Volvo Group magazine 1.2017

What keeps customers awake at night?

Customer challenges are our opportunities

NOBODY WANTS TO buy drooping flowers. So, when Sigr Bizjak Transport sets off on its regular route from the flower markets in the Netherlands, it has 16 hours to cover the 1,250 kilometres to its destination in Slovenia. There are no margins for error and nothing can go wrong. Even the slightest delay could destroy the cargo.

For Sigr Bizjak Transport, punctuality is totally decisive, but our customers are based all over the world and they are all unique. They operate in different industries and segments and they are all faced with specific challenges. In spite of the differences, they have one thing in common: they have chosen us as a supplier. It is great to experience this confidence, but it also represents a huge responsibility.

WE HAVE TO earn this trust, day after day, year after year. In our relationship with our customers, we naturally learn about their businesses in detail. This insight enables us to create value for them by putting together the right solutions from our portfolio of products, services and financing. In our daily partnership with our customers, we are also given ideas to make our offers even better in the future.

Once the products have been delivered and the solution is in place, our customers naturally expect everything to work and our promises to be kept, so that they can focus on other things.

This is the core of our business. And this is why it is so important that we continue to work on decentralising the Volvo Group. We want to move decision-making closer to our customers, but also, in a wider sense, give you, our co-workers and leaders in the Volvo Group, even more opportunity to act and take the initiative in your specific areas – and take responsibility for the result.

NO ONE CAN succeed alone, however. Customers meet the representative of a brand, behind which there is the whole of our value chain, from research and development to purchasing, production, service, marketing and sales. In this chain, all the links must work together.

We have interesting customers with high expectations. We have a mandate to make decisions and take responsibility for the results of our work. We also know that we can only realise our targets if we work together. An exciting combination, to say the least!

MARTIN LUNDSTEDT
PRESIDENT AND CEO, VOLVO GROUP

> The awards prove that we as a company are leading the way in many different areas, such as fuel efficiency, product design, and innovation."
>
> **MARTIN LUNDSTEDT**
> ON THE LONG LIST OF AWARDS AND RECOGNITION THAT THE VOLVO GROUP RECEIVED IN 2016 (SEE PAGE 5)

VOLVO GROUP MAGAZINE is aimed at all the co-workers within the Volvo Group. It is published five times a year in Swedish, English, German, French, Portuguese for Brazil, Polish, Russian, Japanese, Dutch, Korean, Thai, Chinese and Spanish. **PRINT RUN** approx. 88,000 copies **ADDRESS** Volvo Group Magazine, Volvo Group Headquarters, Dept AA13400, VLH6, SE-405 08, Göteborg, Sweden **PHONE** +46 (0)31 66 00 00 **E-MAIL** groupmagazine@volvo.com **EDITOR RESPONSIBLE UNDER SWEDISH PRESS LAW** Markus Lindberg **EDITOR-IN-CHIEF** Ann-Mari Robinson **EDITORS** Lotta Bävman, Carita Vikstedt, Tobias Wilhelm and Joanna Dembicka. A Group-wide Editorial Network also contributes content. **MARKET LANGUAGE REVIEW** Ann-Mari Robinson **EDITORIAL PRODUCTION** Spoon (project team: Maria Sköld, Linda Swanberg, Nic Townsend, Lina Törnquist, Pernilla Stenborg, Ken Niss, Sofia Hammarin) **PRINTED BY** LSC Communications **CHANGE OF ADDRESS** Contact your local HR **TRANSLATED BY** Jeanette Kliger

Volvo Group magazine 1.2017

10

What do customers want?

SPECIAL Customer needs vary depending on where they operate and what kind of business they run. Meet customers in India, Slovenia, Sweden and the USA.

High-level driving skills

In 'The Flying Passenger', Volvo Trucks' latest Live Test, a paraglider and a Volvo FH go on a breath-taking journey on a mountain road in Croatia. The driver is tasked with the extraordinary job of keeping the paraglider in the air while giving him a lift uphill. The film, which premiered on YouTube in November, highlights the performance and fuel efficiency of the Volvo FH with Volvo Trucks' unique powertrain, fitted with an I-Shift Dual Clutch gearbox.

"With this film, and the whole marketing campaign connected to it, we want to show Volvo Trucks' unique ability to combine excellent performance and fuel efficiency, a combination which is highly relevant to our customers. The campaign is part of a longer communication journey, with different kinds of external communication content, targeting different groups with relevant information to maximise its impact," says Ida Mattsson, Content Manager, Volvo Trucks.

Pink Programming encourages female coders

The Volvo Group is one of the main sponsors of Pink Programming, a non-profit organisation encouraging more women to program. The organisation invites all women at any age or level of education to meet and program with experienced developers.

Last November, 30 coders came to the Volvo Group in Gothenburg. Among other activities, they had the chance to program a robot and to see how Volvo Group's fully electric bus works.

"The Volvo Group needs more skilled programmers and, if we can use this partnership to attract more women to become programmers, we can improve our chance of finding the people we need to create the vehicles of the future," says Esbjörn Berg, Director Controls Systems at GTT.

Read more at **pinkprogramming.se**

PHOTO: PINK PROGRAMMING

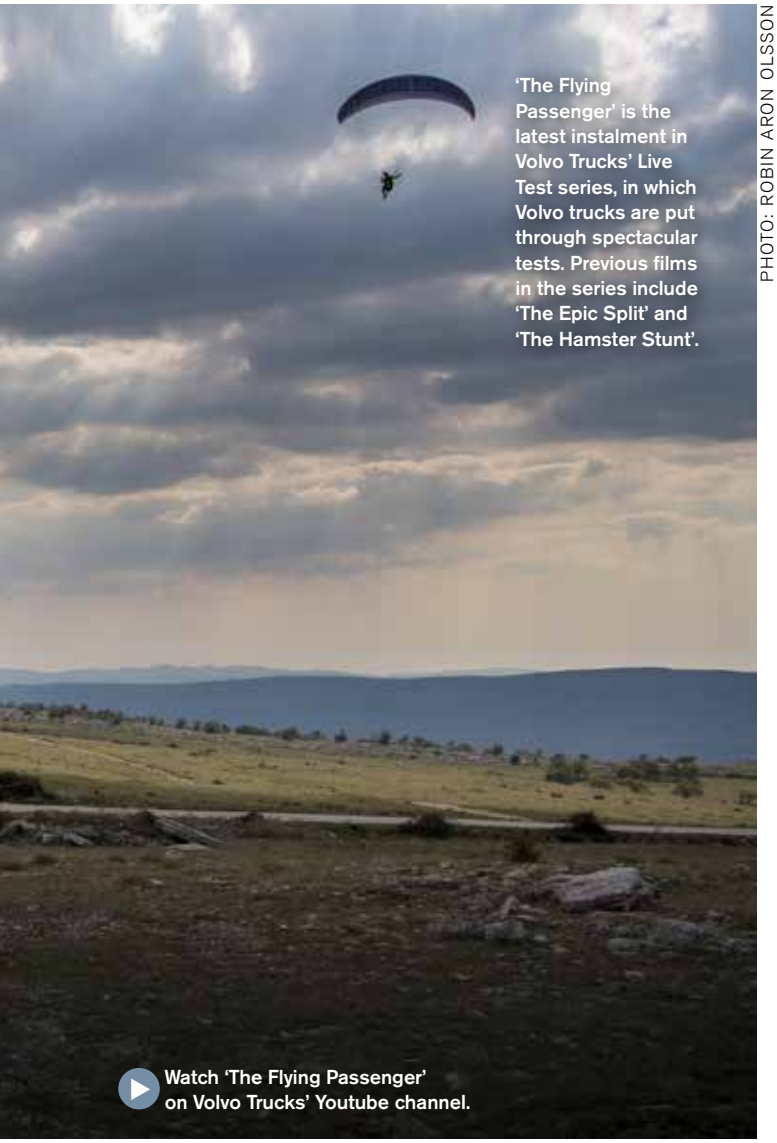


PHOTO: ROBIN ARON OLSSON

'The Flying Passenger' is the latest instalment in Volvo Trucks' Live Test series, in which Volvo trucks are put through spectacular tests. Previous films in the series include 'The Epic Split' and 'The Hamster Stunt'.

Watch 'The Flying Passenger' on Volvo Trucks' Youtube channel.

YOUNG TALENT PUT TO THE TEST

euroskills Gothenburg 2016

Some 450 young people from all over Europe met in Gothenburg, Sweden, last December to compete for the European title in vocational skills. EuroSkills aims to improve the quality, status and attraction of vocational training.

This was the first time that the competition had been held in Scandinavia. The Volvo Group was the official partner and highlighted the competence and skills needed in the future, not least within automation and connectivity.

We are all winners!

2016 was an award-winning year for the Volvo Group. Technical innovations, training programmes and labour relations – here is a shortlist of some of the numerous awards and recognitions.

▶ **Volvo Group Australia** awarded for **'Best rehabilitation and return to work management system'** and **'Best individual contribution to rehabilitation and return to work'** by the Queensland Safe Work and Return to Work Awards.

▶ **Volvo Penta** won the **'Innovation Award'** for the Easy Drain from the Boat Writer International panel at the 2016 IBEX fair in Tampa, USA.

▶ **WirelessCar** won the Frost & Sullivan's **'2016 European Telematics Customer Value Leadership Award'**.

▶ **Volvo Trucks** won the prestigious independent long-term multi-brand **'Fehrenkötter Test'** stretching over 2.5 years in real-life customer operations.

▶ **Volvo Trucks'** 'Real Change' image film won the **'Public Relations World Gold Medal'** at New York Festivals.

▶ **Volvo Penta** won **'Most innovative yacht 2016'** at the World of Yachts Trophies ceremony, together with Amer Yachts.

▶ **Volvo CE's** EC120D crawler excavator, awarded as the annual **'Top 50 product'** at the 2016 Construction Machinery Products Development Forum & China Products Awards in Beijing.

▶ **Volvo Group Bangkok Plant** received the **'Outstanding Labour Relations and Welfare Award 2016'** from the Department of Labour Protection and Welfare, Ministry of Labour, Thailand.

▶ **Mack Trucks** recognised by *Heavy Duty Trucking magazine* as one of trucking's **'Top 20 Products'.**

▶ **Renault Trucks Master** elected **'Editor's Choice'** in the "Trade Van Driver" (TVD) Awards 2016.

▶ **Renault Trucks** rewarded together with its partner Solvay in the **'Automotive Structural Items'** category during the global JEC World 2016, addressing the field of composite materials.

▶ **Renault Trucks** T-model elected **'Truck of the Year 2016'** in Poland.

PHOTO: FABRICE LANG

Congratulations!

2016 was a year full of emotions and events in Lyon, France, as Renault Trucks celebrated a centenary at the Lyon site. Celebration videos are available on Youtube.

PHOTO: ROBIN ARON OLSSON

New road-safety programme for cyclists

LAST NOVEMBER, Volvo Trucks launched 'See and Be Seen', a new global safety awareness programme for unprotected road-users. The effort is directed at young people (from 12 years old) and adults.

'See and Be Seen' focuses on how important it is to watch out for surrounding traffic and to make oneself visible to truck drivers, by maintaining eye contact and by not cycling too close to trucks and other vehicles.

The campaign is a continuation of the successful traffic-safety training programme for young children, 'Stop Look Wave', which is in use all over the world. Both campaigns are attempting to address human error by raising awareness of how to act safely in traffic.

"With the fast pace of today's traffic, it is vital that as many people as possible are aware of the risks in order to avoid accidents and incidents," says Carl Johan Almqvist, Traffic and Product Safety Director at Volvo Trucks.

New Volvo Bus range in India

Volvo Buses has launched the Volvo 9400 range of coaches for the Indian market. They will be manufactured in the Hosakote Plant and will continue to help provide comfortable transportation in India.

UPDATES IN THE NEW RANGE:
New eight-litre engine for the 12m coach.
New 11-litre engine instead of a nine-litre engine for the 13.8m multi-axle coach.
The engine has been upgraded to meet Indian emission regulations coming into effect in April 2017.

PHOTO: VOLVO BUSES

Amazon studies rewarded

PHOTO: VOLVO GROUP

Brazilian scientist Professor Carlos Nobre is the Volvo Environment Prize laureate for 2016. He receives the award for his pioneering efforts in understanding and protecting the Amazon, one of the earth's most important ecosystems. The Amazon has a significant impact on the world's biodiversity and climate.

BETTER BUSINESS WRITING

A few words of advice

Keeping your language simple and to the point can help you get your ideas across.

IN TODAY'S information-driven environment, writing is an important skill. So what should you think about when writing memos to senior executives, proposals to customers, training manuals and presentations? *Volvo Group Magazine* has summarised a few points on business writing from noteworthy management publications.

Plan what you want to say
Collect your thoughts. Ask yourself, what do I want my audience to think after reading this email, report or memo? It is often best to present a solution at the top of the page. By presenting your main idea first, you save your readers time and keep their interest.

Write to be understood
If you use complex sentences and long words, you risk losing your audience. So keep your sentences short and to the point. Try to avoid jargon, acronyms and "fancy" words where possible.

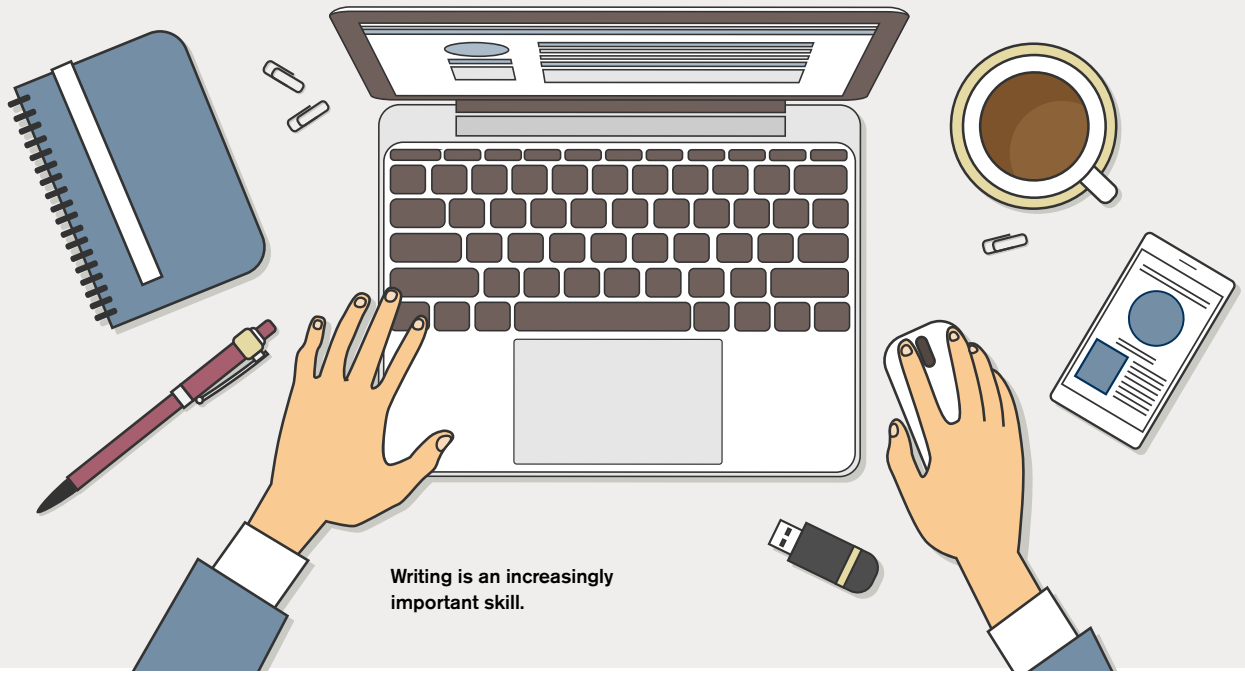
Read what you write
Put yourself in your reader's shoes. Is your point clear and well structured? Are the sentences straightforward and concise? Don't be afraid to ask a colleague to edit your work.

Include a call to action
Business communication is normally meant to achieve a purpose. If you are trying to achieve something, include a call to action – something that the reader is expected to do.

Discuss benefits not features
Benefits engage readers. People are interested in finding out how a solution can make their lives better. Why should readers upgrade to a different IT system? They may not fully grasp all the technical details, but could be persuaded by the ways it can make their life easier.

Practice makes perfect
Writing is a skill. To improve your writing, try reading well-written material every day and stay attentive to word choice.

LINA TÖRNQUIST



Writing is an increasingly important skill.

ILLUSTRATION: COLOURBOX

PHOTOS: RENAULT TRUCKS

Renault Trucks helps WFP to fight hunger

RENAULT TRUCKS IS a partner of the United Nations World Food Programme (WFP), which is using a mobile unit to provide local teams in Africa with training on truck maintenance and fleet and workshop management.

By transferring its technical expertise, Renault Trucks is helping to ensure the mobility of the WFP, trucks and its ability to complete its mission: to fight hunger every day and deliver food assistance to those who need it, often in remote locations.

The partnership started in 2012 and has been extended to 2017. This means that fleet and workshop management trainings is now being provided to 120 WFP employees on the ground.

"The expertise offered by our private partners is vital as it enables us to provide assistance to a larger number of beneficiaries. This is why we are very proud that we can rely on Renault Trucks as one of our flagship partners in the transport sector," says Marina Catena, Director of the WFP in France and Monaco.

WORLD FOOD PROGRAMME IN NUMBERS

- In 2015, the WFP supported around 80 million people in 80 countries and distributed 3.2 million tonnes of food assistance.
- This is possible because of the organisation's fleet of 5,000 trucks, 70 aircraft and 20 ocean shipment as well as 14,840 staff.

THE PARTNERSHIP IN NUMBERS

- 5 years: duration of partnership
- 16 training sessions
- 9 countries: Democratic Republic of Congo, Uganda, South Sudan, Burundi, Rwanda, Ghana, Niger, Sierra Leone, Liberia
- 190 trained WFP staff

90 **years since the very first Volvo car rolled out of the plant in Lundby, Gothenburg, on the 14th of April 1927. The production of trucks and buses started a year later, in 1928. Congratulations!**

Read more about Lundby on pages 66–67.

Learning from French colleagues

WORKING FOR A global company like the Volvo Group means a great opportunity to learn from each other. Chantal Metzler, an operator at the GTO plant in Ghent, Belgium, came up with the idea of a temporary move to another Volvo Group plant.

At the end of last year, she joined a production team at the GTO truck assembly plant in Bourg, France, to learn new things and to share her own experiences. "I started work in 1994 and was part of the very first group of female employees. I am very interested in the concept of continuous improvement and I would like to contribute to the improvement of our own way of working. I may sometimes be critical, but that is because I am convinced we can always do better," Chantal Metzler explains.

"There are many challenges in Ghent. We often hear about 'benchmarking' or learning how other plants operate. But as an operator, you don't often get that opportunity."

Her manager in Ghent, Maarten Van Vooren, was very positive about the idea. "Chantal now gets the opportunity to work on the assembly line and see the continuous improvement process through the eyes of an operator. In this way, both sites will be able to learn from each other," he says.

Read more about Chantal Metzler in the next issue of *Volvo Group Magazine*.

PHOTO: CATHERINE FALCONNET

Chantal Metzler, Operator at the GTO Plant in Bourg, France

Thank you for valuable input!

THE BEST REWARD this editorial team can receive is when readers get in touch and say what they think of the magazine. Thank you!

Constructive ideas, together with the results of the readership survey at the end of 2015, have inspired us to change *Volvo Group Magazine* into what we hope will be an even better, more relevant magazine for everyone working for the Volvo Group.

One important change is that we are now producing *one* edition with the same content for everyone, where the main theme is connected to the Group's new strategy. We have also added a number of new elements. 'On the Clock' follows an employee during a work day and takes the form of text, photos and times. 'Parts' is a detailed examination of a part that is important to our products and customers. 'Moments' highlights an interesting moment somewhere in the world. In 'Voices', employees give their heartfelt view of different topics, while we continue with our Quiz on the last page.

Please continue to let us know what you think of your magazine – send an email to **groupmagazine@volvo.com.**

ANN-MARI ROBINSON,
EDITOR-IN-CHIEF

THE LONGEST BUS IN THE WORLD IS A VOLVO

VOLVO BUS LAUNCHED the world's largest bus chassis at the FetransRio exhibition in Rio de Janeiro, Brazil. The new bi-articulated chassis, Gran Artic 300, is 30 metres long and can carry up to 300 passengers. It has been developed in Brazil especially for BRT systems – high-demand transport systems in which buses run in dedicated lanes.

"We are leaders in vehicles for high-capacity transportation systems, Bus Rapid Transit, and now we're introducing the world's largest bus chassis. This vehicle will provide more efficient transport, offering higher quality to the passengers and improved cost efficiency to the transport operators," says Fabiano Todeschini, head of Volvo Bus Latin America.

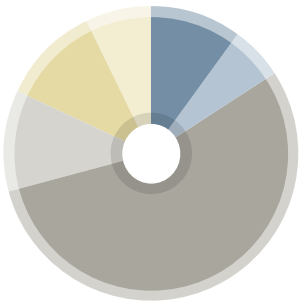
PUMPING CONCRETE IN THE USA
– read more on page 21.

DELIVERING FLOWERS IN SLOVENIA
– read more on page 14.

- DEPRECIATION
- INTEREST & VEHICLE TAX
- STAFF
- ADMINISTRATION
- FUEL
- REPAIR & MAINTENANCE

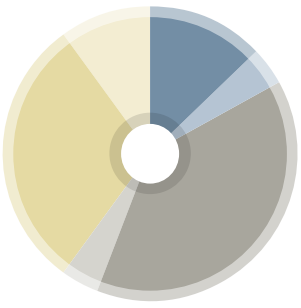
* The mining figures refer to operations in a gravel pit. The figures for long-haul and distribution are from Sweden.

Distribution of costs for customers in different segments*:



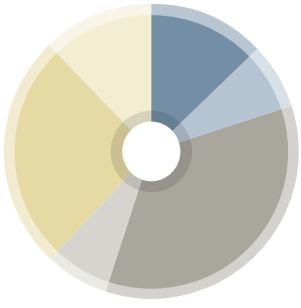
DISTRIBUTION

Particularly in more mature markets, the cost of driver salaries is relatively high.



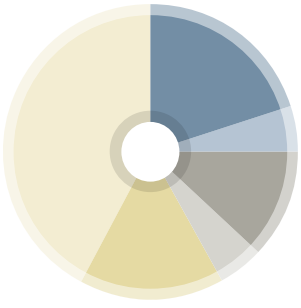
LONG-HAUL TRANSPORT

The cost of fuel is important when working in the long-haul segment.



CONSTRUCTION

Construction means a great deal of wear and tear, so maintenance is crucial.



MINING

For mining, efficient maintenance is key. Financing is also important.

DELIVERING BREAD IN SWEDEN
– read more on page 24

MINING IN INDIA
– read more on page 20.

AROUND THE GLOBE

THE CUSTOMERS' REALITY

What keeps customers awake at night? The answer largely depends on where in the world they live and the kind of business they run. Meet four customers to hear their stories.

PHOTO: PONTUS JOHANSSON

Hillevi Pihlblad Rafidashti and Philippe Divry are part of the strategy functions at Volvo Group.

What is important to customers depends on a number of factors, from global trends for different business segments to local conditions. Therefore, a good understanding of the customer is key to the success of the Volvo Group.

"For such a global and multifaceted company, customer focus starts with a deep understanding of the multiple ways our customers use trucks," says Philippe Divry, Senior Vice President, Group Trucks Strategy.

After working for the Volvo Group in different parts of the world, he has great respect for how complex the business is. "A haulage-company owner mostly worries about the cost of fuel, or finding skilled drivers – whereas, in mining, reliability and uptime are critical. A long-haul truck in the USA operates at much higher speeds and runs longer trips than a European one," says Philippe Divry.

The Volvo Group has always worked with data analysis, business intelligence and customer interviews to better understand the operating conditions of different customers. However, when competition is intensifying, it is crucial to know more and more about each type of operation to deliver the best performance.

"Very often, when a customer complains about the fuel consumption of the truck, we send a team of experts and find out that a few simple changes can make a great deal of difference. This shows that, even with world-class technology, you still have untapped areas of improvement – if you know enough about your customer," says Philippe Divry.

Hillevi Pihlblad Rafidashti, Director Strategic

Planning, Group Strategy, has worked with the customer from different perspectives for several years. She points out that the game is changing rapidly, becoming even more demanding and exciting. For many years, it has all been about Total Cost of Ownership, but customers are looking increasingly at productivity, how they can maximise revenue at the lowest possible cost.

"Productivity impacts our customers' total bottom line and gives an even broader opportunity for creating value together. In the Volvo Group, we are passionate about our customers and it is very clear to us that the success of our customers is the key to our own success," says Hillevi Pihlblad Rafidashti.
In this battle, the sales teams and dealers are at the forefront. Their knowledge of the customers' operations is crucial when they help customers select the most suitable products and services in the Volvo Group portfolio.

"This human factor is a real competitive advantage. Our challenge is to become even better at transferring this field knowledge throughout the whole company and become an unbeatable customer-centric company," says Philippe Divry.

BUT IN AN increasingly digital world, will this knowledge still be important? "Digitalisation, connectivity and big data can really improve our customers' operation through the optimisation of loads, predictive maintenance, driver support, driving assistance and so forth. We foresee major productivity breakthroughs in the years to come," says Hillevi Pihlblad Rafidashti.

According to Philippe Divry, the human factor will always remain more important in the heavy-duty vehicle industry than in other industries: "Unlike the car business, a truck owner meets the salesman or dealer principal frequently, and the trucks are regularly in the workshop. This develops into long and trustfilled relationships – sometimes over several generations – and the local representative has become a trusted adviser. This is a major asset for us at a time when our customers are receiving all sorts of offers from new players," he says.

"We foresee that digitalisation will help us to serve customers more efficiently in certain areas and even to acquire new customers. Still, this will never replace the need for a local partner that you can trust – spearheading the efforts of thousands of people in the manufacturer's organisation constantly to offer the best of a complex world," says Hillevi Pihlblad Rafidashti ◉

WHAT CUSTOMERS WANT

Six focus areas for customers when purchasing a heavy-duty vehicle:

What are the opportunities to increase revenue?

PRODUCTIVITY is about the effective and efficient use of all resources. It is impacted by factors like transport rates, average speed and mileage, time spent on non-driving activities, driving time, load capacity and utilisation.

What is the cost of unplanned stops?

UPTIME is the percentage of time that the truck is up and running – fully operational or ready to perform its intended functions.

What cost savings arise from burning less fuel?

FUEL EFFICIENCY is about covering maximum kilometres with minimum fuel and AdBlue consumption.

What are the costs and consequences of an accident?

SAFETY is about being safe from suffering – or causing – injuries or loss.

What is the cost of crime?

SECURITY is about being protected from theft of vehicles, fuel, cargo or personal belongings.

What is important for driver comfort and performance?

DRIVER APPEAL is about providing a supreme working and living environment in order to attract the best drivers.

These six customer needs have been identified through surveys with Volvo Trucks customers.

CALCULATORS

- Throughout the Volvo Group, different types of calculators are used.
- For example, this can help customers understand how much fuel they consume and how they can improve fuel efficiency.
- A better understanding of the total cost of ownership can boost productivity.

3

TOP ISSUES FOR BIZJAK TRANSPORT

- **Uptime**
- **Safety**
- **Fuel efficiency**

LONG JOURNEY – SHORT ON TIME

Time is crucial in the flower business. Nobody knows this better than family-owned Sigr Bizjak Transport, which handles deliveries from the vast flower markets in the Netherlands to eight European countries.

TEXT LINA TÖRNQUIST | **PHOTOS** GOJKO VUKOV-COLIĆ

It is early morning when the first load of flowers arrives in Ljubljana, Slovenia. They are being delivered from the flower markets in the Netherlands – 1,250 km away.

It is 6 am on the outskirts of the Slovenian capital Ljubljana. Igor Trilar and his son, Gasper, have driven a Volvo FH through the night from the giant flower markets outside Aalsmeer in the Netherlands, 1,250 km away.

As soon as they pull through the gates, bright carnations, sunflowers and lilies are quickly unloaded into the storehouse and vans for local distribution.

It all goes very fast. Time means freshness in the flower business.

"We can't afford mistakes," says Rok Bizjak, who, together with his father and brother, runs daily operations for Sigr Bizjak Transport, a fast-growing family business that handles 80 per cent of the flower transport to Slovenia and manages deliveries in eight neighbouring countries. His brother, Grega Bizjak, explains: "Flowers that are ordered in Slovenia in the afternoon are expected to arrive the next day from the Netherlands. We have 16 hours for the delivery. If they are delivered even one minute late – those flowers are ours".

The family has been in the logistics business for 80 years, since Rok and Grega Bizjak's grandfather purchased an American-made Ford, with 100 hp, in 1936. The business survived World War II and the break-up of Yugoslavia. Today, the Bizjaks oversee a growing international operation.

Still, strong relationships lie at the heart of the business. For example, the Bizjaks have worked with Gardenia, their biggest client, for almost 40 years. They also invest extensively in driver training and safety equipment for their drivers.

Gasper Trilar and his father Igor Trilar help unload the trailer. Gasper used to work as a cook but his father convinced him to join him on the road. Now they drive as a team.

After unloading the truck, employees at the Gardenia Center need to work fast to divide up and pack vans before the flowers are distributed for local delivery in Lubljiana.

Druzhinina Poyuzhina Ksenia

How important is time in the flower business?

"WHEN OUR CUSTOMERS order flowers for next-day delivery, they don't realise that those flowers are still in the Netherlands. They think that, if they order them today, they should be there today. And when the flowers are on the road, everything is important: every car accident, the weather, the traffic. A five-minute delay can lead to two or three hours' wait for the end customer. And the final client often has something important: a wedding, a funeral or a business event, so it's incredibly important that the delivery gets there on time," says Druzhinina Poyuzhina Ksenia, Manager of Gardenia.

SIGR BIZJAK TRANSPORT

Established: 1936
Employees: 120
Fleet: 65 (35 Volvo trucks)
Operations: handles 80 per cent of the local flower business in Slovenia, but also covers Croatia, Bosnia, Serbia, Kosovo, Austria, Germany and the Czech Republic.
Deliveries: Flowers (80 per cent) but also a range of other goods including Jägermeister.
Owners: Aleksander Bizjak and his sons, Grega and Rok. (The business is divided into several different companies.)
Head office: Jesenice, Slovenia, close to the Austrian border.

Flowers are fragile and need to be handled with care all the way from order to delivery to arrive intact.

“We expect a lot from our drivers, so we need to give them the best working machine in the world.”

ROK BIZJAK, HEAD OF VEHICLES AND STAFFING, SIGR BIZJAK TRANSPORT

The relationship with Volvo Trucks began six years ago, after Volvo Trucks was able to make a quick delivery of a combination truck, on a schedule that Volvo Trucks’ competitors could not match. Since then, the Bizjaks’ fleet of Volvo trucks has expanded to 35. Over the past year, the company has purchased only Volvo trucks.

In choosing a truck supplier, Volvo Trucks’ services played a decisive role. “Service is a big factor for us,” says Grega Bizjak. “Volvo Trucks’ service in Slovenia is perfect – truly perfect. They really listen to you. It also makes a difference that Volvo Trucks has its own market company locally, which other competitors do not. It’s a partnership: we have worked together, tested different truck models to see what works.”

For Rok Bizjak, who is in charge of the truck fleet and drivers, the quality of the vehicles matter: “We expect a lot from our drivers, so we need to give them the best working machine in the world.”

Cost is also of growing importance for the Bizjak business. Previously, because wages and costs were lower in Balkan countries than elsewhere in Europe, Slovenian businesses could quite easily compete on price. But with rising wages and costs – this is no longer the case, says Grega Bizjak. “We need to be competitive to stay in business, sometimes winning an order comes down to a question of cents. So we need to have a truck with low fuel consumption and at a competitive price.”

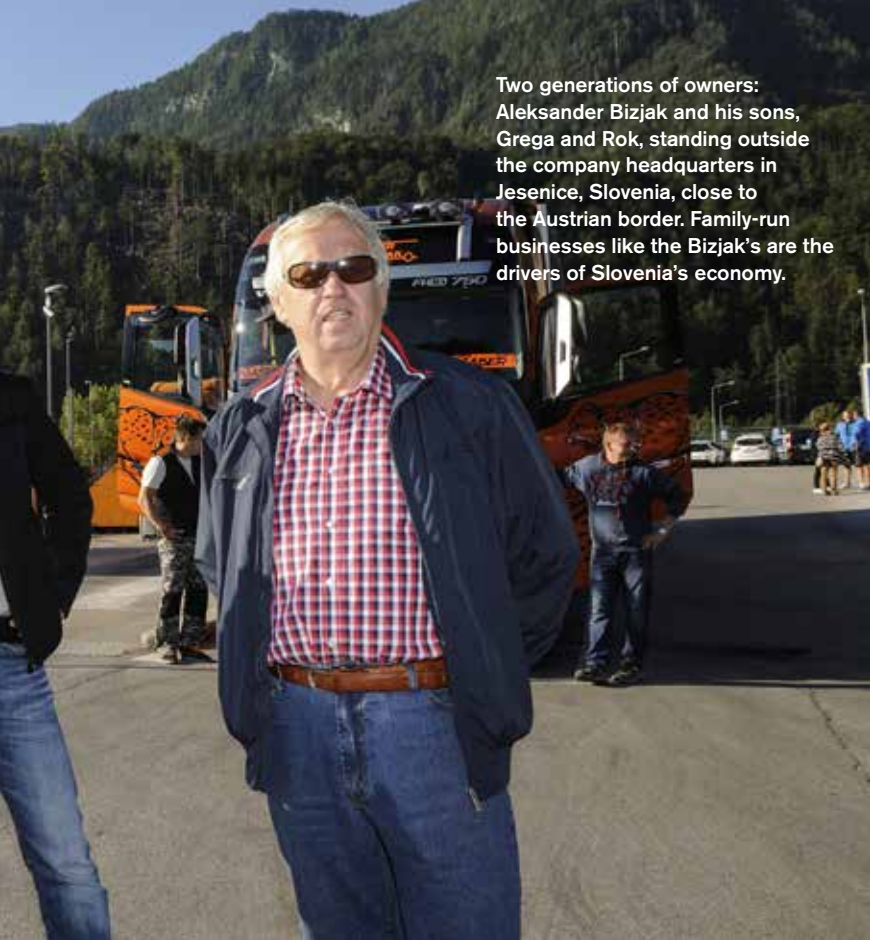
To commemorate their 80th anniversary celebrations, the Bizjaks ordered a brand-new Volvo FH16 750 with special striping.

They gave it to their two best drivers to drive. Despite having some of their own family members on staff, there is no favouritism in these decisions says Rok. “The safest drivers get the best trucks.”

All in the family

SIGR BIZJAK TRANSPORT started operations 80 years ago and the two current generations of owners have grown up around trucks. Incredibly, Aleksander, the father in the family, started driving a truck at the age of eight. Following a burn accident, his father was unable work for a year and Aleksander Bizjak and his mother took over delivering post locally. The mother-and-son team even received special permission from the police. Today, Aleksander’s sons, Grega and Rok, oversee an growing international business. Not only is the business run by a family, many employees and drivers are also family. At Sigr Bizjak Transport, husbands and wives often drive together, as do fathers and sons. As with any family business, business and family time are often one and the same: “You don’t have working time: it’s 24 hours,” says Grega Bizjak and flashes a smile.

“We have an excellent business relationship with the Bizjak family and others working in the company. We have even become friends. I believe it’s because we have achieved mutual trust,” says Janez Jugovic, Sales, Volvo Trucks, Slovenia.



Two generations of owners: Aleksander Bizjak and his sons, Grega and Rok, standing outside the company headquarters in Jesenice, Slovenia, close to the Austrian border. Family-run businesses like the Bizjak's are the drivers of Slovenia's economy.

In the flower business, time means freshness. At the Aalsmeer flower auction, where the Bizjak family picks up their flowers, traders bid against the clock. They have only seconds before vast lots of flowers are sold off and packed into trucks for delivery.

This past year, Gaber Savs and Gasper Potocnik have been driving a new Volvo FH16 750 to the Netherlands. The powerful truck gets them plenty of attention: "Lots of drivers give us the thumbs up or take their phones out to take a picture. There's nothing bad about this truck – it's really cool!"

A 22 hour working day

3

TOP ISSUES FOR BGR MINING

- **Productivity**
- **Cost-efficiency**
- **Uptime**

BGR Mining started out with one excavator and a few tippers. Today it is one of India's largest mining companies. The business relies on Volvo CE to deliver growth.

TEXT LINA TÖRNQUIST **PHOTO** VOLVO CE

BGR MINING

Company: BGR Mining and Infra Private Limited
Established: 1990
Employees: 7,000
Fleet: 50 Volvo EC480DL hydraulic excavators, seven EC750DLs crawler excavators and five Volvo L150G wheel loaders. They also own over 440 Volvo FMXs and FM trucks.
Operations: Focus on overburden removal and coal extraction.
Head office: Hyderabad, India

Twenty-seven years ago, family-owned BGR signed its first mining contract. Today, it is one of India's largest mining operators and has over 1,000 tippers, 150 excavators and more than 7,000 employees across different regions of India's mining belt.

Behind almost three decades of growth lies a focus on high productivity and professional management: "It's our people that make the difference," says B Umapathy Reddy, Chairman and Managing Director. "We have professional staff and we make sure that our operators are trained and have good accommodation and salaries."

Today BGR Mining has a fleet of 57 Volvo CE excavators and five wheel loaders at work at their sites. They also own a massive fleet of over 440 Volvo FMX's and Volvo FM trucks.

BGR expects maximum uptime. During production, machines run up to 22 hours a day. "Each shift is eight hours and the seat is still warm when the next operator jumps in," says M.S. Vadali, Assistant General Manager Mining at Volvo CE in India.

B Umapathy Reddy

To support its customer, Volvo CE in India needs to provide flexible service, servicing machines during the few hours when they are not being used. It also helps train staff, from operators and technicians to supervisors and management.

"By having skilled staff, we are able to be more productive than our competitors. Volvo CE's machines include a lot of innovative technology, so operators need to learn how to use them in the best way," says B Umapathy Reddy.

Cost-efficiency is also a major concern. "In India, our customers are extremely cost-conscious, but they also want quality – you have to demonstrate that you can deliver value." And relationships are crucial: "Relationships win you contracts," says M.S. Vadali.

BGR Mining is a company that expects maximum uptime. During production, machines run up to 22 hours a day. The seat is still warm when the next operator jumps in.

3

TOP ISSUES FOR BRUNDAGE–BONE

- **Uptime**
- **Quality of the vehicle**
- **Driver appeal**

One of Brundage-Bone's Mack TerraPro Cabovers fitted with a concrete pump. The truck is stabilised by four outriggers and its pump is powered by a truck motor working at 1,700 rpm. The truck's position puts severe strain on the vehicle.

EXTREME WORK ENVIRONMENT

Its trucks need to handle extreme stress, contact with corrosive material and maximum payloads. Brundage-Bone chooses Mack trucks for the job.

TEXT LINA TÖRNQUIST **PHOTOS** PAUL HARTLEY AND BRUNDAGE-BONE CONCRETE PUMPING

Many of the Mack trucks used by Brundage-Bone, the world's largest concrete pumping company, spend much of the day suspended in mid-air.

The trucks, fitted with concrete pumps, are used on infrastructure sites that ready-mix trucks cannot access, including high-rise buildings, stadiums and bridges.

When pumping concrete, the trucks are stabilised by four outriggers, which lift some or all of the truck tyres off the ground. The pumping equipment is then powered by the truck motor working at 1700 rpm.

It is an extreme work environment that puts the vehicles in a classification that is worse than the "severe" category listed in service manuals.

The truck's position places unique strain on the suspension, steering and many of the

> “100 per cent of truck hours and miles are completed at max capacity.”
>
> **BRUCE YOUNG**, PRESIDENT AND CEO OF BRUNDAGE- BONE CONCRETE PUMPING

components. Concrete is also abrasive and wears down components it comes in contact with. And the trucks are loaded to full capacity.

“There is no loading or unloading of cargo. 100 per cent of truck hours and miles are completed at max capacity,” says Brundage-Bone Concrete Pumping President and CEO Bruce Young.

Meanwhile, uptime is essential. The pumping units are highly specialised, very expensive and few in number.

“Eliminating any downtime is key to success, since there are limited back-up options if even one of the trucks is taken out of service,” says Bruce Young.

Brundage-Bone needs specialised solutions for its more than 500 trucks. For example, the ability to put pressure on concrete is directly limited by the power output of the truck engine. So, even smaller vehicles in the company’s fleet have large engines.

And because the trucks are used at different sites around the United States, they need to be adapted to cold climates and some of the country’s most stringent weight laws.

For its part, Mack Trucks has invested heavily in uptime solutions tailored to the concrete pumping industry.

On the vehicle side, Mack Trucks has worked with Brundage-Bone to find specialised solutions to maximise payload and reliability. While, on the service side, Mack Trucks provides its customers in the concrete pumping business with dedicated service and support. Its support hotline is manned by professionals with extensive experience from the concrete industry. The team is also integrated with Mack Trucks GuardDog Connect telematics system, which monitors the health of vehicles.

And instead of spending a lot of time communicating needs, goals and warranty information with local dealers, Brundage-Bone’s sales and support is managed nationally, while accessing service from 50 Mack dealerships across the USA.

President and CEO Bruce Young has relied on Mack trucks to build the world’s largest concrete pumping company.

BRUNDAGE-BONE HAS been using Mack trucks since its founding three decades ago. Although they have tried other brands through the years, the company keeps coming back to Mack.

Most of Brundage-Bone’s 450 concrete pumping vehicles are Mack TerraPro Cabovers. But, as Brundage-Bone has developed its business to include a concrete recycling division, Eco-Pan, its vehicle fleet has diversified.

The concrete recycling side of the business makes use of 60 Mack Granite flatbed trucks with knuckle booms, a vehicle configuration that is the product of Mack’s work with the company to design a new truck that maximises payload.

Now, Brundage-Bone is updating its fleet with *m*DRIVE, which they hope will help them recruit and retain drivers. Even though everyday reliability is the largest factor in choosing its vehicles, the truck as a working environment is becoming an increasingly important factor.

“We’ve started to focus more on driver comforts,” says Bruce Young.

Brundage–Bone’s trucks are used on infrastructure sites that ready-mix trucks cannot access. This includes high-rise buildings, stadiums and bridges.

Brundage–Bone's fleet includes a range of vehicle specifications including two, three, four, five and seven–axle trucks. Many of the larger units are even equipped with rear steering wheels.

BRUNDAGE–BONE

Company: Brundage–Bone Concrete Pumping
Established: 1983
Employees: 750
Fleet: Most of Brundage-Bone's 450 concrete pumpers are Mack TerraPro Cabovers. Eco-Pan uses 60 Mack Granite flatbed trucks.
Operations: Started by Jack Brundage and Dale Bone, the company is now represented in 20 states. It also runs a concrete recycling business called Eco-Pan. In August 2014, Peninsula Pacific Strategic Partners acquired both Brundage-Bone and Eco-Pan.
Head office: Denver, Colorado, USA

3

TOP ISSUES FOR POLFÄRSKT

- **Product**
- **Service**
- **Financing solutions**

Freshly delivered

The bread distributor Polfärskt imposes rigorous environmental demands on its trucks. The target is to have the company's operations run solely on renewable energy by 2022.

TEXT LINDA SWANBERG **PHOTOS** SÖREN HÅKANLIND

Polfärskt is Sweden's second largest bread distributor. Every week, the company's 270 sales-oriented distributors deliver bread and biscuits to 2,500 shops all over Sweden.

The company guarantees deliveries to shops within three hours. This means that it is essential that every truck functions as it should.

"It's totally decisive that the service is fast and efficient and that the workshops stick to their schedules. Service quality is in fact the only reason that we have chosen to purchase trucks of a different brand in some places in Sweden," explains Hans Jacobson, managing director, Polfärskt Bröd AB.

The company has been one of Volvo Trucks' customers since 2006 and every year it purchases 20–25 new Volvo trucks. Most of them are financed through operational leasing via VFS Nordic. Financing solutions come high on Hans Jacobson's list of factors that influence the sourcing of new trucks. After its employees, vehicles represent Polfärskt's largest expense.

"With operational leasing, we know exactly what the truck is going to cost, so we avoid surprises. Fuel consumption also plays an important role and it's going to become increasingly important in the future. In this context, it isn't just a question of cost. The important factor is the emissions the truck discharges," says Hans Jacobson.

Polfärskt has ambitious environmental targets. By

Polfärskt has 31 bread terminals in Sweden and guarantees deliveries to shops within three hours. Lisa Johansson is one of 270 bread distributors.

POLFÄRSKT

Bread distributors: 270
Fleet: 280 trucks, 170 of them come from Volvo Trucks.
Operations: Polfärskt distributes six different brands of bread and biscuits to some 2,500 shops in different parts of Sweden.
Head office: Lindome, Sweden

PHOTO: HANNES OJENSA

Hans Jacobson

choosing leasing, Polfärskt is increasing its potential to take advantage of the very latest technology, an important factor when it comes to sustainability. According to Polfärskt's new fuel strategy, by 2022 at the latest, operations are going to be powered by renewable energy, provided that this can be done while maintaining a high level of quality and an economically viable framework.

"Together with Volvo Trucks, we have tested renewable fuels like RME and HVO. We now have a deployment plan for HVO and I'm pretty sure that we are going to succeed. At the same time, I'm convinced that electricity will be an important part of the solution and we have high expectations for Volvo Trucks. Of course, we also follow other suppliers in this area," says Hans Jacobson.

Finding skilled employees is another challenge for Polfärskt. Bread distributors are both drivers and sales staff. New rules for driving licenses make it harder to find qualified drivers. "We can't have drivers who only love driving trucks. They must also have a big interest in selling and in meeting customers. Due to the new rules for driving licenses, we must also look for smaller trucks," says Hans Jacobson.

3

IMPORTANT VALUES
TRANSPARENCY, TRUST AND PASSION

"As I see it, passion covers the complete spectrum of emotions. Being passionately happy or incredibly angry and disappointed when things don't go as they should."

In October 2016, Lars Stenqvist took over as Executive Vice President for Group Trucks Technology and Chief Technology Officer for the Volvo Group. As the Group's CTO he has to ensure that the whole Research and Development team 'play' together.

NEW CAPTAIN AT THE HELM

Fulfilling the customers' quality expectations is high on the agenda for Lars Stenqvist, who will be leading Group Trucks Technology into the next important technology era.

TEXT ANN-MARI ROBINSON **PHOTO** PONTUS JOHANSSON

LARS STENQVIST WAS clearly ready for action when he met *Volvo Group Magazine* at the GC building at Lundby in Gothenburg. He answered enthusiastically and joked in a relaxed manner with the photographer and passing colleagues.

Can you tell us about your first impressions? Has anything in particular surprised you?

"My impressions are positive! Everyone has made me feel really welcome. If there is anything I have reacted to, it's the size. This is a large global company with products adapted to match local requirements. Understanding the complexity of the Group's operations is a truly humbling experience. At the same time, the size and breadth make it possible to find synergies. I think the Group has done a fantastic job so far, perhaps even better than people realise."

What does being Chief Technology Officer involve?

"That I have two jobs. I am the head of GTT and I am also the Group's CTO and have to ensure that the whole Research and Development team 'play' together. I can sense a real desire for even more collaboration."

What are your thoughts when it comes to new technology areas for the automotive industry?

"Well, the first thing I would like to point out is that it's a question of adding technology to what we already have. Sometimes people can have the impression that the technology we are currently supplying to our customers is out-dated and that only new technologies are needed in the future. It isn't as simple as that, however. We need to continue developing many of our traditional technology areas, such as combustion engines, because they are going to be fitted in our vehicles for many years to come.

"*Electrification* is developing steadily and in different segments. When it comes to city buses, it's already part of the equation. As far as trucks are concerned, I believe that developments will first take place in the distribution segment, in urban environmental zones, for example. It can also take place in stages within closed systems, such as airports and ports, where charging is less ▶

Lars Stenqvist chats with Martin Solevid, Richard Blom and Maja Stålrud at GTT in Lundby. He finds the combination of technology and intelligent people really exciting. "It's a challenge to lead and work in this area, but it's fantastic when things come together in perfect harmony."

GROUP TRUCKS TECHNOLOGY (GTT)

- The Volvo Group's division for research and development
- 7,000 people working with different brands in global teams
- Operations at sites in Sweden, France, the USA, India, Brazil, Australia and Japan

complicated. We have a unique opportunity to re-use what has already been developed for buses.

"*Connectivity* is already a fact. As a development organisation, we can really benefit from more operational data in order to develop services that help our customers to make better use of their vehicles. The security aspect, Cyber Security, poses a threat and is an area we need to handle.

"*Automation* is already part of our vehicles, with systems that regulate speed and warn drivers. I think we are going to see the first applications of full automation in enclosed environments like mines."

How well equipped is the Volvo Group for this?

"We are well equipped in relation to our competitors. What we demonstrated at the Boliden Mine in 2016 is impressive proof of the concept that automation actually works. But we undoubtedly need to learn much more: it is a new area, new technology and new expertise to acquire."

What role does the customer play at GTT?

"The customer plays an extremely important role and I realise that we can do even more to create closer customer relationships in our organisation. Engineers regularly meet reference customers, but getting together in a conference room is not enough. Instead, engineers accompany drivers for several hours to understand the big picture.

Being able to visit the customer and obtain first-hand information if defects occur is both valuable and important. Quality is the first factor that determines whether a customer buys a product from us."

Is the level of quality within the Group sufficient?

"Our customers could expect more of us when it comes to technical solutions and faster problem-solving. We are in fact better than we are currently demonstrating."

What needs to be changed?

"Well, the first thing is that, when we release a product, we need to be totally sure that it complies with both our and our customers' requirements. If customers experience problems, our mind-set and leadership will have a decisive effect on how we manage lead times. A problem that needs resolving must not be allowed to stand still. We can improve in both these areas."

Born in 1967, Lars grew up in Mariestad, Sweden. He has a wife, three children and two dogs. He enjoys skiing, running and swimming.

LARS STENQVIST

Education:
MSc in Industrial Engineering from Chalmers University of Technology in Gothenburg
Career:
1992- 2007: Various leading positions at Scania
2007-2015: SVP Vehicle Definition R&D Scania
2015-2016: Head of R&D and CTO at Volkswagen Truck & Bus
Since October 2016, EVP GTT and CTO Volvo Group

"Quality is the first factor that determines whether a customer buys a product from us."

How is GTT going to work on continuous improvement?

"There are many opportunities, such as constantly making small improvements to products rather than lumping them all together on one occasion in one large project. This means that there is less risk of quality disruptions and it enables faster deliveries to customers. We can't simply develop a product that will be introduced in four to five years. We must also make continuous improvements to the products and services we sell today, tomorrow and next year. It's my job, together with the organisation, to work to maximise the output from the investment the Group makes in research and product development."

What is most important for good leadership?

"Transparency, as it's difficult to do your job if you don't have all the facts. I also think accountability and being the captain of your ship are important. Our deliveries from GTT can be compared to transporting a load from one point to another. You can have good weather or a dreadful storm, but your cargo – and crew – must still arrive at the right time and in good condition. That's how I see it; I'm the captain of GTT. This works as a metaphor and leads to discussions about mandates and the things that are needed for project managers and team leaders to also feel that they are the captains of their projects and teams."

Can you tell us about your background?

"After studying engineering at Chalmers University of Technology in Gothenburg, I applied to become a trainee at the Volvo Group but they were not taking on trainees because of the financial crisis. Suddenly, another truck manufacturer in Sweden announced that it was looking for trainees. So, you could say that it was a long recruitment process – I got a job 24 years later!"

PHOTO: FROM THE VOLVO GROUP TECHNOLOGY PLAN

DIGITALISATION

Digitalisation is creating opportunities for new services and solutions and can significantly improve processes and products. One example is how intelligent transport systems can save lives, which was demonstrated in the TEAM project.

TEXT ALASTAIR MACDUFF

The recently completed EU project, TEAM, used connectivity in various traffic situations to improve safety. TEAM, which stands for Tomorrow's Elastic Adaptive Mobility, ran from November 2012 to October 2016 and involved 27 partners, including the Volvo Group. Its aim was to show how drivers, travellers and infrastructure operators can be connected to form one collaborative network. By employing devices ranging from smartphones and in-vehicle information to traffic lights, TEAM's ultimate objective is to reduce traffic fatalities within the EU.

Rafael Basso, Senior Researcher, was project leader

3 TRENDS *shaping the future*

Automation, digitalisation and energy efficiency have been identified as important focus areas in the Volvo Group's Technology Plan. Meet some of the teams that are driving development.

Which are the most important technology trends?
MB: "Automation, digitalisation and new technologies within energy efficiency are three important areas that will also affect one another. For example, digitalisation makes vehicle automation possible."

AK: "These are very broad areas, and to a certain extent, developing technology solutions in parallel will be necessary. Energy efficiency, for example, covers different fuels but is also related to aerodynamics."

How are Volvo Group employees affected?
AK: "Regardless of whether we work in service, technology or product development, manufacturing or sales, it will affect us. That's why it's important that everyone knows about the major trends. A good aid is the summary of the Volvo Group Technology plan which is available on Violin. It gives an overview of how the Volvo Group works with these big opportunities and challenges."

How strong is Volvo Group when it comes to developing the technology of the future?
MB: "We work with a long-term outlook and are in a strong position. It is an advantage to be a large organisation since we can plan ahead and find synergies. It is also becoming even more important to be a good partner, so that we can collaborate with others in different projects."

MICHAEL BALTHASAR AND **ANN SOFI KARLSSON** ARE COORDINATORS FOR VOLVO GROUP TECHNOLOGY PLAN

PHOTO: CHRISTER EHRLING

Read more about electromobility on pages 42–53.

Rafael Basso

at the Volvo Group. "We are now focusing on the second generation of intelligent transport systems. The most significant work that we were involved in was to extend the current Automatic Cruise Control by making the vehicles communicate with each other. This and other types of collaborative driving that increase safety and efficiency are important to develop further."

Another exciting area examined by TEAM was collaborative traffic infrastructure. By linking connected vehicles to traffic signals via wireless communication and a so-called automotive cloud, information can be shared, allowing traffic to be managed more safely and effectively. "Connectivity creates a wealth of possibilities to improve traffic flow and, most crucially, decreases the risk of accidents," says Rafael Basso.

He feels the TEAM project was very successful. "The technology is here. With various stakeholders and different systems involved, things might take longer, but we are in a good position to meet demand. Now an important prerequisite is engagement from the relevant authorities to deploy the technology," says Rafael Basso.

AUTOMATION

Automation is increasing in all aspects of transport. And it is crucial for meeting customer demands. One example of successful automation solutions is the development of the Collision Warning System.

TEXT ALASTAIR MACDUFF

The development of the Collision Warning System with Emergency Brake is seen as particularly important in terms of the Volvo Group's future work on automation. Launched in 2012 in conjunction with the launch of the new Volvo FH, it has since undergone an update in 2015. Its developers are now looking ahead to a next-generation system with improved functionality and global coverage.

The team behind the safety system is based at Group Trucks Technology in Gothenburg, Sweden, and some of the members have been working together in various roles for almost a decade. Mathias Theander is mainly responsible for the software development of the functionality. "The vision of an automated emergency brake system first formed around 2008. We started working with the sensor suppliers around this time. It is the sensors that are the main source of information to determine how critical a situation is. So, they are key to this and any other automation system."

Adding further features and the integration of new software will be vital in maintaining the success of this kind of state-of-the-art safety technology, according to Agneta Sjögren, Technical Specialist. "As the driver's role changes and becomes more 'pushed back', it is necessary to introduce more automated features that improve traffic safety. For example, we have been looking at automatic steering in conjunction with collision avoidance."

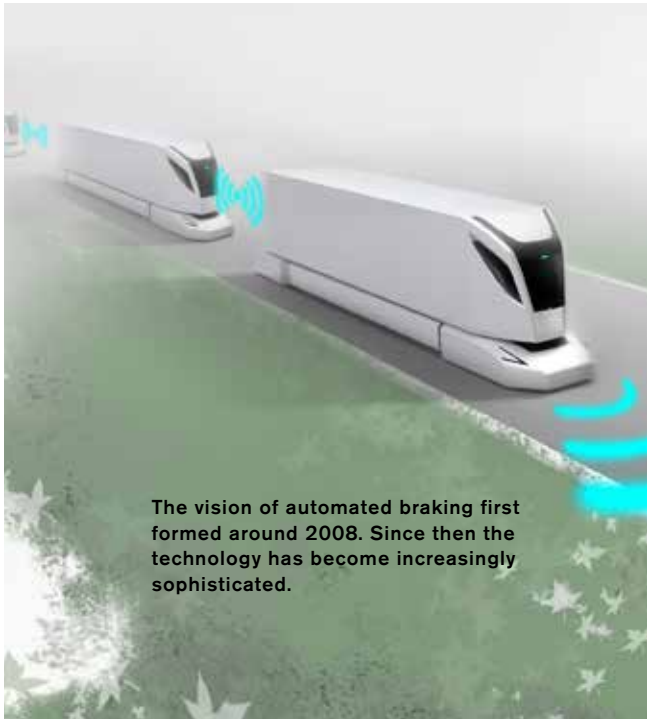
Achim Beutner is Senior Research Project Manager. "At the moment, we know we are exceeding legal demands in terms of safety. But, as the automated systems become more developed, the rest of the technology in the vehicle has to be kept in tune and up to speed. We aim to keep the functionality general, as it can be adapted to various markets."

Automation to improve safety is highlighted as an important future area in the Technology Plan. "For us, it's a question of aligning a common strategy," says Mathias Theander. "Timing is very important. We are looking at everything from adapting interfaces and linking systems together to improve functionality. At the same time, new features are being developed. So, it is all about taking the relevant steps and planning ahead."

In the meantime, the Volvo Group's automated truck technology continues to gather pace. "We are now working on the next-generation system. This will offer improved functionality based on less expensive and improved components," says Achim Beutner. "All of this will contribute to the Volvo Group being able to extend its market share and increase its global presence."

COLLISION WARNING SYSTEM WITH EMERGENCY BRAKE

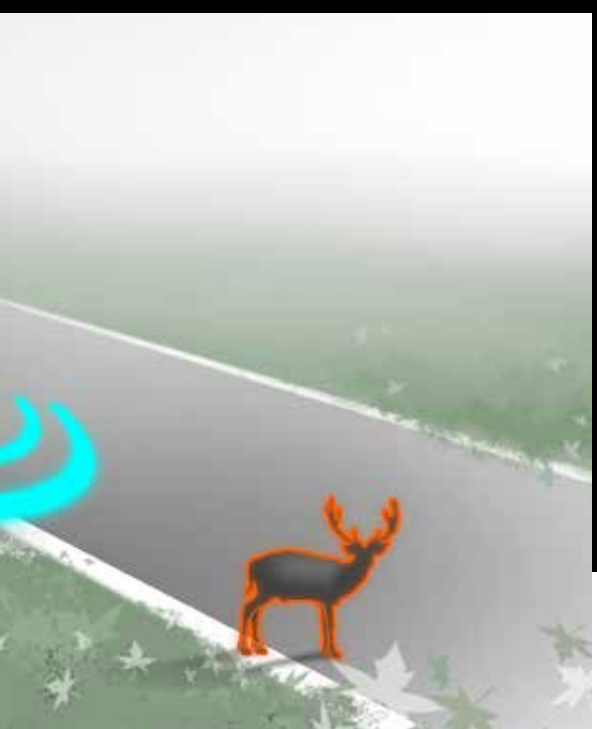
- The system is based on two sensors – the radar judges the distance and speed of vehicles ahead, while the camera provides information about the kind of vehicle.
- The driver is alerted through a red light and later a sound warning if the truck is getting too close to the vehicle in front. If the driver does not react, the emergency brake is applied.



The vision of automated braking first formed around 2008. Since then the technology has become increasingly sophisticated.

Agneta Sjögren, Achim Beutner and Mathias Theander have worked together in various roles for almost a decade.

PHOTO: ROBIN ARON OLSSON



The Collision Warning with Emergency Braking is seen as a milestone in the Volvo Group's work with automation and safety.

ILLUSTRATION: ANDERS TENSTAM

The flow field around the truck is simulated in a virtual "wind-tunnel". Simulation tools offer excellent opportunities for analysis and were used extensively in the development of the Volvo Concept Truck.

PHOTO: CHRISTER EHRLING

Jörgen Rydén, Ulrika Ohlsson, Anders Tenstam and Ismail Ovacik discuss different design options.

The aerodynamic properties of the truck is verified in a wind tunnel. There are only a few test facilities in the world that can accomodate a full-size truck. The photo is from the NRC tunnel in Ottawa, Canada.

ILLUSTRATION: ISMAIL OVACIK

Making the complete vehicle increasingly more aerodynamic opens up new possibilities for energy efficiency.

ENERGY EFFICIENCY

Achieving greater energy efficiency is one of humanity's main challenges. It is also a key priority for the Volvo Group, with many teams working on new solutions for drivelines, fuel and design. One example is the progress that is being made in the field of aerodynamics.

TEXT ALASTAIR MACDUFF

In terms of how it relates to trucks, aerodynamics is concerned with the movement and interaction of air with the solid body of the vehicle. A GTT team in Gothenburg has been working on various projects in aerodynamic design for the past five years and, in May 2016, they presented the Volvo Concept Truck. By modifying an entire truck and trailer rig, aerodynamic efficiency was improved by 40 per cent. Combined with improvements on the driveline and rolling resistance, fuel consumption was cut by 30 per cent.

To achieve this, the team worked in many different areas, drawing on the various concepts within aerodynamics. This has proved to be the best way to deliver positive results, according to Anders Tenstam, Technology Specialist at GTT. "We looked at developing a specified truck. With additional features, we came up with a complete solution for the long-haul sector. Virtual Development played an extensive part in the project. Using a digital framework really increased the pace of developments."

A synergy between engineering and design is clear when talking to the team. Small details are important, as is doing a little in many different areas. Ismail Ovacik is Chief Designer Exterior. "By looking more deeply into the design and optimising the shape, we can create a viable Volvo concept for the future. A message of functionality and fuel efficiency can be communicated simply by the truck's design."

The success of the concept truck highlights the importance of crossover between projects and within different areas of expertise, explains Ulrika Ohlsson who is Group Manager Cab Exterior: "The advanced engineering process involves working with different projects and determining whether they are viable – cost-effective and working on a product that it is actually possible to manufacture. Projects must reach a certain level of maturity before they can be phased into other projects."

LOOKING FORWARD, THE ongoing work of the aerodynamics team reflects the Volvo Group's commitment to an automated future. "We are looking at the positive effect on aerodynamics achieved by platooning, for example" says Jörgen Rydén, Lead Engineer Front Underrun Protection and Lower Front. "This is a very important link between automation and aerodynamics. Also, as new legislation takes effect, we must be prepared to adapt in order to make the most of future opportunities."

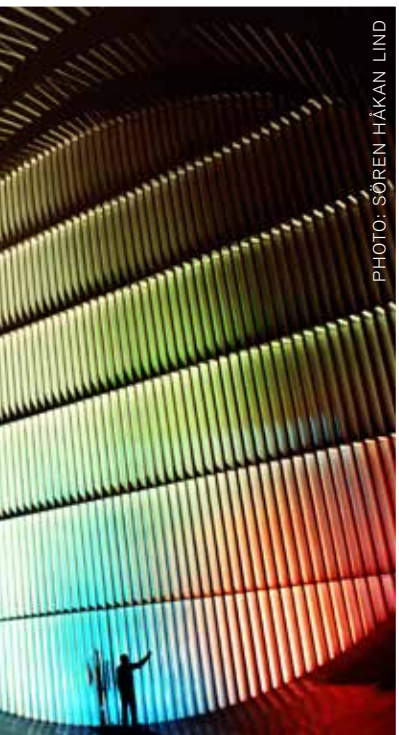


PHOTO: SÖREN HÅKAN LIND

CUSTOMER SUCCESS, TRUST, PASSION, CHANGE, PERFORMANCE
THE VOLVO GROUP VALUES

It has been a year since the Volvo Group values were introduced. Three employees from different parts of the business relate their experiences so far.

"Each value helps the other"

CARRIE BIGGER, CREDIT ANALYST FOR NORTH AMERICAN TRANSACTION SERVICES, VFS GREENSBORO, NORTH CAROLINA, USA

"When the values were introduced a year ago, it didn't feel like a big change, because they made sense. It felt more like we were refocusing on things that have always mattered.

"All the values mean something to me, but, if I were to pick one that is especially important, I would pick trust. When your team trusts you and you trust the people you work with, the other values end up falling into place.

"Throughout the past year, I have been involved in a big project with one of our largest customers. The goals and overall purpose of the project have evolved since we began working on it at the beginning of the year. Now, we are running several projects with this customer concurrently. There are a lot of moving parts and we are working hard to ensure that we support each other and keep one another informed. That's where the values come in: we have to make them a part of our everyday work ethic in order for the team and projects to be successful.

"The Volvo Group has a reputation for being a good company and, working here, I feel like what I do matters. I have been with VFS for 11 years and company values such as these help me want to stay.

"I appreciate working with a team and a company that is willing to evaluate, to change and to improve. You don't have to do things the way you've always done them – and that's also what helps keep things interesting.

"I try to have a high value system in my own life. So, the values are part of why I have pride in working for VFS. When we strive for high performance, we become passionate about what we do and then we trust each other and can create change. It's all a chain reaction. Each value helps the other one; they all fit together."

LINA TÖRNQUIST

PHOTO: STEVE EXUM

“I am proud when colleagues feel the work they do is important”

“In my team here at the Distribution Centre, we often talk about values. We know that, if we succeed in fulfilling the customer’s expectations, it’s also good for us,” says Elias Leiva.

ELIAS LEIVA, OPERATION SUPPORT, VOLVO GROUP LOGISTICS SERVICES, SANTIAGO, CHILE

“There is no question that passion is the value that means the most to me. If you don’t feel passion for what you do, it’s difficult to realise personal and professional goals. It’s passion that enables me to do my job every day with quality.

“Even if these values are new, they have always been part of my work. I try to meet customers in the best possible way and think about how I would like to be treated.

“I have been working here for eight years and, before that, I spent several years working at a dealership. During this period, a great deal has changed and improved. Nowadays, we have a far more direct relationship with other operations within the Volvo Group, not to mention a far greater knowledge and understanding of the brand, our customers and their needs.

“Even if Chile is a small market from a global perspective, we are quick to adapt to change. We have team leaders that are good at explaining the decisions that are made within the Group.

“I am proud when colleagues feel the work they do is important. As I see it, trust is fundamental. If we work on creating confidence between the employees, we can also gain our customers’ confidence.”

LINDA SWANBERG

“We know there will be a great deal of change”

LUC DOLINO, ILS & ISS BUSINESS DEVELOPMENT, GOVERNMENTAL SALES, LYON, FRANCE

“During the VGAS survey, Governmental Sales gave the values very high scores. So I think the values do reflect our organisation. Customer success, for example, is central to us and we have a true passion for what we do.

“Another value that is highly relevant right now is change. Both the industry and our organisation are seeing a great deal of change. There was an announcement last November that the Volvo Group will initiate a process to divest Governmental Sales. Right now, we know there will be a change, but we don’t know how the business will be impacted. We are hoping for an open and honest dialogue going forward – for us, the way it is handled is closely linked to the value of trust.

“From a wider perspective, change, for me, is not only about organisational changes: it’s about innovation and the transformation of the service portfolio.

“In our industry, we’re seeing big changes in government service contracts, which is the area I work with. Government entities such as the military, police and fire departments aim to use industry partners and civilian workshops for maintenance and repair. My division, Business. Development, was created in July, to better respond to these tenders and we are proud of our first big award: a 3,700 fleet with a 14 years maintenance agreement that will involve hundreds of thousands of service work hours.”

LINA TÖRNQUIST

PHOTO: PRIVATE

“To be innovative, it’s important to keep an eye on what is happening in other sectors, not just your own. On the service side, we are drawing inspiration from, for example, the way the high-tech industry deals with reverse logistics and warranty,” says Luc Dolino.

Service under the sun

For Volvo CE, service and repair work often takes place at customer sites. On any given day, about half the staff at Volvo CE's Singapore workshop are out in the field.

TEXT LINA TÖRNQUIST
PHOTOS SAM CHIN

SINGAPORE'S MULTICULTURAL IDENTITY is reflected in Volvo CE's dealership. There are staff here with Burmese, Malaysian, Chinese, Indian and Singaporean origins.

Technician Tan Kee Seng is Singaporean and one of the most experienced technicians on the team. He has been working as a machine technician since the 1980s and joined Volvo CE three years ago.

Today, his work still includes repairs, but it also entails organising tasks in the workshop and communicating with customers.

DEALING WITH CUSTOMERS is one of his key strengths: "My advice is to be open. We try to be transparent. Customers like that," he says.

The workshop team has a mature and supportive attitude. "Machines are always being updated, so you need to keep on top of a lot of things. What you know today will be outdated tomorrow. But we learn from each other. I think that is the strength of our workshop and the company – we share information and support one another."

As a technician with almost 30 years' experience, Tan Kee Seng spends a lot of his time coordinating the work of the workshop team. Here, he discusses the upcoming tasks with Volvo CE technician, Niang Nai Nai.

10.05 a.m.

Mending the transmission on an articulated hauler in the workshop, together with Muthlingam Kanagaraj. This hauler has been running 24 hours a day and its transmission recently started leaking.

9.15 a.m.

“What I like about my work is that it involves so many different tasks. I’m involved in everything from stock taking, to repairs and responding to customers. I never get bored.”

9.08 a.m.

Preparing supplies. When heading out to a customer site, Tan Kee Seng needs to bring all the tools and supplies with him: “It’s important to double-check so that we have everything we need”.

11.37 a.m.

Draining the gear oil on a Volvo EC350 excavator, together with Volvo CE technician Muhammad Alfahad Bin Mohamed Jais. This work is part of the scheduled maintenance that takes place after a machine has run for 500 hours. The excavator is used as a sheer cutter for a customer in the recycling business.

10.10 a.m.

Checking email. Part of Tan Kee Seng's day is spent in the office completing administrative tasks such as emailing customers and filing verfications.

10.35 a.m.

Enjoying a morning tea break. The workshop team gathers to share some beverages and simple food, such as noodles and biscuits. "We often teach one another phrases in different languages."

1.15 p.m.

Inspecting new excavators. New machines that arrive at the workshop in Singapore are inspected ahead of delivery to customers. Volvo CE's sales in Singapore have grown in recent years, which is noticeable in the workshop. To save space, machines are parked very close together.

VOLVO CE'S LOCAL DEALER IN SINGAPORE

The Volvo CE service team is comprised of 17 service technicians, two engineers, one service administrative staff and one workshop assistant. It is led by Service Manager Lee Yee Cheong.

THE FUTURE IS ELECTRIC

The whole automotive industry is in the midst of a paradigm shift and seeing a rapid growth of electromobility. This is having a profound impact not only on the Volvo Group and the transport industry, but on society as a whole.

TEXT NIC TOWNSEND

Wolfgang Schroeder, director general of Sales-Lentz in Luxembourg, sees electromobility as an investment in the future. Read more on page 50.

PHOTO: JONAS TOBIN

IN EARLY 2015, when *Volvo Group Magazine* last met the City Mobility team, they were preparing for the ElectriCity bus route in Gothenburg, Sweden. This would see the Volvo Group's first electric hybrid and fully electric buses operate in real traffic. While there was a lot of interest in sustainable transport solutions, cities were not yet convinced that the future was in electromobility.

Now, the market has completely turned around. "A couple of years ago, we were focused on finding cities that we could approach as potential customers, but now cities are coming to us," says Jessica Sandström, Senior Vice President City Mobility. "More and more cities are realising that electromobility is the best long-term solution and are making firm commitments. Instead of discussing purchases of two, maybe three vehicles, we are submitting tenders as high as 300 buses!"

The transformation proves that the Volvo Group's decision to invest in electromobility, long before the rest of the industry, was correct. "We were first in the market with lithium- ion batteries, and we had the first commercial vehicles in 2009," says Edward Jobson, Chief Engineer, City Mobility. "Our buses are covering 60,000 km per year so we have so much more experience and mileage than anyone else in the business, and all because we were early."

The ElectriCity bus route in Gothenburg, which includes seven electric hybrids and three fully electric buses, has been a particularly successful demonstration of what Volvo Buses can offer. In its first 18 months, over 6,000 visitors from around the world, mainly politicians and public transport providers, have come to the city to witness the full potential of electromobility first hand. "We never organise special demonstrations for visitors – we just take a normal bus in its regular service so they can see how it performs in real traffic with real people," says Jessica Sandström. "This really shows them that electromobility isn't some concept for the future – it is something that can be done right now."

Volvo Group Magazine 2/2015

HOWEVER, WHILE THE Volvo Group's early adoption of electromobility is a distinct advantage, the competition in the field is rapidly growing. Partly from the traditional automotive manufacturers but also from smaller start-up enterprises.

Mats Alaküla, Senior Technology Advisor, is convinced that electricity is key to the future of the whole automotive ▶

"There will be a significant change in our business and it will happen fast."

MATS ALAKÜLA, SENIOR TECHNOLOGY ADVISOR

Jessica Sandström
SVP City Mobility Team

Edward Jobson
Chief Engineer City Mobility Team

> "We took the initiative to create a de facto standard for charging commercial vehicles."
>
> **EDWARD JOBSON**, CHIEF ENGINEER CITY MOBILITY TEAM

industry and that we will witness some changes over the next decade.

"We must be on our toes when it comes to electromobility because there will be a significant change in our business and it will happen fast," stresses Mats Alaküla. "We are already witnessing a real disruption in the car industry, with new companies like Tesla completely changing the game in less than ten years. We also see new start-ups developing heavy-duty electric trucks, so we should be prepared for something quite similar happening in the truck industry, too."

While there is growing consensus that electromobility is the future, there is still much debate and uncertainty about the form it will take. For example, what will be the best charging solution? Currently, new electric vehicles are using one of two options: a plug-in solution where the vehicle is plugged into the electric grid and left to charge overnight, most likely in a depot or garage; or opportunity charging, where the vehicle is charged through short, regular charging sessions that are fitted into the vehicle driving schedule.

The Volvo Group has gone down the path of opportunity charging, such as Volvo Buses' electric hybrids which charge for up to six minutes at the end of each bus route. All studies conducted so far suggest this is the most efficient method of charging. A typical city bus using a plug-in night time charging solution will need a

PHOTO: ROBIN ARON OLSSON

In less than two years Edward Jobson and Jessica Sandström believe cities have become far more open to electromobility. "In 2026, will you even be able to operate a diesel bus? In many cities, not likely. So it's actually less risky to go for something more advanced like an electric vehicle," explains Jessica Sandström.

battery of around three tonnes, while a bus using opportunity charging can get by on much smaller batteries. However, unlike overnight charging, it does require a significant investment in new infrastructure, namely the charging stations.

For a heavy-duty long haul truck to use plug-in charging, it would need around 8-10 tonnes of batteries, which is completely impractical for a vehicle dependent on payload. At the same time, the drive-cycle of a long-haul truck offers very few windows for opportunity charging. For these applications there are other alternatives like fuel cells and hydrogen, electro fuels or electric roads. The Volvo Group is pursuing each of these technologies through Advanced Engineering.

"Electric roads have great potential for charging vehicles both at high speed and standing still. It will probably emerge in limited applications like mining sites, container handling or any dedicated transport routes such as between a harbour to a terminal," says Mats Alaküla.

AS THE TECHNOLOGY continues to improve and electromobility becomes more common it will also become increasingly important to share charging solutions across the whole industry. This is why the Volvo Group has established OPPCharge – a standardised charging interface that is open to different manufacturers and charging providers.

"There are plans to adopt a standard by late 2019 at the earliest, but the market will already be established by then. So we took the initiative to create a de facto standard for charging commercial vehicles," says Edward Jobson.

At this stage, nobody can know with absolute certainty what will happen next and the Volvo Group can only continue to monitor developments and anticipate future needs. But one thing everybody can agree on: change is coming and it will be electric.

"Solar power is growing at an exponential rate, and over the next decade or so we will have a surplus in electric energy," says Mats Alaküla.

PHOTO: OSCAR MATTSSON

3 approaches to charging

OPPORTUNITY CHARGING
A convenient option for buses and distribution trucks with fixed routes. The vehicle is charged at end stops or during loading/unloading. Requires charging infrastructure.

PLUG-IN CHARGING
The vehicle is charged over night. This increases flexibility since no extra infrastructure is needed but it does require large batteries.

CONTINUOUS CHARGING
Different technological solutions are being explored for how vehicles could be continuously charged. The photo is from a test run with a Mack truck.

OPPCHARGE

- A standardised charging interface developed by the Volvo Group open to all manufacturers and charging providers.
- Allows for 150, 300 and 450 kW charging.
- After three to six minutes of charging, the bus will run for 30 minutes.
- OPPCharge makes it easier for cities to commit to electromobility since it still allows them to choose from different vehicle suppliers and different charging providers.

OPPcharge

2016

In 2016, electromobility was all the rage at automotive trade events such as the 2016 Paris Motor Show for cars and the IAA in Hannover, the world's largest fair for commercial vehicles. Many companies are competing in the field of high-energy batteries.

Trends in electromobility

Today everyone in the transport industry is talking about electromobility – whether it is cars, buses, boats, trucks or construction equipment. Here are some of the hottest trends.

Key drivers

- Massive technological advances make it possible to drive vehicles longer distances, at a lower cost and with faster charging.
- Batteries are becoming much cheaper.
- Electricity is both cheaper and more sustainable, partly thanks to the breakthrough in solar.
- Stricter targets for emissions, air quality and noise in many cities. In Europe, some cities are planning to ban access for diesel vehicles within the next few years.
- Sustainable transport solutions are increasingly important for customers.
- Public transport is becoming much more comfortable and efficient.

Did you know...

...that Sweden is a global leader when it comes to electric roads, which allow vehicles to be continuously charged? At present, four projects are under way:

▶ **The Volvo Group and Alstom.** At the test site in Hällered, outside Gothenburg, power lines have been built into the surface of the road.

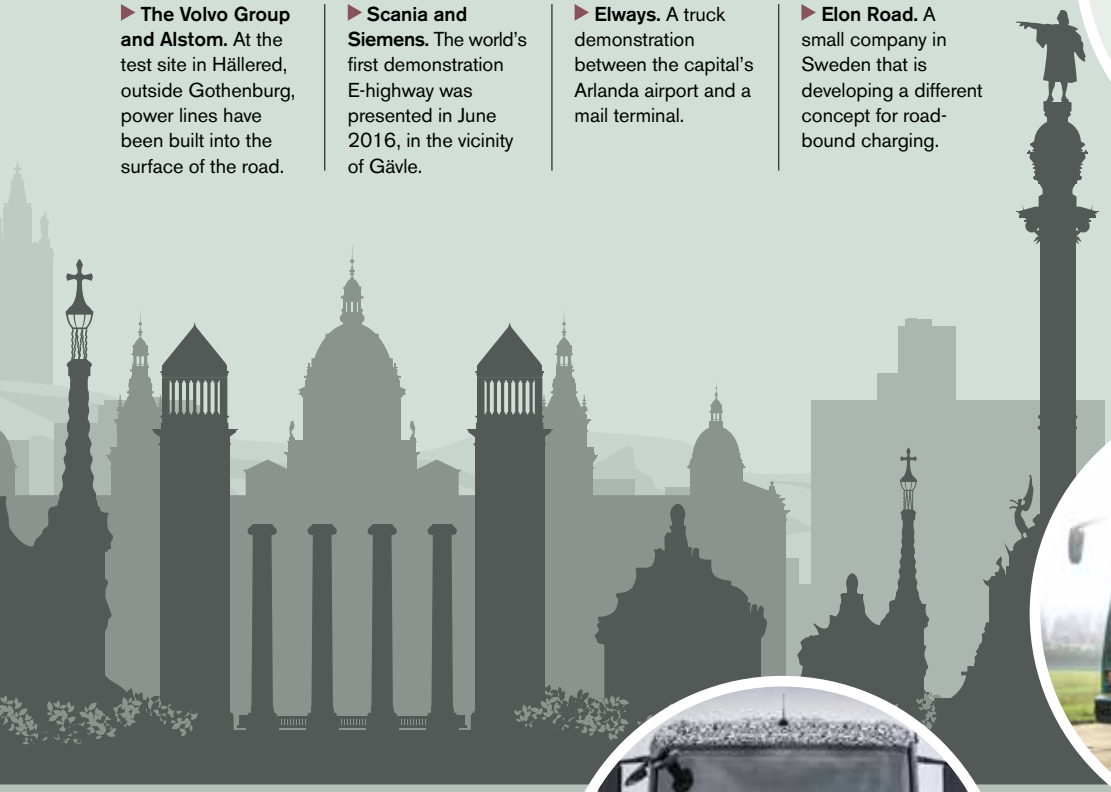
▶ **Scania and Siemens.** The world's first demonstration E-highway was presented in June 2016, in the vicinity of Gävle.

▶ **Elways.** A truck demonstration between the capital's Arlanda airport and a mail terminal.

▶ **Elon Road.** A small company in Sweden that is developing a different concept for road-bound charging.

3

With OppCharge, three to six minutes of charging will keep a bus running for 30 minutes.



Truck competitors

An interesting new development is that both traditional truck companies and new start-ups are working on electric trucks. For city distribution, the demand is clearly there, but more and more companies are also trying out solutions for longer distances.

MAN
Demonstrated its eTruck Concept at the IAA, including a 18-tonne truck with a 106 kWh battery and a 50–150 km range.

NIKOLA ONE
The new Nikola Motor Company presented its fully electric truck, the Nikola One, in December 2016. It is hydrogene powered, with a range between 800–1,200 km and a charging time of 15 minutes.

MERCEDES-BENZ
Showed its Urban eTruck at the IAA 2016. By 2020, it plans to launch an MD 26 tonne truck with a full range of 200 km.

VDL
The VDL Group plans to present a 37-tonne electric truck in 2017, designed for relatively short distances of about 100 km on a single battery charge. The vehicle can then be fully recharged in half an hour.

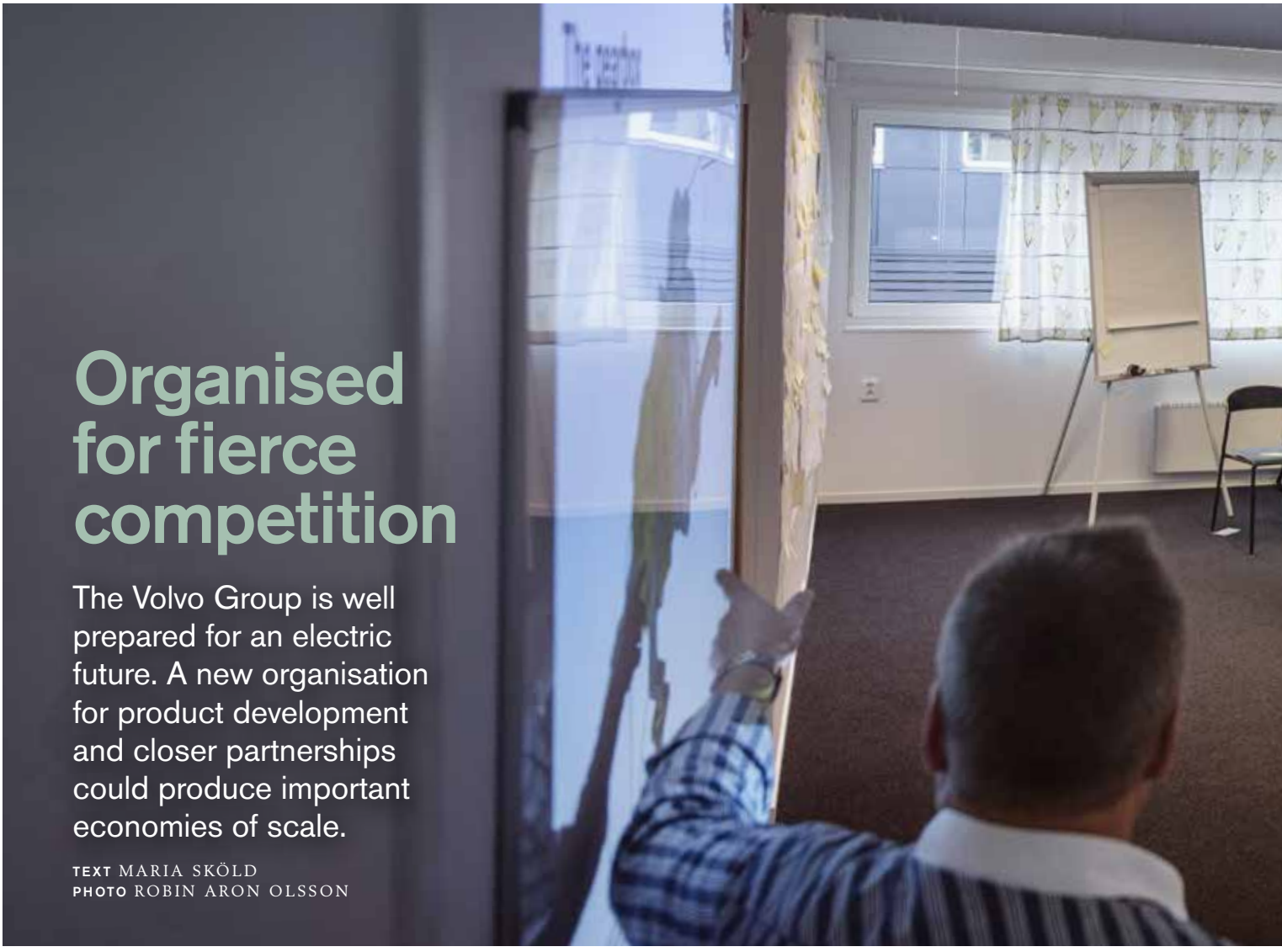
Bus competitors

The Volvo Group is the leader in the field, and to date most competitors have been newcomers that focus on electromobility and bus system integrators like VDL. However the traditional players are gearing up and fierce competition is expected from companies like Daimler. The US market is moving towards electromobility, with start-up companies like Proterra gaining ground.

Organised for fierce competition

The Volvo Group is well prepared for an electric future. A new organisation for product development and closer partnerships could produce important economies of scale.

TEXT MARIA SKÖLD
PHOTO ROBIN ARON OLSSON



IT IS FRIDAY afternoon and people are gathered around a whiteboard. One by one, project owners, project managers and developers take centre stage to explain what they are currently doing and hear their colleagues' comments.

This is a demo meeting at Electromobility in Gothenburg, so everyone present is involved with technical development associated with electromobility. As a result, they can offer many different angles on the problems that are presented and everyone is prepared to share their thoughts and ideas.

This particular type of collaboration and swift decision-making was one of the aims when the new Electromobility organisation within Group Trucks Technology was created on 1 June 2016. Now, development teams from GTT and Volvo Buses sit together after previously having been located in different parts of the city.

ANNA-MARIA HOLMBERG COMES from GTT and is Global Component Responsible for the DC/DC converter. She thinks the new organisation makes her job easier, as she can now spend less time on documentation and obtaining approval. Many questions can simply be resolved by making a quick visit to someone's desk.

"Since we have weekly meetings with the highest project managers, we can make rapid decisions to ensure fast progress. For me as a component owner, this is important. I also get a better insight into the questions other component owners have and developments in the system groups at an earlier stage," she says.

ELECTROMOBILITY

- Set up in June 2016
- Has some 90 employees
- Includes experts in the development of software, systems, components and verification, as well as technical project managers and staff from purchasing.

Anna-Maria Holmberg

“I think there are major advantages to combining so many skills and so much expertise.”

DAVID HELLSTEDT, VICE PRESIDENT ELECTROMOBILITY

The weekly demo meeting is a chance to discuss pressing issues and make decisions that can move the projects forward.

David Hellstedt, Vice President Electromobility, is leading the new organisation. and is a great believer in this new way of working.

“Working with small agile teams has proved to be very successful. We have previously worked in this way within software but not on such a broad scale. I think there are major advantages to combining so many skills and so much expertise,” he says.

THE BUILDING ALSO houses product planners and the City Mobility Team, which is involved in selling city buses. “It’s absolutely essential for us to work as close to one another as possible in order to deal with different customer questions. This enables us to learn more and more about the way the different applications are used and what customers need,” explains David Hellstedt.

He is also eager to work in a more integrated manner with other parts of the Volvo Group, such as sales for the different truck brands. Not least when it comes to distribution trucks, there are many similarities with buses.

In the long term, David Hellstedt also expects increased technological collaboration, which could generate important benefits. The key word is commonality; using the same component in different vehicles and applications. This is particularly important for expensive, development-intensive components like batteries.

THE ELECTROMOBILITY DEPARTMENT has an important role to play here. It supplies systems and components to several bus brands in the Group. It is also collaborating increasingly with Volvo Construction Equipment, where the new autonomous hauler will have a driveline that was originally developed for a bus. Discussions are also in progress with Volvo Penta to identify joint development areas.

“In this context, it’s a question of finding common technological solutions and sharing them. The Volvo Group is tremendously strong, as we have been working on electromobility for such a long time and have such a wide range of products. We must now make sure that we use this to generate the greatest possible advantage.”

Sales-Lentz makes electric change

The Luxembourg bus operator Sales-Lentz is once more leading the way in green public transport. In May, it will start a fully electric service in the city of Differdange.

TEXT JON ELDRIDGE **PHOTOS** BO HALLENGREN

Wolfgang Schroeder (left) and Georges Hilbert are strong believers in electromobility. Sales-Lentz has a full-service contract with the local Volvo bus and truck dealer. Volvo Buses will be responsible for servicing the electric buses, including maintaining the batteries for a fixed monthly cost.

THE PURCHASE OF four Volvo 7900 electric buses is the latest step in a long-standing relationship that Sales-Lentz has developed with the Volvo Group. Sales-Lentz was the first company in Europe to buy Volvo hybrids in 2009 and, in the past year, it has taken order of 12 electric hybrids.

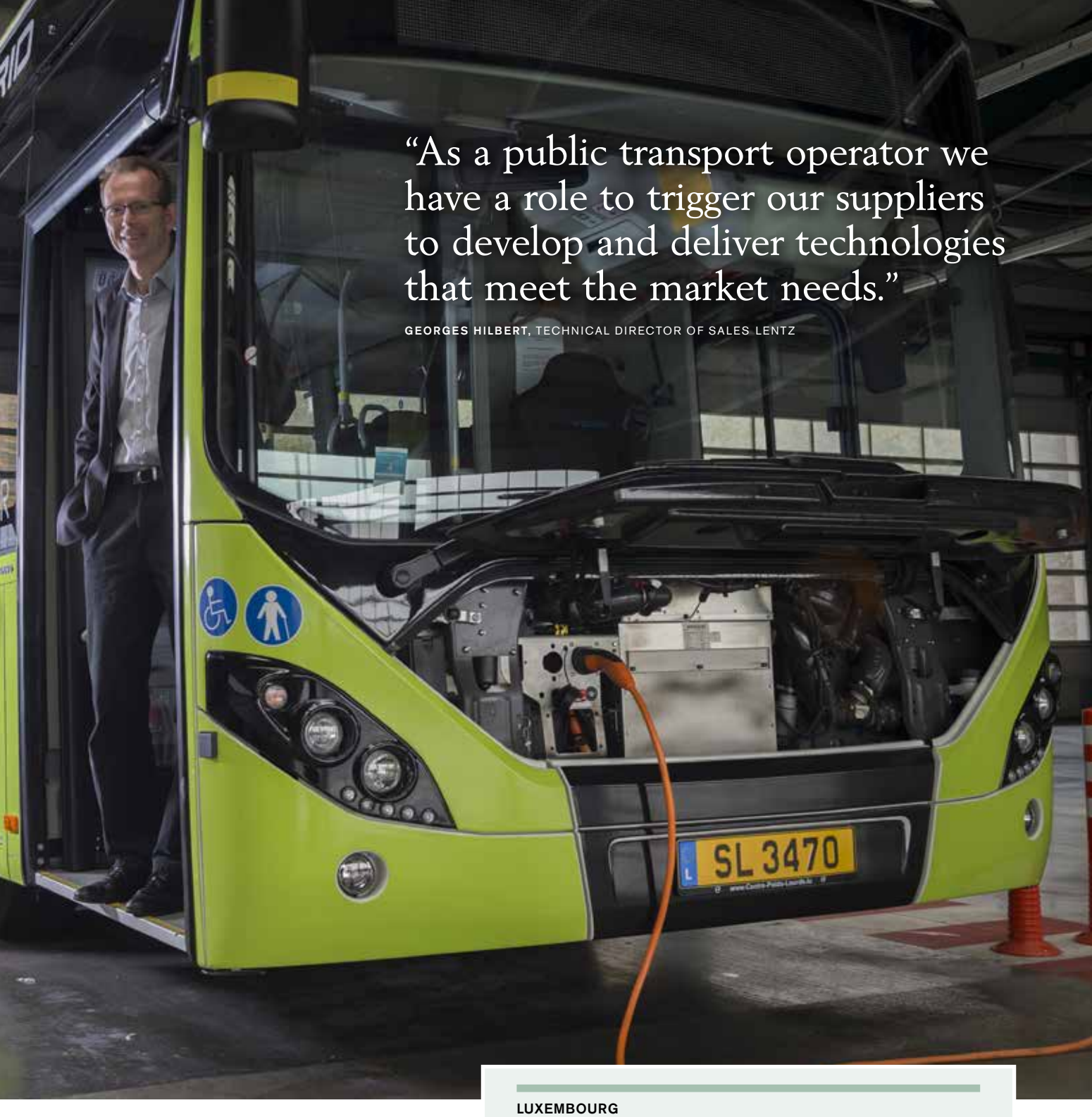
For its inter-urban routes towards Luxembourg City, the hybrid buses are the best option. They can operate in diesel mode outside urban areas, thus saving the battery. The new electric buses meet the requirements for the town itself, as they will lower noise and pollution levels in this growing, former industrial city.

"In our opinion, the noise aspect is at least as important as the emissions," says Georges Hilbert, Technical Director at Sales-Lentz. Studies have shown the detrimental impact of noise levels on human health, a problem that is particularly acute in Differdange. "It is an industrial city with narrow streets, many one way, and noise is more critical than in a capital city with wide boulevards," Georges Hilbert explains.

The town's municipal council is run by a coalition that includes the green party and in 2016 selected Sales-Lentz via a tender to operate the town's transport for the next 10 years. Differdange will be one of the very first cities in Europe to switch all its city busses to full electric.

"SALES-LENTZ HAS ALWAYS BEEN an early adopter of new technologies. As a public transport operator, we have a role to trigger our suppliers to develop and deliver technologies that meet the market needs. We see ourselves as a development partner and entrepreneur ready to invest in sustainable mobility," says Georges Hilbert.

The green performance of Sales-Lentz reflects the interest of Wolfgang Schroeder, the company's director general, who attributes



"As a public transport operator we have a role to trigger our suppliers to develop and deliver technologies that meet the market needs."

GEORGES HILBERT, TECHNICAL DIRECTOR OF SALES LENTZ

his own environmental consciousness to his upbringing in the Black Forest, Germany. "I believe in electro-mobility, with either opportunity charging or overnight charging, depending on the application and line," he says. "It is an investment in the future, and there are some cost savings down the line."

While the company estimates that these savings will not be realised for 10 years, the Volvo 7900 electric buses nevertheless have a

LUXEMBOURG

- The Luxembourg Public Transport Authorities have always welcomed new, cleaner technologies and there have been several pilot projects over the past 20 years.
- The current legislation is very stringent on safety, comfort and environmental criteria.
- Buses can have a maximum age of 10 years at any time in service and therefore the bus renewal rate is high.
- Luxembourg is one of the countries with the youngest bus fleets across the world.
- Several projects with electric hybrid and fully electric city buses are currently under implementation.
- By mid-2017, major lines to and across Luxembourg City, as well as in the city of Differdange, will be equipped with fast chargers and pantographs.

> "I believe in electromobility, with either opportunity charging or overnight charging, depending on the application and line."
>
> **WOLFGANG SCHROEDER**, SALES-LENTZ

far lower energy cost than a corresponding diesel bus.

Ahead of the launch of the service, the operator will install two charging points on the routes in Differdange, in partnership with its Dutch supplier Heliox. The buses will stop under the charging infrastructure – the system connects the bus automatically with the pantograph – every half an hour during the day for fast charging at 300 kWh for three to six minutes. The batteries will then be fully charged over night for three to four hours.

Sales-Lentz emphasises that the Volvo Buses' option of using smaller size batteries that can be fast charged has the advantage that it does not reduce the number of passengers the bus can then transport.

THE NEW FLEET of 12-metre buses can carry 85 passengers each and Sales-Lentz is confident that the service could attract more locals to use public transport. The buses will be equipped with onboard WiFi and USB plug-in points. "The city is really moving from its industrial heritage to a modern liveable city with good quality of life," says Georges Hilbert.

In fact, the city's vision for a sustainable future has a name, 'Differdange change', and in Sales-Lentz and Volvo Buses, it has found the ideal partners. "The idea in 2010 with the introduction of the very first hybrids was to build up Luxembourg as a living lab for electro-mobility," says Wolfgang Schroeder. "We are looking for the next cities to build it up and the minister of transport is following what's happening in Differdange."

Dedicated to green transport

SALES-LENTZ is a family-owned business founded in 1948. Today they run nearly 500 buses in a wide range of segments, including travel, public transport, school buses, airport shuttles, business travel and disability transportation. They mainly operate in Luxembourg, but also own Voyages Léonard, a subsidary located in Belgium.
Sales-Lentz are pioneers in the field of electromobility. Presently their fleet consists of 24 Volvo hybrids, 12 electric hybrids and four Volvo 7900 electric buses; all of them have full-service conctracts with the local Volvo bus and truck dealer.

PHOTO: SÖREN HÅKANLIND

Battery pack

▶ The battery pack is an important part of the Energy Storage System (ESS) in electric hybrid buses.

▶ It allows the vehicle to drive in full-electric mode and supplies energy to auxiliaries in the vehicle. The battery is charged by charge poles at end stations and by the recuperation of brake energy during driving.

▶ The nominal voltage of the battery pack is 650V. It weighs 360 kg and has a volume of 350 dm^3.

▶ The energy in the battery pack is electrochemically stored in battery cells. The cells are interconnected to cell modules, which are in turn connected to battery packs.

▶ The battery pack also contains wiring and harness, safety devices, battery management system, connect/disconnect system, sensors and a cooling system which keeps the cells in the preferred thermal environment.

During Workshop Experience for Engineers, Lena Grännsjö and Lena Johansson went behind the scenes at Volvo Truck Center in Helsingborg, Sweden. Simon Stjärnkvist works as a service technician at the dealership.

Learning new skills

ON-SITE EXPERIENCE

For one week, Volvo Group colleagues Lena Johansson and Lena Grännsjö left the office to try out life at a dealership. "This is a great way to get closer to the business and to customers," they say.

TEXT LINDA SWANBERG **PHOTO** MARTIN MAGNTORN

Lena Grännsjö and Lena Johansson take a look under a truck where service technician Simon Stjärnkvist is repairing a valve failure.

Service technician Simon Stjärnkvist is lying on his back under one of the trucks in the workshop at the Volvo Truck Center in Helsingborg, in southern Sweden. This afternoon, he has two "trainees" with him, so he has to explain what he is doing. "This truck has suffered valve failure and the cylinder head needs to be replaced. Today, we're working under the truck, but tomorrow we'll be focusing on the top," he explains.

The trainees are Lena Johansson and Lena Grännsjö and they are taking part in Workshop Experience for Engineers, a programme run by the Volvo Group University.

They have left their normal workplaces at GTT and Group IT in Gothenburg for a week to practice at the Volvo Truck Center in Helsingborg. During the visit, they will get the chance to learn about all the different parts of the business stretching from sales and customer reception to the parts inventory and the workshop.

"What has impressed me most is that everyone has so much insight. Everyone is aware of what is happening in terms of the business and profitability," says Lena Grännsjö.

IN HER JOB as a Business Analyst/Solution Expert at Group IT, she rarely comes into contact with customers or with the people who use the IT systems she develops. "This visit has given me a far better understanding of our end users and how things are organised at a dealership.

Lena Grännsjö and Lena Johansson both got a lot of useful insights during the week they spent at the Volvo Truck Center in Helsingborg.

Workshop Experience for Engineers

- Run by the Engineering & Purchasing Academy, Volvo Group University. The programme offers employees, first and foremost engineers at GTT and Volvo Buses, the opportunity to follow and practice the work at a dealership. The participants are nominated.
- The aim is that the Volvo Group will take even greater account of the service market's requirements and prerequisites in the product development.
- In addition to the days spent at a dealership, the participants are expected to share their new knowledge and experience with one another and their home organisation.
- The programme is currently being run in the UK, France, the USA, Brazil and Sweden.
- Read more on Navigator, the Volvo Group Learning Management System.

The tempo here is fast and so it's even more important that the IT tools that are used are quick and intuitive. What I have learned here is definitely going to help me in my job," says Lena Grännsjö.

And that is precisely what this programme is designed to achieve. By spending five days at a dealership, employees from different parts of the Volvo Group have an opportunity to get closer to customers and personally experience the link between satisfied customers, quality and good service. The aim is to give the participants new skills and knowledge that they can take back to their own organisation and use in the development of new products.

Daniel Wihlborg

Workshop Experience for Engineers is aimed primarily at engineers, but it is also suitable for other functions. Lena Grännsjö and Lena Johansson both say that the programme has

“Thanks to this programme, I now have a far better understanding of our customers.”

LENA JOHANSSON, RANGE CONTROLLING DIRECTOR, HEAVY DUTY POWERTRAIN, GTT

given them many useful new insights. “I work as a controller and I’m incredibly impressed. Everyone has a complete overview of their business. They are aware of and understand the needs of different customers and the things that give us competitive advantages. Thanks to this programme, I now have a far better understanding of our customers,” says Lena Johansson, Range Controlling Director, Heavy Duty Powertrain, GTT.

She thinks that visiting a dealership together with a colleague is a good thing. “Since we work in different areas of the business, we ask different types of questions. This gives us fresh perspectives and we can learn new things from one another,” says Lena Johansson.

EMPLOYEES AT THE Volvo Truck Center in Helsingborg are used to welcoming visitors from other parts of the Volvo Group.

Daniel Wihlborg is the Service Manager and is responsible for the visits. “It’s up to the participants to organise a schedule for the week. We haven’t actually booked anything when they arrive. On the other hand, we make sure everyone is available to answer their questions. Our hope is that the people who come here get a clear picture of the way things work at a dealership and that they gain an insight into the entire service and sales process,” he explains.

Daniel Wihlborg has also identified other advantages. “As far as we’re concerned, it offers us an opportunity to create contacts and networks in other parts of the company. What’s more, the people who come here know what is happening in terms of product development and that gives us some insight and some idea of what is likely to happen in the future. At the same time, this gives us the opportunity to influence things,” he says.

Peter Janfjord, Team Leader, is used to answering questions from visitors from other parts of the Volvo Group.

3 QUESTIONS TO ROBERT TOLL

STRATEGIC PLANNER, QUALITY & CUSTOMER SATISFACTION, GTT, AND A MEMBER OF THE REFERENCE TEAM FOR WORKSHOP EXPERIENCE FOR ENGINEERS

Why is this programme needed?

“Engineers often work a long way from the customer and the things that happen in the field. The programme is designed to increase the participants’ understanding of our customers and the activities that take place at our dealers. The challenges that our customers and dealers face must always be in our minds when we develop products, make decisions and share experience. A greater understanding will help us develop better products and give the dealers a greater ability to fulfil their objectives when it comes to service, uptime and customer support.”

Who can apply?

“The target group is engineers involved in product development, but employees from other functions can also apply in Navigator. No matter where in the chain people work, they should be working to benefit the end user. Anyone who is interested should speak to their manager. From the people who are nominated, the reference team selects the participants we feel can benefit from the programme in their jobs.”

What kind of response have you received from the participants?

“The feedback we have received so far is overwhelmingly positive. We hope that as many people as possible will have the chance to participate in the programme in the future.”

TAKING THE LEAD

Year after year Volvo Penta continues to release industry-first innovations, while delivering impressive financial results. What is the secret to its success and how does it keep coming up with ground-breaking technology?

TEXT NIC TOWNSEND **PHOTOS** ROBIN ARON OLSSON

Volvo Penta has long been at the forefront of new innovations in both the industrial and marine industries. For example, take the Volvo Penta IPS (Inboard Performance System) – a completely new propulsion system for boats, based on steerable pods. Ever since its launch in 2005, the unique design continues to revolutionise the whole marine industry to this day, setting new standards in manoeuvrability, acceleration and efficiency, while also improving comfort and creating more space on board. This was soon followed by the first ever joystick control for leisure boating, made possible by a new Electronic Vessel Control platform which was developed in parallel with the IPS. Suddenly, steering a boat became simple and intuitive and complex manoeuvers like docking could be performed by just about anyone.

"It was a shock for the industry," recalls Thorbjörn Lundqvist, Head of Design Engineering, Volvo Penta. "The competition had to hurry and change strategy to try to catch up and it quickly set the standard for the whole industry."

"Today, everyone offers a joystick – that's absolutely mandatory now because of us," adds Anders Thorin, Manager, Product Planning Electronic, Volvo Penta. "For IPS, the competition has tried to follow, but no one has succeeded in offering all the same benefits."

For Volvo Penta, this was also the start of "easy boating" – the concept that owning and operating a boat should be as simple and convenient as possible. This has been the guiding philosophy driving Volvo Penta's marine product development ever since.

"We developed IPS to improve efficiency, but it brought a lot of other benefits too and the joystick quickly became the key selling

For Anders Thorin (left) and Thorbjörn Lundqvist, boats are more than an occupation. “We have a strong culture of dedicated people, who are interested in boating. We know that, if a function is useful for us, it will be useful for someone else,” says Anders Thorin.

Volvo Penta set the standard, making joysticks mandatory in the marine industry.

"We developed IPS to improve efficiency but it brought a lot of other benefits too."

ANDERS THORIN, MANAGER, PRODUCT PLANNING ELECTRONIC, VOLVO PENTA

feature," says Anders Thorin. "We soon realised how strong the concept of 'easy boating' was. Many people do not want to spent a lot of time learning how to operate a boat – they want to be able to take out any boat and just use it, much like you can with a car. We realised that, if we could standardise all the functions and make them more accessible, it would fit in very well with the market."

IN THE SAME way that the IPS and new Electronic Vessel Control platform allowed for the introduction of joystick control, it also opened up potential for integrating more components into the drive system, as well as creating new products and functions. "With IPS, we took responsibility for the complete driver interface and driveline," adds Anders Thorin. "When you start integrating functions into a system, you can take two functions and make a new third function. For example, since the joystick allowed us to move the boat in any direction, we combined that with the GPS antenna. All of a sudden, we could keep the boat stationary and so Dynamic Positioning was created."

Over the past decade, Volvo Penta has further expanded and refined its drive systems, adding new functions, while also integrating control levers and interceptors. The navigation system and gauges have been fully integrated into the EVC system via the Glass Cockpit, while the new Battery Management System and eKey-Remote enable users to start up a boat much like they would start up a car.

So what is it about Volvo Penta that has enabled it to make these breakthroughs before its competitors? Part of the reason is that the company can rely on people with deep technical

Volvo Penta – a history of marine innovations

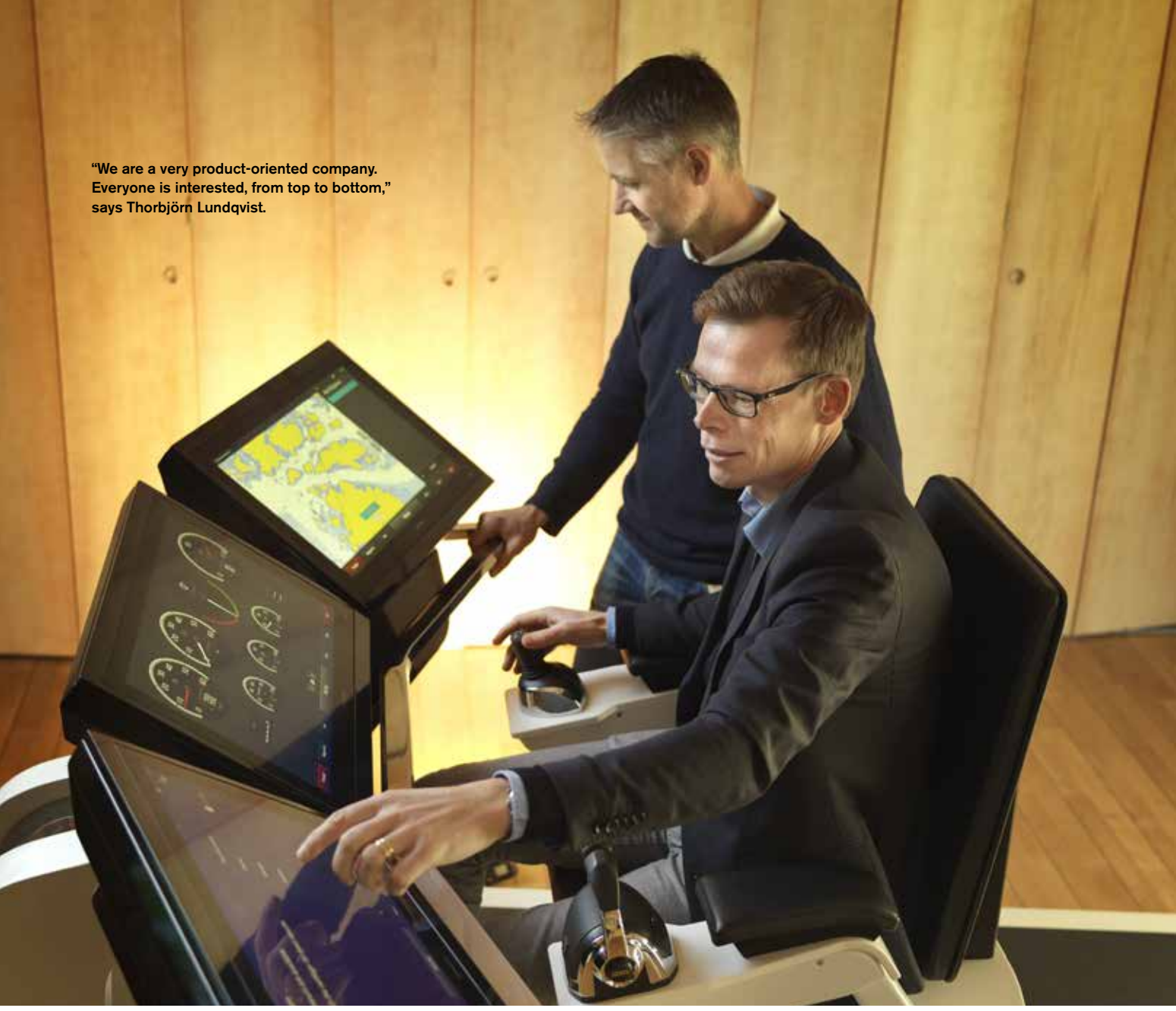
1922: THE U2 ENGINE was released in the midst of the great depression, when the small Swedish engine manufacturers Pentaverken were struggling to stay afloat. The robust 2-cylinder engine changed all that since it soon proved popular with small boat owners, in Sweden and abroad. Variations of the model would be continued to be produced for the next 40 years.

1959: AQUAMATIC took the industry by storm when first introduced at the 1959 New York Boat Show. By combining the benefits of both inboard and outboard engines it became a huge success across the world, especially in the US, and helped establish Volvo Penta as a leading international manufacturer of marine engines.

1982: DUOPROP consists of two counter-rotating propellers on the same drive, which resulted in improved grip in the water and therefore better acceleration and handling. Duoprop continues to feature prominently in Volvo Penta's drivelines today.

2005: VOLVO PENTA IPS (Inboard Performance System) introduced new standards in fuel economy, performance, safety, comfort and handling. Combined with joystick control, launched the following year, steering a boat suddenly became simple and intuitive, and boating became accessible to a whole new segment.

Test your knowledge about Volvo Penta in the Quiz on page 68!



“We are a very product-oriented company. Everyone is interested, from top to bottom,” says Thorbjörn Lundqvist.

knowledge in their respective areas, as well as a personal interest in the industry they work in that gives them unique insight into how their products are actually used. Another key factor is Volvo Penta’s internal organisation, which manages to combine all its in-house expertise in effective teams, which are then given the freedom to pioneer new products and functions.

“I think we benefit from the fact that we are a small company but operate within the larger Volvo Group,” explains Thorbjörn Lundqvist. “Because we are relatively small, we are all together on one site, where we can interact with each other all the time. In-house we have all the expertise we need to make a complete product: electric, propulsion, transmission, engine and good communication between us. We can connect everything together without other external partners or suppliers.”

At the same time, Volvo Penta is also able to adopt and implement technologies developed by other Volvo Group companies. “We have the opportunity to steal with pride and integrate it into our system – without this, we would not have had as many innovations as we have,” adds Thorbjörn Lundqvist.

“For example, take the controls positioned in the armrests,” says Anders Thorin, while pointing to the simulator behind him. “That idea was actually from a Volvo CE excavator. We took the chair and put it into a boat and it works perfectly. And that led to the joystick driving functionality. So, it’s a huge strength to have all the functions from the Volvo Group available to us.”

PHOTO: PER GROTH

02.08 pm

AT THE DEALERSHIP WIST LAST & BUSS, VÄSTERÅS, SWEDEN

"I LOVE IT HERE! The people, the different assignments and the way we work – everything works so well. It feels as though every piece of the puzzle fits together perfectly."

Hanna Widén is a newly qualified technican and she got her training at an apprentice course aimed solely at women.

The course was arranged by Wist Last & Buss, the largest private dealership for Volvo Trucks and Volvo Buses in the Nordic countries. The shortage of truck technicians is a real problem throughout the industry and the course is one way to attract more women to the occupation.

PHOTO: UN/ESKINDER DEBEBE

Secretary-General Ban Ki-moon, together with co-chairs of the Advisory Group; Martin Lundstedt, President and CEO, Volvo Group and Carolina Toha, Mayor of Santiago, Chile

UN + Volvo Group = Sustainability

The Volvo Group has helped develop a report with ten recommendations to the United Nations on how to mobilise sustainable transport for development.

The work started in 2014, when UN Secretary-General Ban Ki-moon asked the Volvo Group CEO to co-chair a High-Level Advisory Group with leaders from the public and private sectors representing all modes of transport.

"Sustainable transport is a driver of sustainable development and a precondition for economic growth, eradicating poverty and combating climate change," said Volvo Group CEO Martin Lundstedt when presenting the report.

10 RECOMMENDATIONS FOR MOBILISING SUSTAINABLE TRANSPORT FOR DEVELOPMENT:

1 Make transport planning, policy and investment decisions based on the three sustainable development dimensions – social development, environmental (including climate) impact and economic growth.

2 Integrate all sustainable transport planning efforts with an appropriately balanced development of transport modes.

3 Create supportive institutional, legal and regulatory government frameworks to promote effective sustainable transport.

4 Build technical capacity of transport planners and implementers, especially in developing countries, through partnerships with international organisations, multilateral development banks and governments at all levels.

5 Reinforce efforts towards preventing road traffic deaths and injuries.

6 Foster an informed, engaged public as a crucial partner in advancing sustainable transport solutions.

7 Establish monitoring and evaluation frameworks for sustainable transport.

8 Promote diversified funding sources and coherent fiscal frameworks to advance sustainable transport systems, initiatives and projects.

9 Increase international development funding and climate funding for sustainable transport.

10 Promote sustainable transport technologies through outcome-oriented government investment and policies that encourage private sector investment.

Here are some pictures Micke Rydbeck sent to *Volvo Group Magazine* from Kenya.

Street life

"This is what a simple convenience shop in Nairobi can look like."

Volvo trucks ready to go

"The model best adapted to East African conditions is the FMX 6x4. Here you can see parts of the Shreeji Ent. fleet."

Customer visit

"Me and the importer Necst visiting the customer Shreeji Ent., which has the largest fleet of Volvo trucks in East Africa."

5 QUESTIONS TO MICKE RYDBECK

DIRECTOR VOLVO TRUCKS EAST AFRICA

Volvo Trucks is investing in East Africa. With a new importer and local production, the target is to capture an even larger market share.

PHOTO: GETTY IMAGES

You have moved from Sweden to Nairobi in Kenya to represent Volvo Trucks on the spot. What does your mission involve?

"We have recently started working with a new importer and I have been tasked with developing business with them. As far as our customers are concerned, it's important that we are on the spot, as this generates confidence and creates an extra sense of security. Our target is to capture an even larger market share in this region. At the present time, we are selling 50 trucks a year. In five years, we hope this figure will increase to 700."

How are you going to achieve this?

"By far the most important thing is to build up an effective service network offering high quality and good geographical coverage. If we don't have that, customers aren't interested.

"We are already represented in Nairobi and Dar Es Salaam and Mwanza in Tanzania. This year, we are extending our coverage to include Mombasa in Kenya and Kampala in Uganda, followed by a number of strategic locations in the region. We are also going to start local production in the form of Completely Knocked Down, CKD, here in Kenya."

Why is local production so important?

"It creates jobs in the region and, at the same time, we don't have to pay customs duty. To capture market share, we need competitive prices. If we don't need to pay customs duty, we can have more flexible pricing."

How would you describe the truck market in East Africa?

"It's a market that is expanding and has enormous potential. At the same time, the competition is fierce. Virtually all the truck manufacturers are present here and a great deal of money is being invested in the area. The market is also impacted by political elections. There's an election in Kenya this year so many people are postponing investments. The timing is perfect for us. We shall be able to invest and have a plant finished after the election."

Why should customers choose Volvo Trucks?

"Our customers are both transport companies that operate heavy-duty long-distance trucks with a large load capacity and companies in the building and construction sector. In these segments, we offer good total economy. More and more customers understand the value of quality products, which offer lower costs and higher income in the longer term. Financing is another important factor. Borrowing in these countries is very expensive. Offering customers loans in euros and dollars results in far lower interest rates."

LINDA SWANBERG

ILLUSTRATION: KEN NISS

Read more!
In *Volvo Group Magazine* 3/2016, we covered Volvo Trucks' investments in other parts of Africa. You can find the magazine on Violin or at **volvogroup.com.**

ILLUSTRATIONS: AG ARKITEKTER

Campus Lundby will be an open and attractive area with fewer fences and gates.

Where history meets the future

By gathering its operations at Campus Lundby in Gothenburg, the Volvo Group is creating meeting places that will pave the way for new partnerships.

AT THE TURN of the year, the employees at Group headquarters and GTO moved to new premises in Lundby in Gothenburg in Sweden. In August, Volvo Penta will be moving back there and, at the same time, Volvo Trucks will move to its new head office in the building where GTO was based before.

In parallel with all these moves, the Volvo Group is planning a number of new construction projects in the area. The plan is that 10,000 employees – twice as many as at the present time – will be based in Lundby within the next seven to nine years.

Ola Hansson, Head of the Nordic Division Volvo Group Real Estate, describes Campus Lundby as a global hub for the Volvo Group's research.

"To develop the world's best sustainable transport solutions, we need to structure the Group to meet future needs. We want Campus Lundby to be an open, attractive area with fewer fences and gates. In addition to offices, workshops and laboratories, there will be roads and pedestrian walkways with restaurants, cafés and a gym," he says.

! From 2021, the people working at Campus Lundby will be able to take a gondola to work. One of the stops on the gondola system the City of Gothenburg is planning to build across the river will be in Lundby.

In addition to being the workplace for 10,000 Volvo Group employees, there will be many meeting places like cafés and restaurants.

One central feature in the planning of Campus Lundby is the creation of physical meeting places that will pave the way for new partnerships, both within the company and with other players such as universities and start-up companies. At the same time, it is important to preserve the Group's historical heritage. "Everything began at Lundby. The gate through which the first car rolled out on 14 April 1927 is still here. Our historical heritage generates a feeling of pride and it's important that we preserve it," says Ola Hansson.

RON MOORE

"A customer is a person, not a number"

MY NAME IS Ron Moore and I am a Mack Trucks customer and the founder of Moore Oil, a company I started in 1954 with a single delivery truck.

Today, we are the largest light product petroleum marketers in Alabama and we're highly diversified, with investments stretching from real estate to finance. We're still a closely held family business. My son Ronald J. "Joey" Moore Jr. oversees development, construction, and store operations, and my granddaughter Rebecca Moore Swann, handles many of the financial functions.

This company, and this family, is the most rewarding part of my life. Today, I am 81 years but I am still working. I guess I could spend more time at the country club, working on my golf handicap, but I've always said that if you're a good golfer, you probably aren't spending enough time at your business.

I've bought 75 new Mack tractors through the years and they are just an outstanding piece of equipment. I recommend Mack trucks to anyone, whether they are a one-truck owner or whether they purchase 12 or 20 trucks at a time like we do. Today, our fleet consists entirely of Mack Pinnacle axle forward tractors with *m*DRIVE automated manual transmissions.

Something that makes Mack Trucks stand out, is that they've taken a personal interest in my business. Their sales people don't only know about their products; they also know about my business and they've become involved in our family, including children and grandchildren.

In a world of computers, with everything being bought and sold online, we've noticed that for many of our suppliers we've become a customer number.

But Mack has never treated us that way. They get to know their customers personally. That's what I appreciate. They are responsive to our needs as a business and as people. That makes a real difference. Keep it up!

RON MOORE,
FOUNDER OF THE MOORE OIL COMPANY, ALABAMA, USA

What do you know about Volvo Penta?

From cast-iron hardware in 1868 to today's innovative marine products and high-tech industrial engines – Volvo Penta has had a long and fascinating journey. Answer the quiz and you have the chance to win a nice backpack.

1

The word Penta comes from Greek. What does it mean?

A. Reliability
B. Safety
C. Five

2

In what year did Penta become part of the Volvo Group?

A. 1955
B. 1935
C. 1927

3

Volvo Penta's IPS (Inboard Performance System) is a unique drive system. When was it first introduced?

A. 2007
B. 2005
C. 2003

4

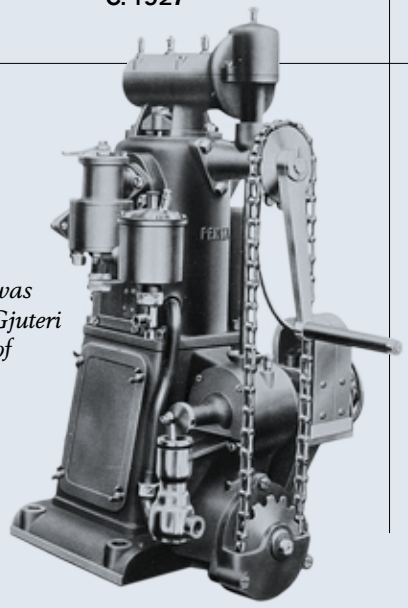
Sales of industrial engines are a rapidly growing operation for Volvo Penta. How much of the total sales value does it represent?

A. About 20%
B. About 50%
C. About 60%

5

The very first engine was ordered from Sköfde Gjuteri in 1907. What kind of engine was it?

A. A steam engine
B. A petrol engine
C. A paraffin engine



6

Volvo Penta has an extensive network of 3,500 dealers all over the world. In how many countries can you find Volvo Penta today?

A. 130
B. 100
C. 75

Win a waterproof backpack!

Email your answers to **groupmagazine@volvo.com** no later than 15 April 2017. Write "Quiz" in the subject line. Remember to include your name and address. Three lucky winners will receive an innovative, waterproof backpack inspired by water activities but designed for everyday life. Good luck!

PHOTOS: VOLVO PENTA

VOLVO