

Matter of life and death

AVE YOU EVER thought about how crucial our products and services are for society to function? The food we eat is transported to a shop by a truck. We travel on roads and work in buildings and plants that are built using construction equipment. We often simply take all this for granted, but in actual fact transport and the infrastructure make our modern lives possible.

Sometimes we only understand just how important things are when they stop working. When it is a question of life and death. We produce engines that power fire-fighting vehicles and maritime rescue boats. The UN uses our trucks to deliver food to starving families. In a country like Lebanon, where the electricity supplies are sporadic, hospital operating theatres are able to continue working thanks to gensets built using Volvo Penta engines.

IN THIS ISSUE of *Volvo Group Magazine*, you can read about 10 examples of ways all of us at the Volvo Group, together with our customers and partners, are driving prosperity in different parts of the world – right here, right now.

If we look ahead, we can see that our contribution to society is going to be increasingly important. When the global population grows, so, too, does the need for transport and infrastructure. We then need to meet this demand with solutions that are gradually becoming more and more sustainable.

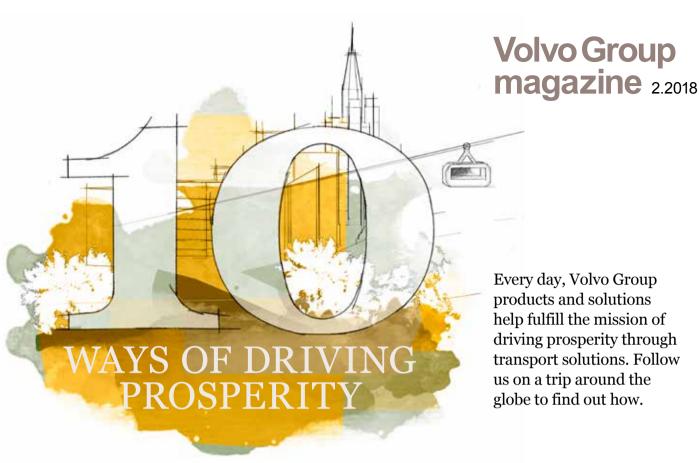
We are continuing to make our diesel engines

cleaner and more efficient and we are making a conscious effort at every link in the value chain to reduce our environmental impact. We are already leaders when it comes to electric buses and we are now developing future hybrid and fully electric solutions in our other business areas. In 2019, for example, we are going to start selling fully electric trucks.

New technology is offering us new opportunities to improve logistics systems, create value for our customers and reduce our environmental footprint. But it is never a matter of using technology simply for its own sake, however. It is always about what technology can do for us. If we build a truck, it needs to be safe for other road users and for the person driving it, so that they return home safely to their families at the end of a working day. Both today and in the future.



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Every day, Volvo Group products and solutions help fulfill the mission of driving prosperity through transport solutions. Follow us on a trip around the globe to find out how.

Providing power in Lebanon In Lebanon, Volvo Penta engines are used in gensets to provide electricity

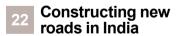








Mack Trucks is playing a key role in New York City's ambitious waste management plans.



India is investing in public infrastructure, and Volvo CE is proving to be a valuable partner for highway construction projects.

Investing in Ethiopia's youth

As skills shortages hold back growth in Ethiopia, the Volvo Group is helping to develop young technicians.



ALSO INSIDE

54 FULLY ELECTRIC TRUCKS IN 2019 56 MEET VOLVO CE'S NEW PRESIDENT 60 EMPLOYEE SATISFACTION IN TUVE

66 KINA WILEKE WANTS EVERYONE TO COMMUNICATE



New President of Mack Trucks

MARTIN WEISSBURG
will become President of
Mack Trucks as of 1 June,
2018. For the past four
years, he has headed Volvo
Construction Equipment and
in his new capacity he will
continue to be a member of
the Executive Board for the

Martin Weissburg joined the Volvo Group in 2005 as

Volvo Group.

President of Volvo Financial Services Americas, before becoming global President of VFS in 2010. He will be based in Greensboro, USA.

Martin Weissburg succeeds Dennis Slagle, who will remain with the Volvo Group as a special projects leader reporting to Martin Lundstedt, President and CEO.



Martin Weissburg

1

VFS Thailand introduces a "first" among truck brands in Thailand, an offer for Volvo and UD customers to split their down payment over six months at no interest, and receive a credit card as an added value when choosing the Volvo Group.

Self-driving electric buses in Singapore

VOLVO BUSES has partnered with Nanyang Technological University (NTU) in Singapore to develop and test self-driving electric buses. The aim is to develop an autonomous version of the all-electric, 12-metre Volvo 7900 Electric in 2018 so that tests can start in 2019.

"Together with NTU, one of the world's leading universities of technology, we now have the possibility to test various solutions under realistic conditions in a major city that has high ambitions for its public transport," said Håkan Agnevall, President Volvo Buses, when the programme was presented.

Singapore has announced that it wants to start using autonomous vehicles before 2022. Of the 2,000 double-decker buses presently used in the city, 1,800 run on a Volvo chassis.



Singapore has high ambitions for its city transport and is the ideal testing ground for autonomous buses. In 2019, two 12-metre Volvo 7900 Electric will be used to try different autonomous solutions under realistic conditions.

Stricter emission rules in Europe

IN RECENT DECADES, regulators in Europe, the USA and Japan have progressively implemented stricter emission standards for new heavy-duty engines. Next year, the toughest rules to date will come into force in Europe. Under the European Commission's new legislation, heavy-duty trucks sold in Europe need to declare fuel consumption and CO₂ emissions. These values can be used to calculate the emissions and fuel consumption for a specific truck, something that is otherwise difficult, since heavy-duty vehicles are typically custom built.

The Volvo Group welcomes the new legislation which will make it easier to compare customised offers from different truck manufacturers to find the most fuel-efficient option.



HELLO...

... **Girish Jandhyala**, Learning Program Manager at Volvo Group University Greensboro, USA

You were recently invited to speak at the international Opex Conference in Amsterdam. What did you present?

"It was titled *Unleashing Operational Excellence* and was attended by senior management from many big companies, so it was an honour to present what the Volvo Group is doing. I talked about our work with continuous improvement and VPS, Volvo Production System. Many companies try some version of this, but a study from consultancy firm McKinsey shows that 70 per cent of transformation programmes fail. One reason could be too much focus on technical aspects and not enough on the culture and the basic fibre of its people."

Why is that so important?

"We must distinguish between merely having the knowledge of something and truly understanding it. For a transformation to succeed, it must be part of the culture of the workplace and in people's everyday lives. Then you will understand it and live the change. Culture must come from the top. In the Volvo Group, we can see many important changes from the culture implemented by Martin Lundstedt."

What is special about the Volvo Group when it comes to operational excellence?

"A big difference is that we have an operational excellence strategy for the whole Group, not just pockets of it. And we try to make it simple, so that everyone can relate to VPS and even use it outside work."



The highlight of the Australian launch of UD Quon in November 2017 was the test drives for dealers, customers and media.

Australia launches the latest UD Quon

WITH THE BOLD statement of "Best Japanese Truck", UD Trucks has launched the all-new UD Quon heavy-duty truck on the Australian market. Communication related to the launch has focused on how this truck combines the best of three worlds: UD Trucks Japanese heritage of

manufacturing quality, adaptation of Volvo Group's latest technologies, and Volvo Group Australia's strong dealer network. The all-new Quon will be sold through Volvo Group Australia's multibranded dealership and its partners, which has 39 sales and service locations throughout the country.

Trucks are fun THE RECENTLY launched Mack Anthem is now even more fun. In cooperation with Mack Trucks, LEGO has produced a Mack Anthem Technic LEGO set with which you can build both the Anthem and a Mack LR refuse truck.

A novel way of solving problems

GROUP IT HACKATHONS are becoming increasingly popular. Since the first contest of this type was launched three years ago in Wroclaw, Poland, some 15 events have been held in different parts of the world. The picture is from a Hackathon in Bangalore, India, last year.

In this type of contest, IT specialists compete to create software prototypes on a given theme within a limited time frame. Many of the solutions have then been put to use in different parts of the Volvo Group.



Engaged competitors in Bangalore, India.

Prestigious award to Renault Trucks

RENAULT TRUCKS T High Edition has received the German Design Council's prestigious German Design Award 2018 in the Transport category. The award was presented at the Ambiente Fair in Frankfurt in February.





Watch out!

VOLVO MERCHANDISE has partnered with tech giant Garmin to create a unique GPS smartwatch with a Volvo watch face and advanced training and navigation features. Its functionalities will be constantly updated and the plan is to also add Volvo-specific features and connected services.

Tobias Wilhelm takes over



Tobias Wilhelm

TOBIAS WILHELM is new editor-in-chief for Volvo Group Magazine and Director Internal Communications as of 1 April.

"Volvo Group Magazine has an important role

to play in everyone's knowledge and understanding of our shared direction as the Volvo Group. I look forward to working with the magazine even more and developing it further," says Tobias Wilhelm.

Before taking on his present position, Tobias Wilhelm was Internal Communication Manager at Volvo Trucks. He has been an assistant editor of *Volvo Group Magazine* since 2015.

Tobias Wilhelm is replacing Ann-Mari Robinson, who has been editor-inchief since the launch of *Volvo Group Magazine* in 2015. Since 1 January, Ann-Mari Robinson now works at Volvo Trucks Europe Sales Area.



20,000

The number of children around the world that have so far been educated about waste management as part of Volvo Ocean Race's sustainability campaign. The goal is to reduce the use of single-plastics that end up in the oceans, harming marine life and ultimately human health. A fun and educational online training in six languages for the age group 6-12 can be found at

www.volvooceanrace.com/en/sustainability/education.html

Creating a Volvo Group CTO office

MANY societal challenges need to be solved by technology development and innovations. For the Volvo Group, this means that research and innovation must be even more strongly focused on social issues, as well as policy and regulatory agendas.

To achieve this, a new Chief

Technology Officer, CTO, office has been set up, headed by Niklas Gustafsson, formerly SVP Sustainability & Corporate Affairs and Chief Sustainability Officer. He will report to CTO Lars Stenqvist and be a member of the GTT executive management team.



In this issue we take an in-depth look at some of the many ways in which the Group is driving prosperity around the world. For example, in Lebanon, access to public electricity is never taken for granted. With help from Volvo Penta, the Khonaysser Group is ensuring its customers maintain power.

TEXT NIC TOWNSEND PHOTO ROBIN ARON

AN ESSENTIAL LIFELINE



T HAS BEEN nearly 30 years since the Lebanese civil war ended and for the most part the country has fully recovered. However, one unfortunate legacy of the 15-year conflict remains – an underdeveloped electrical infrastructure that falls way short of the country's needs. Political instability and indecision continue to hamper efforts to find a solution and, with the government only being able to deliver an average of 12 hours of electricity per day, outages are a daily occurrence.

For many, this is more than just an inconvenience. In the country's hospitals, even a short blackout can mean the difference between life and death. "Without electricity, we would shut down – it's as simple as that," says Mouin Abouzahr, General Director, Labib Medical Center. "You can't do anything and you have to transfer your patients to another clinic. So, having 24-hour electricity is crucial, it's the heart of the hospital."



Joseph Abou Zeid, head of maintenance, and Afif Abou Zaher, maintenance engineer, inspect the Labib Medical Center's genset.





"It was a very tough time, but this hospital never shut down and, for many people living here, it was a shining light."

ELIAS KHONAYSSER, KHONAYSSER GROUP

THE 164-BED HOSPITAL, based in Sidon in southern Lebanon, is one of the most important in the region and over the years it has had to overcome some exceptional challenges to continue providing health care.

None more so than during the 34-day conflict with Israel in 2006. "We were being bombed and shelled and at the same time experiencing a major increase in casualties and we still had to provide the health-care services required of us," recalls Mouin Abouzahr. "Bridges between here and Beirut were bombed, and air and sea freight was stopped, which made it difficult to secure diesel and make sure our generators were working."

THROUGHOUT THE CRISIS, the hospital relied on power from its generating sets (gensets) supplied by Khonaysser Group and powered by Volvo Penta engines, as well as Khonaysser Group's round-the-clock maintenance and support. Not only did this help the Labib Medical Center to continue operating at such a critical time, but it has continued to help the hospital run efficiently ever since.

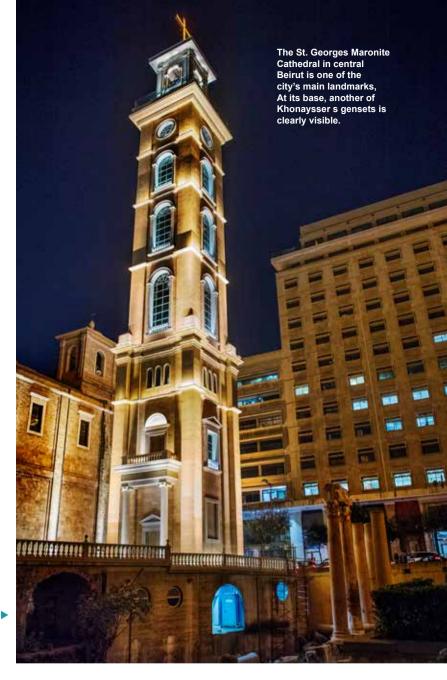
"It was a very tough time, but this hospital never shut down and, for many people living here, it was a shining light, so it was great that we



could in turn provide them with light – literally," says Elias Khonaysser, Khonaysser Group.
"Today, they have three 500 kVA gensets that are synchronised – two for prime applications and one on standby for emergencies or load sheds. This means they are always connected, they will not even see a light bulb blink."

THERE IS LITTLE evidence in Beirut's modern neon-lit skyline of glass skyscrapers and electronic billboards to suggest the country is suffering an energy crisis. The city's historic centre has been immaculately restored to its former glory, when Beirut was known as the Paris of the Middle East, and its streets are lined with flagship stores from the world's largest fashion brands. What was once the dividing line during the civil war is now a marina filled with luxury yachts and surrounded by newlybuilt high-end apartments. But, behind the scenes, hidden away on rooftops and basements, there are countless gensets providing all the necessary power. In fact, Lebanon is one of the largest markets in the world for industrial genset builders like Khonavsser Group.

As he drives through Beirut, it seems Elias Khonaysser cannot go more than 20 metres without being able to point out a building powered by one of his company's gensets. Restaurants, hotels, corporate offices, factories – even at the base of the St. Georges Maronite Cathedral – one of the city's largest landmarks – a Khonaysser genset is clearly visible. This is





Tony Toufic, Maintenance Manager at the Rosary Sisters Hospital, inspects the gensets every day and with just one call he can have Khonaysser Group's technicians on site within minutes.



A 15-year civil war, followed by continuous political instability and indecision, has left Lebanon with an underdeveloped electrical system, and by extension created a large market for gensets.



Khonaysser Group has worked with Volvo Penta for over twenty years, and believes its engines provide reliability and good fuel consumption.



Khonaysser Group's' 50,000 m² plant in the Bekaa Valley was opended in 2014. Around 30-50 gensets are assembled here each day.

"All medical equipment is dependent on the generators and a breakdown could lead to a catastrophic situation."

TONY TOUFIC, MAINTENANCE MANAGER AT THE ROSARY SISTERS HOSPITAL

LEBANON

Capital: Beirut
Population: Six
million

Language: Arabic, with both English and French widely spoken

Religion: Shia Islam (27%), Sunni Islam (27%) and Christian (40%)

Area: 10,452 km²

not surprising, considering it has over 20,000 customers across Lebanon.

Today, the company is run by Antoine Khonaysser and his three sons: Halim, Elias and Hady. It all started with Antoine, a mechanic who used to run his own workshop for trucks, buses and construction equipment. When the civil war began in 1975, buses ceased running, much of the country's electricity stopped and it became almost impossible to import anything, so they began servicing and building gensets from bus and truck engines. "Beirut was closed and you couldn't even get from here to the airport (approx. 14 km away)," recalls Antoine Khonaysser. "So everyone needed generators for electricity and we did the servicing. When the war stopped, the country opened up and we could begin importing again."

In 1992, Khonaysser started buying Volvo Penta engines after a representative from the company came to visit them in Beirut. Five years later, Khonaysser Group become Volvo Penta's exclusive importer for Lebanon and the family-owned company has gone from strength to strength ever since. Today, it has over 200 employees, a modern 50,000 m² assembly plant in the Bekaa Valley and is present in five countries: Lebanon, Qatar, UAE, Saudi Arabia and Iraq. It has also built up a global dealer network and can offer its customers support throughout the Middle East, Europe, Africa, Asia and North America.

IN A HIGHLY competitive market, Volvo Penta engines have enabled Khonaysser Group to supply its customers with a fuel-efficient, reliable product. The distinctive green colour of its gensets has been taken from the colour of Volvo engines to reflect their importance in the company's success. However, in Lebanon, the product alone is just part of the equation and it needs to be backed up with good aftermarket support.

"Around 60-70 per cent of our customers are most concerned about the service we can provide," says Elias Khonaysser. "After all, if a customer's genset fails, he will say Khonaysser failed, so our reputation is on the line."

Delivering fast, efficient aftersales services has therefore always been a key focus and the company can boast a team of technicians ready to serve its customers around the clock with both preventitive maintenance and emergency support.

For the Rosary Sisters Hospital in central Beirut, this is what differentiates Khonaysser.



"One call and we can get their whole team here in a few minutes," claims Tony Toufic, Maintenance Manager. "That is very good for us, since all medical equipment is dependent on the generators and a breakdown could lead to a catastrophic situation. They provide regular and professional maintenance and, if there is a technical issue we cannot solve, they are always there to help."

KHONAYSSER GROUP

Founded: 1960 Employees: 230

Markets: Lebanon, Qatar, UAE, Saudi Arabia and Iraq

Customers: Approx. 20,000 Facilities: Over 200,000 m²

Production: Approx. 30-50 gensets are produced daily at the company's production facility in the Bekaa Valley

Services: Design, assembly, sales, installation and aftersales support of generating sets; industrial and marine engines and gensets; electrical panels; synchronisation systems; soundproofing; weatherproofing; trailers and towerlights.

Just as Khonaysser Group is expected to support its customers throughout the lifecycle of its products, it also expects continuous support from Volvo Penta when it comes to spare parts availability and warranty issues.

"Fortunately, Volvo Penta has been able to support us 100 per cent when it comes to aftersales," says Antoine Khonaysser. "We are in contact weekly with Volvo Penta's spare parts team, where we deliver regular reports so that they know the situation in our market and will do what they can to ensure we do not lose market share. This relationship has been a real success story over the years."

THROUGH THIS COLLABORATION, Volvo

Penta also benefits from having a partner with decades of experience and a solid reputation for reliability and exceptional service. "We have built up so much trust with our customers that many of our sales can be done by phone," explains Antoine Khonaysser. "They call, order a genset and we send it directly – they never inspect it or test it, because they trust us."







TARGETING ZERO WASTE

Their mission is to keep the largest city in the USA healthy, safe and clean. Together with Mack Trucks, the New York City Department of Sanitation is leading the way when it comes to new technologies and sustainable solutions.

TEXT LINDA SWANBERG PHOTO MACK TRUCKS







DSNY is the world's largest sanitation department, collecting 12,000-13,000 tons of garbage and recyclables every day.

IX DAYS A week year-round, thousands of sanitation workers hit the streets of New York's 59 different districts. Together, they collect a daily average of 10,000–11,000 tons of waste and 2,000 tons of recyclable material like glass, paper, metal and organics.

For a city with more than 8.5 million inhabitants, waste is a big challenge – and the ambitions are high. New York City has set itself a

target of sending zero waste to landfills by 2030.

The New York City Department of Sanitation (DSNY) plays an important role in helping New Yorkers to reuse and recycle. Thanks to initiatives like the NYC Organics programme, more and more materials are sent for recycling.

"This is a high priority for the city and we are hoping that the recycling numbers will go up and the refuse numbers will go down even more as time progresses," says Rocky DiRico, Deputy Commissioner, Support Services, at DSNY.

"I'm very proud of who we are and what we have done. Everyone looks to us for guidance and follows our lead."

ROCKY DIRICO, DEPUTY COMMISSIONER AT DSNY

Besides leading the way to zero waste, DSNY has another crucial task – keeping the city's streets and highways clear of snow and ice. Whenever a heavy snowfall hits the city, the Department of Sanitation works around the clock to make sure that streets are clear for emergency vehicles, along major roadways and around hospitals, schools and fire and police stations.

THE DIVERSITY OF tasks and environments and the tough working conditions mean that demands are high on the vehicles used in the departments operations.

DSNY has a fleet of 5,800 different vehicles, from support vehicles and mechanical street sweepers to sand/salt spreaders and collection trucks. When it comes to heavy vehicles like refuse and recycling trucks, the majority are Mack trucks. DSNY and Mack Trucks have been working together for more than 30 years and collaborate closely on all levels. Most of the Mack trucks are customised to meet the needs of DSNY.

As owner to the largest fleet of heavy-duty vehicles in New York City, the Department of Sanitation plays a very important role when it comes to testing new technologies and solutions.

"If we don't lead, no one else will. I'm very proud of who we are and what we have done. Everyone looks to us for guidance and follows our lead," says Rocky DiRico.

A lot of effort is put into finding new solutions that will make the vehicles more fuel efficient and sustainable. The Mayor of New York City, Bill de Blasio, has declared that greenhouse gas emissions should be reduced by 80 per cent by 2035.

DSNY HAS LONG worked hard to reduce greenhouse gas emissions. It has its own laboratory where it measures emissions and constantly tests alternative fuels like biodiesel and dimethyl ether (DME). In its fleet, it also runs about 50 hybrid refuse trucks and a handful of hybrid electric trucks.

"We work very closely with Mack Trucks to identify different technologies that can help us reach our goal of reducing greenhouse gas emissions. Because of the size of the fleet and multitude of vehicles that we have, we don't think there will be a single solution. It's also very important for us to see the return on investment; any technology that we identify has to enable us to maintain the productivity of the fleet," says Spiro Kattan, Deputy Director of Clean Fuels and Technology Division at DSNY. •



Most of the refuse and recycling trucks on the streets of New York are Mack trucks, customised to meet the needs of the 59 different districts.

New York City

... is by far the largest city in the United States, with a population of more than 8.5 million inhabitants.

23,500

Sanitation workers regularly empty 23,500 litter baskets on sidewalks across New York City.

19,000

lane miles plowed by DSNY during every storm.

7.25

million tons of snow cleared by DSNY during one storm in 2016. 10 TONS

In a single shift, a collection crew can pick up 10 tons of refuse. 5,800

The number of vehicles in the fleet of DSNY.

Zero Waste

New York City has taken on the challenge of sending zero waste to landfills by 2030.

3.7 million

The number on tons of material that DSNY manages every year.

"Without DSNY and Mack trucks, the whole city would shut down when hit by a big snow storm."

JOHN STUART, MANAGER OF NATIONAL ACCOUNTS, MACK TRUCKS

About 1,200 Mack refuse trucks and 350 recycling trucks are used to collect waste and recyclables on the streets of New York every day. DSNY has a total of about two dozen different types of Mack trucks with many different uses. "The trucks are like Swiss army knives. The most important aspect of the garbage truck is its ability to plow snow and work for five to seven days without stopping. Not many other trucks can do that. Without DSNY and Mack trucks, the whole city would shut down when hit by a big snow storm," says John Stuart, Manager of National Accounts, Mack Trucks.

Source: DSNY 2016 Annual Report



THE WA

Varanasi and Allahabad are the bedrock of India's political and religious history, but until now economic growth in the region has not kept pace with the rest of India. With the expansion of the highway NH2, this is about to change.

PAYAL BHATTAR

рното JONAS GRATZER sweetmeat shop by the roadside on the busy highway between India's holy cities, Varanasi and Allahabad, in the state of Uttar Pradesh in North India. This 72 km long highway, which is an integral part of the 1,465 km long NH2 that links the east and west of India, is now undergoing expansion and will soon have six lanes instead of four.

"I started my business on a very tiny scale when this road was being expanded from a two-lane to a four-lane highway. Today, I earn Rs 200-Rs 400 (€2.50-€5) daily and I am certain that, once the highway expands further, there will be more development and my business will grow, particularly during festivals," says Bindu Devi.

NH2 is an integral part of India's largest highway project – the Golden Quadrilateral – which was launched under the National Highways Development Project (NHDP) in 2001.

EVERY YEAR, **MILLIONS** of foreign and domestic tourists visit the region for various festivals and religious ceremonies and travel between Varanasi and Allahabad. On these occasions, traffic on the highway comes to a grinding halt several times a day. The road infrastructure is







Bindu Devi (far left) runs a roadside shop, while Shyam Sunder Singh is a farmer who has been living in the region for 30 years. Both expect their businesses and quality of life in general to improve with the new expanded highway.



not even close to being able to meet demand. During the busiest periods, the three-hour journey between Allahabad and Varanasi can take twice or even three times as long, crippling timely access to basic necessities and amenities for people living in the region.

"The closest hospital with adequate medical facilities is in Varanasi and the road is sometimes so jammed that traffic is diverted to villages," says Shyam Sunder Singh, a farmer who has been living and working in the region for 30 years.

The heavy traffic adversely impacts local business and agrarian communities living in the 60 odd villages and districts in and around the highway. For instance, Bhadhoi district, renowned for its versatile carpet industry

specialising in ancient Persian-style weaving, is completely dependent on this road for trade. The same applies to for several small and mediumscale farmers growing wheat, rice, seasonal vegetables and sugarcane.

THE EXPANSION OF the Varanasi-Handia highway is a complex project that requires the construction of 15 elevated roads, in addition to widening the existing road. One of the biggest challenges is to manage daily traffic, as construction for the expansion will block at least four-five metres in the centre of the existing road.

"We need to complete the project efficiently and smoothly, while delivering it in the fastest time. This requires precise planning and execution



Expansion of the Varanasi-Handia highway

The six-laning of the Varanasi-Handia section of NH2 stretches from km 713.146 to km 785.544 in the State of Uttar Pradesh. "Varanasi has not developed as much as the rest of India. The expanded NH2 will change this. It will improve connectivity, reduce travel time to just 1.5 hours, boost trade and generate more employment. So the region will see a virtuous cycle of economic development," says Ratan Lal Kashyap, Sr. Vice President, G R Infraprojects.





Vinod Agarwal

and this is where good machinery plays a very vital role," explains Vinod Agarwal, Managing Director of G R Infraprojects.

G R Infraprojects is the construction company that was awarded the contract for the expansion of the Varanasi-Handia highway.

To do the job efficiently, G R Infraprojects has powered itself with 50,000 tonnes of steel, centralised yards, hundreds of fabricated units and equipment from companies like Volvo Construction Equipment.

CONSTRUCTION HAS JUST about begun and 14 Volvo CE machines are in top gear at the site. In addition to these 14 machines, G R Infraprojects has a fleet of more than 100 Volvo machines, including pavers, excavators and compactors, across its sites.

"India is an extremely price-sensitive and highly competitive market. For us, the challenge is to provide the customer with the best solution at the right price, while being responsible for the environment, as well as for the communities



Subhash Sharma

around us," explains Subhash Sharma, Key Account Manager (North-India), Volvo Construction Equipment.

It is estimated that the construction of one kilometre of a highway requires 4,076 days of labour. By that count, the Varanasi-Handia highway

has the potential to generate approximately 300,000 days of work and it is estimated that nearly 3,000 people will find direct means of livelihood through the project.

Shiv Babu is one such beneficiary. He is a resident of Bhiti village near Varanasi and worked on carpet weaving before the industry went into decline. His family was struggling to make ends meet, until he found employment as a labourer on the highway expansion project.

"Today, I earn Rs 250 (€3.00) a day. Once this road is made, people like me can travel to bigger cities like Varanasi and seek better opportunities for employment. This will definitely help us," he says.

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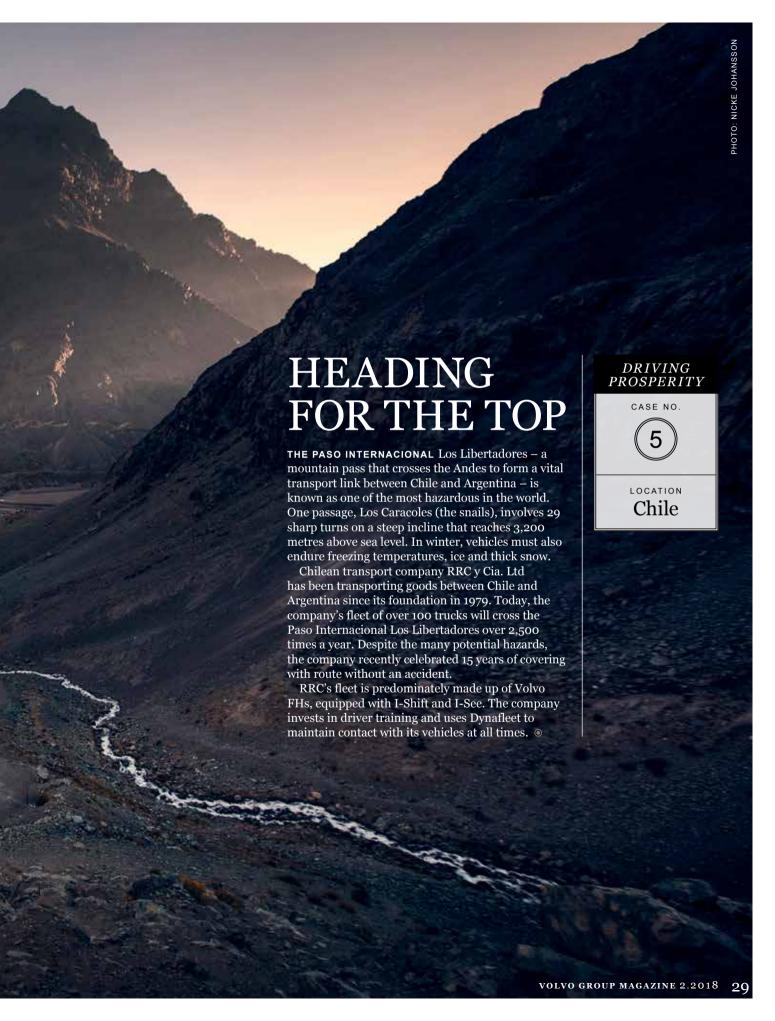


G R Infraprojects

G R Infraprojects is a leading construction company based in Udaipur, Rajasthan, India. It has been building roads, highways, bridges and airport runways in India for more than two decades. The company is involved in infrastructure development across several states in India. G R Infraprojects is Volvo Construction Equipment's second largest customer in India.







THE IMPORTANCE OF TRANSPORT

Almost everything in our homes or workplaces has, at one point in its production or distribution, been on a truck.



Over 70% of all the freight tonnage moved in the USA goes on trucks. To move 10.4 billion tons of freight annually requires over 3.6 million heavy-duty Class 8 trucks and over 3.5 million truck drivers.

More than 6,000 billion tonne-kilometres of goods are transported each year by road in the EU, USA, CIS, China and Japan alone.



Road transport today carries, on average, more than 80% of inland freight volume.

Less than 1% gets carried over 1,000 km.

Road freight transport directly creates **6.5 million** jobs in the EU and nearly **9 million** jobs in the USA.

85% of road freight

tonnage is carried over

distances of 150 km or less

- along routes for which

no other form of transport

would be realistic.

TOP TEN

countries for international road freight transport within the EU

- 1 Germany (27.2% of international road freight transport in total tonne-kilometres)
- 2 France (18.3%)
- 3 Poland (7.7%)
- 4 Spain (7.1%)
- 5 Italy (5.0%)
- 6 Belgium (4.9%)
- 7 Austria (4.5%)
- 8 Czech Republic (3.8%)
- 9 Netherlands (3.4%)
- **10** UK (2.3%)

Did you know that...

- ... truck engines have become about 90% cleaner in the last 15 years.
- ...large trucks are 100 times more effective than passenger cars in terms of fuel consumption per load unit.
- ...24 modern trucks together make less noise than a single truck made in 1970. Special insulation and other technologies mean that modern trucks are significantly quieter than those built just a few years ago.



MAIN TRANSPORTATION MODES IN EUROPE



AIR

Fast and secure but also expensive. Generally used for valuable or urgent deliveries.

0.1% (of total tonne

kilometres within the EU)



SEA

Very cost effective for heavy and bulky goods, but also slow and limited by ports, shipping channels and canals. 32.7% maritime

4.3% inland waterways



RAIL

Relatively cheap and can transport bulk quantities but inflexible and limited by rail networks and terminals. 12.3%



ROAD

Relatively cheap and very flexible – can even be used for door-to-door deliveries. However, cannot transport large volumes.

50.6%

TAKING THE LONG ROAD

through 12 states from Boston to Newport, Oregon.

5,415 km

US ROUTE 20 is the longest highway in the USA. Route 20 stretches 3,365 miles (5,415 km)

> 8,000 km

THE E40 is the longest road in Europe, stretching more than 8,000 km from Calais in France all the way to Kazakhstan where it stops just short of the Chinese border. In between, it travels through France, Belgium, Germany, Poland, Ukraine, Russia, Uzbekistan, Turkmenistan, Kyrgyzstan and Kazakhstan.

TRANSPORT NETWORK (thousand km)					
	EU	USA	Japan	China	Russia
Road network (paved)	5,000	4,310	989	3,765	1,094
Motorway network	74.3	93.3	8.4	104.4	51.0
Railway network	220.0	205.6	19.5	103.1	86.0

Sources: ec.europa.eu www.erf.be www.iru.org trucking.org







DRIVING PROSPERITY

CASE NO.



South Korea A tragic car accident that left Lee Sang In partially paralysed should have ended his dream of being a truck driver. Instead, he now has his own business and is one of the most fuel-efficient drivers in the world.

TEXT RUFINA K. PARK PHOTO ROY CRUZ



Given how much truck driving means to Lee Sang In, it is no surprise how much he cares about keeping his truck in top condition.

LEE SANG IN

Age: 42 Job: Truck driver Company: Lucky Express headquartered in

Busan, Korea (joined in June 2017)

Truck: Volvo FH 540 Daily trip: Chungcheong

Province to Busan (round trip that totals 650 kilometres)

T IS A chilly and quiet night in Busan, the second largest city in South Korea after Seoul. The port city is a popular summer destination famous for its beaches, but, in the winter, it feels like a sleepy town. At this hour, most of the locals are getting ready for bed.

But the truck driver Lee Sang In is still hard at work. He has just arrived from Cheonan, 253 km away. It has been a long day that started at 8 am. Due to unexpected snowfall he was delayed five hours and had to skip dinner to make up for lost time - and his day is far from over.

"Once they finish loading my truck, it'll be about midnight," Lee Sang In explains. "It will be around 4 am when I get back up to Cheonan and then I'll catch some sleep until 8 am before starting another day."

Lee Sang In transports goods on his Volvo FH 540 between Cheonan and Busan - a 650-kilometre round trip. Each day, he can spend up to 22 hours in the truck and use about 200 litres of fuel. Although it sounds like an exhausting lifestyle, Lee Sang In is still happy to be a truck driver, especially given the enormous challenges he has had to overcome.

"My dream was to become a truck driver since I was seven years old," he says.

AT THE AGE of 14, Lee Sang In decided that high school and college were not the right path for him – he wanted to pursue his passion for trucks. At the time, he was too young to become a truck driver, but he could become a qualified car mechanic. He dropped out of high school, started working at a car centre and enrolled in an automotive technician training programme.

When he turned 18, he obtained his driver's license and the next year, he became an assistant truck driver for about two months. He then worked as a forklift driver for about two years as part of his compulsory military service. He was preparing to pursue his lifelong dream of becoming a truck driver, when his world turned upside down.

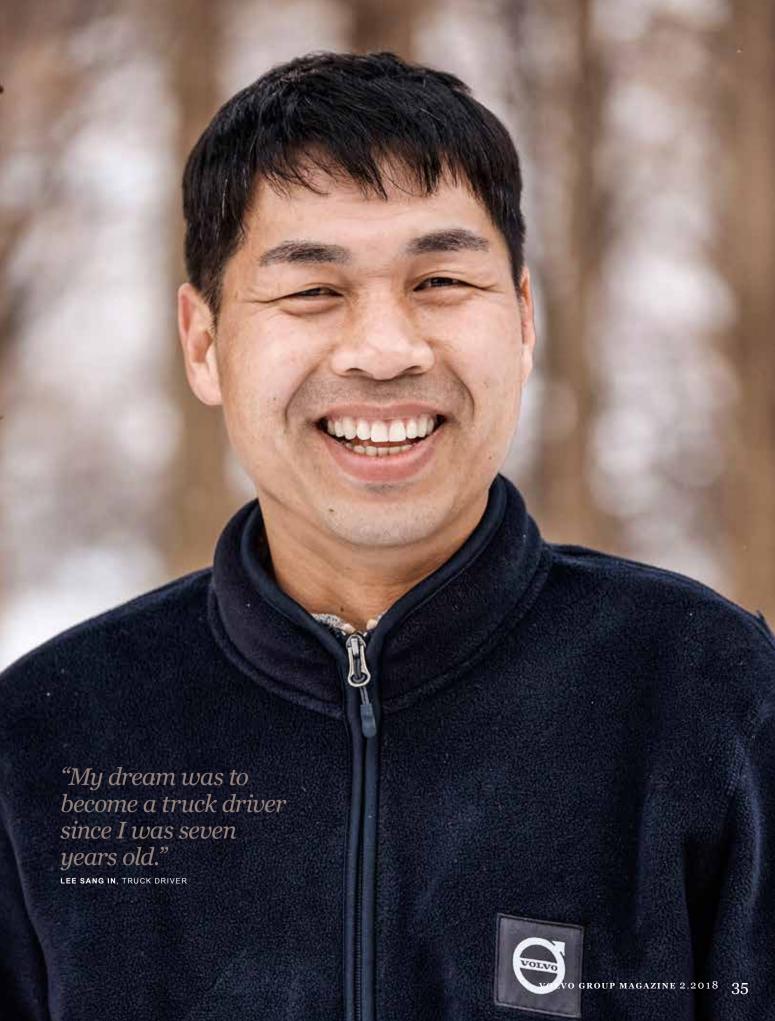
On 11 December 1999, Lee Sang In was involved in a horrific car accident – in which the other passenger riding with him tragically died at the scene. Meanwhile, Lee Sang In suffered temporary memory loss and severe brachial plexus injury, which left his left arm paralysed.

"I couldn't even recognise my parents and friends for several days. When my memory slowly came back, I heard the doctors speak to my parents about my situation. I realised that I would never be able to use my left arm again and that I would need to find some other way to live."

AFTER HE RECOVERED, Lee Sang In started to deliver newspapers and later became an authorised dealer for a milk company in his area, but he soon experienced another setback. One day, he went to the doctors because of abdominal pain and he found out that he had stomach cancer. Thankfully, it was discovered in the early stages and Lee Sang In survived.

After overcoming yet again another major surgery, he tried to return to normal life by re-opening the milk franchise company, but all he could think about was his lifelong dream of becoming a truck driver.

"Every day, when I was walking or driving, I would notice a truck passing by and I would always search for truck-related information on the internet. One day, I found out that I could obtain a truck driving licence to drive cargo trucks, despite my disabled arm."



"People who ride in the truck with me always comment that they feel safe even though I drive with one hand."

LEE SANG IN, TRUCK DRIVER

Lee Sang In immediately took the train to Seoul for the exam and passed on the second try.

From the beginning of his career, Lee Sang In drove Volvo trucks. His first was a used Volvo FH 500 and, two years ago, he switched to the Volvo FH 540.

"There are many advantages to driving a Volvo truck. For example, Volvo Dynamic Steering (VDS), makes it really easy to drive with one hand and allows me to go straight even if there are bumps on the road."

Most of all, the easy and comfortable steering features have allowed Lee Sang In to drive with confidence on the road, even though he can only use one arm. "People who ride in the truck with me always comment that they feel safe even though I drive with one hand. The easy steering features make me feel like the truck was designed just for me. I'm thankful that I can make a living and work despite my disabilities," he says.

IN FACT, LEE Sang In is one of the best Volvo truck drivers in South Korea. In 2016, he won the Korea Fuelwatch Challenge and came second in the Asia-Pacific region. He even made it to fifth place in the preliminary rounds in Sweden during the international competition. "That was one of the most amazing moments of my life."

Last year, Lee Sang In also recorded the most sales in his company. Financially, he is doing much better than in the past – but he says that he has never focused on the numbers. "I believe that my sales record is just a natural by-product of me doing something I love to do," he says. "Even though I can only use one of my arms, I have never cared about what others think and have instead remained confident in my skills and brought a cheerful attitude at work."

Even when the weather is bad or when he has to drive alone for long and extended hours, Lee says that he has never felt a desire to quit. "Every day, I go to work with the feeling that I am going camping or going to play," he says. "I feel like I have everything in the world."







Lee Sang In spends a lot of time in his truck, sometimes up to 22 hours a day.



Customers in the driving seat

Over 90 per cent of Volvo Trucks' customers in South Korea are owner-drivers like Lee Sang In. By being able to meet their high demands, Volvo Trucks has become the country's leading imported truck brand.

BCAUSE SO MANY of Volvo Trucks' customers own their own businesses, uptime is very closely related to their income. "If a truck stops, they lose money. So, increasing uptime is key to customer satisfaction," says Youn-Soo Kim, Vehicle Sales and Marketing Director, Volvo Trucks Korea.

For this reason, much has been invested in Volvo Trucks' service network. Today, it has 29 workshops nationwide – three of which are wholly owned, while the remaining 26 are exclusively for Volvo trucks. This is already the largest service network in Korea amongst imported brands – which it hopes to extend to 40 locations by 2020.

Owner-drivers also typically have a very different relationship with their vehicle since it forms such an integral part of their daily life. "On average, our customers will drive around ten hours a day, which means they have high expectations when it comes to driver comfort and safety," adds Youn-Soo Kim. "They are very proud of their trucks and have a high level of technical knowledge too."

VOLVO TRUCKS KOREA

- ▶ 90 per cent of customers are owner-drivers.
- Approximately 60 per cent of customers drive rigid vehicles in the transportation segment, 20 per cent drive tractors in container transportation and 20 per cent drive tippers in the construction industry.
- Around 40 per cent of trucks sold in Korea are imported brands, namely Volvo Trucks, Scania, MAN Mercedes or Iveco
- Amongst the imported brands, Volvo Trucks is the leader, with an average market share of 40 per cent.



Youn-Soo Kim

Innovations such as VDS, I-Shift Dual Clutch and I-Shift with crawler gears were all introduced early into the Korean market. In 2018, advanced safety features

such as Collision Warning with Emergency Brake and Lane Departure Warning System will become standard in all Volvo models.

ALL THESE FACTORS combined – a wide service network, proactive efforts to improve service quality and industry-leading technology – have helped made Volvo Trucks the leading imported truck brand in Korea. "Our main strength is that we always make customer satisfaction our first priority. We're very proactive when it comes to improving our products and services," says Youn-Soo Kim.

Output

Description:

NIC TOWNSEND







Ethiopia is a country of paradoxes. The economy is the fastest growing in Africa, but development is held back by a shortage of skilled workers. At the same time, half of the young people are under-employed.

But a Volvo Group-supported school is playing a key role in training a new generation of technicians and drivers.

TEXT MICHAEL MELAKU & MARIA SKÖLD PHOTO MWANGI KIRUBI

THE HANDS-ON APPROACH



ASIL ASEFA IS determined to learn everything there is to know about Volvo trucks so that maybe one day he can open his own business. In Ethiopia, skilled technicians like him are hard to find.

Two years ago, when Fasil Asefa joined the workshop on Debre Zeit Road just outside Addis Ababa, he knew he had landed a dream job. The dealership is run by Equatorial Business Group (EBG) which imports Volvo Trucks and Volvo Construction Equipment to Ethiopia. This is the place to be for someone wishing to learn as much as possible about how to service trucks and construction machines.

"I really like working here, it's exciting! Having senior colleagues around makes it easier and creates a good working environment," Fasil Asefa says, as he tries to figure out what is wrong with a white Volvo FH that has just come into the workshop.



The business of Samuel Desta depends heavily on the skilled technicians the dealership is able to attract.



THE WORKPLACE IS huge, with two office buildings and several workshops and display rooms. A total of 66 technicians work here, specialising in either construction equipment or trucks. So far, Fasil Asefa, 23, is a junior technician, but he has set high goals for himself:

"I want to be the best professional technician possible and, in the future, I would like to open my own workshop!"

To achieve this, he is always looking for new experiences and tries to learn from colleagues. Already as a small boy, he was fascinated by cars and trucks.

"The best thing about the automotive industry is that there are so many inventions and so much to learn. I always try to read about new technologies, I really enjoy that," he says.

Fasil Asefa likes the friendly atmosphere in the workplace and the support given by his employer, by providing transportation to and from work for example. Since he lives in another part of Addis Ababa, this is important. Many of the other technicians are also quite young

"I want to be the best professional technician possible and, in the future, I would like to open my own workshop!"

FASIL ASEFA, TECHNICIAN

and some he knows from the Selam Technical & Vocational Centre, where he got his training. The school works in close collaboration with the Volvo Group and its dealers.

HENOCK TADESSE IS another former Selam student. Like Fasil Asefa, he joined EBG two years ago but with construction equipment as his speciality.

"I like working here, because it gives you many opportunities. But it can be challenging at times. You must be physically fit, especially when working with construction equipment since you also need to service machines out in the countryside," he says.

The best part of the job is when he manages to solve a problem and help a client – nothing beats that feeling.

Henock Tadesse is also well aware that, in Addis Ababa, having a job is not something that can be taken for granted. Many of his friends are unemployed, sometimes despite having gone to university. By some estimates, half of all young adults are under-employed.

At the same time, the Ethiopian economy is moving ahead at full steam, even if the official growth rate has dipped slightly after a decade of two-digit growth. The country is seeking to overtake Kenya as the economic powerhouse of East Africa and is positioning itself to be the next hub for global manufacturing.

THE BIG PARADOX is that one of the impediments to continued growth here is the lack of skilled labour. In particular, there a shortage of trained technicians that can service all the trucks and construction equipment needed in the building boom.

For Samuel Desta, who heads the EBG workshop, finding the right staff is always a challenge.

"Having skilled technicians is absolutely crucial for us, so that we can give good service to the trucks and machines we sell," he says.

Ideally, he wants to recruit trained technicians from a school where they have already acquired basic knowledge about the automotive sector and had a chance to acquaint themselves with the heavy-duty vehicles on the market. But, in Ethiopia, there are few training centres and those that exist tend to be very theoretical due to a lack of modern training facilities.

"Selam Vocational School is an exception and we have already recruited nine technicians from them. We're really grateful to Volvo and the other partners for helping us fill the gap here," Samuel Desta says. ⊚



Henock Tadesse was one of the first 27 students who graduated as a technician in 2015. Like most of his classmates he soon found work. Now he is servicing construction machines both at EBG's workshop and on the premises of customers.



Hanna Nigussie likes her job as a teacher at Selam Technical School where she was once a student herself.



Asmeret Gebrekidan coordinates the training of technicians and feels it has been a success.



A model school for technicians

OR A FIRST-TIME visitor to the Selam Technical & Vocational Centre, it is easy to forget that this is a school. The clean, spacious workshop looks more like what you would expect of a top-notch dealership anywhere in the world, with neatly parked trucks waiting to be serviced.

The difference is that the groups of technicians in blue overalls standing around are in fact students. From day one of their training, they get to see real trucks and construction machines up close and, every time a new topic is introduced, they can immediately go and have a look for themselves to see what it really looks like.

Today, teacher Hanna Nigussie has gathered a group of students around a modern Volvo D13 engine for a class on valves and injectors. She feels that having this type of equipment creates a totally different learning experience compared to other schools in Ethiopia, where a lack of resources often forces the teaching to be much more theoretical.

"In fact, I studied here myself and the reason I joined was because I would get a chance to work on heavy-duty trucks and machines," Hanna Nigussie says.

THE SELAM TECHNICAL & Vocational Centre is an offspring of the local orphanage, Selam Children's Village, and offers a range of different training programmes for young people, many of them from the orphanage. Since 2012 they have run Ethiopia's first state-of-the-art vocational training for technicians specialising in heavyduty vehicles.

The programme was made possible by a collaboration between the school, the United



Hanna Nigussie teaches students about valves and injectors using a Volvo D13 engine. The Selam Technical & Vocational Centre is well-equipped with components and trucks, so lessons can be more hands-on.

Nations Industrial Development Organization (UNIDO), the Swedish development authority, Sida, and the Volvo Group, with Volvo Construction Equipment initially playing the lead role.

Asmeret Gebrekidan, who is department coordinator at the school, feels the programme has been hugely successful.

"It's a very good partnership between us and UNIDO, Sida and the Volvo Group. They have provided us with equipment and training and we run the programme in our facilities," she says.

HANNA NIGUSSIE WAS among the first to graduate from the school in 2015. Currently some 70 students have completed the course and most of them have found jobs.

Hanna Nigussie first worked at a truck dealership before returning to the school to teach.

"I really like my job. It feels great to see the students grow and learn more and more," she says. \odot

SELAM

- Some 70 students have graduated so far, with 53 currently enrolled in the programme.
- ▶ 19% of the students are women
- The programme serves as a role model for other vocational schools in Ethiopia.

Education is the key

THE VOLVO GROUP is increasingly trying to support vocational training. In many markets, the shortage of skilled technicians and drivers is a serious threat to business.

In Ethiopia, the Volvo Group works with two local partners – EBG, which imports Volvo Trucks and Volvo Construction Equipment, and Nyala Motors, a specialist in UD Trucks. For both dealerships, it is important to be able to provide high-quality service and maintenance,



Johan Reiman

so the establishment of the specialised school for technicians at Selam has been important to them. So far, EBG has recruited nine technicians from Selam, and Nyala Motors four.

"Supporting vocational training makes good business sense to us. At the same time, it feels

great to know that this is also a way to make a difference in low-income countries with high youth unemployment, such as Ethiopia," says Johan Reiman, Manager CSR Projects.

CURRENTLY, THE VOLVO GROUP is involved in three programmes to train technicians, in Ethiopia, Morocco and Zambia. In addition, a school for commercial drivers has just been established in Ethiopia and another will be launched in Morocco later this year.

The goal is to expand to at least ten countries, but it takes time to identify the right markets and partners. Apart from the organisations involved in the Selam project – UNIDO and Sida – the Volvo Group is working closely with the American governmental agency USAid in Morocco.

"The Volvo Group contributes its expertise, for example by training the teachers. We also supply equipment, including engines, complete trucks and machines. This, in combination with internships at dealers, give the students a chance to train in a modern environment," says Johan Reiman.







WHY SAFETY IS KEY TO FUTURE VEHICLES

While safety has long been a core value of the Volvo brand, it is also integral to the Volvo Group's mission of driving prosperity. A strong safety record is essential as the industry shifts towards new technology such as automation.

TEXT NIC TOWNSEND PHOTO VOLVO GROUP

VERY YEAR, APPROXIMATELY 1.2 million people die in traffic accidents. That is 3,400 people each day – the equivalent of ten full passenger planes. Not only is this the cause of immense human suffering for the victims and their families, but it also comes at a huge economic cost through congestion, repairs and medical care. In fact, poor traffic safety is a huge impediment to economic development and tends to hit society's most vulnerable the hardest with the clear majority of these accidents taking place in



In the 1990s, Volvo Buses began frontal collision tests with test dummies using lap belts. For the future, the vision is clear – zero accidents with Volvo Group products.



Peter Kronberg

developing countries. It is for this reason that the United Nations has set a target of halving the number of global deaths and injuries from road traffic accidents by 2020, as part of its 2030 Agenda for Sustainable Development.

"The Volvo Group is playing an active role in these

efforts, not only by pioneering safety solutions in the commercial transport sector, but also by contributing our expertise and advocating increased attention to road safety issues," says Peter Kronberg, Safety Director, Volvo Group. "Transportation is what makes societies function and powers its development. It is an important part of driving prosperity – but today's frequent collisions bring transport systems to a standstill and development can't come at such a high human cost. If we are to realise the Volvo Group's mission, we must contribute to making our roads safer."

NEW TECHNOLOGY WILL play an important role, and the industry now develops active safety systems which are designed to avoid accidents, in addition to passive safety systems that mitigate the impact of accidents. This has been made possible by advancements in technology

and machine intelligence, which also underlies the new automotive frontier of automation. Automated and connected vehicles can drastically improve efficiency and productivity and they have the potential to improved safety

Yet, based on the misconception that automation is about creating driverless vehicles, there are some concerns that the technology represents a safety risk. In this regard, having such a strong track record in the field of safety is a huge advantage for the Volvo Group, which has already shown how the technology can be used to improve traffic safety, through innovations such as Collison Warning with Emergency Brake and Lane Keeping Support.

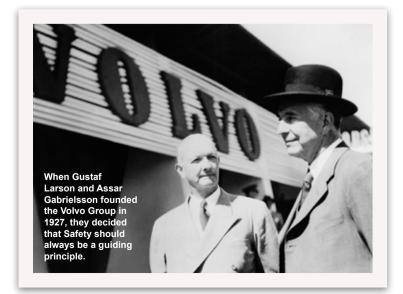
"The human factor – either the driver or another road user – is involved in the vast majority of traffic accidents," says Peter Kronberg. "This is because we are fallible – we sometimes overestimate our capabilities, we speed, we become tired or inattentive, and some even drink and drive. An autonomous vehicle will be designed never to do any of these things."

Still, the driver will remain central to traffic safety. Active safety and the majority of automated systems are designed to support drivers, not replace them. "Human beings are fantastic at anticipating events in complex environments – far superior to computerised systems. How many potential accidents do human drivers avoid every day? We are seeking the optimal mix between human and machine."

Ultimately, no new technology – whether it be automation or an alternative fuel – will be successful unless its safety can be assured. Just as safety has been at the core of the Volvo Group for over 90 years, it will continue to be so as Volvo Group companies continue to drive prosperity across the globe.

Output

Description:



"Safety is and must be the basic principle in all design work."

FOUNDERS OF THE VOLVO GROUP

By 2030, there will be one billion more people in the world. At the same time, greenhouse gas emissions must be reduced. New technologies are creating new opportunities for the Volvo Group to play its part in making society more efficient, safe and sustainable.

TEXT LINA TÖRNQUIST & LINDA SWANBERG ILLUSTRATION SUSANNE FLODIN

FINDING THE SOLUTIONS FOR TOMORROW

HE UN'S CLIMATE goals speak for themselves. To reduce global warming, greenhouse gas emissions need to be cut dramatically over the next few years. In combination with a fast-growing population and urbanisation this is an enormous challenge, not least for the transport industry.

"To drive prosperity around the world we know that more transport will be needed. I feel that the whole of society has high expectations of us and is waiting to see what we, as engineers, come up with," says Lars Stenqvist, Volvo Group Chief Technology Officer and EVP Group Trucks Technology.

He thinks that the picture of the future is far brighter today, largely thanks to access to inexpensive data power and the rapid development of battery technology.

"This opens up new opportunities and means that our vehicles can do things that were totally impossible just a few years ago. In the transport system of the future, both vehicles and



infrastructure are going to communicate with one another. This means that our vehicles must be good as products, but they also need to be extremely good at communicating in this type of transport system."

THE KEYWORDS FOR future transport are connected, electric and automated. To keep pace with the rapid technological developments, the Volvo Group has invested heavily in these technology areas in recent years – a strategy that is being balanced by investments in well-known technology.

"We are convinced that the combustion engine, for example, can be much more efficient and the beauty is that you can run it on almost any kind of fuel. It will remain important for us for many years to come and will have a place alongside electrification. Our common product platforms give us an enormous advantage when it comes to developments in both well-known and new technologies," says Lars Stenqvist.

Since 2016, the Volvo Group has set up new organisations and implemented more agile ways of working within electromobility, connectivity and automation. Many new employees have been recruited and the Volvo Group is conducting a close dialogue with different partners.

"The level of interest from external partners in working with us is incredibly high and we are seen as a driven and innovative player. One of the most important challenges is to decide what we are going to do ourselves and what we should develop in partnership with others, or even



Lars Stenqvist

let others develop. We are working hard to define what is going to differentiate us from our competitors in the future."

Presenting proof points in the shape of new solutions and technology concepts at an early stage is another important key. One example

is the Innovation Summits in 2017, where the Volvo Group presented an electric excavator, an autonomous refuse truck and an autonomous hub-to-hub solution for dedicated highway lanes. "No one knows exactly what the future will look like. These demonstrations and the input we receive from policy makers, drivers, customers and other business partners are incredibly valuable," says Lars Stenqvist. ⊚

"By 2030, we'll have intelligent transport systems in which vehicles and infrastructure communicate. This will help expand capacity and make transport flows much more effective."



Work at the cutting edge

TOMMY HANSSON STRAND is working in close collaboration with both customers and partners to develop new technology solutions. Since September 2017, he has been head of the



Tommy Hansson Strand

Innovation Lab, a new unit within Connected Solutions. In addition to being at the cutting edge when it comes to finding the services of the future, the Innovation Lab has been tasked with cutting the time between concept and commercial solution.

"We are working proactively and are following

everything that is happening within the digital ecosystem closely. In the connected world, everything moves quickly and there are many new players who could be potential partners," he says.

TO DEVELOP THE services of the future, it is also essential to understand how the products are currently used. The data generated by the approximately 700,000 connected assets plays an important part in the Innovation Lab's work. The studies done by the Advanced Analytics team relating to the fuel tank are concrete examples. The data reveals that, in many cases, the fuel tank is not totally emptied, which means that customers do not use all the energy available.

"We can take advantage of this knowledge in our product development, not least in the transformation towards electrification. Is it possible that we don't need such large batteries? This kind of insight creates many new opportunities for finding effective, sustainable solutions. What's more, if we can deliver this kind of value to our customers, we will also be competitive. The two things go hand in hand."

Output

Description:

THE FUTURE OF GOODS TRANSPORT

A shift to new business models

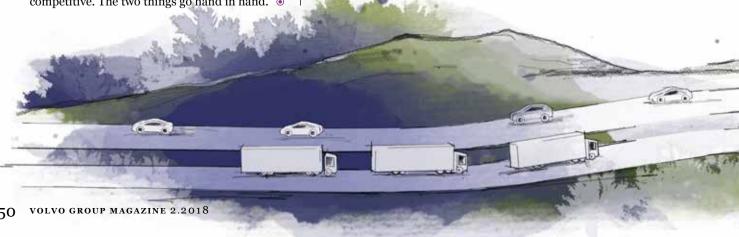
Electric trucks, intelligent infrastructure and autonomous transport are set to be common by 2030. That could open up a range of benefits – no traffic jams, for example.

HE SPEED OF change makes 2030 feel like a long way off for Mikael Karlsson, who heads up the Autonomous Solutions division at Volvo Trucks' newly established Transformation Office and Strategies, which is developing business strategies for new technologies.

But he is convinced that automation will definitely play an important part in the transport system by then.

"Just as with manufacturing today, we expect areas with highly repetitive transport flows will also be highly automated: mines, busy highway stretches and harbours, for example. But there will also be other routes, which are still more suitable for drivers. For these applications, sophisticated automation functions are more likely to be features that help drivers and improve their work environment."

Mikael Karlsson expects that more advanced automation will be positive for the Volvo Group's overarching goals of safety, efficiency and productivity.



"A higher degree of automation leads to steadier transport flows, with fewer stops and starts, and that reduces emissions and creates productivity. Automation also drives the development of safety technologies, even for applications where the driver is in the vehicle."

LARS MARTENSSON, DIRECTOR Environment and Innovation at Volvo Trucks, expects that the development of electromobility will be another huge factor in goods transport, especially in the cities. Once in place on a broad scale, electromobility can affect the whole urban transport infrastructure.

"By 2030, we won't have traffic congestion in cities. A major solution is that the trucks in cities are electric and significantly more quiet so that deliveries take place during off-peak hours."

Lars Mårtensson is very hopeful about the possible environmental gains from new tech.

"In the future, trucks will have a small impact on the environment. Thanks to intelligent transport systems, in which trucks and infrastructure communicate, vehicles will coordinate better and become much more effective. For long-distance transport, natural gas and bio gas will become the main alternatives to diesel."

potential to develop that, through better tyres, less air resistance and lighter materials," says Lars Mårtensson.

FINDING A BUSINESS model that can bridge the transition to new technologies is key. And a major task of the newly established Transformation Office and Strategies is to explore how automation is set to affect the entire business model for transport.

Currently, Volvo Trucks is undertaking several public pilots in the field together with strategic partners in order to explore how automation can make transport safer and cleaner.

"We see automation and electromobility as having the potential to transform our business model," says Mikael Karlsson. "So, we are pushing to see how we can sell transport solutions as total solutions. For example, by selling a subscription model – where the customer buys transport instead of products."

So far, interest has been strong.

"There are a lot of customers who would like to work on large-scale transport solutions together with us," says Mikael Karlsson.

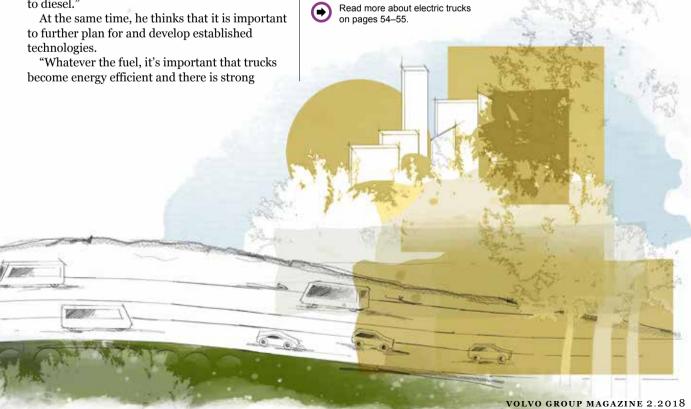
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Mikael Karlsson



Lars Mårtensson



Flexible solutions for improved city living

Cities want to be attractive places to live and work. Broad-scale electromobility and new, flexible public transport will help people move around the city in a more efficient and sustainable way.

Y 2030, THERE will be shifts not only in technology but also in mindset, thinks Jessica Sandström, Senior Vice President City Mobility. "Having large diesel vehicles in cities is going to be much less acceptable, a bit like smoking indoors has become in most places."

Today, peace and quiet are seldom taken into account as a factor for achieving a quality of life, but that too is changing.

"People are starting to quantify the costs of stress caused by noise pollution and even looking at how many people die from it. The growing focus on noise is set to be an additional driver for change, on top of the airpollution and energy efficiency," says Jessica Sandström.

MAJOR CITIES HAVE already been choosing to electrify their bus fleets. Paris has decided that 80 per cent of its fleet will be electric by 2025 and Brussels is aiming for 100 per cent by 2030



Jessica Sandström

So far, more than 4,000 hybrid and fully electric Volvo buses have been sold around the world and Jessica Sandström sees a trend whereby cities have gone from ordering and testing one or two electric buses to making large, batch orders.

The next change along the road will be introducing autonomous, connected vehicles and, once the three technologies are combined, the change will affect the whole transport system. As new technologies take shape, transport systems are set to become much more integrated.

"Compared to what we will see when all the three technologies are combined, I see electromobility as a speed bump. Already, we've seen a lot of car-sharing technologies crop up. I expect that by 2030, two-car households are going to feel antiquated. Instead, we expect different modes of transport: small autonomous, electric shuttles with room for 10-12 people may connect to larger trunk lines, for example."



Synchronised and connected

New technologies can lead to big efficiency gains in the construction and mining industries. Innovative thinking among customers is helping to speed up development.

OLVO CE'S PRODUCTS cover a broad range of applications. From large mining customers in remote, hard-toreach sites to road-building projects that need to fit onto narrow city streets.

This breadth means the pace of integrating new technologies will vary between different products, thinks Thomas Bitter, Senior Vice President of Marketing & Product Portfolio at Volvo CE.

"I don't think that our industry will be completely autonomous or completely electrified by 2030. But I'm convinced that technology will have taken a big step forward," he says.

Volvo CE is already developing electromobility solutions for its customers. There are huge advantages to electrifying some machines, such as compact excavators, which are smaller and often operate on sites close to people's homes and places of work.

The end game is to develop sites that are fully electric, autonomous and connected.



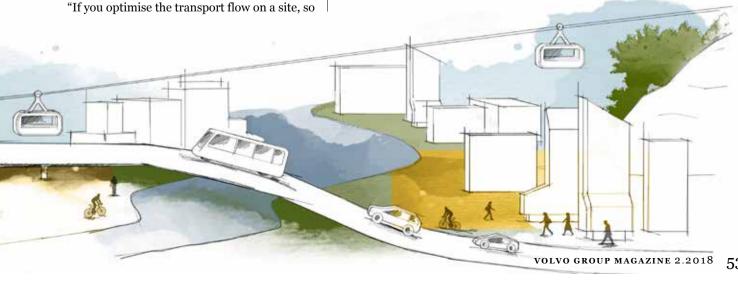
Thomas Bitter

that a hauler is synced with the loading tool, such as an excavator or wheel loader, we will see huge efficiency gains."

Customers are also part of the push for more sustainable future technologies. Already in several large-scale international infrastructure

projects, the end customer is setting tough emission standards for equipment suppliers and that is driving technology development.

"Among our customers there are both early and late adapters. So, we have to be very smart in how we invest in different technologies,"says Thomas Bitter. •



Time for electric trucks

Next year, Volvo Trucks will begin producing fully electric trucks. They represent an important part of the solution to reducing air pollution, noise and congestion.

TEXT MARIA SKÖLD PHOTO PATRIK OLSSON

ore and more cities impose stringent rules for emissions and noise, sometimes reducing the circulation of dieselpowered vehicles. Increasingly, cities also set requirements in their procurement processes, specifying that electric vehicles are to be used for deliveries and waste management.

This has created a strong push for electric vehicles. To meet this demand, Volvo Trucks has announced that from 2019, Volvo FL and Volvo FE will be available as fully electric trucks.

"This is one stage in our work on offering sustainable solutions. We have been working on electrification since the 1980s and the time has now come for fully electric trucks," says Jonas Odermalm, Head of Product Strategy Mediumduty Vehicles Volvo Trucks.

Much has changed since Volvo Trucks presented its first hybrid trucks for electric operation back in 2010. Political pressure has increased when it comes to climate-oriented issues and there is a better understanding of



Claes Nilsson



the way particulates and noise damage people's health. At the same time, batteries have become more effective and less expensive. The Volvo Group is well placed to benefit from this, not least thanks to the experience acquired from bus development.

THE RAPID DEVELOPMENT of electromobility means that anyone purchasing a truck today is faced with new questions. Five years from now, how will demand and trade-in values look? Is it already worthwhile investing in an electric truck, even if the purchase price is higher?

As a result, the role of adviser and partner is becoming increasingly important, notes Helén Petersson, Business Development Manager Volvo Trucks: "This is totally new to some of our



customers. They need to consider how they are going to organise charging and driving schedules in the best possible way, for example. So, it's important for us to be able to support them based on our experience," she says.

Claes Nilsson, President Volvo Trucks, expects electric trucks to soon take over city distribution but thinks other fuels will continue to be used for longer transports. In this context, Volvo Trucks has attracted a great deal of attention because of its LNG-powered Volvo FH that was presented last year.

"We believe in full electrification for urban distribution as a first step. However, we are working with electrification for other transport applications. This is only the beginning," says Claes Nilsson. ⊚

Renault Trucks has years of experience

The electric truck range from Renault Trucks to be launched in 2019 capitalizes on the experience gleaned from ten years of testing electric trucks in real-life conditions with its customer-partners.

RENAULT TRUCKS HAS been investing heavily in electromobility research and development since 2009, focusing on extensive field testing in partnership with its customers. Real-world tests on various types of experimental full-electric 12-16 tonne trucks – Speed Distribution for Guerlain, Stef for Carrefour, Nestlé and the Delanchy Group – have provided Renault Trucks with vital information on conditions of use, battery behaviour, recharging facilities and specific maintenance requirements for electric trucks.

In addition to these experimental vehicles, a 4.5-tonne electric truck has been on the market since 2010: the Electric Maxity: "Our commercial experience with the Electric Maxity has



Francois Savoye

enabled us to bring our network up to speed on selling, servicing and repairing electric vehicles," explains François Savoye who is in charge of Renault Trucks' energy efficiency strategy. "Today's electric vehicles are a

competitive solution, which was not the case in 2010."



Melker Jernberg is the sports and car fan who grew up among his family company's machines and trucks. Following an industrial career that went from strength to strength, he is now going to lead 14,000 colleagues at Volvo CE as they continue their journey towards further improvement.

TEXT
MARKUS LINDBERG

PHOTO ANNALISAFOTO

Business is all about people"

T IS FUNNY HOW life often goes in circles and brings us back to where we started. That is how it must feel for Volvo CE's new president Melker Jernberg, now the head of the company that makes the type of machines the young Melker watched his father use in the family construction company. But who is Melker and what are his plans for the next round of the circle?

What made you accept the job of President of Volvo CE?

"Well, I've been involved with industry and had links with vehicles and machinery in virtually everything I've done professionally. I also grew up in an environment in which my grandparents had a farm and my mother and father have spent 50 years in the construction sector. Last but not least, Volvo is a fantastic company. So, taken as a whole, the opportunity really inspired me."

What have you focused on initially and what are your first impressions?

"First, I was given a general introduction to the Volvo Group and I got to know all the business areas and functions. That also gave me the opportunity to talk to other parts of the Group to find out how they feel about collaborating with Volvo CE. My impression is that it's a very professional partnership that is appreciated by both sides. At the start of the year, I set myself the target of meeting and holding discussions with as many people as possible at Volvo CE. I have already visited several of our sites and met many

"I think that people want to be seen, to be included, to influence and make a difference. We want to feel that we are part of something bigger."

dealers. I'm impressed by all the hard work that has been done at Volvo CE and it's easy to see the result of those efforts in the encouraging figures in the quarterly reports. But the most important thing is to understand the culture and the way the work is being carried out day to day. I have to say that I have been given a really warm welcome, not just professionally but also on a personal, genuine level."

What kind of leader are you?

"I think that people want to be seen, to be included, to influence and make a difference. We want to feel that we are part of something bigger, more meaningful. So we need to encourage an environment that enables us to achieve this. A place where we embrace every individual's similarities or differences and challenge ourselves and each other to make full use of our talents. I think that respect is partly a question of setting high standards. Not in order to be unkind, but because I can see something fantastic in that individual. At the same time, it's essential to recognise when things don't work out."

What do you expect of your co-workers?

"I expect us to be transparent and succeed in working cross-functionally, without blindly following hierarchy or bureaucracy. We need to understand that we are responsible for our own success, but to achieve that we also need to cooperate with one another. I'm a great believer in the power of a well-functioning team."

What is your take on business?

"We all need to be extremely interested in our customers' customers' business. We must then incorporate this knowledge of their lives and what is important to them into the innovation process. If we aren't product leaders, the company won't have the necessary stamina in the long term. Finally, business is all about people and establishing confidence."

MELKER JERNBERG

Born: In Orsa, Sweden, in 1968

Family: Married, three sons, 21, 19 and 12 years old

Passions: Played ice-hockey and football as a boy and handball at club level until he was 35. He has a lifelong love of skiing, but his greatest passion is cars. As a child, Melker knew the specification of every car that was available in Sweden!

Education: MSc in Mechanical Engineering from KTH, the Royal Institute of Technology, in Stockholm, Sweden



Melker Jernberg

Did you learn about the importance of confidence from watching your parents running a business?

"At the present time, my parents have around 20 employees in their company. If you want to keep a business like theirs going for 50 years, you have to understand that

a handshake is a handshake. It doesn't have to be more complicated than that."

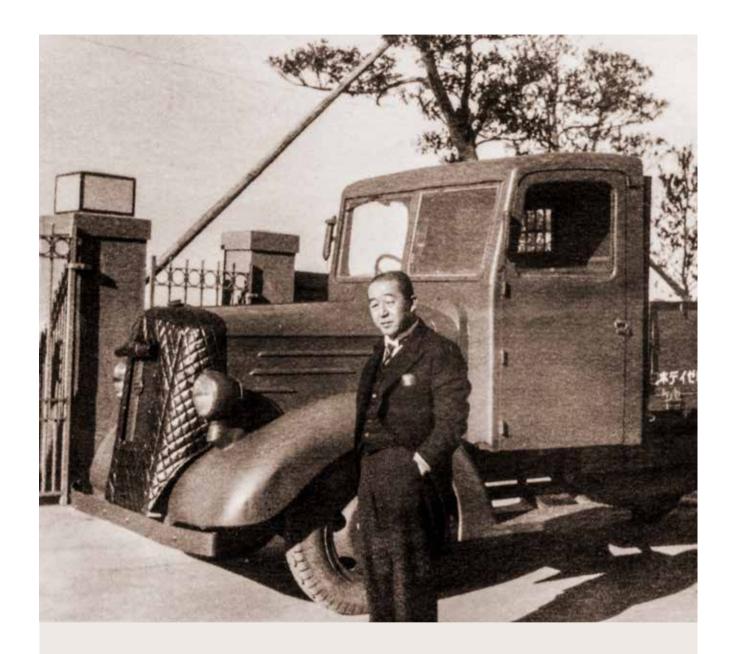
As you look ahead, what is important for Volvo CE?

'Well, it's important to keep costs down. If we don't, then we are not respecting all the people who had to leave when we made cutbacks. In the short term, we have a fantastic opportunity to keep doing well in this economic cycle by being efficient and delivering what we promise. Ours is a cyclical business, so we also need to get better at managing upswings and downturns - because they will happen, so we should be ready when they do. The next priority is solving quality problems even faster. Speed is important, because, even after we solve a problem, it takes a long time for our customers to accept that there has been an improvement in quality. Looking ahead, we need to continue having the world's best diesel-powered machines, but, if we want to be technology leaders long term, we also need to have the world's best electric, connected and autonomous machines. It isn't a question of either/or, it's a question of both."

Career in short:

Joined Scania in 1989 and stayed for 22 years, eventually heading the company's bus division. He left that job to become head of the steel producer SSAB's business operations in Europe, the Middle East and Africa. In 2014, Melker Jernberg became CEO of Höganäs, a Swedish company producing metallic powder.

Ooking back STORIES FROM THE ARCHIVE



Epoch-making 3,000 km test run

THE JOURNEY OF UD TRUCKS started with a single truck. In 1935, Kenzo Adachi founded Nihon Diesel Industries and three years later the company developed the first Japanese-made diesel truck engine. In 1939, the first diesel truck, the LD1, was ready.

Dedicated to ensuring ultimate dependability, Kenzo Adachi himself took the LD1 on a legendary test drive of 3,000 km. Although Japan's

roads at the time were unpaved and the country was full of narrow roads and bridges, not a single bolt came loose and not a single spring broke. Ever since, UD Trucks have been



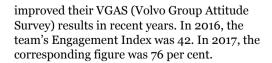
Over the last few years, the plant in Tuve, Sweden, has undergone a very positive change. More individual responsibility has led to greater engagement and more satisfied employees.

TEXT LINDA SWANBERG PHOTO ROBIN ARON

VERY DAY, AROUND 105 truck chassis for the Volvo FH, FM and FMX pass through Section 3 at the Tuve Plant in Gothenburg, Sweden. In addition to fitting brackets, the team that works here prepares valves and supplies the rest of the plant with polyamide tubes for the braking and suspension systems.

The team at Section 3 is one of many working teams at the plant that have clearly





SIMONA HANOUN HAS been an operator at the plant in Tuve for over two years.

"I love it here! The team spirit is wonderful and we always help one another. The managers are interested in our views and opinions and



Nathalie Sjöholm, Production Manager, is really proud of her team and the progress they have made. Ahmed Yusffuf and Max Vikingsson are two of the team members.

NUMBERS

ENGAGEMENT INDEX

2015	2016	2017
37%	49%	63%
		Global Norm 2017 72%

they show that they care. This gives everyone the chance to develop," she says.

The production manager for the team is Nathalie Sjöholm and, during the past year, she has been focusing heavily on collaboration and creating engagement.

"If the employees enjoy working together, this generates other positive results. To create a better work environment, we have changed a number of things at balancing, for example. The employees' views are invaluable and it's largely thanks to them that we have made so much progress. I am incredibly proud of our team," she says.

THE WORK NATHALIE Sjöholm and the team at Section 3 are doing is part of the development and improvement journey that began at the plant in 2016. In the process of creating an improved structure and a joint strategy, culture is an important component. This was not really the case before.

"As a plant, we have been very good at measuring results, but we have perhaps not worked on culture in the same way. I think that the key to creating high engagement is to understand how culture contributes to business results," says Jessica Sandberg, HR Director at the Tuve Plant.

Investing in leaders and creating more coaching leadership, with greater cohesion and transparency, has been another important factor.

"Many managers have said that they have



Gustavo Maturana has been a member of the team for three years and he thinks a great deal has changed in the last few months. "The communication is much better now. A good manager shows respect and is open to suggestions and new ideas. At the same time, it's important that managers are decisive and deal with things whenever necessary."

The Tuve Story

In 2016, the plant in Tuve formulated a new set of targets. There are five of them:

- ▶ Proud and engaged teams
- ► Coaching leadership and performing teams
- Safety, order and tidiness
- ► Feedback and visible goals
- ▶ Trust and respect

These targets are described as a journey on which Culture, Strategy and Structure are closely interwoven.



Jessica Sandberg

felt alone in their roles. I think that makes people too controlling and afraid to act. We want everyone to feel that we are trusted and that we ask for help when we need it."

For some time now, the plant has been working with smaller teams, according to the small team concept.

and different tasks have an established balance owner. Large groups have been divided into smaller groups and that makes everyone

"If we are to be able to make the necessary changes, everyone has to be involved and contribute."

JESSICA SANDBERG, HR DIRECTOR AT THE TUVE PLANT



take greater responsibility for what the team delivers.

"Technological development is taking place at lightning speed, so, if we are to be able to make the right improvements, everyone has to contribute," explains Jessica Sandberg.

The last two VGASs show that this change programme has produced results. In overall terms, the Engagement Index at the plant has risen from 37 per cent in 2015 to 63 per cent in 2017.

The Leadership Engagement Index has improved from 43 per cent to 60 per cent.

"We still have a great deal to do and, when it comes to leadership, it's about making it easier to do the right thing. The next step is to speed up our rate of change and improvement – our target is to be best at getting better," says Jessica Sandberg.
©



The team play a decisive role

THE PLANT IN TUVE has approximately 2,100 employees and about 100 of them are involved in knocked down (KD) operations at the plant. On the plant site, they pack, flag and load the parts that are then assembled to produce Volvo trucks in countries including Malaysia, India and South Africa.

The team and their colleagues play a decisive role.

"We can joke and have fun, but, at the same time, we make sure that we act immediately if something happens. What's more, we have a boss who trusts us and makes sure we have a good work environment when it comes to safety, ergonomics and cohesion. This is incredibly important. If the work environment isn't good, it's difficult to do a good job," says Anders Jägerås, who works as a loader and has been employed at Tuve for 38 years.

Ida Leitner has been working at the plant since September last year. Prior to that, she had never driven a fork-lift truck and had no experience of working at a plant.

"I was given a great reception and I quickly became part of the team. As a loader, you have to take a great deal of responsibility, but, at the same time, I know that I can always ask for help if I need it. I have learned so much and coming to work is really enjoyable," she says.

Gunnar Brunius

PLANT MANAGER

"WHEN I STARTED working at the plant in February 2015, I was met by an organisation that was tired of change. There was a great deal of friction and this could also be seen when it came to engagement. Since then, we have worked on a number of fronts to introduce an effective structure and become a self-improving organisation.

"To succeed, effective leadership is totally decisive and we have invested heavily in training and creating a joint approach. It's important to have common objectives and for everyone to know where we are now and where we are heading.

"Looking ahead, the most important thing is autonomous teams, where everyone understands that what they do is important and everyone is involved in problem-solving. Even if a great deal still remains to be done, we are well on the way. We want to be a workplace people apply to and both my colleagues and I are contacted by people who want to work here. It's fantastic to see how we are moving towards an organisation where everyone is involved and contributing."



ALL ON THE SAME CLOUD

The new digital workplace that is taking shape bring many benefits, such as less administration and easier access to documents. But most importantly, soon all employees will be part of the Group's IT environment – regardless of whether they work at plants or in offices.

TEXT MARIA SKÖLD PHOTO PONTUS JOHANSSON

f you have not noticed already, you soon will. Thanks to a new security solution from Microsoft, more and more of the Volvo Group's information is being transferred to the cloud, opening the door to a dramatic change in communication and entirely new way of working. Cross-functional collaboration and navigating in the information flow will be easier.

"Imagine that the system will learn what is important to you and present that to you exactly when you need it. We're moving in that direction," says Jens Gustafsson, Senior Vice President Communication Development.

Together with colleagues from IT, HR, Strategy and Communication, he is looking for ways the Volvo Group can benefit from digital advances.

"We have been talking for a long time about the way the technology shift is changing the automotive industry. Now, however, it's going revolutionise our day-to-day work," says Helen Troede, Manager End-User Services, Group IT.

The first stage will see the creation of a new common IT platform that can be accessed from absolutely any unit, even a private computer or a mobile. "It's incredibly important. We can now democratise communication and give all our colleagues the same conditions, even if they work at production, for example, without access to computers," explains Jens Gustafsson.

In the longer term, everything will be gathered on the new platform — mail, intranet, HR applications and information linked to services and products. This is a major change, given that some 3,500 applications are currently being used within the Volvo Group.

"THIS IS NECESSARY if we are to have any chance of both utilising all the know-how within the Group and constantly develop new services. Taking this step moves the Volvo Group to the cutting edge, a long way ahead of most other companies," says Jens Gustafsson.

Until now, complicated special solutions have been needed to collaborate with customers and external partners. In the future, these problems will disappear. But Helen Troede emphasises that strict security measures will be in place, with each individual having a unique ID.

Employees will have a more individually adapted and user-friendly IT environment, in line with the Designed Around Me initiative.

"In their private lives, most people have grown used to increasingly self-instructing, customised services. The same thing is now also going to apply at work," says Marie-Louise Bergh Converse, Director Designed Around Me Programme at Group HR.

"Smarter IT systems could also take over many routines. In the longer term, making it possible to dramatically reduce the time spent on administrative tasks. Most people probably think it would be more fun to work when they have more time to focus on how they can help drive Volvo's business."

Output

Description:



- ► Transition to Office 365 and Microsoft Enterprise Mobility and Security.
- ▶ It will be possible for people to work from their own computers and mobiles (BYOD, bring your own device).
- From a common platform, it will be possible to access Teamplace, mail, Violin och applications from HR.
 - ▶ Push notifications adapted for the individual.



Marie-Louise Bergh Converse, Jens Gustafsson and Helen Troede are three of the colleagues from IT, Communication, HR and Strategy who are working together to take advantage of the opportunities provided by new technology. This is a never-ending process, as new useful services are constantly appearing.

insights understanding the world around us



QUESTIONS TO KINA WILEKE

EXECUTIVE VICE PRESIDENT GROUP COMMUNICATION

All employees are communicators – at least that is how Kina Wileke sees it. As of 1 January, she has head responsibility for the Volvo Group's communication.

How does it feel to be Executive Vice President Group Communication?

"Like wearing a pair of well-worn, comfortable shoes - and finding out that the heels are twice as high as before. I have worked within the Volvo Group in different roles for ten years, so it feels both familiar and new. Now I have ultimate responsibility for the Group's communications and that includes how we handle our brands."

What do you want to do?

"We will preserve the strengths of the Group while also keeping an eye on the future. All employees can contribute by daring to talk more about the Volvo Group - with family, friends and in social media. Explain how we work here! That will strengthen our brand and our business and it shows that we are an attractive employer. Our employees are our best and most trusted ambassadors and they have a lot of wise opinions."

What should the Volvo Group not talk about?

"We want to fill our company with certain values that we can happily talk about. For example, this includes how we contribute to making society better, which is incredibly important. But we rarely take a position on political issues. Nor should we talk about our competitors or owners."

What trends can you see in communications?

"The most important thing to understand is that all communication today is about dialogue - there is no sender and receiver. And that changes everything. Dialogue is harder than one-way communication, but it is also more fun."

What does this mean for the Volvo Group?

"We have become bolder and this is good. A clear example is how over the past couple of years we have established ourselves as thought leaders within innovation. Earlier. we never talked about the development of products and services before they were commercialised. Now we are much more open about how we work and the technological possibilities that can be found. It then becomes easier for our employees to be proud of everything we do and to recruit

MARIA SKÖLD

FACTS

Name: Kina Wileke Lives: Gothenburg

Family: Yes, big and diverse.

Background: Originally a journalist. Started at the Volvo Group in 2008 as a speech writer for Leif Johansson, before becoming press chief and manager for the Group's external communications. Most recently, SVP Brand, Communication & Marketing Volvo Penta.

Interests: Likes to train and spend time with family and friends. Also interested in art, architecture and design.





WHAT YEAR IS IT?

It would prove to be a significant year for both the Volvo Group and the world in general. Can you guess which year it was from these seven events?

- After 27 years, Nelson Mandela is released from prison and talks on ending apartheid in South Africa begin.
- Volvo CE, at the time known as the VME Group, expands its product range to include compact wheel loaders with the acquisition of Zettelmeyer Baumaschinen GmbH. Its production facility in Konz, Germany, is still part of Volvo CE today.
- East Germany and West Germany are reunited as the nation of Germany, with Berlin reinstated as its capital.



- Construction crews on both sides of the Channel Tunnel between England and France break through and meet, forming the first land connection between the two countries in 8,000 years. Within four years, the tunnel is fully operational.
- It is an important year in the development of the internet, Tim Berners-Lee develops HyperText Markup Language (HTML) while also publishing a proposal for the creation of the World Wide Web.
- The Renault Magnum is launched. It is an instant hit with truck drivers the world over and wins International Truck of the Year. The Magnum remains in production until the launch of the Renault Trucks T in 2013.
- Mack Trucks becomes a wholly owned subsidiary of Renault Véhicules Industriels, making the new company one of the largest manufacturers of heavy-duty diesel trucks in North America. In 2001, the company joins the Volvo Group.



Win a Mack from Lego Technic!

One lucky winner will receive a 2,595-piece LEGO Technic Mack Anthem building set. In addition to the Mack Anthem, the set can also be used to create a fully functional Mack LR front loader refuse model. Email your answers to **groupmagazine@volvo.com** no later than 31 May 2018. Write "Quiz" in the subject line and remember to include your name and address. The winners of the quiz in Volvo Group Magazine #5 2017 were Gunnel Galle, Sweden, Diana Lara Del Cid, Mexico, and Michal Worzal, Poland. The correct answers in #5 were: 1 C, 2 A, 3 C, 4 A, 5 A, 6 C.