in Canada and remains there today as a monument over engineering excellence, retired from duties in 1991.



1950: R15

First Rigid Hauler manufactured at the Motherwell facility in Scotland, UK, in 1950.

Important features:

- Brakes were controlled by compressed air.
- Air assisted clutch which was controlled by a pedal and mechanical linkage.

Engine DNA to the first Rigid Hauler, R15, lines back to 1919.

Proven truck heritage of the R15, lines back to 1934.

1920 1930 1940 1950 1960 1970 1980 1990 2000 2010 2020

Transmission of the R15 origins back to 1946 with heritage lines back to 1915.

1974: R17



1980: 3311D / 1989: 3311E

Important features:

- Engine power 671 to 783 kW.
- Transmission retarder added.
- Dry disc front brakes replaced drum/dual shoe brakes.
- Air actuated brake system replaced with full hydraulic actuation.

2002: TR100 MTU

1998: 33100B

1972: 33-11 80t

1975: 33-11B

1977: 33-11C

1989: 3311E

1996: 33100 91t

2000: TR70

1999: TR100

5 CLEVEREST GREEN INNOVATIONS

Climate change is a reality and we know that it is accelerated by our actions. But humans are by nature innovative – and although our industrial revolution may have had huge environmental impacts, it is our technological revolution that might just save the day. Here we look at some of today's top environmental solutions.

By **Pippa Fitch**



01 / URBAN FARMING

The global population is expected to rise from 7.3 billion today to 9.7 billion by 2050 – with the biggest increase concentrated in our cities. The farming and transportation of food to meet the demands of this growing population is a challenge that has not gone unnoticed. But – urban farming could be the answer. It refers to the practice of cultivating, processing and distributing food in or around a town or city. If implemented consistently in cities around the world, 180 million metric tons of food could be produced in cities every year. But food isn't the only benefit of urban farming. There is storm water runoff retention, pest control, reduction in inner city heat and energy saving through lower transport costs. If all these factors are considered, urban farming could have a global net worth of \$160 billion annually.



02 / ZERO CARBON BUILDINGS

The World Green Building Council (WorldGBC) is demanding that all new construction must be carbon zero by 2050, if we are to meet global climate targets and keep the planet at a safe temperature. This means buildings must be designed to high energy efficiency standards and use no CO₂ emitting fossil fuel energy to operate. Zero carbon buildings are already a reality. In 2012, the first zero carbon building (ZCB) in Hong Kong was opened. ZCB is constructed out of low impact material and orientated to allow for natural ventilation and shade. This building goes beyond the traditional definition of zero carbon by offsetting the embodied carbon in its construction process. It does this by producing renewable energy on site, from a combination of photovoltaic panels and biodiesel tri-generation systems. Even more ambitious projects are already underway, including The Sustainable City in United Emirates, which is set to home a population of 2,700.



03 / SOLAR PANEL ROADS

Our planet is covered in roads – and by 2050 our global network of highways is projected to increase by 60 percent. If roads are partly responsible for our carbon emissions – through the cars we drive – surely there's a way to redress our polluting ways and put this increased infrastructure to good use? Research is now ongoing to see if these roads could double up as power generators, by swapping tarmac for solar cells that could be used to power nearby buildings, street lights and road signs, or possibly your car as you drive along. France and China are already trialing solar roads. While it's currently an expensive and untested innovation – it is estimated that it would cost \$56 trillion to replace the US roadways alone – it could be a neat solution to greening up our infrastructure if we get this right.

04 / ELECTRO-MOBILITY

Electric vehicles are already driving on our roads and the demand for electro-mobility in other forms of transport is advancing every day. The electrification of construction machines, for example, will become increasingly important as we look for solutions that cut down emissions and make machines and sites safer and more efficient. Volvo Construction Equipment recently unveiled its concept EX2, believed to be the world's first fully electric compact excavator prototype. When charged using renewable sources, electric machinery like this can deliver zero emissions, higher machine efficiency, lower noise levels and reduced ownership costs. As the industry begins its transition to this new era of intelligent automation, the development of electric construction machinery is advancing.

05 / 3D PRINTED HOMES

The first 3D printed homes are underway in the Netherlands with the aim of having these modern-day homes habitable by the middle of 2019. The one-to-three story homes are printed from a specially formulated cement that comes out of a 3D printer like whipped cream. This novel method provides such precise measurements that it is said to produce zero waste. An added advantage is that homes can be purpose-built and suffer none of the shape restrictions that limit traditional building methods. And if the 3D printer operates on site, then transport costs are minimal, and carbon emissions reduced. This type of construction is predicted to become mainstream within the next decade.



THE GLOBAL CONSTRUCTION MARKET DIGS EXCAVATORS



Increasing urbanization and rising construction investment are key drivers for the market, but there is no one size fits all. From big to small, we go on a global hunt to find the world's most popular excavators.



01

VOLVO'S FORMIDABLE EXCAVATOR SIX PACK

Was there ever a machine more adaptable, scalable, or shape-shifting than the excavator? Here we look at the versatility behind a selection of Volvo Construction Equipment's mighty machines.

By **Brian O'Sullivan**

01 / THE 'WHEELY' LONG-NECKED ONE

It is not only its wheels that makes this excavator special. Designed for the waste and recycling industries, the new EW240E material handler weighs in at 26 tonnes, and with its 6.5m straight boom and 5m gooseneck arm, the machine has an impressive forward reach of more than 11m.

Operators can work in comfort in the spacious cab, which can be raised up to five meters above the ground for an eye-level view. To enhance safety, the Volvo EW240E material handler is equipped with a limited arm that avoids collision between the cab and the grapple.

Source: Off-Highway Research.



02 / THE ONE WITH A 'HIGHER' PURPOSE

To provide the most versatile machine possible on demolition job sites, EC700CHR reaches a lofty 32m but it can also be fitted with both high-reach equipment and a standard boom and arm. The ability to switch from one type of boom-arm configuration to another with ease, offers a higher return on investment. And a hydraulic modular joint enables a fast and safe change from demolition to standard attachment, boosting machine utilization when not required for high-reach projects. Watch this space – an even bigger and better demolition excavator is coming soon from Volvo CE.

03 / THE ONE WITH A SHARP BRAIN

Levelling sites, digging trenches, grading slopes – or creating complex, multi-dimensional site profiles – all have never been easier, thanks to Dig Assist, Volvo's machine control system for excavators.

Powered by the award-winning Volvo Co-Pilot in-cab console and incorporating sensors and the latest location technology, Dig Assist delivers excavation accuracy in a fraction of the time normally taken using conventional methods. Simple and intuitive, the operator can set up projects in just a few touches by selecting the required job parameters. The operator can then monitor progress of the job as it gets underway and on-screen alerts indicate when pre-set parameters are met.



04 / THE QUIRKY ONES

Need to convert your excavator into a rock drill – no problem! Or how about transforming your Volvo excavator into a prehistoric-looking amphibious dredger with super long tracks, boom and arm? Step right in, because Volvo has a long history of adapting excavators for a whole world of strange and wonderful specialized applications.



06 / THE HEAVYWEIGHT ONE

With a knockout bucket breakout force of 424 kN and an arm tear-out force of 408 kN, the 90 tonne class EC950E is the Muhammad Ali of excavators, offering superior digging force, particularly when working with hard and heavy materials. Constant high hydraulic pressure delivers power to the machine when needed. Built with protected components, including a heavy-duty boom and arm, a strong frame structure, and a heavy-duty plate, the EC950E is no pushover, and can be relied on for longevity and sustained uptime in demanding applications.

05 / THE ONE WITH A SMALL BUM

The ECR18E is a 1.8 tonne class machine that can squeeze into the tightest of spaces, and thanks to its ultra-short tail design – the shortest radius in the Volvo range – it can work close to obstacles without colliding with them. Despite its short tail design, the ECR18E remains highly stable all round – its variable undercarriage can retract to less than 1 meter wide to enter confined areas – or expand to a more surefooted 1.35 meters.



EVOLVING WITH EASE

Volvo Financial Services and Volvo Construction Equipment join forces to help transition Chinese mining company Jin Kai Yuan Technology & Energy Development into a full-service provider.

By **Chi-an Chang** Photos by **Ashley Tang**



“The proactive total solution from Volvo Financial Services and Volvo Construction Equipment made the equipment purchasing process very efficient,” says Zhang Yunliang, president at JKY Technology and Development.

Change is hard and transforming a business can be particularly challenging. But with the help of Volvo, Chinese firm Jin Kai Yuan Technology & Energy Development (JKY) has changed its business from an equipment leasing company serving mining activities to a full-service provider that not only mines raw material but also manages the entire process from pit to the port. The Inner Mongolia-based company kicked off its transformation in 2016 and hasn't looked back since.

“As the demand for mining is growing every day, the industry just couldn't continue the way it was. We saw an opportunity and knew our business could succeed if we could come up with a solution that boosted production in the most efficient way possible,” said Zhang Yunliang, president of JKY.

To boost mining production and meet growing demand, JKY developed a

strategy around expanding its fleet of construction equipment. After surveying the earthmoving equipment market, the company was interested in Volvo but was concerned with cash flow management.

At this point, Volvo Financial Services joined the discussions and was able to alleviate those worries. It offered a tailored payment plan that would ease cash-flow and tax issues for JKY. On top of this, VFS proactively helped negotiate a lower insurance rate for the company by documenting its sound management practices and low historical risk.

With the proper financial support in place, Volvo Construction Equipment was able to send experts to survey jobsites where JKY worked. After these visits Volvo recommended specific earthmoving models to meet JKY's needs.

“The proactive total solution from Volvo Financial Services and Volvo Construction Equipment made the equipment purchasing process very smooth and efficient. That's why within two

weeks of seeing the proposed payment plan we purchased 50 EC480DL crawler excavators,” said Yang Zhan Sheng, director of operations at JKY.

JKY purchased the crawler excavators from XATG, Volvo's dealer partner based in Xian. The EC480DL crawler excavators are working at four coal mining sites — two in Inner Mongolia and two in Shaanxi Province. Thanks to the EC480DL's short cycle time and high performance, on average, each crawler excavator loads 350 m³ of material and works 20 hours daily for JKY.

“We chose Volvo's EC480DL because it offers high overall lifetime value — combining high uptime and resale value with fuel efficiency and excellent operations,” Yang said. “Plus, we really appreciated Volvo sending experts to understand our needs and then providing training to ensure we optimized machine operations and fuel consumption.”

The EC480DL has an operating weight

“This strong aftermarket service gives us the operational reliability and peace of mind we need as our business expands.”

**ZHANG YUNLIANG,
PRESIDENT OF JKY**

between 47,300 kg and 53,100 kg. Its engine has gross power of 265 kW and includes an automatic idling system which triggers when the levers and pedals are not activated. This not only lowers fuel consumption but also reduces noise levels in the cab. The EC480DL also has a reinforced heavy-duty boom and arm built from high-strength tensile steel

making it a perfect choice for mining and giving it extra reliability. Bucket capacities for the unit range from 1.77 m³ to 3.8 m³.

JKY purchased Volvo's telematic system CareTrack for all the EC480DL excavators and said the insight into real-time data it provides allows the company to monitor features such as fuel consumption, operator performance and maintenance needs.

“We get data daily that allows us to determine which machine needs proactive maintenance and which operator could benefit from more training,” Yang said. “Every member of JKY's executive leadership team has access to the data, which helps us optimize operations and our business.”

The partnership with Volvo has proved such a success that in 2019, JKY plans to add more Volvo excavators to bolster operations as the company's CEO, Zhang, explained.

“We are really impressed with the support we've received from Volvo

Financial Services, Volvo Construction Equipment and XATG,” he said. “We plan on adding another 50 EC480DLs to our fleet because we've experienced their efficiency and reliability as well as the aftermarket support that comes with them. Anytime we have equipment issues, whether it's maintenance or parts, XATG responds within 24 hours. This strong aftermarket service gives us the operational reliability and peace of mind we need as our business expands.”

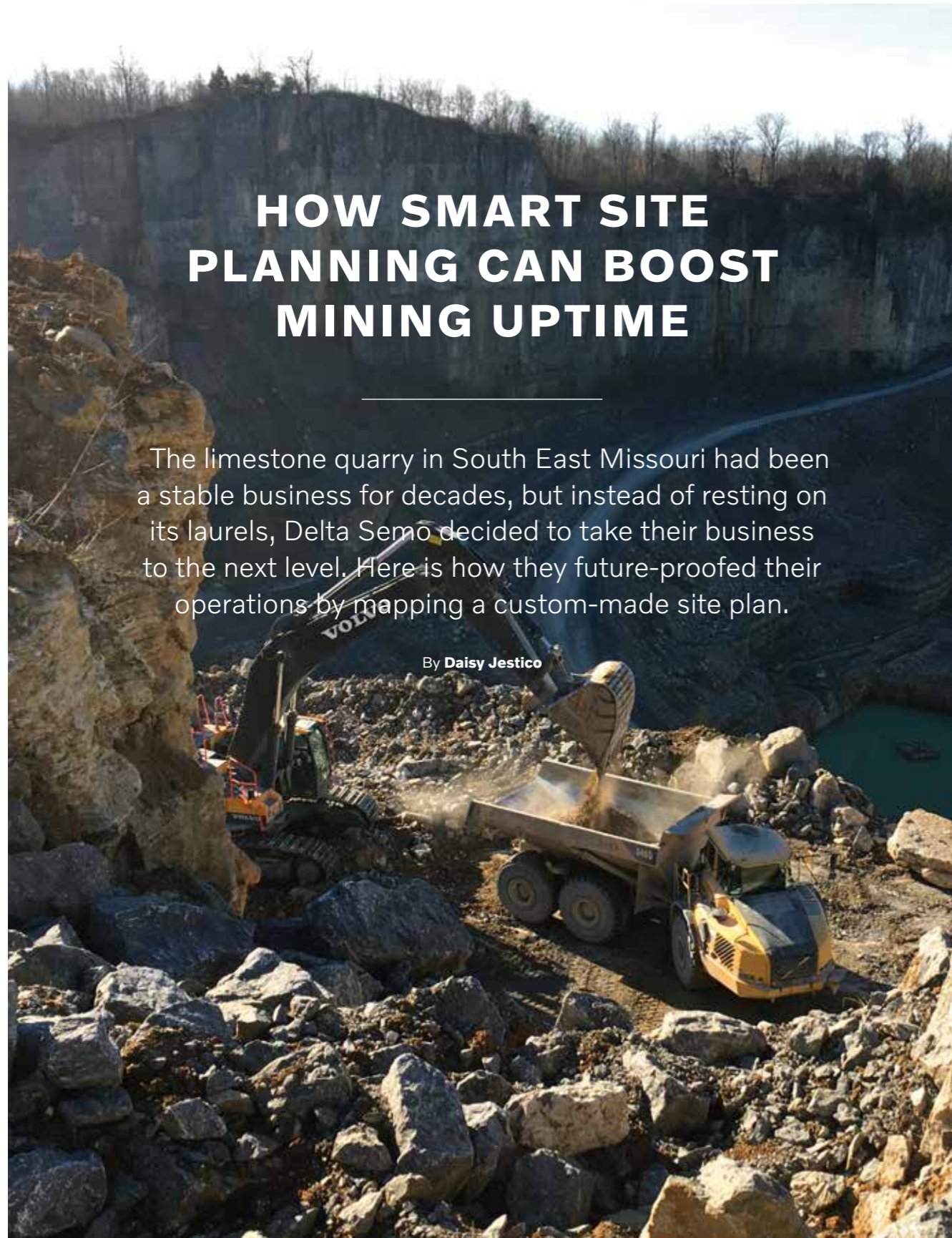


After market support in Inner-Mongolia.

HOW SMART SITE PLANNING CAN BOOST MINING UPTIME

The limestone quarry in South East Missouri had been a stable business for decades, but instead of resting on its laurels, Delta Semo decided to take their business to the next level. Here is how they future-proofed their operations by mapping a custom-made site plan.

By Daisy Jestico



“If Volvo CE can contribute in any way to a customer’s success, we become more than just a supplier, we are a true business partner.”

DAVID NUS, DIRECTOR OF GLOBAL KEY ACCOUNTS



The 200-acre Delta SEMO quarry in South East Missouri, just outside the town of Cape Girardeau next to the Mississippi River, has been mining limestone for the local construction industry for more than 40 years. Typically producing between 700,000 to one million tons a year, mining takes place in an open pit that is now over 400 feet deep. The business is fighting fit and continues to excavate top quality stone that remains in demand. But refusing to rest on its laurels, the quarry wanted to future-proof its operations in order to ensure success well into the future.

Delta’s management worked closely with the Global Customer Solutions team at Volvo Construction Equipment to see how to reduce costs and make its operation even more efficient. Taking a closer look at the customer’s fleet of machines is just one consideration in this complimentary site assessment program. Drilling, blasting, crushing, stockpiling – all of this was carefully analyzed over the Volvo CE team’s two week visit at the site. They also looked at safety practices, site layout, business planning, reserves planning, environmental aspects and maintenance practice.

While operations were running well via 11 work benches, little tweaks were suggested to boost things further. The assessment team – led by David Nus,

Director of Global Key Accounts at Volvo CE, and Craig Griffiths, Manager of Customer Solutions at Volvo CE – encouraged the quarry to move ahead with plans to attack the overburden. By helping formulate the best way to remove this waste rock covering the valuable limestone, the business could take advantage of the good material hidden beneath it.

Other suggestions included widening the pit, so they could dig even further, widening the haul roads to allow for two-way traffic of rigid dump trucks and reducing the gradient of those roads to a 8–10 percent grade. This would allow the organization to increase fuel efficiency and boost the number of production cycles.

“Our main role at Volvo CE is to sell mobile equipment, but that’s not our only job,” says David. “In these site assessments we just want to be able to add value to our clients, highlight what’s important and advise organizations on how to think strategically for the future. If Volvo CE can contribute in any way to a customer’s success, we become more than just a supplier, we are a true business partner.”

01 From left David Nus, Director of Global Key Accounts at Volvo CE, Will Gmerek, Sales at dealer Rudd Equipment Company, Mike Martin, Aggregates Area Manager of Delta Companies Inc, and Craig Griffiths, Manager of Customer Solutions at Volvo CE. **02** Site assessment in progress.



FOUR FACTS ON VOLVO CE AND THE TRADE SHOWS

It is Bauma season in the construction industry. With bauma CHINA behind us, and bauma MUNICH in front of us, trade show news is the number one topic in the construction business right now. Here is Volvo Construction Equipments presence at a glance.

By Anna Werner

11

The number of machines Volvo CE showcased at bauma CHINA in November.



2

The number of Volvo Group Presidents who joined the exhibition. Volvo Construction Equipment President Melker Jernberg and President of Volvo Penta, Björn Ingemanson held a press conference talking about market trends, industry developments and their companys visions for the future.



9

Volvo CE will launch its integrated customer service solution. The Volvo Services contains 9 categories: Fuel Efficiency, Productivity, Safety, Finance, Uptime, Attachment, Rental, Parts and New Life.

8TH OF APRIL 2019

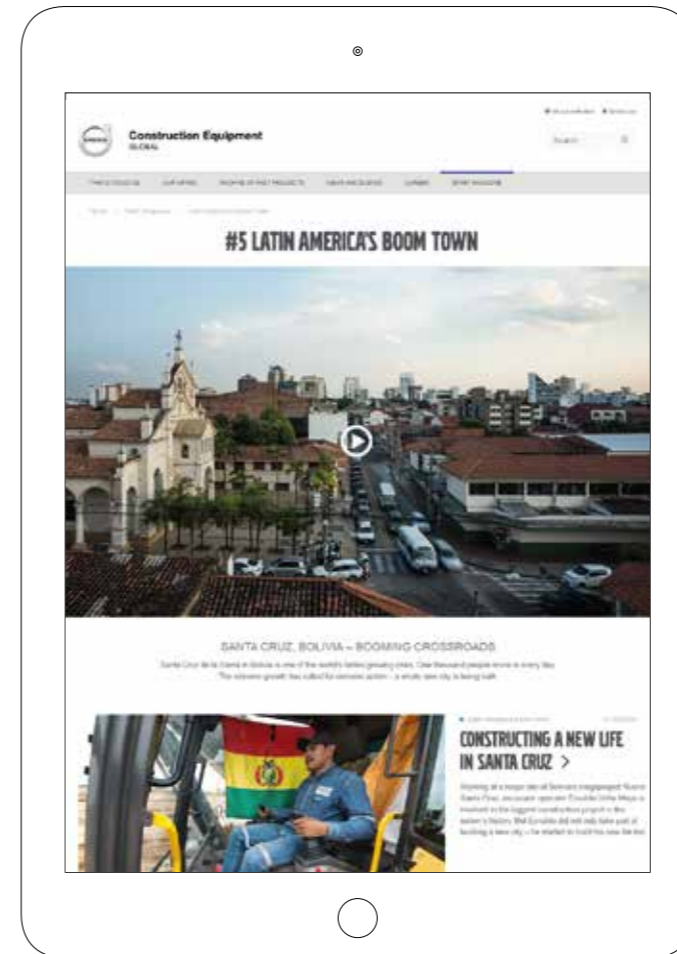
The opening date for the triennial bauma MUNICH. Stay tuned for Volvo news on the exhibition via our social channels.



www.volvoce.com

SPIRIT ONLINE

The magazine you are holding in your hands is just one part of the new Spirit. On our global website volvoce.com, you will find more exclusive content from films to articles from around the world. Here are some highlights.



VIDEO: 60 SECONDS ON EXCAVATOR UPTIME

There are a few simple checks that are easy to overlook. Here we look at some of the key areas you need to keep in mind to make sure your machine stays up and running.



VOLVO CE UNVEILS ELECTRIC COMPACT WHEEL LOADER CONCEPT

Volvo Construction Equipment demonstrated the LX2 electric compact wheel loader at the Volvo Group Innovation Summit in Berlin. The prototype machine delivers zero emissions, significantly lower noise levels, improved efficiency and reduced operational costs.

FIVE MACHINE INNOVATIONS PROMISING TO CUT FUEL EMISSIONS

With the rise of fossil fuel prices and the pressure to lower carbon footprints many consumers and companies are demanding more fuel-efficient vehicles. Here we explore the truth behind some new innovations.

↑ MEGAPROJECTS RESHAPE SOCIETIES.

You have read all about it – now watch the films. Spirit's film team will take you to some of the world's biggest construction sites. Meet the construction workers and the machines doing the job.



THINK INSIDE THE BOX

When we started the process of developing the next generation of construction machines we wanted to challenge ourselves. Not just repeat the old think-outside-the-box-mantra without really thinking outside any box other than the conference room. (We actually consider ourselves being quite creative but that's nothing we'd ever say in an ad, because we're Swedish and Swedes are humble.)

Anyway, we thought: what if we asked our friends at the LEGO® Group to see if they could bring some new ideas to

the table? They sure did. And together with a bunch of amazing kids, we developed a Concept Wheel Loader called ZEUX packed with some truly spectacular features.

The "real thing" will take more time to develop, but that shouldn't stop you from getting the LEGO Technic version of it (available in stores in August). And in case you want to watch the full story about the project, go to volvoce.com/zeux. A perfect example of what can happen when you decide to think inside the box instead of just doing things the usual way.

