

SUSTAINABILITY

Researcher Helena Berg wants more action in the construction business.

FUTURE TRENDS

They used to be grey – but now highways around the world turn green.

A DAY IN THE LIFE

He changed Eskilstuna for Dubai. Meet the Business Manager Per Lorentzon.

MEET THE GIANT

Volvo's new rigid hauler line is released, designed to boost productivity.



SPRIT

Volvo Construction Equipment Magazine, Summer 2018

THE NEW PARIS

It is called the European construction site of the century. 200 kilometers of new metro lines will reshape the French capital.



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ARE YOU PREPARED FOR THE FUTURE?

The legendary founder of Ikea, Ingvar Kamprad once said: "Almost everything remains to be done. The future is bright." The saying was not intended for the construction industry, but the quote describes the industry's current status well. We have the ability to construct a smarter, greener, more connected society. But how do we manage our opportunities?

A recent study published by think tank McKinsey Global Institute shows half of the world's infrastructure needs would be met if construction business became as productive as the rest of the world's economy. Manufacturing grows with approximately 3,6 percent per year, and the total economy with 2,8 percent, while the construction business only grows with 1 percent. In fact, the construction industry misses out on 1,6 trillion dollars every year, due to low productivity.

We are all familiar with the obstacles. Even the smallest construction projects are multi-disciplined events that involve hundreds of individual actions. When scaled up to mega project size, managing the sequencing of man, machine and material so that the right things are done at the right time and place is a logistical headache that the industry has been grappling with for generations.

But change is on its way. At Volvo CE we meet forward thinking customers who make inroads in

productivity savings in a number of inspiring ways. The examples are plenty and come from different sectors. It is safe to say that there is no quick fix to improve productivity on a global scale. The change will come via a mix of new technology, old process being shook up and new government policies.



Looking at the bigger picture. In this issue of Spirit we have visited three mega projects that are reshaping society. We take a look at the construction of Dubai's giant new airport and meet the Emirate born Nasser Ahmed Al Bloushi who has an inspiring personal career history where curiosity, respect and ambition has played key roles. From the extreme heat in Dubai we encounter the arctic cold in Kiruna, Sweden's northernmost city where the whole city is being moved. Finally, we visit Paris and look at the French capital's new revolution. This time the drama is played out in public transportation.

Tiffany Cheng

Director, External Communications
Volvo Construction Equipment

SPIRIT

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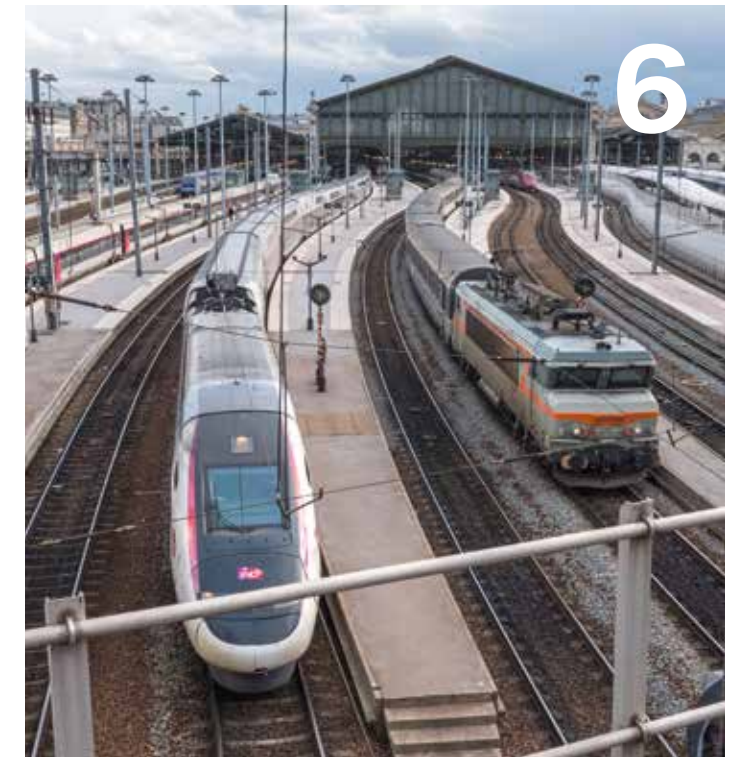
51. SPIRIT ONLINE

You have read the articles. Now watch the films. Video material and more on Spirit magazine online, volvoce.com/spirit.

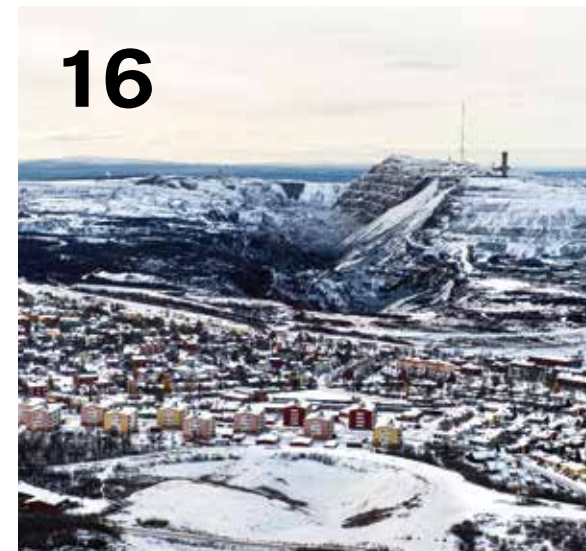
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16



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42



14



TRANSFORMING A CITY FOR THE FUTURE

Hundreds of kilometers of new subway lines are being built in Paris. They are part of The Grand Paris Express – at the moment the largest construction project for public transportation in Europe. With it come new homes, work opportunities and a serious ambition to really give new life to the suburbs of Paris.

By Kerstin Magnusson Photos by Kristofer Sandberg

For a long time now, the public transportation system in Paris has suffered from growing pains. Imagine a belt, tightly drawn around the city, squeezing harder and harder. The existing subway lines, both subterranean and above ground, are overpopulated during rush hours. The roads surrounding the city, in particular the so called Périphérique, are dividing the greater Paris area with the inner city. The result? Constantly jammed roads and time-consuming commuting for the citizens of one of Europe's biggest cities.

The solution can, and most probably will be, The Grand Paris Express. In about one decade's time, it will ease the pain, and loose the belt. 200 kilometers of subway lines are right now being built. A big number of companies within the construction field are involved, including Volvo CE.

It is a huge and ambitious project, and Europe has never seen anything like it. Isabelle Rivière explains the challenges that needed to be met when it all started, in 2008.

"People lived, and live, in the east and go to work in the west. So we had to modernize our public transport network. Currently we have a star-shaped network with Paris at the center whereas most travels are actually from one suburb to another. The idea about a circular subway line came up, joining the tips of the star in order to create connections so that people don't have to go through Paris to go from one suburb to another."

Apart from the pure transportation issue in the city, the project also aims to connect the smaller cities around the center with each other. A vivid example of this is the construction of one The Grand Paris Express hubs in the small city of Clamart, just south of Paris. There, the work started some years ago and the construction site is huge.

"With this station, the small cities Clamart, Vanves, Malakoff and Issy-Les-Moulineau will be connected in a way that we haven't seen before. When it is finished, it will save loads of time for the commuters," says Gualtiero Zamuner, Project Manager for the site on behalf of Société du Grand Paris.



01

“People lived, and live, in the east and go to work in the west. So we had to modernize our public transport network. Currently we have a star-shaped network with Paris at the center whereas most travels are actually from one suburb to another.”

ISABELLE RIVIÈRE



02

01 The skyline is the same. The current big transformation of Paris is underground.
02 Five million Parisians use the metro every day.

THE GRAND PARIS EXPRESS

It is the largest transport project in Europe, and consists in a fundamental rethink, redesign and focus on the public transport network on the scale of the metropolitan area. The purpose of this exercise is to avail Greater Paris with multimodal transport solutions, more integrated transport services, hence supporting a model of polycentric development. The project was launched in 2007 and it will be finished in 2030.

- 4 additional lines.
- 200 km of new railway lines.
- 68 brand new interconnected stations.
- 2 million passengers every day.
- A train every 2 to 3 minutes.
- A 100% automatic metro system.
- 90% of lines will be built underground.

Source: www.societedugrandparis.fr

SOCIÉTÉ DU GRAND PARIS

The Société du Grand Paris is the public agency set up by the French government in 2010 to deliver the vision of The Grand Paris Express. The Société du Grand Paris leads operations related to the:

- Construction of the new lines, stations, structures and facilities.
- Acquisition of rolling stock for the infrastructure.
- Development within and around the stations.
- Design and building a pipeline of optic fibers along the new lines.

The total budget amounts to just over €29 billion. The funding framework is based on tax revenues, ensuring the financial stability of the project, and commercial revenue.

Source: www.societedugrandparis.fr



01 Gualtiero Zamuner, from Société du Grand Paris, in dialogue with Nicolas Chartier-Kastler and Maxime Lecot, Bouygues at the construction site in Clamart. **02** Clamart is one of the most complex construction sites of the Grand Paris project.

He shows around on the site, where the beginning of a gigantic tunnel takes up most part. Descending, it is hard to imagine what it will look like in just a few years. Here, travellers and commuters will mingle and board subway trains, taking them in different directions.

“The Bouygues construction company is currently doing work around us to build the second flooring of the future station. Then we’ll dig further to get to the next level below, and then further again, to create a station for the subway,” he says and sweeps with his arm around the area.

Besides the actual station, the citizens of Clamart can look forward to other effects in the future.

“An urbanistic project is taking place right now, conducted by the Clamart mayor. 800 apartments, a day nursery and schools will be built. A good example of that The Grand Paris Express is not only about transportation,” says Gualtiero Zamuner.

The Clamart example is also putting the finger on an existing challenge for the French capital. As the city borders haven’t been moved since 1861, and the core of Paris remains the same, the suburbs are really divided from the old Paris, with all that comes with it.

01 Constructing new bicycle paths.
02 This is what part of the future Paris will look like. Image by Jacques Ferrier Chartier-Dalix Architectes.



01

“An urbanistic project is taking place right now, conducted by the Clamart mayor. 800 apartments, a day nursery and schools will be built. A good example of that The Grand Paris Express is not only about transportation.”

GUALTIERO ZAMUNER.



Paris is for example one of the most segregated cities in Europe. The Grand Paris Express aims to find solutions and give life to the whole region.

“It is all much bigger than hundreds of kilometers of subterranean lines. The ripples on the water are new companies, housing units and jobs. A new Greater Paris is taking shape and transportation will be its frame”, says Isabelle Rivière.

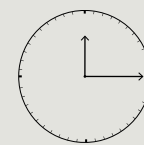
Being a large project, The Grand Paris Express is also observed by other major cities, and Isabelle Rivière reveals that a delegation from Moscow paid a visit to Société du Grand Paris a few years back for advice. And it is not only the pure construction they want to know more about. In a world where we need to think more and more about how to travel together, efficiently and with minimum effect on the environment, a project like The Grand Paris Express means so much more.

“This is truly a revolution. We are defining a new kind of metropolis. With efficient public transport, we can also imagine that in the future, people will use their cars less or in a different way and use public transport,” concludes Isabelle Rivière.



02

The Megaproject Listing

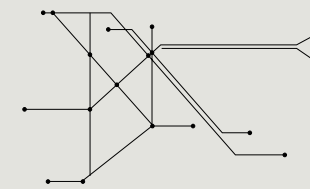


15 MINUTES

The time it will take from
 Only airport to the Paris-Saclay University
 with The Grand Paris Express.
 (Currently, it takes 1 hour and 6 mins)

115,000

The number of jobs generated by
 The Grand Paris Express during 2010–2030.



200 KILOMETERS

The total length of the four new metro lines.
 The current length of the whole Paris metro
 system is 218 kilometers, which makes it the
 longest in the world.

2,000,000

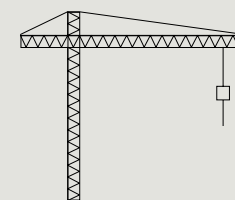
The number of passengers who will use
 The Grand Paris Express everyday.



FACT FILE

The French capital is rapidly growing and the current transportation system needs to be updated. The Grand Paris Express, a giant and ambitious project to be finished in 2030, will serve the Parisians with four brand new metro lines and more possibilities to travel between the city center and the suburbs. Europe has never seen anything like it.

By **Kerstin Magnusson**



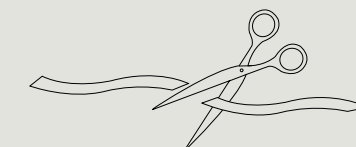
250,000–400,000

The approximate number of housing
 units that will be built around the
 stations.



12 MILLION

The number of people living
 and working in the Greater Paris
 metropolitan area.



1900

The year when the original Paris metro
 system opened. It premiered in conjunction with
 the big World Fair the same year.

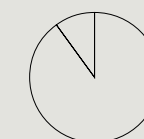
**€29
billion**

The total budget of the whole
 project.

CO₂

27.6 MILLION

Tons of CO₂ saved by
 2050 thanks to
 The Grand Paris Express.



90 PERCENT

The amount of lines
 built underground in
 the new system.

PARIS BELTWAY GOING GREEN

Paris has a grey belt. The ringroad, Boulevard Périphérique, literally forms a concrete circle around the city. Now, initiatives are taken to transform the grey ring into something green. Inspiration can be taken from around the globe where highways have been successfully removed.

By **Per Grehn** Photo by **Kristofer Sandberg**

With over one million cars a day, the 35 kilometres of the Boulevard Périphérique are one of the busiest in Europe. Since its inauguration in 1973, the Périphérique – composed of up to six lanes – has been a concrete belt around Paris, dividing the city and its suburbs.

The public agency in charge of urban studies, Parisien d'Urbanisme, qualifies almost the whole Périphérique as a “challenge for urban integration”. As an example, the value of properties drops by half, from €6,300 per square meter in Paris city to €3,800 per square meter in the surrounding areas.

In 2016 the first institutional attempt to move Paris beyond its boundaries, beyond the Périphérique, was

launched. The project – Métropole du Grand Paris – aims to deliver a more integrated development to Paris and its suburbs, by creating a new metropolitan governance.

A call for innovative urban projects, “Reinventing Paris”, has given talents from around the world the opportunity to build the Paris of tomorrow. A total of 372 projects have been submitted to the City of Paris for 23 different sites. One of the winning contributions consists of a new building that will be placed over the Périphérique in the heart of the Porte Maillot sector, a strategic part of Greater Paris.

In an auto-obsessed era many freeway systems have been overbuilt all over the world. Decades later cities have realized that it's actually healthier, greener, and safer without them. Here are three freeway removals in cities that have become a success.



In an auto-obsessed era many freeway systems have been overbuilt all over the world. Decades later cities have realized that it's actually healthier, greener, and safer without them. Here are three freeway removals in cities that have become a success.



Photo by Shutterstock



CHEONGGYEcheon, SEOUL, SOUTH KOREA

As a way to boost economic prospects in a low-lying area which had become a slum, an elevated highway was built through Seoul in 1976. In 2003 work began to remove the old dirty highway from the city center, restoring the highway but also a lost creek that once used to run there. The new greenway is not only a new favorite place in the city. Birds, fish and other wild life have returned and the temperature has dropped by several degrees in the urban core.

EMBARCADERO FREEWAY, SAN FRANCISCO, USA

After the 1989 Loma Prieta earthquake, a decision was made to tear down the damaged State Route 480 freeway. Today the restored area has miles of public space, walking and bike paths, and the freeway removal was one of the first showing the world that a project like this was not only possible but also a way to save money and increase the economy of the city. The reconstruction turned out to be cheaper than fixing the quake-damaged freeway and property values increased in the area.

RIO MADRID, MADRID, SPAIN

Up until the early 2000s, the two large spans of the M30-freeway used to take over the space of the banks of Madrid's Manzanares river and the historic waterway was totally neglected. In 2011 the re-construction of the area was completed. By rerouting the traffic into tunnels, the river banks were completely redeveloped into a 300-acre recreational area. Studies show that residents who live close to the area access the park frequently and are becoming healthier.



Photo by Shutterstock



“MOVING A CITY IS REALLY ABOUT MOVING A COMMUNITY”

Where do you start when the task is to move and design an entire city? Krister Lindstedt, lead architect for the new Kiruna, tells Spirit how people, not buildings, were put in the very heart of the design process.

By **Elna Nykänen Andersson** Photos by **Anna Hållams**

Anyone who's ever moved knows the agony that comes with it – from the exhausting practicalities of packing and unpacking to the psychological challenges of saying goodbye to the old and coming to terms with the new. Imagine, then, an entire city going through that process at the same time, and you start understanding the magnitude of the move taking place in Kiruna, Sweden's northernmost city. For White Arkitekter, the project has been in the making since 2013 when it won the international design competition together with Norway's Ghilardi+Hellsten Arkitekter. Following their “Kiruna 4-ever” proposal, the new city hall has recently been completed, ground work and pipe-laying are in progress, and in 2018, the move will take a big leap forward when several buildings will be demolished, moved and built.

What makes this project so special?

It's special because it affects the whole town, and because we deal with the very people who are being affected. We know who they are. In many other projects, there will be newcomers we don't know. For the people of Kiruna it's also very special because it affects the very heart of their city, where their everyday life takes place. That's what also makes it unique in an international context.

How did you involve the residents of Kiruna in the design process?

We started the whole process by asking who the people of Kiruna are and what they think about the move. We found that they understood the importance of the mine, but they also wanted a town that could grow and become more than merely a mining town. We found a few challenges that we could address in the urban design. One was to create new meeting places and create a more compact town center. We also found that they were very attached to and identified themselves with the surrounding nature.



Image by White och Ghilardi-Helsten

And how do the people feel about the move?

Kiruna is very dependent on the mine. It's their main source of wealth. There are other sources – a rocket launch station and tourists – but still, the mine is very important. People acknowledge this, and that's why there's also an understanding for this project. The existing, beautiful view over the mountains and the mine will be lost with the new site, and there's a sadness for that. But what we can do is bring people closer to nature by bringing in landscapes or green corridors right into the heart of the city. Those are ways that we can take on the challenges of the people of Kiruna into the new, and create something that's attractive enough so that people will want to come along. Because that's not obvious. People will be reimbursed, and it's a free country – they could choose to move elsewhere.

Where do you start with a project of this magnitude?

When you start moving a city, it's very important to understand that it's really the move of the community that's the most difficult part. The social part

of it, getting people motivated. What you need is a good vision, based on the current challenges of Kiruna. After that you need to understand the challenge of changing a town's location. Getting everyone involved in the new town to really understand and believe that this will in fact be the new town. That's the challenge Kiruna is going through right now. But I do believe the local authorities and the mining company understand that they must take the first steps and offer a town that can give the people services from day one; schools, pre-schools, shops. When those steps are taken, the town will start developing on its own.

How about the practical challenges of moving buildings?

It's interesting to think that you can also bring good things from the old place to the new one. It can be a way to bring identity from the old into the new, which can trigger memories and identity for the people and make the character of the new town more exciting. Up until now the mining company and the local authorities have agreed on bringing in around

20 buildings, originally to safeguard that the best architecture from the old Kiruna would be brought along. But now, they have found that moving a building will cost about the same as building a new one. This opens up a new market for bringing your own house into the new town.

What kinds of infrastructure challenges are you facing?

First of all, there's the challenge of creating the low-tech infrastructure; having the streets and cycle lanes in the right places so that they really serve people. Another challenge is to create a completely new network for handling rain water for a town that up until now has been a green area. You have to take into account the typography, as the water needs to flow naturally. Then there is the challenge of actually building it. It's a massive undertaking to build almost all the infrastructure at once.

How much did the cold climate affect the design?

The climate is a defining factor in Kiruna. These days, we can make much



better forecasts to know what we're building and what kind of environment it will result in. We can, for instance, make wind and day light exposure forecasts to design the town better. We're moving the town from a site that has a beautiful view, but is also heavily hit by winds. The new location will be a few degrees colder but will feel warmer, as it's not hit by winds as much. We've also designed a street net with straightforward streets which bring you clearly where you want to go, but there's also a finer web of streets on a more local level, where the streets are more protected from the cold.

Building a new town gives Kiruna a chance to benefit from the latest urban planning solutions. Can you give some examples?

Kiruna has a very good opportunity to become a smart city. That's being discussed now. It could, for instance, be a way of handling energy by sharing it between buildings and co-use of spaces or transportation. In our proposal, we also have cable cars – that's not a solution that's on the table now, but it would definitely be useful here, especially between the mine and the town center.

If you would define your dream vision for the new Kiruna – what would it look like?

I'd look at the most central place, the new town square, and see it crowded with people, kids playing, more experienced people standing and talking about this move, exchanging experiences. People could put on their skis in the city park and

go out into the nature, or take their snow mobile or dog sled, and maybe go all the way to the beautiful nature close by.

And what is the worst case scenario – if this doesn't go as planned?

It would be that people don't come along. That they wouldn't want this new town and moved elsewhere. I guess you could imagine a mining company here without the city, like an oil platform, but not even the mining company wants that. Kiruna has been here for over 100 years and it's a wonderful organism, a home for the people living there. Our challenge is to build the city together with the people, and make it a place they want to live in.

- 01** The new Kiruna is taking form.
- 02** The mine which Kiruna is built around.
- 03** The old Kiruna. A large number of buildings will be moved.



Photo by White

Krister Lindstedt

“The existing, beautiful view over the mountains and the mine will be lost with the new site, and there's a sadness for that. But what we can do is bring people closer to nature by bringing in landscapes or green corridors right into the heart of the city.”

KRISTER LINDSTEDT

5 CITIES THAT HAVE BEEN MOVED

The Kiruna move is unique in many ways – but it's not the first time in history that cities in part or whole have been moved and rebuilt. Here are some examples from around the world.

By **Elna Nykänen Andersson**



Photo by Shutterstock

01 / VIDALIA, USA

The town of Vidalia in Louisiana suffered huge damages when the Mississippi river started to flood in 1927. In 1938–1939 more than 100 homes, offices and government buildings were either demolished or relocated six blocks inland in a federal flood control project. New streets were also built. You can visit the old site by strolling the Vidalia Riverfront where a walking path has been built along the river. The town also has a suitable slogan: “A city on the move.”

03 / TALLANGATTA, AUSTRALIA

In 1956, the town of Tallangatta was forced to move eight kilometers west due to the expansion of the Hume Dam. More than 100 homes were transported by truck to the new town, while 37 new homes as well as businesses and public buildings were rebuilt. According to Australia’s ABC News, the move was stressful for many people – but thanks to it, Tallangatta was also one of the first Australian towns to get sewerage.



Photo by Shutterstock



Photo by Shutterstock

← **02 / NIJMEGEN, THE NETHERLANDS**

Near the Dutch town of Nijmegen, the river Waal takes a sharp bend and becomes narrower, forming a bottle-neck. At times of high water, the river has not always been able to cope with the volume of water. To protect residents from flooding, the authorities decided to widen the river. The work was completed in 2016 and as a result, the water level dropped – but the increased safety required sacrifices from the town’s residents. Fifty households had to be relocated as a result of the flood risk management measures.

↑ **04 / VALDEZ, USA**

On Good Friday, 1964, disaster struck the town of Valdez in Alaska. In the early hours of the evening an earthquake registering 9.2 on the Richter Scale struck 70 kilometers west of the town. The quake triggered an underwater landslide, which in turn created several tremendous waves. The first waves washed away the Valdez waterfront and drowned 30 people who had been standing on the dock. In all of Alaska, 114 people died as a result of the earthquake. Three years later, it was discovered that the entire town had been built on unstable ground. Valdez was relocated 6 kilometers east of its original site, and 52 buildings were moved.

05 / HIBBING, USA

Bob Dylan’s former home town in Minnesota is also known as “The town that moved”. A mining city like Kiruna, Hibbing was established in 1893 by German miner Frank Hibbing, who discovered iron ore nearby. In the 1920s, iron ore was also found under the city and so Hibbing moved three kilometers south to its present location. The work was in many ways even more difficult than what Kiruna is dealing with today. Building by building, using horses, steel wheels, logs and tractors, Hibbing was moved to where it stands today. More than 180 houses and 20 businesses relocated to their current sites.



Photo by Shutterstock

HOT VS COLD

Minus 30 degrees Celsius in Kiruna. Or plus 40 degrees in Dubai. No matter the climate – the same articulated hauler is in action. With some tweaking.

By Anna Werner and Karin Freij



01 / STEERING

A unique, self-compensating, hydro-mechanical system that provides precise steering, excellent maneuverability and a short turning radius – regardless of conditions. Designed for off-road operation in both soft and slippery conditions.

02 / CAB-COMFORT

The cab has a centralized operator station and a hydraulic suspension. The controls are ergonomic and easy to understand and suit all operators. The comfort is so high that it lets the operator go faster over uneven terrain, increasing the productivity.

03 / OIL AND GREASE

The oil is used to run the hydraulic system, lifting the body etc. But it is also used to cool the different driveline components. Lubricating the different joints of the machine is done with grease. The oil and grease can be changed depending on what ambient temperature/climate you are operating in.

04 / AUTOAMTIC TRACTION CONTROL (ATC) AND DIFFERENTIAL LOCKS

Volvo ADT's have flexible 6x4 and 6x6 drive, for the best traction and fuel economy. The 100% lockable axle differentials ensure traction in the toughest ground conditions. The ADT wide base tires give low ground pressure and good off-road mobility.

05 / CLIMATE CONTROL SYSTEM:

The high-capacity heating and ventilation system improves comfort, enhancing productivity. Separate defroster vents keep the windows clear.

06 / ENGINE

The air to the engine is taken from inside the engine compartment instead of ambient air. This ensure less contamination but also helps the engine to heat up during a cold start, as we take the hot air around the engine instead of the cold surrounding air.

07 / WATER SEPARATOR

The water separator is heated by both an electrical heater and the engine coolant system. When heated by the engine coolant system the hot water from the radiator passes through the water separator to raise the temperature of the fuel.

08 / COVER

Several cover plates are installed around the hood and grille to avoid the flow of cold air into the engine compartment. Additional plates are fitted to the radiator to reduce the cooling area and to prevent the engine from reaching too low working temperatures. To avoid the batteries from freezing they too are covered with an extra insulating cover.

09 / BREAKS

Oil-cooled, wet, multiple disc brakes on all three axles deliver industry leading braking performance, low operating costs and ultimate durability – even on the muddiest and dustiest sites.

10 / AIR CONDITIONS

With more than 98% efficiency, Volvo's air filtration system provides the cleanest operator environment in the industry – even in dusty conditions.

11 / FILTERS

The three-stage filtration system ensures that no airborne dust makes it through to the engines.



MEGAPROJECT LISTING #2

Location: Kiruna, Sweden.
Climate: Temperatures in the winter – below -20°C.
www.volvoce.com/spirit



UPCOMING MEGAPROJECT

Location: Dubai, United Arab Emirates.
Climate: Temperatures in the summer reaches 50°C.
www.volvoce.com/spirit

LOCAL EXPERTISE MEETS INTERNATIONAL EXPERIENCE

A UAE national working for Volvo CE's dealer in the country shares the details of his personal journey with Volvo CE – revealing how hard work, determination and a career-long respect for people of all backgrounds and cultures have led him to develop into a unique team player with global competence.

By **John Bambridge** Photos by **Martin Velkov**

Localization is a real buzzword on the lips of the Gulf Arab oil states, though by many different names: Emiratization in the UAE, Omanization in Oman, and Saudiization or Nitaqat, in Saudi Arabia.

In the region, decades of oil revenues have delivered immeasurable growth in terms of infrastructure, industry and living standards. However, not every aspect of the growth has been positive, and one emerging long-term problem is the extensive reliance of many industries on foreign expertise.

Now, concerted efforts are underway to redress this imbalance. The private sector is being encouraged to give back by providing training to local citizens and working to increase their participation in the workforce.

But rewind 20 years and one affable young Emirati man was beginning a career that set an example of localization at its best long before neither the buzzword, nor the policy initiative, came in vogue.

Nasser Ahmed Al Bloushi is a Product Support Manager and the Government Affairs Manager at Al-Futtaim Auto & Machinery Company (FAMCO), UAE dealer of Volvo CE since 1984 and Volvo Trucks & Buses since 1985.

In a rarity for a UAE national, Nasser has gradually worked his way up from a being a machine technician, employed in the thick of the heat, sweat and grime of the workshop to his present position: a front and center customer facing role working to best serve the needs of FAMCO's government clients.

Nasser made the transition from workshop floor to product support in 2008, and since then his role has seen him spend the bulk of his time interacting with the customer on site, whether it may be a quarry operation in the northern emirate of Fujairah, or a new highway project in Abu Dhabi or Dubai.

He explains: "We're working on a daily basis from eight to five o'clock, and we are expending about 80 percent of our time attending to the customer."

Nasser has come to speak eight separate languages through his interactions on site with operators and customers, including Arabic, English, Hindi, Pashtu, Urdu and Swedish – the latter to the delight of visitors from Volvo CE and personnel back in Sweden.

"I have learnt to speak all of my colleagues' languages. It has been extremely



01 In the work shop.
02 Nasser Ahmed Al Bloushi surrounded by Vladimir R Knezivic, Managing Director at Famco and Samer Juneidi, Divisional Manager Construction Equipment at Famco.
03 School is open. Famco holds educations on their premises.



01

positive for me to work with so many different nationalities and cultures. It has also been challenging at times, but I love a challenge!" he comments.

"I've been to Sweden five times for training, though done most of my training here, because we have a big competency development center here, in the Jebel Ali Free Zone, where the guys come from the factory to train the whole Middle East region... we are lucky to have it on our doorstep."

Overall, Nasser's career has been a happy marriage of his own interests and enthusiasm and the reciprocal interest of Volvo CE's distributor FAMCO in developing the training and skills of its employees.

"When I was a child, I always liked to work with machines – to help fix cars and do technical things – and I came to realize that I would like to work with my hands in this industry," Nasser explains.

"When I joined to Al-Futtaim, I was still quite young, so they gave me the opportunity to both work and study, working in the morning with the mechanics, and heading back to my college in the afternoons."

And Nasser is still learning: "I learn every day from everyone. Whenever there are new developments, I learn together with the Volvo coworkers and the people here, so I'm always learning, and it's always interesting."

In this digital age, Nasser's role now increasingly involves him using data and analytics to troubleshoot technical issues on site. Volvo CE's Machine Tracking Information System (MATRIS), for example, he notes, "will tell you how often the operator has made a specific mistake," instructing further training.

But at the end of the day, the most important facet of Nasser's role is about dealing with people. He notes:

"When you have a problem, you will always get a solution from the people on the ground. I respect the technicians, because I have come from the same place, working with the machines."

NASSER AHMED AL BLOUSHI



02

"When you have a problem, you will always get a solution from the people on the ground. I respect the technicians, because I have come from the same place, working with the machines."

When you look at the objectives of localization, Nasser is also a shining example of Emiratization in practice. With a rounded personality, he represents the outward-looking and multicultural side of the UAE that has placed it on the world stage, and reflects the nation's spirit of ever looking to the next horizon.

For his part, he adds: "I think change is always for the better. In Dubai, we now have more than 200 nationalities living in a small city, and we get to mix with all sorts of people, languages and cultures. By accepting everyone, we have become a leading Middle East country, and that is good for UAE nationals."

NASSER AHMED AL BLOUSHI

Two decades with FAMCO, the distributor of Volvo CE since 1984 and Volvo Trucks & Buses since 1985.

11 years in the workshop as a technician.

2008 to present as Product Support Manager.

6 months as Government Affairs Manager.

80 percent of time spent dealing with customers.

Speaks 8 languages, including Arabic, English, Hindi, Pashtu, Urdu and Swedish.



03

10 BIGGEST AIRPORTS

When the expansion of the Al Maktoum International airport is finished, it will have a capacity of over 200 million passengers per year. It will be able to accommodate 100 A380 at one time. It will cover a land area five times larger than the Los Angeles International Airport. But for now these ten airports are the largest ones in terms of passenger numbers.

By **Martin Eriksson & Anna Werner**

01 / HARTSFIELD-JACKSON (ATL). ATLANTA, GEORGIA, USA. 104 MILLION PASSENGERS YEARLY.

The first airport to reach 100 million passengers in 2015, this large hub serves as a gateway to southeast USA for many domestic flights. The Atlanta metropolitan area is not the largest in the USA – but it is one of the largest with only one airport for passenger flights. The airport started out as an old racetrack, with the first plane landing 1926. At that time the airport was named Candler Field – after Asa Candler, former Atlanta mayor and co-founder of The Coca-Cola Company.



Photo by Adam Linke/Decisive Moment Events

Photo by Hong Kong International Airport

02 / BEIJING CAPITAL INTERNATIONAL AIRPORT (PEK). BEIJING, CHINA.
94 MILLION PASSENGERS YEARLY

Since the building of the new Terminal 3 in time for the 2008 Beijing Olympics, this airport has seen a steep rise in passengers. When it opened it was the largest building in the world by floor area. Quickly reaching its capacity, a new airport is being built in the southern parts of the city, scheduled to open in 2019.

03 / DUBAI INTERNATIONAL AIRPORT (DXB).
84 MILLION PASSENGERS YEARLY

Speaking of the largest buildings – when Terminal 3 at Dubai International opened, it came to the throne as the building with the largest floor area. With its 1,7 square kilometers, it is four times as big as the Vatican City. The baggage handling system for the terminal can sort 15,000 pieces per hour.

Photo by Dubai International Airport

Photo by Peter J. Schulz

←

06 / O'HARE INTERNATIONAL AIRPORT (ORD). CHICAGO, USA.
77 MILLION PASSENGERS YEARLY

Until the late 1990's, O'Hare was the busiest airport in the world by the number of passengers. It was surpassed mainly due to limits that the federal government imposed in order to reduce flight delays. In 2014 O'Hare was the world's busiest airport in terms of takeoffs and landings. The airport serves as a hub for American Airlines and United Airlines. O'Hare has direct flights to more than 210 destinations.

07 / LONDON HEATHROW (LHR). LONDON, UNITED KINGDOM.
76 MILLION PASSENGERS YEARLY

Heathrow is Europe's biggest hub. In the light of Brexit, the airport is believed to be even more important as a symbol of Great Britain's openness to the world. The British government recently decided to expand the airport. A new runway will be built, increasing Heathrow's passenger capacity to 130 million passengers and the flight movement capacity to 740 000 annually.

09 / SHANGHAI PUDONG INTERNATIONAL AIRPORT (PVG). SHANGHAI, CHINA.
65 MILLION PASSENGERS YEARLY

Shanghai Pudong is the primary international flight hub of China. While Shanghai Pudong mainly serves international flights, the city's other big airport, Shanghai Hongqiao International Airport, mainly serves domestic and regional flights. The Shanghai Pudong was first opened in 1999 and has grown significantly since then. The airport's third runway opened in time for the Beijing Summer Olympics 2008. With the completion of the fifth runway in 2015 the airport's capacity doubled.



Photo by LHR Airports Limited

→

04 / LOS ANGELES INTERNATIONAL AIRPORT (LAX). LOS ANGELES, USA.
81 MILLION PASSENGERS YEARLY

This large airport has the record for origin and destination travelers – that means most travelers either starting or ending their trips here. The X in the airport code doesn't bear any meaning. It was appended there while changing to the three letter codes when the need for more combinations arose.

05 / HANEDA AIRPORT (HND). TOKYO, JAPAN.
80 MILLION PASSENGERS YEARLY

The Tokyo area is the third busiest flight-region in the world (London and New York are the busiest) and Haneda airport is the biggest in town. The route Haneda-Sapporo (CTS) alone has close to 9 million passengers yearly. In Terminal 2 you can find a 24 hour vending machine restaurant.

08 / HONG KONG INTERNATIONAL AIRPORT (HKG). HONG KONG, CHINA.
72 MILLION PASSENGERS YEARLY

The airport is located on the artificial island of Chek Lap Kok. The island was created to host the airport. When opened in the late 1990's, the passenger terminal buildings were the largest in the world. The airport is an important contributor to Hong Kong's economy as a major employer in the area. The airport is operated by more than 100 airlines with routes to more than 180 cities across the globe.

10 / PARIS CHARLES DE GAULLE AIRPORT (CDG). PARIS, FRANCE.
65 MILLION PASSENGERS YEARLY

Charles de Gaulle is also known as Roissy airport. It is Europe's second largest airport in terms of passengers, after Heathrow in London but the biggest in terms of flight movement. Charles de Gaulle hosted a historical event in 1976 when the first Concorde took off on its first regular passenger flight.



Productivity

MAINTAINING HIGH PRODUCTIVITY

Volvo provides the best choice for those focused on high productivity, with its all-encompassing solution covering equipment, service, maintenance, assembly and software.

By Daisy Jestico

Image by VolvoCETL All Rights Reserved

But with a rising profit margin comes a whole new set of difficulties. How do you streamline the costs of your business to meet those increased market demands? And how do you manage a bigger fleet of machines and staff while keeping productivity at a high? No sector understands these complexities better than the thriving coal industry, and one Chinese mining retailer has opted to take on even more work to make juggling these factors a little easier.

The Jin Kai Yuan Technology & Energy Development Company in the Shanxi Province has adopted a unique business model where they now offer a one-stop shop from the pit to the port.

The company has expanded its earth-work peeling offering – the first step in the mining process where soil and rocks are removed to expose the coal seams – to now include management of the entire mining process, working together with the owners of the mine. It allows them to keep a closer eye on everything from supply and marketing to investment and production – while maintaining overall control over the costs. A smart solution which is ahead of their competitors, according to Jin Kai Yuan.

President Zhang Liangdong says: “As the market demand for mining is growing every day, the industry just cannot cope with the way it has been working in the past. We needed to come up with a solution that could boost production in the most efficient way possible. So now we provide both our existing contracting service to coal mine owners and get involved in the overall investment of the mine, giving us influence over the whole process.”

This united approach has helped to lower costs by providing an all-encompassing offering of equipment, service, maintenance, assembly and software. But chief among these factors is the need for the most efficient and productive machines, which is why the company has purchased 50 Volvo EC480DL crawler excavators. The company says the machines are at the heart of the business and allows it to reduce operating costs and boost profits.

“As the market demand for mining is growing every day, the industry just cannot cope with the way it has been working in the past. We needed to come up with a solution that could boost production in the most efficient way possible.”

ZHANG LIANGDONG

“For a large-scale mining operation like this, fleet management is the axle on which our company’s daily business turns,” President Zhang adds. “When operated by skilled workers, the right machines can improve attendance rate, reduce equipment failure and transform the work we do. If we’re careful with the way we manage our fleets we can lower costs while still strengthening our service.”

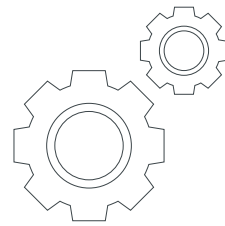


Zhang Liangdong

The perfect match of man and machine is a careful balance to strike. When you have a vast number of workers and construction equipment moving around on site at the same time, keeping individual tasks operating to a tight schedule is key. So not only does Jin Kai Yuan make it a priority to motivate staff and set clear targets, but it also strives for the optimum machine uptime.

“Volvo is a trustworthy international brand,” he continues. “Energy efficiency, low fuel consumption, total cost of ownership and a reduced need for maintenance all played into our decision to choose Volvo. We believe the excavators have a much higher production efficiency than anything else on the market helping us to deliver a much higher production per unit time.”





HOW THE EU IS IN DANGER OF MAKING CONSTRUCTION LESS PRODUCTIVE

Construction remains one of the most stagnant major industries in the world. As a result, productivity is falling. How can legislation help boost productivity? That was the theme of questions asked of CECE Secretary General Riccardo Viaggi.

By **Daisy Jestico**

Is construction's reputation for low productivity fair?

Some parts of the business have done better than others, so it is not always deserved. We build highways now with far fewer people than in the past and construction equipment has made far bigger strides than other parts of the construction value chain. From an engineering point of view we are doing our bit.

Why are we less productive than other industries?

There is no one culprit – it's become an intrinsic part of the industry. Construction is still fragmented and labour intensive, much more than industries that have found ways to automate most of their processes. 90% of those working in construction are male, too few of them are young and so this lack of diversity is holding back progress and the adoption of new ideas. Digitization is a classic example of this – a recent report by management consultants McKinsey ranked construction as among the least digitized in Europe.

Are laws and regulations stopping us being more productive?

Often the problem is not the regulations themselves, but how – or even if – they are implemented at a local level. If they are not implemented as agreed – emissions regulations, for instance – then that can be counterproductive to improving not just productivity, but also make European manufactures less competitive.

What is the European Commission (EC) doing to make construction more productive?

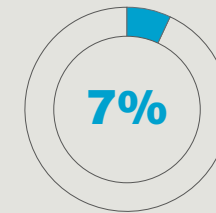
The current European Commission is looking at industrial productivity and competitiveness as an important measure when making new legislation. This is a relatively new goal.

Is there too much regulation in Europe? Read Riccardo Viaggi's answer to that question, and more in Volvo CE's newsroom www.volvoce.com.



Riccardo Viaggi

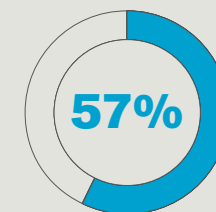
CONSTRUCTION'S PRODUCTIVITY PROBLEM



7% of the world's working population are employed in construction.



Yet productivity grows just 1%.



57% of time spent on construction sites is spent on unproductive activities.

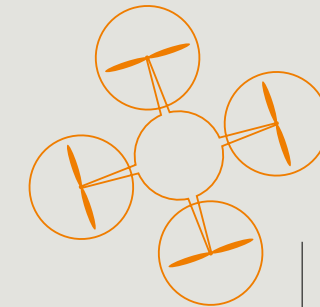


If construction catches up with the rest of the world's economy half of the world's infrastructure needs would be met.

Due to low productivity, every year the construction industry misses out on

1,6 TRILLION DOLLARS

TOP TECH TRENDS TO BOOST CONSTRUCTION PRODUCTIVITY



01 / DRONES

Drones can survey sites quickly and accurately, collect data and report back faster and take on tasks in difficult-to-navigate areas. Drones can help construction project managers supervise sites in 1/2 time and cost.

02 / ARTIFICIAL INTELLIGENCE (AI)

AI and machine learning – the ability for computers to learn and detect patterns on it's way. By 2035, AI has the potential to increase construction productivity on site by 40%.



03 / CONNECTIVITY

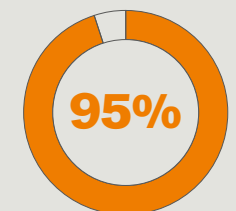
Digitalization will transform project productivity by integrating every piece of equipment into a single organism. Industries that digitalize enjoy increased productivity of up to 1,500 %.



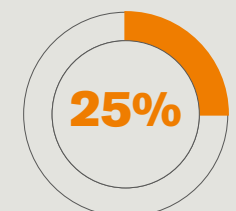
04 / ELECTROMOBILITY

Hybrid-combustion and all-electric drive technologies offer exciting productivity-boosting opportunities in construction applications. The first fully electric ferry in Norway takes just ten minutes to recharge – that's less than 10 percent of the time it takes to charge the average iPhone.

Volvo's ongoing Electric Site quarry research project is aiming to cut emissions by



and total cost of ownership by



x10

Volvo Construction Equipment's concept EX2 – the world's first 100% electric compact excavator prototype delivers ten times higher machine efficiency with zero emissions.



EXPLORING FUTURE ENERGY STORAGE

Helena Berg talks about energy storage systems for construction machineries in conjunction with her lead role in a Construction Climate Challenge research initiative.

By **Construction Climate Challenge**

Over the last 10 years an unprecedented surge has taken place in the manufacture of battery powered vehicles. The automotive industry has rose to the ever-increasing demand for cleaner, environmentally conscious transport solutions.

In a CCC research initiative, Helena Berg is leading a project at Chalmers University of Technology. In the project, they strove to find a way “through the forest” of current energy storage systems. Focused primarily on the crucial details along the full chain, from materials via cells, to packs and to installation and charging, Helena and her team aimed to review if the current research and development in this field is fit to meet the construction site climate challenges.

“We decided to set up a project to look into which route we should take. Our aim was to help find which battery technology is needed from a sustainable, cost and performance perspective,” she explains.

Helena welcomes the advancements that companies like Tesla are making in the automotive industry, but is acutely aware that construction machinery still has a long way to go in terms of battery dependency.

“In the construction site you need to optimize the battery. Tesla has shone a light onto the battery industry, which is good. Now it’s not that strange to think about a fully functioning electric construction site anymore,” she explains.

What became apparent in the study is that battery performance is only half of the challenge. To select the right battery it is crucial that sustainability calculations run parallel to economical costs. Finding energy storage solutions that are both economically and sustainably viable is the greatest challenge.

Conclusively, batteries like the Na-ion and asymmetric super capacitors were earmarked as battery lead-runners, due to their high rate capabilities, pack simplicity and low environmental impact.

However, according to the research, regardless of the emerging technology chosen, the charging strategies will always highly affect the lifetime cost, pack installation, and environmental impact of the energy storage. Charging on a construction site many times during the day, from a weight and volume perspective, was seen as preferential in terms of saving costs. But from a lifetime and environmental perspective, charging was recommended only a few times during the day, lunch breaks or during the night.

What is the biggest challenge for batteries in heavy machines?

Construction machines are unique to other hybrid and electric vehicles because they require more energy in less



Helena Berg

Photo by Construction Climate Challenge



Volvo CE's 100% electric compact excavator prototype – known as the EX2.

Photo by Jonas Ljungdahl



Photo by Jonas Ljungdahl

time. The power demands are challenging if you compare to a bus or a passenger car. You can’t use the same cells because you need something that can deliver power in a short time.

Is the development of a sustainable and powerful enough battery for construction vehicles currently too far behind to make a considerable change in the foreseeable future?

I think it’s about taking what’s best now and doing something with that. Learn how to make the vehicle and then change the battery. There’s research going on now for example at Chalmers, where they are combining a super capacitor and a battery in one cell. From that perspective I would like to see more research in that field.

Can batteries be given a second life, and applied in, for example, hybrid systems to lower the cost of storage?

In general, yes, depending on where you are. It’s naive to say exactly how long batteries can last. It’s almost impossible to know right now. It’s tricky how to arrange the batteries, the warranties, if you lease out the batteries, and how to really guarantee what is left in the battery.

What would you say the most important findings were in your study?

That you can’t just look for performance; you must have the sustainability calculations in parallel when you select your technology. Otherwise you can put so much money into the wrong direction. It’s so easy to forget the importance of sustainability in research and you can find yourself in a dead end.

Are you planning on continuing the research?

Yes we are. At Chalmers University of Technology, we’re looking into the lithium and sulphur Li-S battery and also for the technology that combines super capacitors with batteries. There will be a continuation of research into new materials, which are better, cheaper and more sustainable.

What do you think is really important for the construction industry right now?

Just do something! Make electric machines. Go ahead with the electric sites and continue to fund climate development projects.

MEET THE BUSINESS MANAGER

Per Lorentzon changed quiet Eskilstuna for busy Dubai. He is now promoting Volvo Construction Equipment in the emirate where construction work is literally everywhere.

By Anna Werner Photos by Anna Werner



Per Lorentzon is standing at the construction site of Expo2020. Construction machines are operating looking just like giant insects in the sand. In two years' time this place will be hosting the first world expo ever held in the Middle East. Al Wasl Plaza will be the heart of the Expo and 25 million visitors are expected to visit the fair during the half a year it is open.

"A lot of places in the world have visions. What I find interesting with Dubai is how the emirate makes its visions come true. Dubai doesn't want to follow, the emirate wants to lead. I think one must respect them for that," says Per Lorentzon.

Connectivity is one of the main themes of the expo and the Emirate of Dubai is working on positioning itself as a place where connections will be made in many ways. Next to the construction site of Expo2020 is the Dubai World Central, also called Al Maktoum airport. The airport is operational, mainly for cargo flights, but is currently undergoing the first development phase to become the world's largest airport. The airport will be an eight hour flight away from both Europe and Asia.

"The Expo2020 is important for drawing attention to Dubai, the region and the emirate's vision. But the expansion of the Al Maktoum Airport will

be of a more structural importance to the region long after the doors have closed on Expo2020. Dubai is strengthening its position as a logistic hub to count on," adds Per Lorentzon.

It has been one and a half year since Per Lorentzon and his wife Lena decided to leave Eskilstuna in Sweden and bring their two sons to live in Dubai, at least for two years. They are now part of the large expat community of Dubai. More than 80 percent of the emirate's population are expatriates and more than 200 nationalities live in Dubai. Per Lorentzon works closely with people from all over the world.

"The cultural mix can sometimes be challenging, both privately and in business, but it is also a big part of what makes Dubai such an interesting place to live and work in. I also believe it is a big contributor to the success of the development of the emirate," mentions Per Lorentzon.

He has twenty years of experience working for Volvo Construction Equipment, mainly from commercial aftermarket. His role now is to be responsible for sales in a number of countries across the Middle East.

"Before we left for Dubai I was told that the market and its demands were very different here compared to Europe from where I have the majority of my experience. For example I was told that fuel consumption of equipment was not a big topic, as fuel prices are so low. I do not find that entirely true. Fuel prices are rising and a lot of business here

**PER LORENTZON,
VOLVO CONSTRUCTION
EQUIPMENT, DUBAI.**

Title: Business Manager

Background: Has worked for Volvo Construction Equipment since 1998.

Stationed in Dubai since: 2016

Family: Wife Lena. Two children, Filip, six years old and Oliver, four years old.

Lives: In The Lakes, Dubai. "We were looking for a small house, and found one that is small for being Dubai, but huge with Swedish measures. A standard bedroom in Dubai seems to be the size of a small apartment in Sweden."

Home: Eskilstuna. I am born and raised there while Lena moved there from a neighbouring town as a small child.

"Language is definitely one. Our sons are six and four years old. Our oldest could make his way around in English after a few months in school. Now I hear the two of them play in English sometimes. Another aspect for the kids is learning there are different walks of life. But maybe cultural differences are something we grown-ups focus on? The children seem to deal with that in a very natural way. "If you play football you are my friend"-kind of approach where skin colour, financial situation or religious background is completely irrelevant."

PER LORENTZON, ON KEY LEARNINGS FOR THE FAMILY LIVING AS EXPATS

**ON THE MARKET IN THE
MIDDLE EAST**

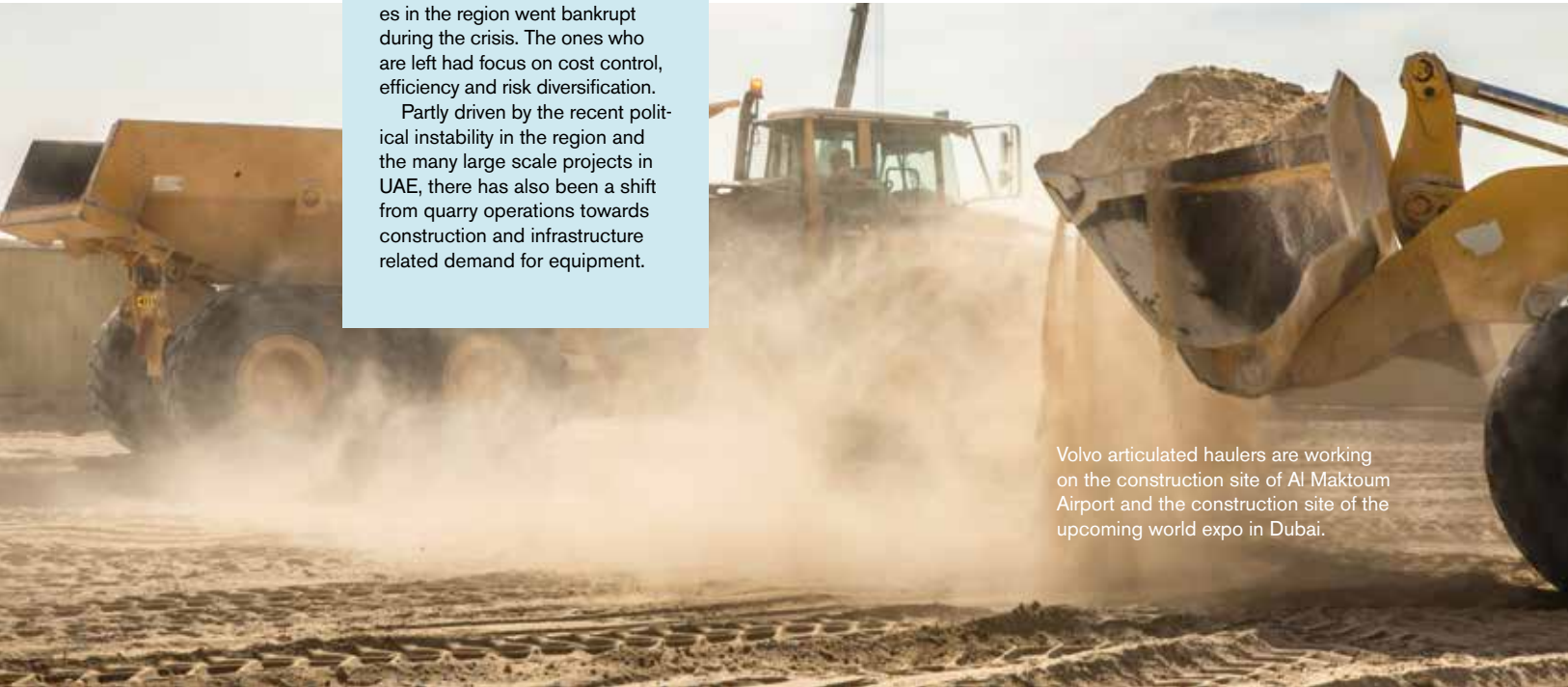
The large down turn in the gulf is mainly a result of the big drop in oil prices during 2014 and 2015 which not only affected many businesses in the oil dependent economies, but also forced governments into a more restrictive investment policy. With oil prices now starting to pick up again we see a gradual improvement in the macro economic climate leading to the return of more positive business outlooks and structural investments from governments. The economy is picking up but is uneven throughout the region. The United Arab Emirates and Dubai had a slump, but not as deep as other parts of the Middle East. Quite a few both large and small construction and quarry businesses in the region went bankrupt during the crisis. The ones who are left had focus on cost control, efficiency and risk diversification.

Partly driven by the recent political instability in the region and the many large scale projects in UAE, there has also been a shift from quarry operations towards construction and infrastructure related demand for equipment.

is influenced by employees with background in for example Europe or the US, where savings on fuel consumption have been at the top of the agenda for a long time. Total cost of ownership and environmental aspects are becoming more important in the Middle East too," comments Per Lorentzon.

He says his driving force is to help customers work more efficiently.

"Since I know both our machines and our services, I can focus on the solution as a whole which is a benefit. Naturally, not all customers are open to combining their machine purchase with services right now, but it is something I really like and believe in since it adds real value to a customer's businesses. I have seen how monitoring the fleet has been an eye opener to fleet managers also here in UAE, and that is normally the starting point for implementing a more structural way to increase efficiency and productivity," says Per Lorentzon.



Volvo articulated haulers are working on the construction site of Al Maktoum Airport and the construction site of the upcoming world expo in Dubai.

THE SKY IS NOT THE LIMIT IN DUBAI

Dubai has made a name for itself across the globe as a place where the impossible is made possible – a modern marvel of a city sprung from the desert as if a mirage. And today, Volvo machines are at the heart of the city's aspiring vision for the Expo 2020 and an aviation hub to connect the whole globe.

By John Bambridge Photos by Ruta Jurkuvenaite

No city fully reflects the rise of the modern Middle East quite like Dubai, whose sprawling metropolis has emerged from the arid sands of its far flung corner of the Arabian Peninsula in a matter of decades.

The iconic city of concrete, steel and glass you see today is all but unrecognizable from the small coastal fishing and trading community made of walls of stacked sand and coral that once bore the same name.

Hundreds of square kilometers of arid flats and wandering dunes fifty years ago now host a burgeoning population of some five million inhabitants. In skies touched only by the swirling desert dust, there are now more airplane contrails than in any other place in the world and spectacular light shows emanate from the world's tallest building where decades ago there was no electricity, let alone a cityscape.

Dubai today is a city of global ambition that punches well above the weight of a typical city of just 3 million people. Aside from pre-eminence of the Burj Khalifa among the world's supertall structural marvels, Dubai's Jebel Ali Port is the largest man-made harbor and by far the busiest port in the Middle East, while Dubai International Airport is the world's busiest airport by international passenger traffic.

This formidable infrastructure has positioned Dubai as a global hub for both commercial and leisure activities, and the number of visitors that frequent the emirate each year now stands at over 15 million people, or more than five times the resident population of the city.

Fast forward to 2018 and it is against this backdrop that the latest chapter of the city's story is now being written once again in the sand in preparation for a World Exposition of unprecedented scale and



scope. With Expo 2020, Dubai is looking to draw an additional 10 million curious visitors to the country, and swell the total visiting population to 25 million – or more than the total population of Australia.

But first, such serious ambition requires the right infrastructure, and in the case of Dubai, the right infrastructure means not one, but two mighty megaprojects: the massive expo site itself, and a vast aviation hub to address the logistical challenges of welcoming so many guests in one place, at one time.

While the air traffic hub at the heart of Dubai's plans, Al Maktoum Airport, is already in operation with a capacity of 7 million passengers a year, the expansion project ahead of Expo 2020 will see this leap to 26 million passengers a year. Ultimately, by around 2025, its capacity will then rise to around 140 million people – making it by far the largest airport and aviation infrastructure hub in the world.

Indeed, the broader plans laid out for Dubai South, the Aerotropolis surrounding and encompassing Al Maktoum Airport envisage a scale and a scope that will ultimately dwarf even the World Expo and continue to propel the fortunes of Dubai as a city long into the future. Currently under construction over an area of 140km², or two times the area of Hong Kong Island, Dubai South will house 900,000 people.

In the near term, however, the scale of the work laid before the contractors on the ground



Mohammed Amer

ahead of Expo 2020 is no less daunting. Out of the 140km² total area of Dubai South, 50km² is being prepared as part of the ongoing expansion of Al Maktoum Airport.

Remarkably, this entire ground preparation operation is being conducted by a single company, Tristar Engineering and Construction, a veteran Abu Dhabi-based infrastructure contractor that has overseen dozens of critical projects in the UAE over the decades.

However, the Al Maktoum Airport expansion project sits head and shoulders above anything that Tristar has completed in the past. Logistics- and Fleet Manager Mohammed Amer states: "You can call it a megaproject; it is not at all ordinary. I don't think anybody has done a similar project in the UAE with such quantity."

And the quantity is the key, because in fact, this project is not one of area, but one of volume. It is the amount of material to be moved that is truly staggering. "We have finished 100 million cubic meters of cut and fill, and we have a balance of about 70 million cubic meters to go," says Amer.

01 There are traditional markets by the Dubai Creek. They are called souks and sell gold, spices and textile.
02 Construction work is always present in Dubai.

140km²
The total area of Dubai South, or two times the area of Hong Kong Island.

This is because Dubai's desert landscape is a mix of rising dunes and sunken depressions where the sea water seeping through the porous mineral below has glued the sand together, making it as hard as rock.

Amer continues: "We have some areas where we are simply loading the trucks with excavators, but we also have hard material that is like rock where the excavators first have to break the material up with hydraulic hammers before excavating it and loading it into the articulated haulers."

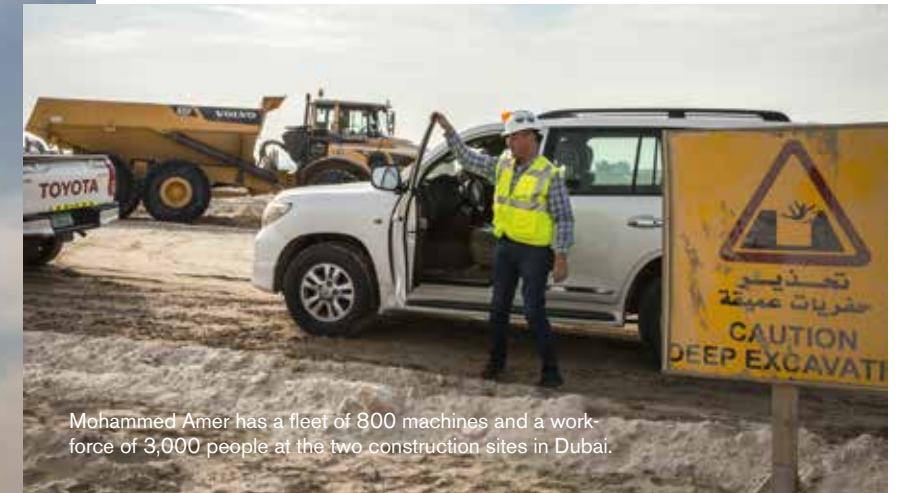
And with so much at stake, Tristar is naturally relying on some of the best earthmoving equipment that money can buy: a fleet of 37 Volvo A35F articulated haulers.

Even so, the cutting and filling of 170 million cubic meters of sand and rock over an area of 50km² in just two years requires a relentless effort, and Tristar's 37 A35F haulers are working 10 hours a day to meet the tight schedule and dizzying production targets.

And then there is the climate. Ambient temperatures in the UAE desert can rise well in excess of 50°C in summer, while the dryness and lightness of the sand ensure that a fine suspension of desert dust is almost always in the air. Such conditions demand that even the best equipment is carefully looked after.

However, they are also conditions that Volvo CE's A35F haulers happen to be well prepared for, thanks to both their fully enclosed axles, which guard against the dust and circulate cooling lubricant, as well as





Mohammed Amer has a fleet of 800 machines and a workforce of 3,000 people at the two construction sites in Dubai.

"All our haulers have exceeded 10,000 working hours, and we are still happy," Mohammed Amer, Logistics and Fleet Manager, Tristar, in Dubai.

"We have finished 100 million cubic meters of cut and fill, and we have a balance of about 70 million cubic meters to go."

MOHAMMED AMER

their three-stage filtration system, which ensures that no airborne dust makes it through to the engines.

Amer notes: "The most important thing about the Volvo machines is their extremely low downtime. Volvo Construction Equipment created the articulated hauler, and to this day they continue to lead in their design and manufacture."

He continues: "All of our haulers have exceeded 10,000 working hours, and we are still happy. Now we are also doing oil analysis for the haulers because I want to monitor them very closely as they reach higher hours. That will help to catch any problems in the engine, transmission or hydraulic system. When you make routine scheduled oil sampling, you will know what the oil condition is within each element of the powertrain, and if there is something you need to overhaul or repair before it breaks down – because if that happens, it will cost you two, three times more to repair it."

Mercifully, Tristar has experienced extremely few breakdowns with its Volvo-only hauler fleet, and that is one of the main reasons why the contractor has only stocked Volvo machines since it first invested in the D series machines back in 2007 – upon their debut in the Middle East.

Amer continues: "It's because of the dealer, the strong performance of the haulers, the high resale value, and the low breakdown time. But the most important thing is not to have breakdowns. We want to keep the availability of the machines at 100 percent and we have almost achieved this with the F Series machines."

The breakdowns, where they have occurred, have also never been due to failures in the powertrain, but as a result of the strains placed on the axle and brake components in the testing operational conditions.

Tristar has a highly trained and skilled workforce, but up against high productivity targets and tight

deadlines, vigilance is required to ensure that the best driving practices are maintained and reinforced.

These include, notes Amer, "using the retarder within a reasonable distance before stopping to reduce the speed gradually and not suddenly braking", which can affect the brake life and raise the prospect and risk of breakdowns in the braking system.

To deal with the high temperatures of the Gulf summer, the haulers are meanwhile filled with unusually viscose oil to ensure its moving parts stay adequately lubricated and cooled.

Amer adds: "This is our mentality: we like to always maintain our fleet, and keep it ready for any work."

And lately, the work put to Tristar's F Series articulated haulers as also involved the nearby Expo2020 site, where they are likewise engaged in hauling sand as part of the site-wide cut and fill of dunes and depressions.

Amer explains: "At the Expo2020 site the haulers are shifting soft material over soft ground from one place to another, as part of cut and fill works. We're using the articulated haulers where there is no proper road for the normal trucks."

Across both sites, Tristar now has a total of 800 machines and pieces of equipment and a workforce of 3,000 people engaged in an array of activities. At the Expo 2020 site, the contractor is also building the infrastructure, including the roads, telecoms, and water and sewerage lines.

And with less than three years until the doors open on 20 October 2020, the race is already on to deliver these latest jewels in Dubai's crown in time for its unveiling before the world.

It is an exciting time, but as Amer quips: "You will never get bored in contracting because every day there are issues to work on. Especially with equipment, you might face 100 different problems a day minimum. So you have to work in so many different directions, and every day brings new challenges."

MEET VOLVO'S NEW GIANT

Volvo Construction Equipment unveiled its new range of Volvo-branded rigid haulers to customers and dealers at the company's Motherwell facility in Scotland.

By **Charlie Williams**

All eyes were on the new range of Volvo-branded rigid haulers last April when Volvo Construction Equipment officially launched the new machines in front of customers and dealers at the company's Motherwell facility in Scotland. Guests got their first glimpse of the new machines – which consist of the 45-ton R45D, 60-ton R60D, 72-ton R70D and the flagship 95-tonne R100E – on Tuesday April 10th. The star of the show was the R100E, a completely new rigid hauler that combines a wealth of market and customer knowledge with proven components, new technologies and a striking new design – all providing a cost-effective and productive solution to fulfil the needs of today's mining and quarrying customers. The new four-model range is initially available in less regulated markets.

With a focus on helping customers achieve production targets faster – and using less fuel in the process, Volvo's new rigid haulers are made for surface mining and quarrying applications where operational costs and safe operations are critical. Uptime and productivity are centered on the range's durable design

THE NEW RIGID HAULER

First Volvo R100E was sold during the launch event; Lars Göran Rutqvist from Rutqvists Schakt AB, a customer of Volvo CE's Swedish dealer Swecon, became the first one to place an order of the new rigid hauler.

The machines are scheduled to enter production in June 2018, following completion of all field trials.

The machines will initially be launched in less regulated markets, with the exception of the R70D and R100E which are also available for sale in Europe until Q2 2020.

The machines are manufactured at Volvo CE's Motherwell production facility in Scotland.

that promotes high component protection and longer lifecycles. Efficient and intelligent, the Volvo haulers boast a competitive power-to-weight ratio, effective gearing and weight distribution that gives the tractive effort to allow the machines to traverse steep slopes in total control.

As well as having the chance to inspect the new machines, guests at the landmark event – which was held between April 9th–11th – also got to the opportunity to test drive the all-new flagship R100E, see how the rigid haulers are designed and made and watch them in action at a nearby quarry.

With customer input key to the development of the new range of rigid haulers, the machines have undergone extensive field testing – with very positive results. One such customer is Trollope Mining Services, a contract mining company based in Johannesburg, South Africa.

"The Volvo R100E is an impressive design that offers a good balance between productivity, fuel efficiency, comfort, ease of maintenance and safety," says Sagrys De Villiers, Site Manager at the Manungu Colliery. "We are sure that this truck will be a strong competitor in the rigid truck market in the future."

"The R100E is capable of carrying an extra bucket pass compared to other 100t trucks being used on the site," agrees Workshop Manager Danie van Niekerk. "This means extra productivity for the mine, which is very valuable."



Speed and acceleration of the hauler on inclines compares favorably against competitor machines, even when fully loaded and carrying more material."

The E-Series R100E is a completely new machine that delivers stability, a long service life, high profitability, durability and comfort. With its high capacity and hauling speeds, new V-shaped body, efficient hydraulics, intelligent monitoring systems and operator environment, Volvo CE demonstrated how the rigid hauler will help customers in the mining and quarrying segments move more material in less time. Moreover, the R100E is also quick and simple to operate and maintain.

Based on the existing and well-proven Terex Trucks TR-Series, development of the D-Series R45D, R60D and R70D Volvo rigid haulers follows an in-depth engineering review, ensuring that the machines meet the standards expected from Volvo products in their target markets and segments. Improvements include greater visibility and safety systems, along with Volvo technical support and branding.

"It was great to invite customers and dealers to the site where the new

"The development of these machines has relied heavily on the longstanding rigid hauler expertise of Terex Trucks as well as customer input and the technological strength of the Volvo Group."

THOMAS BITTER

Volvo-branded rigid haulers are being manufactured," says Thomas Bitter, Senior Vice President of the Marketing and Product Portfolio function at Volvo CE. "We've been working on the new range since Volvo CE acquired Terex Trucks in 2014. The development of these machines has relied heavily on the longstanding rigid hauler expertise of Terex Trucks as well as customer input and the technological strength of the Volvo Group."

"The proven design of the Terex Trucks rigid haulers provided us with a

strong DNA on which to develop Volvo CE's innovative entry into this product line," agrees Paul Douglas, Volvo CE's Vice President of Rigid Haulers and Managing Director of Terex Trucks. "The R100E has been designed to meet customer demands for a rigid hauler that delivers high performance and productivity, low total cost of ownership, easy serviceability and good operator comfort. It, along with the rest of the range, builds on Terex Trucks' 84-year heritage and incorporates the customer feedback and market knowledge we have built-up over the years."



Customers and dealers got the first glimpse of the R100E Rigid Hauler at Motherwell.

SPIRIT ONLINE

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



↑ MEGA PROJECTS 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.



SIX INNOVATIONS TO HELP REDUCE MACHINE COST

The cost of owning a machine is much more than just the initial purchase price. Operating costs begin as soon as the engine is started, so knowing the combined life cycle costs and equipping machines with the right features is crucial in getting a good return on investment.

Here we look at the innovations helping to reduce machine costs.



WHY ELECTRIC CONSTRUCTION EQUIPMENT WON'T SOLVE THE TOTAL COST OF OWNERSHIP DILEMMA

Fuel costs may radically change but working out the ideal formula for running construction equipment will be just as complex in an all-electric future.

VOLVO GROUP IN JOINT EFFORT TO MEET GRAND PARIS NEEDS

The Volvo Group is working together in order to meet the demands of the Grand Paris project – Europe's largest construction site.



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.

