

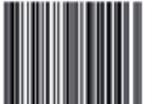
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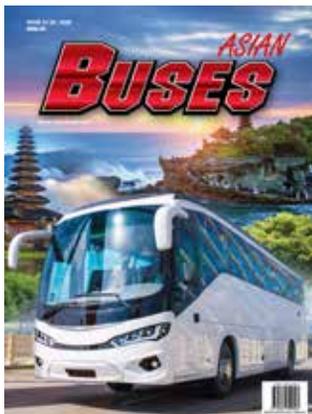
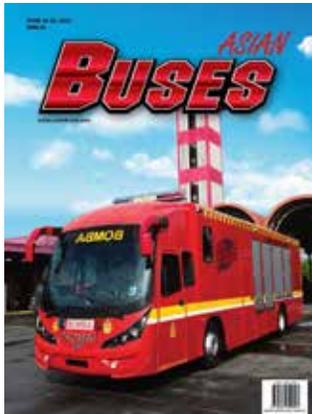
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## The Last Stretch Always Feels Longer

**D**o you feel the same? You hop onto a bus to Singapore or Penang and you know exactly how long the trip will take, yet the last part always feels like it is dragging on forever. When stopping in Ayer Hitam, the remainder of the trip to Singapore is not that much, however, getting to the stop before the border crossing went by in a flurry and time passed very quickly.

It feels the same with the editing of this magazine by the way. When we send one edition to the printer, we usually have a number of articles ready to be dealt with and the overall flow of the magazine is fairly much settled. We get to know about brands setting up shop or hear about a launch that is going to take place and I plot that in. Somehow, the last few pages though are always dragging on, just like the long distance bus ride. Don't know what it is that keeps these stories lurking in the dark for some time before they emerge, completing the magazine.

Following our magazine you will notice that I don't talk a lot about the pandemic. I prefer to speak about happier things, besides, there are many other news outlets that

deal with Covid. My guess is that you don't need yet another publication to harp on this subject. However, this time I feel it is timely to also speak about a post-pandemic economy. There are many things that will happen in the next couple of weeks and months. Starting with the re-recruitment of bus captains. As buses were not operating, many have taken up other jobs in order to make a living (flexibility is a good thing and I applaud this).

I feel it is going to be a cork shooting out of a gassy bottle when the bus operators are being given the green light to take passengers around the place again. Fairly soon now, the border to Singapore will open again as the island nation also needs their workforce back. The question I have is: will the bus operators be ready to jumpstart immediately. Hopefully, in recent weeks business owners have readied themselves for the upcoming tsunami of demand. I am sure that there is a lot of FOMO that has been accumulated and people will want to scratch that itch as soon as they can.

Which is leading me to another topic that I feel is now displaying the same characteristics: electrification of public transport. E-Mobility has been something I have spoken and reported about for some time now. But I feel that with the changing legislation in several countries, brands focusing their attention to this new propulsion system and even new brands emerging, we are now on the last stretch here too. I believe that the last corner is about to be taken and in a short while, we will see a wide range of electric vehicles spilling out of the factories.

Unfortunately, we are taking a bit of a detour with our exhibition. For now, the event hall is a Mega Vaccination Centre and we think that it will be a better time to host MCVE in March next year. Here again, I am sure to experience the same anxiety leading up to it with the New Year's eve being the final stop and then the last few weeks stretch out as if the time-space continuum stretches. And just like that, with a bang, I will find myself in the midst of a great exhibition again.

It will be a three months before I can talk to you again in this column, but I am sure that the stories about how you all burst back into action will come flooding in now. I think, we have made it through the worst part of the pandemic and now we need to get our passports ready so that we can cross over to another era where we build upon an industry that is vital for the economy.

Stay safe, Drive Safe,

Stefan Pertz  
Editor, Asian Buses



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# Hino Midibus to Enhance MARA Mobility Network in Rural Area

*Majlis Amanah Rakyat (MARA) aims to enhance its bus network in rural areas whole Peninsular Malaysia and opted for HINO midibus, trusting the brand since the '80s era.*



**H**ino Motors Sales (Malaysia) Sdn Bhd (HMSM) recently handed over 32 units of HINO XZU720R-HKFRL1, midibus model, to its loyal fleet customer, Majlis Amanah Rakyat (MARA). MARA is a government agency under the purview of the Ministry of Rural Development. The handover was held in conjunction to 'Majlis Pelancaran Direktori Pelaburan' initiated by MARA.

MARA allocated the 32 new units of HINO midibus to operate in rural areas across Peninsular Malaysia. Aiming to give the best to society by improving their bus network in rural areas, MARA focuses more on providing the best facilities and service in public transport lines.

The event was attended by MARA Top Management together with their VIP guest, YB Dato' Hajah Azizah binti Datuk Seri Panglima Haji Mohd Dun, MARA Chairman, who officiated the ceremony.

## Enhancement of Greater Bus Network

HINO vehicles have been part of MARA bus network for the past 40 years and continue growing their relationship as the government agency decided to expand their bus facilities.

In her opening speech, YB Dato' Hajah Azizah binti Datuk Seri Panglima Haji Mohd Dun, MARA Chairman, said, "This implementation of bringing in new buses in MARA network is our initiative to ensure our public services to society sits at the best level. To give the best to society, each of these new buses is built in compliance with the United Nations Regulation (UNR) by Malaysian agencies."

Commenting on the additional new 32 units to enhance the bus network, Fazli Rizal Ismail, Director MARA Transport Industry Division, he said, "The HINO brand started emerging in our bus network since the '80s. It is a long journey with HINO and throughout the operation, we see that HINO has set its standard on supporting customer needs. HINO has shown a customer-centric approach and fully understands our business needs."



MARA has been experiencing the after-sales service served by HMSM for many years as around 70 percent of its bus network are HINO vehicles. Fazli Rizal continued, "Besides providing the best-fit product to our industry, HINO has never failed to give top priority to the after-sales services. Our bus network operates throughout Peninsular Malaysia and since HINO has extensive nationwide service centres, it gives us peace of mind".

When highlighting what makes MARA choose to be a loyal customer to the HINO Brand, he praised HINO on its QDR: Quality, Durability, and Reliability of HINO product with competitive and reasonable price as well as a fuel-efficient product.

In line with its tagline 'Transporting Every Happiness', HMSM is honoured to be part of the MARA public transport network since the early journey of HINO brand in Malaysia and looks forward to setting a new standard of excellence for the industry and continue to give the best to society.



HMSM Managing Director, Atsushi Uchiyama said, "A million thanks to MARA for the trust and confidence in HINO product. HMSM will give our best support through the most efficient and reliable way. It is also our commitment to sustain a close customer relationship by listening and understanding the changing need of our customers and respond to them immediately."

### Best Fit Midibus

As the sole Japanese manufacturer for midibuses in Malaysia, HINO midibus comes with a powerful 156Hp engine and 6-speed manual transmission, making the 8-10meter midibus is the best-fit model to navigating as hop-on-hop-off public transport in rural areas.

HINO midibus is fitted with Tubeless Tyre, reassuring safety by slow release of air in cases of tyre puncture and prevents the vehicle from instant failure. This allows the driver to drive an additional distance to a safer place for a tyre change. Apart from this being an advantage in terms of safety, the tubeless tyres are also able to enhance fuel efficiency. Their lighter weight, in combination with lower rolling resistance help reducing fuel consumption.

In compliance with United Nations Regulation (UNR) by JPJ, this midibus is fitted with Energy-Absorbing Steering Wheel and Speed Limiter setting at 100km/h.

### Driver Training Provided

HMSM also takes an initiative to improve driving skills among commercial vehicle drivers through the establishment of its training centre, Hino Total Support Customer Center (HTSCC) in Sendayan. Putting the priority of its fleet drivers, MARA has also registered all their bus drivers to undergo professional driver training offered by HMSM.

Through this training, drivers will be given intensive courses that focus on driver safety, eco-cien driving, and driver familiarisation that have proven. Upon completion, savings of up to 10 percent in fuel economy can be achieved and with enhanced driving skill, MARA believes it will narrow down the risk of an accident to occur. 🚗

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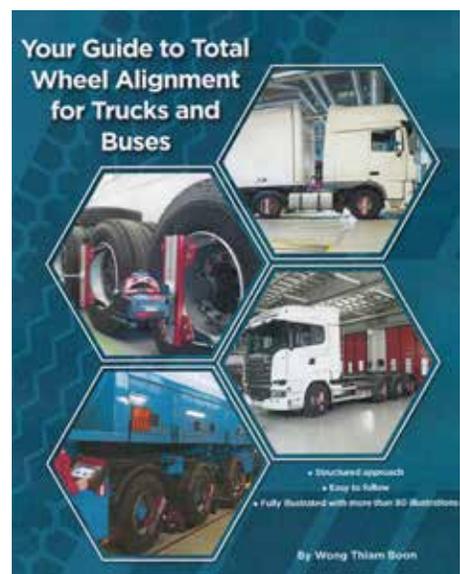
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"This practical and resourceful book will be an asset to any fleet operator or workshop that wants to improve the performance of commercial vehicles. It is TB Wong's experience of decades working with wheel alignment systems that shines through and makes this a must-have item for anyone that is serious about their transportation business. The industry had to wait far too long for a resource like this and I am excited to see TB Wong's knowledge now being available to the market."

Stefan Pertz,  
Editor, Asian Trucker Malaysia  
Editor, Asian Buses

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## Webasto Thermo & Comfort Announces South East Asia Staff Appointment



Kamaljit Gill

Mr David Byrne, Webasto Australia's Director of Sales, Service has announced the appointment of Mr Kamaljit Gill in the position of Technical Sales Manager, South East Asia. Gill will be based in Malaysia to support Webasto's growth plans for Customised solutions across South East Asia in a range of segments including Battery and Charging, Bus and Truck Climate and Special Operations Vehicle solutions. In the coming months Webasto will be recruiting a Nationwide Dealer Network to support customers across the region.

Gill has extensive experience in the Truck industry holding senior roles across a range of functions, including Quality, Technical, PDI, Operations and Sales, spanning 17 years with Mercedes Benz Commercial vehicles. Mr Gill's experience will be a welcome addition to the Webasto Thermo & Comfort Team.

Webasto have some exciting new additions to their product line up including the Cool Top RTE 23, an effective, lightweight, 24 volt, roof mounted electric parking cooler made specifically for the region. Another important addition is the highly efficient Medical Grade, HEPA-14 air filtration system designed to filter the air and protect from Covid-19 and other air borne infections in Ambulance cabins and in mass transport situations. These new products complement Webasto's existing truck market offerings such as the rear or roof mounted Cool Split 20 truck air conditioning system and a range of compressor fridges ranging in size and style from a 16L Drawer Fridge/Freezer up to a 49L Upright refrigerator. All Webasto Products come with a 2 year warranty.

**W**ebasto has been providing comfort solutions for the Bus and Truck Market since 1965 and have increased their Truck Portfolio in recent years with high quality products that are perfect for the Asian climate.

There are exciting times ahead with Webasto preparing to support future electrification with scalable CV battery and thermal management systems for all manner of electric vehicles, Gill will be an integral part of expanding this offering into the South East Asia market. 

# New Scania Malaysia Flagship Branch in Senai Now Open

*The new Scania Malaysia sales & service branch in Senai, Johor, is now open. It is a sustainability flagship branch located at Lot 39795, Jalan Idaman, Taman Perindustrian Senai, 81400 Senai, Johor Darul Ta'zim*



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Seen here are all the sales, admin and technicians ready to give their best for customers.

**//** We have been in Johor since 2002. The state is the Southern gateway to the vast transportation network in Peninsular Malaysia. So, the move to bigger and more advanced premises in Senai meets the growing demand for Scania from customers both within and outside the state," said Heba Eltarifi, Managing Director of Scania Southeast Asia.

The new premises boast 5 000 square metres of land with wide open spaces and plenty of green-lung landscaping. LED lights are used throughout the premises. A water harvesting system, an integrated state-of-the-art oil dispensing system, a waste oil-management system and an environmental station to ensure segregation and recycling of waste; are all installed to meet Scania's sustainability objectives. Solar panels will be next to be installed in order to harness renewable energy from the abundance of sunlight in Malaysia. The workshop has 16 workplaces, an overhead crane; all run by a team of highly trained employees.

"Our wide range of products and services continue to support our customers' operations providing maximum uptime and fuel economy. They understand that in order to achieve this their Scania trucks, buses and coaches need scheduled maintenance," said Anders Liss, Regional Manager – Region South. "This is why our repair and maintenance services are rapidly gaining recognition, and our new facility will support them all the way."

With a Scania Contract, customers have a 'home' workshop and a service team with thorough knowledge of Scania vehicles. The increasingly popular Repair and Maintenance Contract ensures that Scania vehicles and engines are covered – from powertrain protection to full bumper to bumper coverage. Our service team ensures customers get quality advice, maintenance and parts when needed. Scania Parts continue to be available and delivered fast, supported by Asia Parts Centre in Singapore. Through connectivity with the Scania Fleet Management



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System, real-time vehicle data can help with proactive and preventive services to maximise customers' uptime and operating economy.

"Scania continues to lead the shift towards a sustainable transport system. Our customers appreciate our industry-leading fuel-saving vehicles but also our partnership to reduce carbon emissions," said Anders. "Here in Johor, customers like Mohd Sidek Amzah Enterprise, Naidu Trans Logistic and Narita Shipping & Transport are leading the way towards a greener future with Scania Eolution."

"We recognise the challenges that the country and the Johor state is facing now with the pandemic and the restrictions, yet we continue to believe in and invest in Johor. So, not only will this facility advance our long history of supporting transportation in Johor but also spearhead the newer, more profitable and sustainable future of the state together with our customers," concluded El Tarifi. **▀**



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## Expanding Applications

Electrification is also making inroads into heavier vehicles. In urban duty cycles, battery electric trucks of any size become the cheapest option for several use cases in the 2020s. That is due to a combination of factors, including rapidly declining battery costs, modest driving ranges, and the relatively large efficiency penalty of diesel trucks in urban traffic, which tend to consist of congested and recurring start-stop operation.

Heavy-duty electric trucks are already economically attractive in urban duty cycles by the mid-2020s. Megawatt-scale charging stations and the emergence of much higher energy density batteries by the late 2020s result in battery electric trucks becoming a viable option for heavy-duty long-haul operations, especially for volume-limited applications.

Shared mobility is set to rebound to 2019 levels within the next two years globally, and by the end of 2021 in most major markets. By 2025, shared mobility's share of annual passenger vehicle kilometres travelled globally exceeds 6 percent for the first time.

## Impact on Fossil Fuels

Oil demand from road transport peaks globally in 2027 in the Economic Transition Scenario, due to the growth of alternative drivetrains, fuel economy improvements of combustion vehicles, and the proliferation of shared mobility services, which go electric faster than privately owned vehicles.

Consumption in the U.S. and Europe has already peaked; China follows in 2026, while India continues to consume increasing amounts of road fuel until 2038 in the Economic Transition Scenario. Commercial trucks remain the only segment globally yet to see a peak in demand.

In the important passenger vehicle segment, oil demand never gets within 1 million b/d of its 2019 peak. EVs and fuel cell vehicles displace 21 million b/d of oil demand by 2050 in the Economic Transition Scenario.

## The Net Zero Scenario

In the Net Zero Scenario, oil demand from road transport remains broadly similar until 2030, as it takes time for changes in vehicle sales to flow through

# Electric Vehicle Outlook 2021

**M**obility is at the core of modern civilization, and the way people and goods move impacts many aspects of life. The years ahead will bring significant changes as electrification, shared mobility, vehicle connectivity and, eventually, autonomous vehicles reshape automotive and freight markets around the world.

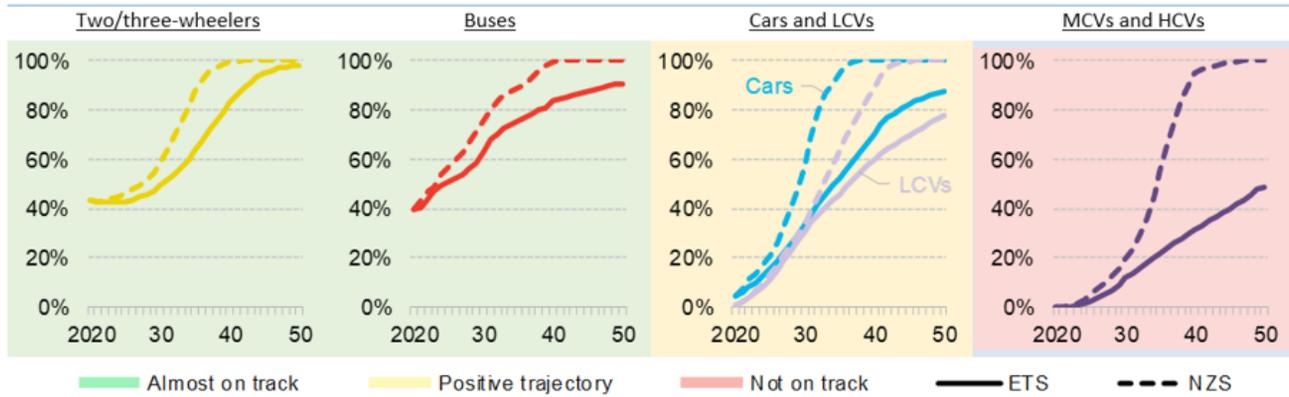
BloombergNEF's, in its sixth annual Long-Term Electric Vehicle Outlook (EVO), presents a status update and outlook on the industry with regards to electromobility: There are over one million commercial EVs, including buses, delivery vans and trucks, and there are over 260 million electric mopeds, scooters, motorcycles and three-wheelers on the road globally. Battery prices continue to fall, policy pressure toward 'Net Zero' is rising in many countries, and compelling new EV models are hitting the market.

## Snapshot of the Market

There are currently almost 600 000 e-buses on the road globally, representing 39 percent of new sales and 16 percent of the global fleet. China accounted for the vast majority of all e-bus sales in 2020, with over 74 000 units sold, and continues to account for 98 percent of the global e-bus fleet.

This share begins to decrease as some Chinese city bus fleets start to saturate and adoption picks up in Europe, North America, South Korea, South East Asia, India and South America. By 2025, e-bus sales outside of China hit 14 000, up from 5 000 in 2020. Buses and two- and three-wheelers are the biggest near-term opportunity for electrification in emerging economies.

Adoption of EVs in the commercial van and truck market is further behind, but is picking up speed. The combination of more models available, corporate fleet commitments, favourable economics and rising concern about urban air quality are set to tip the light commercial-van segment over to electrification in the next few years.

**Figure 1: Zero-emission vehicle sales share outlooks – ETS versus NZS**

Source: BNEF. Note: 'ETS' is Economic Transition Scenario and 'NZS' is Net-Zero Scenario. 'LCVs, MCVs and HCVs' are light-, medium- and heavy-duty commercial vehicles. 'Zero-emission' includes battery-electric and fuel cell vehicles. All values global.

to the fleet. From then, the rate of decline in oil demand accelerates, more than doubling the rate in the ETS.

In 2030, oil demand in road transport is some 0.7 million b/d lower in the Net Zero Scenario compared to our Economic Transition Scenario. By 2040, this gap widens to over 12.5 million b/d, and by 2050, to almost 25 million.

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### Peak in Oil Demand

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# Update from Pan Malaysian Bus Operators Association

*In a bid to keep the industry going, the association submitted an appeal to the government for a special "One Off" grant to express bus companies to YB Datuk Seri Ir. Dr Wee Ka Siong.*

**P**an Malaysian Bus Operators Association is fully aware that the COVID-19 pandemic has greatly affected everyone in Malaysia, besides the rest of the world. Every industry has had to face challenges during this period, exasperated by not knowing when the situation will improve. The question most of us have is if the economy will be able to return back to normal or if this will be a permanent feature wherein we will have to adapt and continue on living in a pandemic environment, and for how long? While the Minister of Transport is certainly aware of the situation, the Pan Malaysian Bus Operators Association (PMBOA) presented YB Datuk Seri Ir. Dr Wee Ka Siong with a plight to seek support.

This is a time of great uncertainty and while some industries have started to recover with assistance from the Government, tourism and tourism related industries are predicted to be the last to recover. Within the tourism industry, transportation via express buses is among the most affected. The users of express buses are mainly foreign and local tourists, students, workers, government servants and families travelling as a group who make up a substantial portion of the population in the country. Since the start of the Movement Control Orders (MCO) and in line with the SOPs put in place to combat the spread of the Covid-19, the passenger loading of express buses have decreased drastically. Zero loading is most common.

Transportation by express bus plays a major role in the influence of the international, cultural, tourist and business capital of a country. As stated above, companies in the express bus industry are heavily impacted by the measures taken to combat the spread of the COVID-19 virus and business are in fact almost at a standstill. Without assistance from the Government, most if not all express bus operators will have to call it a day.

"As such, we are appealing to the Government for a special "ONE OFF" grant for the survival of express bus operators," PMBOA President, Datuk Mohamad Ashfar Ali told Asian Buses.



Datuk Mohamad Ashfar Ali

The stage bus companies in the transport industry receive government assistance through the SBST and ISBSF programs but not the express bus companies.

The business of express bus companies has been affected since the start of the enforcement of MCO by the Government as we have not only been able to operate the buses, but when the companies do operate, the ridership is extremely low with turnover being less than 10 percent of previous year mainly due (but not limited) to the following reasons: -

1. People are advised by the Government to stay safe and stay at home and only go out when absolutely necessary.
2. People fear getting infected with COVID-19 when on board buses and therefore choose to travel using their own transport.
3. Ban on interstate travel and inter district travel except with the approval from PDRM and authorized Government agencies e.g. MITI.
4. General fear of enforcement activities being carried out for violations of SOPs, with fines of RM 1 000 to RM 10 000 and possibility of being arrested.
5. Zero arrival of foreign tourists due to closure of international borders.
6. Closure of preschools, schools and centres of higher education.

The Minister of Transport was briefed that assistance from the Government is essential for (but not limited to) the following reasons: -

1. Buses which are parked and when not operating on the road during MCO, RMCO, CMCO, will incur additional cost for repairs and safety checks before allowing the buses to operate on the road again. This is for the safety of the passengers: e.g. cost of batteries, tyres, brake system, air conditioning, and suspension.
2. The sustainability of transportation as an important industry for the country is necessary when the borders within the country and out of country are opened up. The express bus companies must be supported and be ready when transportation activities are required again. It does not help if companies have to close down or cannot operate anymore.
3. Majority of the express bus companies are operating purely based on "moral obligations" to keep the industry moving and providing job retention to the local community. If commercial decisions were the basis, most express bus company owners would have ceased operations due to regulatory and operating constraints. Basically, it means that shareholders are pumping in cash from their own pockets as businesses are operating below the break-even point.

To counter this, PMBOA proposed that the following mechanism be adopted by the Government for the payment of the special "ONE OFF" grant:

1. A special "one off" grant be given to the express bus operators based on the number of buses owned by each express bus company which buses were operating as at 18.03.2020, marking the start date of MCO being enforced in Malaysia.
2. Payment be made only to active express buses as per 18.03.2020 with Valid Operator Licence (Lesen Pengendali) road tax and Puspakom certificate as verified by APAD and JPJ.
3. Estimated cost of repairs and safety checks by operators per vehicle before allowing the buses to be on the road again in about RM15,940.00 per bus as follows: -
 

(i) Safety check on bus	RM280.00
(ii) Batteries	RM2 300.00
(iii) Engine & gear system – drive line-engine oil, gear oil, axle oil, retarder oil & filters (service)	RM2 900.00
(iv) Brake system	RM1 200.00
(v) Suspension	RM2 060.00
(vi) Air Conditioning	RM2 800.00
(vii) Tyres	RM2 400.00
(viii) SOP compliance	RM2 000.00
4. PMBOA requests for 70 percent of the said cost of RM15 940.00 as the special "One Off Grant" per bus, amounting to RM 11 158.00 per bus.
5. Total financial assistance for the industry is estimated to be about RM46 million which will greatly benefit about 200 Express Bus operators operating about 4 200 buses in Malaysia.

"In view of the foregoing, the express bus operators urge the Government to implement on an URGENT basis this proposed incentive initiative for effective results during this crucial period. We hope that YB Datuk Seri would immediately take up this matter to the Ministry of Finance and the Cabinet," was the appeal PMBOA sent along with the request. 



# Completely New: the Scania Fencer

**Swedish brand Scania launches the Fencer, an all-new, fully built-up and sustainable single deck bus range.**

In May, Scania launched their new Fencer bus range. The first model is the Fencer f1, a single deck, fully built-up bus. The vehicle, which is the first complete Scania single deck bus to be released in the UK for ten years, will subsequently be introduced to many other markets worldwide and will form the basis of a new platform of sustainable Scania buses going forward. Named to reflect its agility, performance and the sharpness of its design lines, the Scania Fencer f1 offers a host of operational and sustainability benefits, including the widest range of fuelling options available on the market today.

"The Scania Fencer f1 is a truly innovative and exciting new product which is the result of several years of research and development by Scania's engineers in conjunction with our colleagues at Higer, with whom we have enjoyed a strong, professional partnership with for the past 15 years," comments Martin West, Sales Director – Bus and Coach for Scania (Great Britain) Limited. "The result is a flexible, efficient and economical vehicle built to the high quality standards assured by our fully

embedded production processes at the Higer factory. As such, the Fencer will contribute significantly to the sustainability objectives of the UK Government's recently announced national bus strategy. As a completely built-up Scania product, the Fencer will be fully supported by the Scania network of 84 UK service centres.

"The Fencer will be built on a new chassis, which has been designed from the outset as a future-proofed platform with a comprehensive selection of renewably-fuelled drivetrains including full battery electric and hybrid versions and biogas options (see Editor's note 1). Initially, we are launching the vehicle with our tried, tested, proven and highly regarded nine-litre engine, which can be operated on 100 percent HVO (Hydrotreated Vegetable Oil) biofuel. This engine option has been missed in recent years by our rural and inter-urban customers and we are delighted to be reintroducing it to the market at this time.

"Looking ahead, the single deck Fencer f1 is just the beginning of a new bus platform for Scania. Articulated and double deck options are also planned, meaning we will soon have a solution for every UK bus fleet operator."

## Scania Fencer: Features and Benefits

The nine-litre Scania engine fitted to the first Fencer vehicles will be SCR-only and meets the requirements of the Euro 6 Step E emissions standard. Paired with ZF's Ecolife 2 fully automatic six-speed gearbox, the vehicle is capable of achieving substantial fuel savings compared to its predecessors. Other features of the transmission include fast and smooth shifting and a new 'unloaded starting' feature which enhances passenger comfort by reducing noise, improving starting performance and delivering consistent acceleration.

Scania's in-house modular chassis development approach focuses on safety, performance and quality, and ensures all major components are under Scania's direct control. Suspension, brakes and electrics are all controlled by Scania's own software, and all systems communicate with Scania's own diagnostic tool, thereby simplifying trouble shooting and programming. In this way, Scania seeks to maximise uptime of the Fencer while maintaining optimal efficiency and performance at all times.

An all-new driver's area features an adjustable instrument panel for increased driver comfort. Ergonomically designed, all controls are within arm's reach for ease of use and to reduce driver fatigue and stress.



Externally, the Fencer's bodywork displays an innovative and contemporary profile, with low windows contributing to the natural flow of the vehicle's lines and kerbside appeal. Also incorporated into the design are stylish LED lights and enhanced side lighting. Inside, the modern, spacious design approach continues, with a light and airy saloon complemented again by full LED lighting to create a stylish and relaxed ambience.

### **Sustainability, Science Based Targets and the Scania Fencer**

Scania is firmly committed to driving the shift towards more sustainable transport solutions. As such, the company adheres to agreed Science Based Targets (see Editor's note 2) set by SBTi, a partnership between the Carbon Disclosure Project, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature. Scania was the first manufacturer in its sector to have its Science Based Targets approved.

While Scania's targets fall under what are referred to as Scope 1 (actions directly under a company's control, such as its environmental measures at its production facilities) and Scope 2 (actions indirectly under a company's control, such as the type of electricity and heating/cooling systems it uses), Scania is also working with its customers, for whom Scope 3 (the 'well-to-wheel' impact of the products they use) applies.

This is because of all the impacts related to Scania's indirect downstream activities, the use of Scania's vehicles – upon which Scope 3 focuses – accounts for more than 90 percent of the total carbon footprint generated. According to the Science Based Targets initiative, the Scope 3 target is far-reaching and aligned with the most ambitious decarbonisation scenario developed by the initiative. With regard to its Scope 3 activities, Scania ensures the products it offers are matched to the purpose to which they will be put and looks to educate and create awareness in sustainability issues amongst its customers. Between them, Scopes 1 and 2 seek to reduce carbon dioxide emissions by 50 percent by 2025 and Scope 3 seeks to reduce carbon dioxide by 20 percent by 2025.

As a vehicle which is produced responsibly and is to be offered with a wide choice of fuelling options, the Scania Fencer will contribute significantly towards achieving Scania's Science Based Targets.

The Fencer range will be available with a choice of renewable powertrain technologies with hybrid, gas power with BioCNG and BioLNG options. In addition, Scania's entire diesel offering can run on HVO without any modification.

The Scania Fencer will have Scania's 100 percent battery electric powertrain, available to order this year. A new fully integrated chassis will allow for an eight- or ten-battery pack set-up. This chassis will also feature a host of mechanical revisions, new electrics and ECU, new independent front suspension and a new rigid front axle for improved passenger capacity load capacity and turning radius as well as increased comfort and aisle width.

Scania's development engineers have created a new battery electric platform which is Scania technology end-to-end throughout the entire drivetrain. A Scania battery will power Scania's own 300kW electric motor driving through Scania's own two-speed gearbox. The chassis has been climatically tested in city, interurban and pure urban environments to ensure the fully electric will deliver zero emission transport as it expands beyond the city centre and into inter-urban environments.

Science Based Targets have been created to help achieve the objectives of the Paris Agreement, a legally binding international treaty which provides a framework to limit global warming to well below 2°C, preferably 1.5°C, compared to pre-industrial levels. The Agreement was ratified on 5 October 2015 and came into force on 4 November 2016. 

# How to Make a Smooth Transition to Electric Mobility

*Electrification is on everyone's cards. Volvo Buses shares their insights into how to make this happen and Lars Johansson has answers to the most pressing issues.*

**M**any cities around the world have already taken important steps towards more sustainable public transport. But to reach the climate goals set for 2030 and 2050 to meet the Paris Agreement, a much higher pace is needed. So, how do you prepare for a smooth transition to an electric bus system? What are the biggest challenges and success factors? Volvo Buses' Head of Public Affairs – Lars Johansson – answers the most important questions.

## 1. When is the Right time for a City to make the Transition to an Electric Bus System?

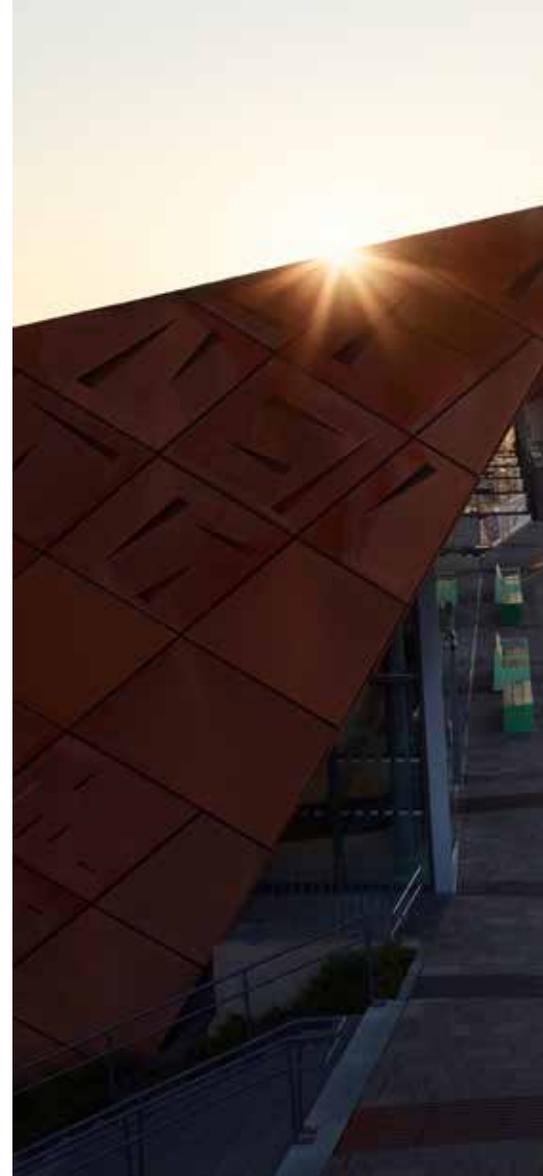


The answer to that question is really yesterday. To meet the Paris Agreement's climate goals of completely fossil-free transport by 2050 to slow down global warming, it is urgent.

For instance, in Europe there are clear goals that all countries have committed themselves to. As recently as mid-December 2020, EU countries agreed on a new climate goal: a 55 per cent reduction in carbon dioxide emissions by 2030 compared to 1990 levels. The increase from 40 to 55 per cent is a clear indication that more measures are needed, and quickly.

The approach to implementing electrified public transport differs a lot in various parts of the world. For example, China has today about 90 per cent of all electric buses in the world, mainly due to large subsidies for manufacturers and operators in recent years. This development has primarily been driven by the need to improve the air quality in large cities.

In the US and Canada, there is usually a very high portion of federal funding for the purchase of new buses. This model supports the transition towards electrification, which is taking off. On the contrary, in Europe, a traditional



tender process applies with few ad hoc state subventions for the purchase of electrified buses. Despite this, many cities have taken important steps towards electrification, and the EU's Clean Vehicle Directive will accelerate the transition.

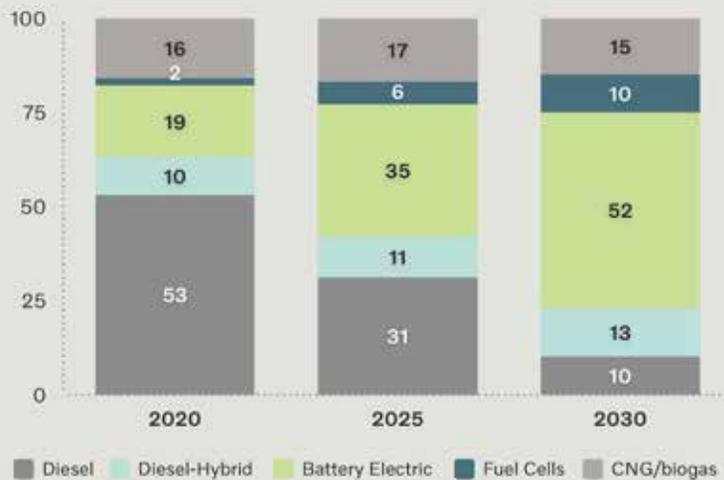
Recently, the same electromobility trend can be observed in Latin America, mainly in progressive cities like Santiago in Chile and Bogotá in Colombia.

An important aspect for us in the transport industry is that there is a long lag because the buses purchased today will normally run for around ten years. This means that if you do not quickly phase out buses that run on fossil fuels, it will take a long time before CO2 emissions can be reduced. You must also take into account the differences between city, regional and long-distance buses – it is primarily city operations where electrification must start and happen very quickly.



### ELECTRIFICATION OF THE BUS MARKET

The Clean Vehicle Directive will accelerate the electrification of city buses in Europe. The industry predicts that electromobility products will gradually take over and that diesel buses will fade out towards 2030. (Source: UITP)



“One initiative that will drive the development of electrified public transport is the EU Commission’s Clean Vehicle Directive.”

One initiative that will drive the development of electrified public transport in Europe – and probably later in other regions – is the EU Commission’s Clean Vehicle Directive. It will take effect in 2021 and will affect all procurements that include city buses. For all EU countries, this means that a certain proportion of buses procured must meet the definition of a ‘clean vehicle’ according to a set quota per member country.

For example, in Sweden 45 per cent of all buses purchased before 2025 must be in the categories “zero emission” or “low emission”, of which at least half must be “zero emission” buses, i.e. electric buses.

The proportion differs among the member countries, but for most the quota will be the same as it is in Sweden, i.e. 45 per cent from 2021. The levels will then be raised to 65 per cent from 2026 until 2030. Beyond that, no decision has been made.

In addition to the Paris Agreement’s ambition to minimise greenhouse gas emissions, every country has its own target for carbon dioxide emissions, as well as nitrogen oxides and particles. The transition to electrified vehicles will play a very important role here too.

According to the World Health Organization (WHO), air pollution has become the world's single largest environmental health risk and it is the fourth highest cause of death among all health risks. Today, 90 per cent of the world's population live in areas that do not meet the WHO's minimum standards for air quality.

For example, in Europe, more than half of nitrogen oxide emissions and a significant proportion of other pollutants come from transport. Some cities have such major problems with air quality that they have banned older diesel vehicles from entering central zones. More and more cities are planning to implement similar restrictions.

Minimising traffic noise is another challenge that is high on the agenda for many cities, and where we can see requirements becoming increasingly stricter.

The WHO estimates that every fifth inhabitant of Europe is regularly exposed to noise levels that are so high that they can adversely affect their health. Excessive noise can result in, among other things, an increased risk of disturbed sleep, cardiovascular disease and damaged hearing.

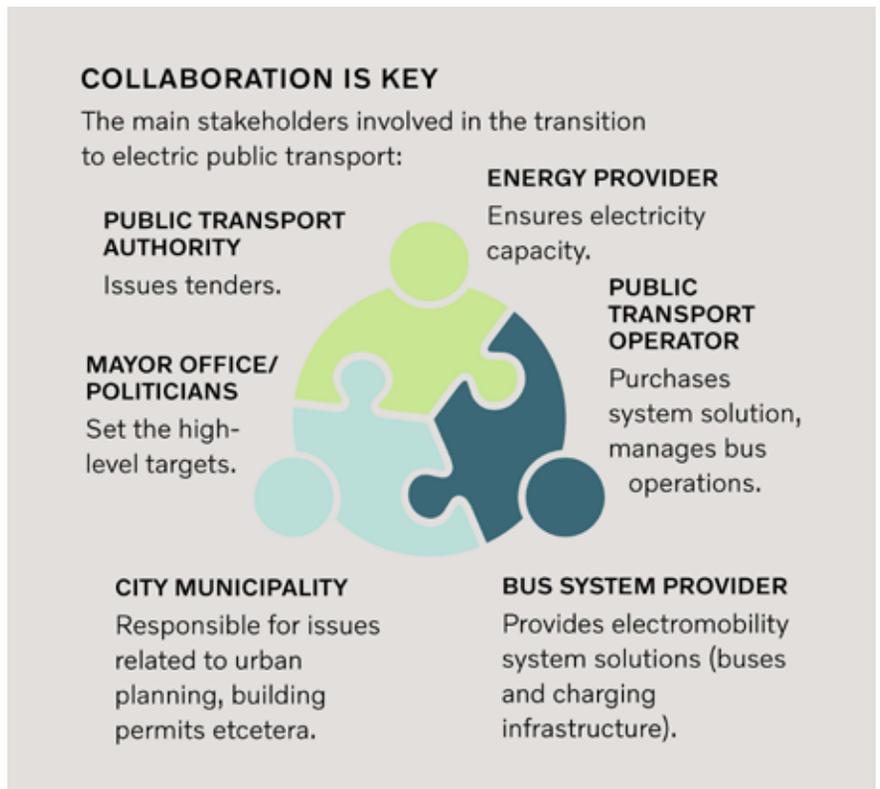
Both the negative health effects of noise and the construction of noise barriers can be costly. For cities, there is therefore much to be gained from reducing noise where it occurs. In city traffic, heavy vehicles with diesel or gas engines are among the dominant sources of noise.

In addition to the fact that electrified public transport is necessary for achieving climate goals and reducing hazardous emissions and harmful noise, there are several other arguments in favour of electrified buses.

With growing populations and urbanisation, demands for functional and sustainable public transport increases. Traffic jams are already a very big challenge for cities around the world. For cities to be attractive in the future, they must be able to offer their residents efficient, sustainable, quiet and convenient transport options.

Electrified public transport also creates new and exciting opportunities for mobility and urban development. Without exhaust fumes and high noise levels, buses can operate in more areas and you can build in areas of cities that were previously unavailable. Public transport can take people closer to where they need to be, and you can even build bus stops indoors. All of this allows cities to become denser, but also more attractive for their inhabitants.

**2. How Long does it Take to Implement Electric Bus Systems on a Large Scale?**



The conditions for implementing electrified bus systems on a larger scale vary hugely between cities. How long it takes depends on, among other things, local conditions for electrification and what the procurement procedure looks like. In most cases, you have to count on at least 18 months from the start of the process to when the buses can be put into service.

One of the biggest differences between the procurement of electric buses and conventional buses, is that there are many more stakeholders involved. In addition to the public transport authority (PTA), the bus operator and the manufacturers of the buses and charging infrastructure, the city municipality, the electricity providers and other relevant stakeholders, must also be involved at an early stage.

Careful planning and close cooperation are prerequisites for being able to take the step to large-scale implementation. Careful planning and close cooperation between the various stakeholders are prerequisites for being able to take the step to large-scale implementation.

Another crucial issue is the availability of electricity. Regardless of which charging infrastructure a city chooses, electric buses place great demands on electricity capacity. It is therefore important to have an early dialogue with energy providers and the city about building permits and permits to rebuild and lay new cables to depots and charging stations.

Several cities have conducted test projects with electric buses on a smaller scale and the lessons from those projects have been important when implementing larger electrified bus fleets. What we can see is that there is a lot of interest from cities in Europe to learn from each other and share knowledge.

At Volvo Buses we were very early in investing in electromobility. Thanks to our long and broad experience in delivering complete solutions to different cities, we are also ready to be a partner and sounding board for cities that are looking into the electrification of their city bus traffic in a sustainable way.

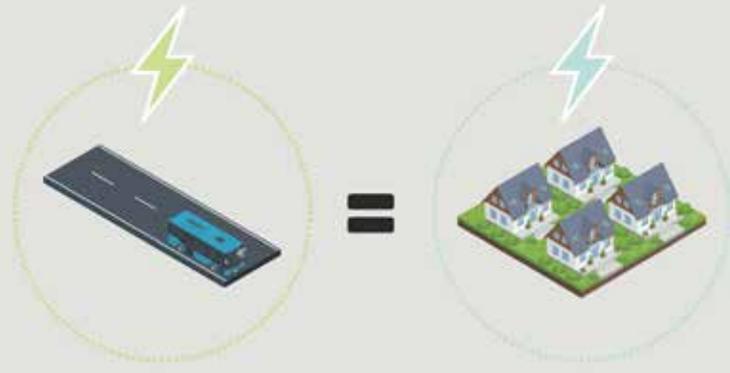
When it comes to successful collaborative projects, ElectriCity in Gothenburg, Sweden, is a very good example. The city's first electric buses were put into service as early as 2015 and the project has attracted tens of thousands of visitors from all over the world. The municipality, the PTA Västtrafik, the local energy supplier Göteborg Energi, the bus operator Keolis, Chalmers University of

## THE ENERGY REQUIRED BY ELECTRIC BUSES

Securing enough energy capacity is crucial when implementing electric buses.

During 12 years, the total energy usage for 100 electric buses (12 metre) is **97,200 MWh**.

That is equal to 400 private houses during the same period. But compared to conventional buses, the energy saving is huge.



Technology, Volvo Buses and other stakeholders have been involved in running the project.

With the experiences and lessons learned from ElectriCity, Gothenburg has now taken the step towards large-scale implementation. In December 2020, one of northern Europe's largest electric bus fleets – 145 Volvo 7900 Electric Articulated – were put into service. The goal for the region is to electrify all its city bus traffic by 2030.

Finally, to implement an electric bus fleet like Gothenburg needs careful planning and successful collaboration between stakeholders from the beginning. Depending on local conditions and scale of operation, time to implementation will differ a lot between cities.

### 3. How do You Ensure an Optimal Charging Infrastructure?



Implementing a complete system is a complex task. Different route lengths, topography, frequency, capacity and local rules and regulations mean that different e-mobility solutions are required for each city.

Ensuring an optimal charging infrastructure requires careful analysis and simulations of each individual route on which the electric buses will run. It is an extensive preparatory project that Volvo Buses as a system supplier does in close collaboration with the PTA, the operator, the energy suppliers and other stakeholders. These calculations then form the basis for our suggestions for buses, energy storage systems (batteries and supporting devices), charging strategy and charging infrastructure.

In many cases, a combination of depot charging and fast charging on route can be the best solution from an operational point of view. On routes with a lot of traffic, charging stations on route give buses unlimited range and more driving hours. Another aspect to consider is the local grid capacity, as with charging on-route the grid capacity need is distributed geographically.

Charging infrastructure is crucial for determining how many batteries and what capacity each bus needs. The batteries in an electric bus are still very expensive and resource-intensive to produce. It is therefore extremely important to make sure that the batteries are utilised in an optimal way to ensure the longest life-time possible.

When a battery is taken out of service from the bus, it still has capacity left. Instead of sending the battery for recycling, the battery can serve in second life applications, e.g. housing energy storage, UPS (uninterrupted power supply) and peak shaving. From a Life Cycle Analysis (LCA) perspective, the second life usage of batteries means that the "in-use" phase of the product lifecycle is significantly extended and thereby reduces the overall environmental footprint.

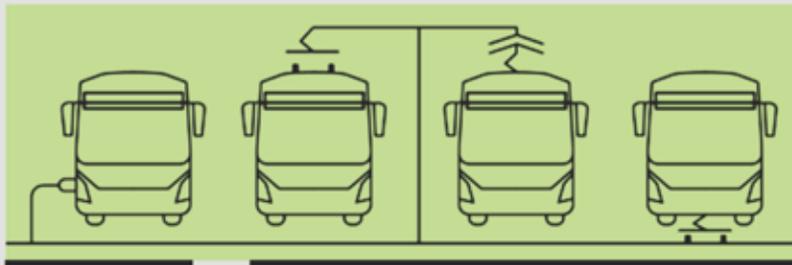
"A key question in the long-term transition to electrified public transport is having industry standards for charging infrastructure."

A key question in the long-term transition to electrified public transport is having industry standards with open interfaces for charging infrastructure. All buses, regardless of brand, must be able to use the same charging stations. International organisations have been working on this topic for many years, and in Europe the bus industry has agreed on which standards should apply.

An important bridge has been the EU's ASSURED project, which aims to encourage electrification of vehicles in urban traffic through interoperability between different manufacturers of vehicles and charging stations.

### FOUR WAYS OF CHARGING

Industry standards with open interfaces for charging infrastructure will be crucial. These are the four standards suggested by UITP:



#### MANUAL CONNECTION

Depot charging via CCS cable.

#### AUTOMATED CONNECTION

Opportunity charging via station-mounted pantograph (panto down, left) and roof mounted pantograph (panto up, right).

Charging via an electric contact on the road.



The International Association of Public Transport (UITP) was commissioned by CenCenelec (European Committee of Electrotechnical Standardization) to submit a proposal to the EU Commission. This was done in 2019.

Four standards have been proposed: depot charging via CCS cable, opportunity charging via roof mounted pantograph (panto up), opportunity charging via station-mounted pantograph (panto down) and charging via an electric contact on the road, which is likely to be used only in rare cases.

Finalisation of the various standards will be decided late 2021. The EU Commission will publish the final charging standards at the end of the year. It will of course be hugely advantageous if markets outside Europe choose to follow these standards.

#### 4. What is the True Environmental Impact of Going Electric?

Electrified public transport is hugely beneficial to the environment, primarily in terms of the reduction of greenhouse gas emissions, nitrogen oxides, particles and noise.



A concrete example is Gothenburg, which at the end of 2020 implemented the Nordic region's largest electric bus fleet to date. By replacing the cleanest diesel buses on the market with 145 new Volvo 7900 Electric Articulated, the city will reduce its CO<sub>2</sub> emissions by 14 500 tonnes per year. This is about the same as the CO<sub>2</sub> from around 5 000 cars. Simultaneously, emissions of nitrogen oxides will decrease by approximately 8 000 kg per year. Emissions of soot and other hazardous particles will be reduced by 200 kg.

An electric bus also consumes 80 per cent less energy than a diesel bus. The energy savings for the fleet of 145 Volvo 7900 Electric Articulated, which drive a total of 60,000 km per year at an average speed of 18 km/h, is 32 200 MWh per year. This corresponds to the yearly energy need for 1,600 private households.

One question that often comes up in the debates around electric vehicles is how clean the electricity is from a CO<sub>2</sub> point of view. Depending on whether the electricity is produced from renewable or fossil sources, the carbon footprint – from well to tank – can vary from as little as 10g to over 1 000g of CO<sub>2</sub> per kWh.

In addition to the environmental benefits of electric buses, it is very important that all countries are involved in driving the development towards electrified transport. If we do not start the transition now, we will not achieve the climate goals that are necessary for reducing global warming.

Even though many countries globally still produce a relatively high proportion of their electricity from fossil sources, a positive trend is observed. A very large proportion of new European energy plants will produce renewable energy. This is also the case for certain countries outside Europe.

“Electric buses also have a positive effect on a city's noise levels.”

Electric buses also have a positive effect on a city's noise levels. In one year, the 145 buses in Gothenburg will start up 17 640 000 times. Each bus's noise level is reduced by 7dB, halving its noise emissions.

A study on noise was carried out within the framework of the ElectriCity project in Gothenburg, which compared differences in the sound from electric buses, diesel buses and gas buses. The study showed large differences in noise levels at speeds of up to 40–50 km/h, with the electric buses being clearly quieter than the others.

The differences were greatest when it came to low-frequency noise, which is more difficult to mitigate with noise protection, facade materials and windows. According to recent studies, the indirect costs of noise pollution are substantial.

**5. What are the Most Important Success Factors for Implementation of Electric Buses?**

**Political will**

This is where it all begins. Making the transition to an electric bus system requires political will, vision and a political decision. It also requires a long-term system approach and knowledge of what electrification actually means, its effects, and the opportunities it creates.

**Collaborative approach**

Implementing an electrified bus system is completely different to buying diesel buses. Being successful requires close collaboration between various stakeholders and all partners must be involved in the process as early as possible. Otherwise, the risk is that the whole project fails because of a missing building permit or other authorization. At Volvo Buses, we have extensive experience in delivering complete solutions to cities around Europe. Good collaboration

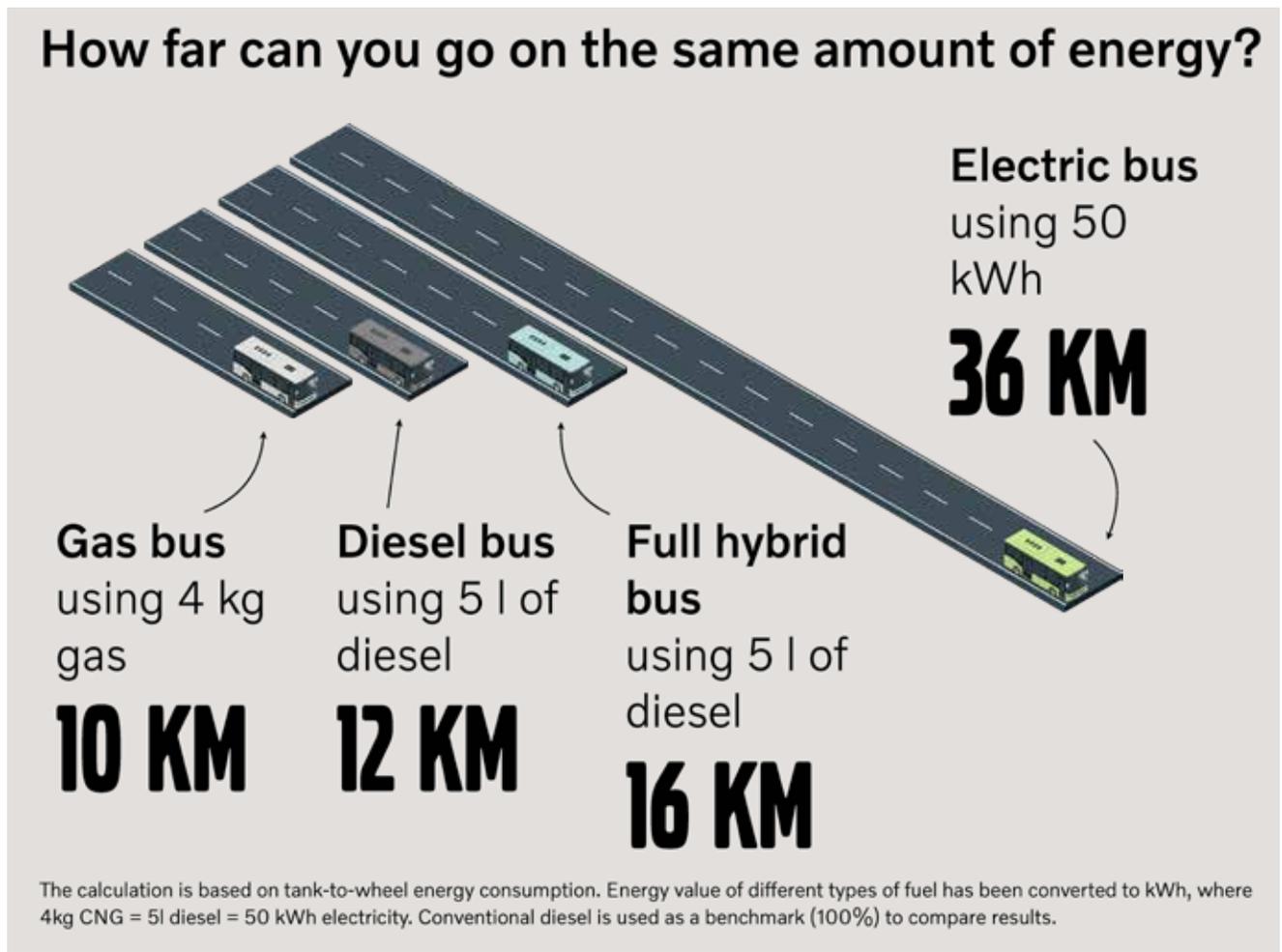
and a common vision, both in terms of environmental goals and creating an attractive city for residents, is something that everyone involved in large-scale implementations highlights as the most important success factors.

“Electrification requires new thinking, a lot of commitment, and a common vision.”

Hanna Björk, Sustainability Manager at Västtrafik in Gothenburg, Sweden. Last year Västtrafik added 145 new Volvo 7900 Electric Articulated to its fleet.

**Thorough analysis**

As a system supplier, we undertake meticulous analysis before every offer. Route distances, topography, climate, passenger numbers, traffic density, bus types, battery capacity – all of these factors affect which charging infrastructure is most optimal. Where and when will the buses be charged?



Is it better to have three smaller depots rather than one large one? By undertaking analysis early on, we can ensure the city gets the best solution that suits them.

### Ensure energy supply

To charge electric buses, large amounts of electricity are required and the power supply to depots and charging stations must be secured at an early stage. A close dialogue with the city's electricity suppliers is therefore absolutely crucial.

### Plan for implementation

Apart from a collaborative approach, a common plan for how the actual implementation is to take place is also required. This includes planning for the construction and rebuilding of depots, charging stations and stops, as well as applying for building permits and other authorizations. Again, it is important to ensure that all parties are involved early on in the process and that everyone is striving towards the same goal. For cities that already have some experience with electric buses, this is a simpler process. For those starting from scratch, more holistic planning will enable their electromobility journey to be successful. ■

## LESS NOISE EMISSIONS



**-7dB** With an electric bus, the noise level at take-off is reduced by 7dB. This means the perceived noise is cut by half compared with a conventional bus.

Lars Johansson, Volvo Buses'  
Head of Public Affairs





# Hengst's Clear Vision

*In 1958 Walter Hengst founded Ing. Walter Hengst KG in Münster. In doing so, he laid the foundation for the successful development of a company that is now run by the third generation as Hengst SE.*

**H**engst Filtration is guided by a clear vision: "We are the world leaders in filtration, making our planet a purer place". This is because with their products the company aims to protect people, machines and systems, resources are conserved and the living conditions on our earth are improved.

## **Hengst in a Nutshell**

On our planet we are experiencing a rapidly growing world population, increasing consumption of resources, increasing mobility and globalization. So what is needed today is exactly what Hengst excels at: making things cleaner.

Hengst Christopher Heine, Chief Executive Officer of Hengst SE, deliberates on the direction of the company and provides prognosis about what the future might look like when it comes to filtration. "No matter where – nothing is working without filtration! We will continue to be a company that puts innovative filtration technologies for a cleaner planet at the centre of its activities, with around 3 000 employees worldwide, at 21 locations on four continents," he said

## **Responding to THE Challenge**

Corona turned business upside down in just a few weeks. Hengst's customers have certainly had a business rollercoaster ride too, and Heine hopes that the economic recovery will make itself felt for them too. "The crisis also made it clear to me how robust the aftermarket is compared to the OE market, for example, and how new challenges mobilize new ideas and forces." As an example, within a few months Hengst has hatched the plan for and built up a completely new business area for "Health Care" with surgical masks and an antiviral air purifier. Heine is proud to say that he was very impressed by the unbroken passion and commitment of the entire aftermarket team in these extraordinary times.



### Big News, Further Growth

Heine told Asian Trucker that “We are very pleased that the Bosch Rexroth hydraulic filtration business has officially been part of the Hengst Group since April 1, 2021.” According to him, the hydraulic filtration business is an excellent addition to the existing portfolio and fits in perfectly with their strategy of growing in industrial filtration as well as in the agricultural and construction machinery sector and expanding the company’s programme and positioning themselves more broadly. The move is motivated by the fact that developments in global markets are becoming increasingly unpredictable. Technological upheavals such as the electrification of drives or digitalization are expected to have a significant impact on the business.

### Day-to-Day Innovative Products

During routine oil changes, the complete screw-on oil filter, consisting of the filter element, valves, springs, seals and oil filter housing, used to be replaced at every service. Although only the performance of the filter element is limited in the spin-on filter, all other components become waste products despite their full functionality. The Hengst oil filter system - with the core of the ENERGETIC filter insert - addresses the problem described and offers an environmentally friendly solution: the oil filter housing and valves remain firmly on the engine block with every oil change. Only the filter insert needs to be changed. The first generation went into series production in 1993.

Maximum reliability, as short a downtime as possible, high efficiency of the drive: These are decisive factors that automobile manufacturers and industrial users place on the technology. Intelligent fluid management and state-of-the-art filtration technology play a key role in protecting people, engines and machines.

### Hi-Tech Solutions

The idea behind the Blue.maxx is to consistently rely on multi-level systems consisting of a pre-filter and a main filter. These are laid out on top of one another so that the change intervals are reached at the same time. In this way, the potential of both filters is optimally used.

The electric disc separator Blue.tron offers highly efficient oil separation and active blow-by pumping for crankcase ventilation. The oil entry into the engine’s intake system is significantly reduced and the boost pressure level can be increased, which leads to an increase in engine performance and efficiency.

“With the Blue.on, a resource-saving alternative to the widespread screw-on oil filters has been developed. The aim was to reduce the environmental impact through the use of long-life components and recyclable filter elements as well as to ensure a high filtration performance over the life of a vehicle,” Heine sums this up.

“All of these developments present us with challenges that we are already tackling together with our customers. The development of completely new business areas with the topics of gear oil filtration, smart filtration e.g. for cabin filters or solutions in the field of fuel cells are the focus here, as well as the expansion of the field of industrial filtration,” he said. Despite the sometimes uncertain framework conditions, Hengst is still operating in a future market with enormous growth potential: Current forecasts assume that the global filtration market will double in the next ten years. Filtration simply remains exciting and offers so many opportunities to continue to exist as a specialist in this field in the future. ■



LEFT TO RIGHT: CHRISTOPHER HEINE - CEO / VOLKER PLÜCKER - GROUP VICE PRESIDENT FILTRATION FOR INDUSTRY & ENVIRONMENT



## Hino Malaysia's Response to COVID-19: Revival Service Program for Bus Operators

In supporting Tourism Malaysia, Hino Malaysia takes the initiative to revitalize the tourism and transportation sectors that are most affected financially wise due to the Covid-19 pandemic.

Hino Motors Sales (Malaysia) Sdn Bhd (Hino Malaysia) introduced a special service program for Persatuan Pengusaha Bas Persiaran Semenanjung Malaysia (PPBPM) registered members during the PPBPM Annual General Meeting Opening Ceremony organized by the association. Introduced as Revival Service Program, this program is one of Hino Malaysia's initiatives to revitalize the tourism and transportation sectors that are most affected financially by the Covid-19 pandemic.

Held at Vivatel, Kuala Lumpur, the event was officiated by the Minister of Transport, YB Datuk Seri Ir. Dr Wee Ka Siong. Also present at the ceremony was Encik Syed Yahya Syed Othman, Production Director, Tourism Malaysia. "I would like to send my gratitude to Hino Malaysia for the contribution as part of your Corporate Social Responsibility (CSR) to help our main industry players who are facing tough times," said the Minister during his speech at the opening ceremony.

"Hino Malaysia will be offering discounts for tour bus operators and drivers vehicle maintenance. Also, all tour bus operators and drivers are being offered payment in instalments for the maintenance service, and this will ease the financial burden of tourism industry players. I hope there will be more companies taking this kind of initiative to help our society," he continued.

This offering to all PPBPM members that are participating in the Cuti-cuti Malaysia program is the result of the partnership with PPBPM to collaborate in supporting Tourism Malaysia. This collaboration is seen as an ideal platform for a start-up to reach the target group of bus operators, whereby PPBPM registered members total 150 nationwide.

As part of HINO's CSR activity, we are pleased to be involved and to collaborate with PPBPM as our support for tourism and transportation sector recovery in Malaysia. With this initiative taken by Hino Malaysia, we believe, our collaboration with PPBPM will indirectly give better support to Malaysian bus operators," said Atsushi Uchiyama, Managing Director of Hino Malaysia. Besides offering the special service program to bus operators, Hino Malaysia also contributed RM 3 000 to the association as recovery financial support. According to him, Hino Malaysia always foresees on giving the best not only to customers but to society as well.

Taking the initiative to contribute in transportation sector, Uchiyama said, "Being customer-centric will always be our main pillar to build trust and confidence from customers. To be the most customer-centric and reliable commercial vehicle company, understanding customer's business needs is important. We realise the difficulties that bus operators are facing to restart their operation and it requires financial resources especially, on the maintenance cost. We created this program to ensure the buses will be back on the road in good condition with super low initial cost," he continued.

This Revival Service Program offers up to 50 percent discount for HINO Genuine Parts and a special 90-day payment term for the service maintenance cost with minimum upfront payment of RM300. PPBPM members may also enjoy the extended 1-year warranty term for all HINO Bus models whereby terms and conditions apply. In line with its main objective to revitalize the tourism and transportation sectors, this Revival Service Program is not limited to HINO buses. To help all bus operators, Hino Malaysia also offers a service package for other brands with terms and conditions applied. This program offers free on-site inspection as buses that did not fully operate during the Movement Control Order (MCO) starting March 2020. ■

# Siang Yun Transport uses Volvo Buses to Make Trips to Work Comfortable and Economical



Letting us have a glimpse into his operations, Mr Tan Kim Siang, Director, Siang Yun Transport Sdn Bhd (Sian Yun), offers insights into a business that is both challenging to run and to a great extent subject to external influences.

Located in Johor Bahru, Malaysia, Siang Yun offers a range of services. As a partner with WTS Travel & Tours in Singapore, Siang Yun's coaches are plying the roads of Malaysia, offering cross border transport services for tourists from Singapore, going to Legoland for example. The company also plays an important role for businesses in Singapore, by sending workers across the straits daily. What originally started as a school bus service provider has since expanded into the transport services for a number of sectors.

Providing shuttle services for factory workers and overland tours, the company depends heavily on buses that perform reliably when timings are erratic, and durably when idling is inevitable for most of the time due to traffic congestion at the causeway. Many of Siang Yun's customers are prestigious brands, operating factories in two or three shifts. "On average, we transport about 2 000 workers every day, crossing the border, depending on the shift schedule of the factories we serve," Tan shared. Since some factories operate seven days a week, his fleet of 110 buses hardly ever stands still in normal circumstances.

Having opted for Volvo buses in 2014, Tan recalled that initial trial revealed that the vehicle performance makes a difference for the business. "We have about 130 drivers and we take their feedbacks seriously." There are two aspects to investigate as the waiting time at the border can easily be up to two hours. Firstly, the buses have proven to consume less fuel when idling and secondly, the automated gearbox eases fatigue of drivers. Tan was first intrigued by the Volvo B7R when he saw this model at a local bodybuilder's facility, ready to be exported to Australia. As it turned out, the specification perfectly fits the requirements of Siang Yun and the price is also reasonable, making the purchasing decision a lot easier.

After the Volvo B8R was introduced, Tan immediately opted for the new model. The all new Volvo B8R chassis comes with the industry known fuel-efficient D8A engine with up to 330hp. Equipped with the renowned fleet management system - Volvo Telematics - and the real time driver feedback system - Volvo I-Coaching, the feedback is presented by clear, yet discrete symbols changing from green to red when pre-set parameters, such as speed, are exceeded. The vehicle therefore could help improve driving behaviour and provide immediate activity reports and vehicle locations at any time to Mr. Tan for easy management of his fleet. The enhanced safety systems, such as the Volvo electronic braking system with disc brakes and Electronic Stability Program (ESP), give Mr. Tan more confidence that his drivers and customer are both ensured a smooth and pleasant ride at the highest safety level. Besides the Volvo B8R, Siang Yun has also acquired two Volvo B11R coaches, which come with 12-speed I-shift transmission, most suitable for long distance and inter-city transportation.

Covid-19 has undoubtedly impacted his business heavily. Tan is however hopeful as he is seeing an end to the Pandemic. He said "The Volvo Action Service ((VAS) team has been very supportive and proactively provided assistance to us in checking the buses during the lock down as well as every time before we re-start them. After such a long time of inactivity, the buses definitely need to be thoroughly checked." Siang Yun's own workshop handles simple daily check-ups while the Volvo workshop manages the maintenance and repairs of his fleet. "Currently, the idling is the key concern as we do not drive a lot during the Movement Control Order (MCO) period. Since the mileage is not high, the service schedule then follows operating months instead of mileage to ensure an overall good condition of the vehicle." To diversify his business, Tan has ventured into goods transport by adding trucks into his fleet and, naturally, Volvo Trucks were added.

When positioning the business, safety is a key aspect and Tan said that he usually presents his business by "advertising" the fact that his fleet is Volvo, the leader in safety. Besides safety, comfort is also placed top on his agenda when making purchase decisions, as the workers would be seated for long times crossings borders. "The short trip of two kilometres can take up to two to three hours so comfort is essential. That is why we use automatic gearboxes, which relieve my drivers from frequent gear shifting and fatigue."

Another consideration that Tan always keeps in his mind is that of environmental impacts. Tan is yet to be convinced that autonomous vehicles can address his business needs, as they are highly dependent on the maturity of infrastructure and connecting network, for instance, the Wi-Fi coverage. However, he is among the early adopters of green technology buses. A few buses he purchased come with Euro V re-conditioned engines. He mentioned that the AdBlue supply is no issue as he has a supply from Singapore, where Volvo's regional parts warehouse is located. While the emission standard in Malaysia remains at EURO III, the fuel he used is always the best available. Tan looks forward to switching to EURO V or VI engines when available. "I am waiting!" he emphasised. ■

# A Sad Tale of Road Traffic Injuries in Malaysia

Statistics and information on road safety is readily available. Most times, one would be confronted with numbers about fatalities and how families are shattered by the tragic loss of their members. However, in most cases, injuries sustained may not be fatal, yet severe enough to impact those who suffer them.

## Road traffic injuries are preventable

Road safety advocates, who are among the people affected by the COVID-19 pandemic, should take the global crisis as a blessing in disguise. Why? Because it allows for a comparison to be made between how much effort and resources have been committed to address road traffic injuries (RTIs) and the pandemic. Such comparison would allow benchmarking to be done of the number of resources spent for road safety against that for the pandemic and to review if it is sufficient enough all this while.

RTIs and the COVID-19 pandemic are public health issues that have resulted in premature deaths among the people, but the latter received tremendous attention and action because no one would have thought it could take away or harm so many lives over a short period. It is also because the number of deaths will keep increasing unless interventions are put in place to stop the virus from spreading, mutating, and infecting more. RTIs in contrast receive relatively little media attention despite almost all transportation-related fatalities occur on the roads. The reason? First, it is because the number of fatalities and injuries in each road crash is usually low and second, they occur so frequently that they are not newsworthy anymore. A comparison of the impact brought upon by these two issues should be able to help transport policy-makers gauging if existing measures for road safety are on par with or way below expectation.

An extreme amount of resources has been pooled and invested by public sectors, corporates, non-governmental organisations as well as individuals to reduce deaths due to the pandemic, to mitigate the risk of death due to the pandemic, to prevent more deaths due to the pandemic, and to revive businesses to slow down the progression of economic downturn. In contrast, a similar degree of attention is seldom seen to prevent more deaths and serious injuries on the road. However, one thing is for sure: while the effectiveness of new vaccines distributed worldwide to create the so-called herd immunity against the COVID-19 virus is still hotly debated, 'vaccines' for roads have existed and have proven to save lives. There are hundreds to choose from a wide range of treatments and costs.

## What is happening now?

On average, 19 lives are lost each day due to RTIs in Malaysia since the last decade. Many more suffer from injuries that caused permanent disabilities and life-long health-related predicament. According to statistics released by the Department of Statistics Malaysia (DOSM), RTIs ranked within the top five principal causes of death since 2013 (Figure 1). Are policy-makers aware that the estimated costs of road crashes

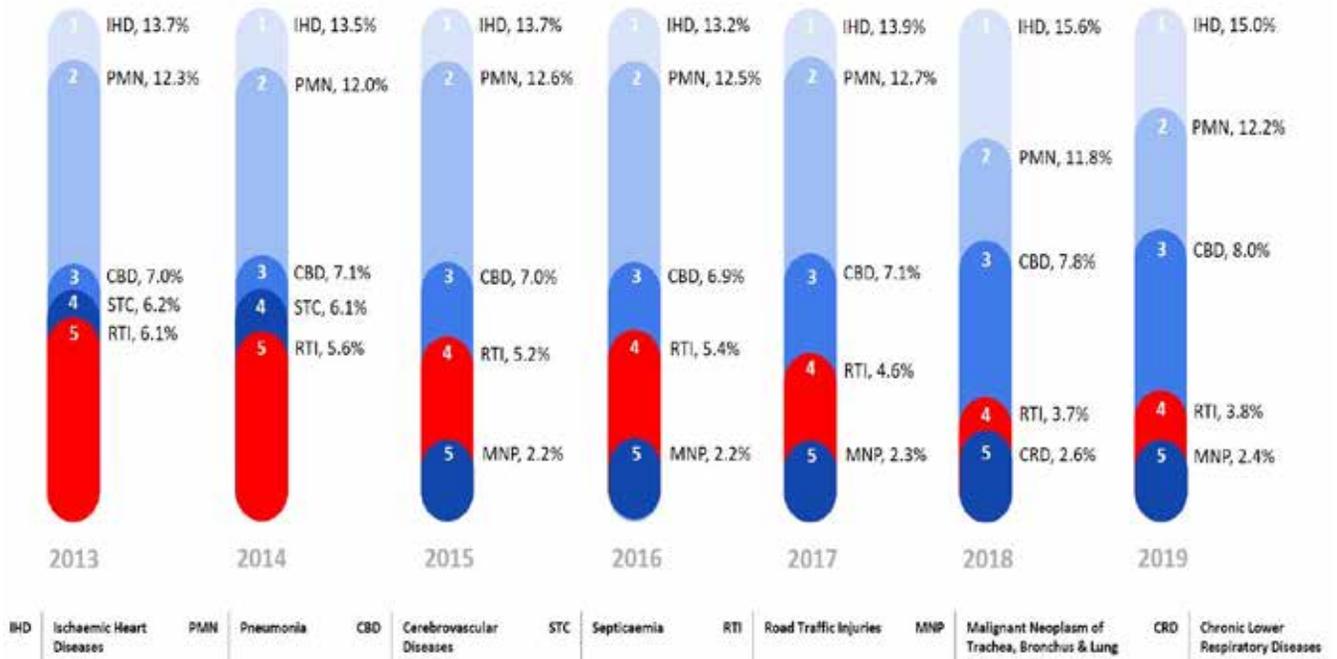
in Malaysia make up more than five percent of the Gross Domestic Product (GDP)? Interestingly, a study revealed that the percentage for low-and-middle-income countries averages only less than 3 percent. This information strongly supports a contention that measures taken by the government to curb RTIs are far from adequate. Going by the existing trend in the allocation of resources for road safety, we would never be able to achieve the targeted scale of reduction in road deaths and serious injuries of at least 50 percent as proclaimed by the United Nations General Assembly Decade of Action for Road Safety 2021-2030. A worldwide road assessment programme estimated that Malaysia should be looking at investing 0.1 percent of its GDP annually over the next 10 years on road infrastructure improvement to allow more than 75 percent of travel to occur on roads rated 3-star or better, hence meeting the global reduction target in RTIs.

## How to Ensure the Allocation for Road Safety can be Optimized?

It is long overdue for the government to adopt a new way to set priority and decide on fiscal allocation for road infrastructure and road safety projects. Specifically, the government should consider the social return on investments for road development and maintenance projects to ensure they do not increase the economic burden of road crashes. Particularly, one recommendation to the government is to incorporate the value of a statistical life (VSL) as well as the value of a statistical injury (VSI) to quantify the consequences of road crashes to the nation from an economic

## MALAYSIA TOP 5 PRINCIPAL CAUSES OF DEATH

PERCENTAGE OF ALL CAUSES  
(DATA SOURCE: DEPARTMENT OF STATISTICS MALAYSIA)



**Figure 1. Principal causes of premature death in Malaysia 2013-2017**

point of view. These values, or project appraisal mechanisms that make use of these values, have long been used in developed countries to indicate the level of investment justified for the saving of lives and prevent serious injuries.

The advantage of using VSL and VSI is that they are primarily derived and therefore change according to gross domestic product (GDP), a measure heavily used by legislators to make fiscal policy decisions. As far as international studies are concerned, the relationships  $VSL = 70 \times (\text{GDP per capita})$  and  $VSI = 17 \times (\text{GDP per capita})$  are adopted by the International Road Assessment Programme (iRAP) as a rule-of-thumb to ensure consistency in applying their road assessment models across participating countries. Another study found that VSL for low-and-middle-income countries with GDP per capita between \$1 268 and \$20 000 can be estimated as  $1.3732E-4 \times (\text{GDP per capita})^{2.478}$ . These findings allow many banking institutions and funding agencies around the world to identify high impact road safety project investments based on an objective and scientifically proven method. Unfortunately, such practice is yet to be adopted in Malaysia despite facing a limited budget for road improvements. A simple example is shown in Table

1 on the application of VSL and VSI in determining the better option between two types of dedicated motorcycle facility to reduce motorcycle deaths on Malaysian high-risk sections. The VSL and VSI are used to calculate the present value of safety benefits for the total number of deaths and serious injuries that can be prevented over the entire service life of the intervention. In this example, providing the non-exclusive motorcycle lane would be the better option from an economic point of view as the BCR is higher. The exclusive lane however would be the better investment from an ethical point of view because it yields a higher number of lives saved.

### A happy ending tale of road traffic injuries

Every country needs to make smart decisions on ways to save people from becoming victims of road traffic injuries, especially when the resources to do so are limited. The decisions rely heavily on the impacts an investment could have so that they bring high social and economic returns. Decision-makers, especially engineers, should not be having difficulties in making life and death decisions because of subjective or incomplete information. Optimizing resources in life-saving investment especially for the benefit of road

## BENEFIT-TO-COST ANALYSES FOR MOTORCYCLE INTERVENTION

	Non-exclusive motorcycle lane	Exclusive motorcycle lane
Effectiveness in death reduction	60%	80%
Baseline deaths/year	61	61
Baseline serious injuries/year	610	610
Post-intervention deaths/year	24	12
Post-intervention serious injuries/year	240	120
Deaths prevented/year	37	49
Serious injuries prevented/year	370	490
Total present value of safety benefits	RM3.1 bil.	RM4.0 bil.
Total cost of construction & maintenance	RM1.0 bil.	RM2.0 bil.
Benefit-to-cost ratio (BCR)	3.1	2.0

Information used in the analyses:

- i. GDP/capita (2019): RM46,366 (source: [www.imf.org](http://www.imf.org))
- ii. VSL (2019) : RM3.25mil
- iii. VSI (2019) : RM0.81mil
- iv. Death to Serious Injury Ratio : 1 to 10
- v. Intervention service life : 20 years
- vi. Analyses period : 20 years
- vii. Discount rate : 12%

**Table 1. Application of VSL and VSI in benefit-to-cost analyses**

users should and can be done innovatively. The use of VSL and VSI shall be considered. MIROS is currently in the progress of developing both these metrics to better reflect the costs of road crashes in the local context. In Malaysia, motorcyclists comprise more than half the vehicle's population and when the environment does not permit safe riding, the death rates will not reduce significantly. If alternatives of road safety investment are objectively and scientifically assessed, the chances are the country will be free of high-risk roads. Any Malaysian can then happily say "I love to travel on Malaysian roads".

**Note:**

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## ZF Commercial Vehicle Control Systems Combats Fakes and Counterfeits

*The issue of fake and counterfeit parts in the market is an issue that has occupied some space in discussions for a while. Brands are taking steps to protect their clients from harm from such products.*

Every genuine WABCO branded part is made of high-grade materials and is rigorously tested by ZF Commercial Vehicle Control Systems (ZF CVCS) before leaving our factories. And from the moment of manufacture, every part has the full support of WABCO's worldwide customer service network of thousands of authorized dealers and workshops. As a tier one supplier working with the world's leading Original Equipment Manufacturers in the commercial vehicle industry, WABCO has the experience, commitment and scale to meet the most rigorous production and safety standards.

We were talking to Kenneth Tang, Business Leader, Asean, Fleet Solutions and Trailer Systems of the ZF Group, Commercial Vehicle Control Systems to find out more about their genuine parts. As ZF Group is a provider of OEM components and parts, their products are delivered with your new vehicle. We wanted to know just how much of a problem are fake / counterfeit parts in our parts of the world.

### **Reputable Supplier**

ZF Commercial Vehicle Control Systems (formerly known as WABCO) is the leading global supplier of braking control systems and other advanced technologies that improve the safety, efficiency and connectivity of commercial vehicles. From their perspective, counterfeit is indeed a challenge that exists in the market. These products, usually cheaper and of inferior quality, are disturbing the market order, being harmful to the fleets, drivers, and putting vehicles, drivers, as well as goods in danger.

With the Vision Zero Accidents and Zero Emissions, ZF focuses on providing technologies and solutions to make the Commercial Vehicle industry safer, smarter and greener. If we talk about safety, braking technology is one critical elements for providing protection to the commercial vehicle ecosystem. Genuine parts are essential to ensure that the protection is effective and the benefits to the drivers and vehicles are maximized.

### **Multilayered Protection**

It has come to the point, where manufacturers have to consider the protection of their intellectual property as well as the reputation of the brand by

fighting off fake and counterfeit products. There is now a significant effort made by ZF CVCS to develop systems and methods to allow for identification of genuine parts. The measures extend to the training of the thousands of distribution partners and down to the way boxes containing parts are designed. Several methods to protect the users from fake or counterfeit products can be found on the box.



**Verify Security Seal**

The Security Seal clearly shows whether a shipment has completed its journey in the logistics chain intact and in its original packaging. The Security Seal is placed on top (either mid, left or right side of the box) to close the box. When a Security Seal has been removed the word "opened" appears in six different languages and remains clearly visible even after re-closure.

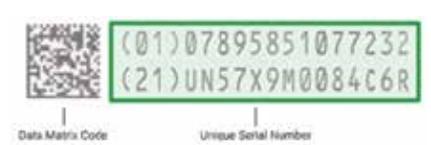
As part of ZF, the global leading technology company, the WABCO brand has a long-standing history and experience in providing products and solutions with high quality.

Every genuine WABCO branded part is made of high-grade materials and is rigorously tested by us before leaving their factories. And from the moment of manufacture, every part has the full support of a worldwide customer service network of thousands of authorized dealers and service partners.

"We have invested in packaging technologies and security seals since 2017 that make it easier to quickly identify a WABCO brand original part by the fleet operators and workshops. Through continuous training programs to our extensive network of Authorised Distributors and WABCO Service Partners, we can support the fleet owners with our Genuine Part program and easy access to WABCO brand original part," Tang elaborated.

The silver PrioSpot is part of the WABCO label displayed in the lower left corner of the label. Every PrioSpot is unique. No Code will match another one. The four PrioSpot characters should match the last four digits of the unique serial number. In direct light the PrioSpot and the WABCO logo shimmer in rainbow colors. In diffuse light only silver and black colors appear. Under direct light a moving character is visible. This Image repeats the last character of the unique serial number.

Also, the brand kept busy during the lockdown to improve these features and launched a Unique Service QR code in 2021. Fleet operators and commercial vehicle owners can easily access ZF's digital service platform and authorized networks with modern digitalized technologies. Together with their authorized networks, Tan and his team can quickly support the fleet operators and vehicle owners on their questions on parts authenticity and with solutions.



In order to verify Unique Serial Number (MAPP Code) users can use one of the two options: Scan Data Matrix Code with the free NeoReader application available on Wabco's website or manually enter the unique serial number (MAPP Code) in their online solutions centre. Another layer of protection has been added by using case sensitive codes.

Products from dubious sources are potentially harmful, as explained above. The question is, what possible damage can come from parts that are imitations. Tang explained that the WABCO branded braking technologies and components are used widely in commercial vehicle and that they are tier 1 suppliers to world leading O.E.M. in the commercial vehicle industry. Braking is one of the most important safety components in the systems of the commercial vehicle. Brake failures from the use of fake / counterfeit parts can lead to the decrease of operations efficiency, damage to the goods and in the worst case, the loss of people's safety or lives.

Sometimes it is rather difficult to tell a genuine part apart from something that is not originating from the manufacturer. If such a part fails, or when in doubt, can

turn to the global network WABCO has established. In case someone makes a claim against ZF CVCS, there is a clear procedure on how they go about this to ascertain that the part is genuinely yours and to find out what happened.

“Our associates and authorized network of Distributors and Service Partners are trained through our professional training from WABCO Academy. We have a straightforward and detailed claims-handling process in place. With our braking diagnostics tools, software and professional training to our partners, we can support and resolve the issues in cases of claims”, Tang says.

Additionally, ZF CVCS has a global and regional footprint for the claim investigation center, with the purpose to support in case there are field claims. Most of the claimed / defective parts will be sent out to the CIC (Claim Investigation Center) for a detailed investigation and root cause analysis, and an investigation report which includes authenticity of the product will be released.

Naturally, buying from an official distributor eliminates the issues associated with fake / counterfeit parts. ZF CVCS has a wide distributors network and all of them have been well-trained regarding product technology, business ethics, and are evaluated on a regular basis. Tan stated that “We also have reached legal agreement with them to ensure the authenticity of the WABCO branded products they are selling. In addition to that, all the WABCO branded products are traceable in their selling system.”

In addition to the authenticity identification measures, such as security seal and QR code, other measures have been taken to mitigate the situation:

- It is the current situation that braking is the component that may sometimes be overlooked compared to the engine, transmission and axle.

- That is also why ZF CVCS is making efforts to cooperate with governments, associations and fleets to raise the public awareness of the importance of braking products.
- For those vehicles that have been going through their life-cycle, ZF CVCS is offering competitive and cost-effective solutions to the Commercial Vehicle aftermarket under the brand of ProVia, which is distributed by the same authorized network. ■



Kenneth Tang



# The Diesel Engine: Powering through Decades

*The invention of the Diesel engine has been a revolution, especially in the transport industry. We take a look at the development of the powerplant over the years.*

As a means of propulsion, Diesel engines have been with us for over a century. What unites most truckers, is the common engine under their hood, no matter if it is a cab over engine or a conventional design. It is noteworthy that the development of this engine type is tightly associated with the MAN brand. We have a look at the development of the Diesel engine over the years and how it continues to see improvements.

## Meet Rudolf Diesel

Diesel, born in Paris in 1858 to German parents, learned about the

poor efficiency of the steam engine during his studies at TU Munich university. In 1880, Diesel becomes head of the French branch of Professor Carl von Linde's refrigeration technology company and, on his own initiative, builds an ammonia engine. From 1890 onwards, he manages Linde's engineering department in Berlin. Further research gave him the idea for an efficient heat engine.

D2066



Rudolf Diesel set up his first shop in Paris to begin development of a compression ignition engine. A slow burn, the process would last 13 years. In the 1890s, he received a number of patents for his invention of an efficient, slow burning, compression ignition, internal combustion engine. The Diesel Engine was created. In 1893, he is granted the German patent no. 67 207 for the "Working method and design of internal combustion engines", and signs a contract with Maschinenfabrik Augsburg for the construction of a test engine. Working now entirely on a freelance basis, Diesel is able to devote all his time to the development and construction of his engine. Based on the test engine, the effective output is successfully verified for the first time in 1895, registering an efficiency of 16.6 percent.

### D3876



From 1893 to 1897, Diesel further developed his ideas at Maschinenfabrik-Augsburg AG. Thanks to the support of Heinrich von Buz, the world's first operational diesel engine (on display at the German Museum in Munich) is built at Maschinenfabrik Augsburg between 1896 and 1897: A series of improvements and subsequent tests led to a successful test on February 17, 1897 when Diesel demonstrated an efficiency of 26.2 percent with the engine.

Diesel's third test engine used in the successful story in 1897 acceptance



### D1556

test 1 cylinder, four-stroke, water-cooled, air injection of fuel. Output: 14.7 kW (20 hp). Fuel consumption: 317 g/kWh (238 /hp-hr) Efficiency: 26.2 percent. Number of revolutions: 172 min-1, Displacement volume: 19.6 L Bore: 250 mm Stroke: 400 mm. Following its commercial launch in 1898, the innovative "Diesel patent heat engine" still has to clear several hurdles to fully meet the expectations of its operators.

At the turn of the century, the diesel engine begins to conquer the world. It is used in stationary plants, and from 1903 it is also used for marine propulsion and to this day it remains the most economical of all heat engines. Rudolf Diesel lives to see only the first signs of the major impact his pioneering achievement would go on to make. He went missing during a sea passage from Belgium to Great Britain in the fall of 1913 and has since been presumed to be dead.

### First Automotive Engine, First Truck

The first automotive diesel engine with direct fuel-injection was used in 1923. It was the 1K14/19 single-cylinder diesel test engine with direct fuel-injection (13 hp, 10 kW), which was an essential prerequisite for significantly increasing engine speed, was used to acquire important findings relating to direct fuel-injection. Tests with direct fuel-injection started in year 1919.

On 12 March 1924, MAN engineers Sturm and Wiebicke set off from the factory at Augsburg, headed for Nuremberg in an M.A.N. Saurer truck. The 4-tonne platform truck was powered by an experimental diesel engine which for the first time injected fuel directly into the four cylinders.

With around 40 HP in available output, the test drivers managed to complete the 140-kilometre trip in five and a half hours. This successful drive was a baptism of fire for technology that enabled the economical diesel engine to be built compactly.

### World's first Automotive diesel engine

In 1923 MAN presented the world's first diesel engine vehicle with fuel injection and an entirely new type of bus construction, built on a low-frame chassis.

The 1K14/19 single-cylinder diesel test engine with direct fuel-injection (13 hp (10 kW), which was an essential prerequisite for significantly increasing engine speed, was used to acquire important findings relating to direct fuel-injection.

**First 3-axle and Trolley Buses 1930**

The first 3-axle and trolley buses were built by MAN in the 1930s. This was the most powerful heavy-duty diesel truck in the world at the time, with 140/150 HP.

Along with the development of turbo chargers for diesel engines and the all-wheel drive for commercial vehicles, MAN introduced assembly-line production manufacturing.

**An MAN MKN26 bus was introduced in 1953**

The legendary F8 short-nose trucks and buses in the MKN design with alligator engine compartment lid shape the image of the German streets during the time of the reconstruction and the start of the German 'Wirtschaftswunder' (economic miracle).

**1970s**

MAN 890 SG was an articulated bus introduced by MAN in the early 1970s, which was based on the guidelines for a standard bus. This is essentially a further development of the articulated bus MAN 890 UG-M16 with underfloor engine between the front and middle axles.

Due to the position of the diesel engine, this type of articulated bus had a higher floor than the standard two-axle buses. In 1972, man changed the type designations. The 890 SG became the SG 192.



**1994**

MAN presents the MAN Lion's Star FRH 442 coach. It was awarded Coach of the Year in 1994.

The bus production took place in the former Büssing plant in Salzgitter, which MAN had already taken over in 1971.

**2000 - The takeover of the premium bus brand NEOPLAN**

The company was founded by Gottlob Auwärter to built bus and truck in 1935.

In 2001, Neoplan was acquired by MAN AG subsidiary MAN Nutzfahrzeuge AG to form Neoman Bus.

The success story of the NEOPLAN Skyliner began in 1967. As the first ever double-decker coach, the Skyliner made a big impression on customers and passengers worldwide.

Neoplan continue its success with premium luxury coach until today.

**2005 - The Year of the Common Rail**

A new generation of engines – the D2066 Common Rail engine was introduced by MAN. This new engine was used on both bus and truck. Common-Rail-Injection guarantees low consumption combined with high performance. The D2066 CR offers fuel economy of up to 5 % compared to the older D28Lowest engine mass in the 430 HP category (967 kg dry weight). It from 360 Hp to 440 Hp in horsepower range.

**2010 - The start of Hybrid Engine**

With the MAN Lion's City Hybrid, the fourth generation of the hybrid buses goes into series production. Thanks to its innovative hybrid drive concept the model can make fuel savings of up to 25%, and was awarded the 'ÖkoGlobe' (The first international environmental award for the mobility industry) and 'Red Dot Design' awards in 2011.



The MAN Lion's E Bus is using Lithium-Ion Battery Module and it come with high capacity: 480/640 kWh (solo/articulated bus) and high charging capacity: 150 kW. This allow the E-bus to operate 200-270 km per-charge.

One of the stunning feature is the batteries were installed on the roof, with this feature it allow to empty the rear engine compartment, making room for an ideal seating area at the back.

Another important power train of MAN Lion's E Bus is the Electric Central Motor. This electric motor able to operate continuous power at 160kW and maximum power at 270kW on solo bus. While on Articulated bus, the continuous power will be 270kW and maximum power 400kW.

The maximum torque of the motor can be operated up to 2,100 Nm (Solo bus) or 3500Nm (Articulated bus) Both solo and articulated bus using same Single-stage adapter gearbox. ■

The MAN Lion's City Hybrid using D0836 Hybrid Engine. With up to 45 percent, it achieves the highest efficiency of all combustion engines enabling it to deliver the energy required for the high-power generator. The six-cylinder engine can always be activated whenever extra vehicle performance is needed. Though the bus is normally accelerated electrically and therefore emission-free.

### 2018 – D15 Engine Makes an Entrance

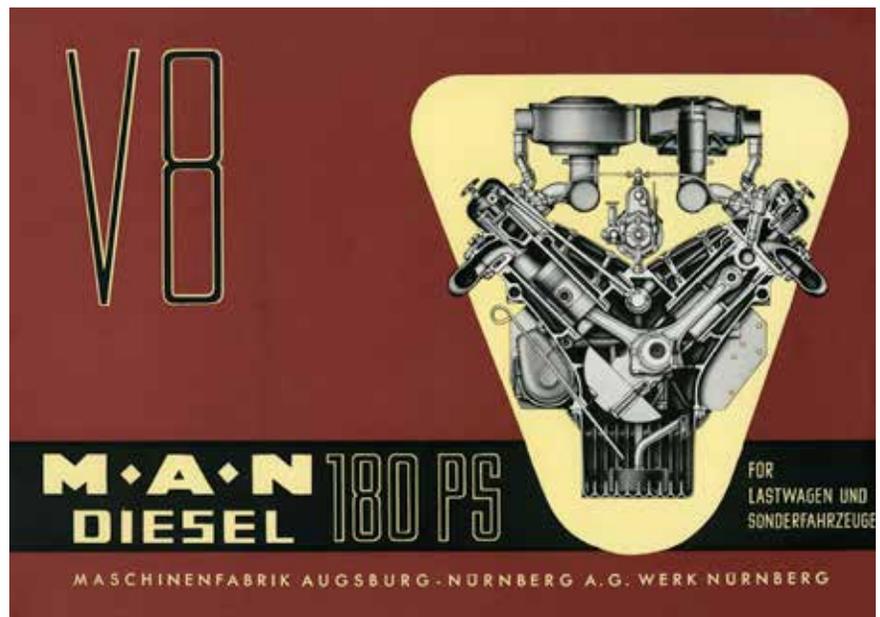
MAN launched its new generation of city buses - the new MAN Lion's City with the completely newly developed D15 Diesel engines and the new MAN Efficient Hybrid System. This system made a significant contribution to reducing fuel consumption and emissions. The standard start-stop function ensures whisper-quiet and emission-free stopping phases in city traffic.

### 2020 The Era of Electric Bus

The production of pure electric vehicles at MAN is imminent in year 2020. The new MAN Lion's City E Bus able to operate 200 to 270 km without a charging stop, thanks to modern battery technology.

With fully electric power train, the MAN electric bus drives with zero emissions and zero noise.

The MAN Lion's City E able to perform pure driving pleasure by inviting passenger area meets ergonomic driver's workplace and distinctive ambience.





## MIROS Pushes Ahead with Road Safety Agenda

It was a packed agenda during the WRRS (Work Related Road Safety) seminar, hosted by Miros on the 6th of April, which is a reflection of the fact that the team is working tirelessly on seeking ways to improve road safety. Over the course of the day, many papers, programs and findings were presented, with these being the highlights:

### Launch of WRRS OSH-C

The Work-Related Road Safety Occupational Safety and Health Coordinator (WRRS OSH-C) programme was launched specifically to address all occupational safety and health (OSH) issues for sectors related to road safety.

The programme is a collaborative effort undertaken by the Malaysian Institute of Road Safety Research (Miros), Social Security Organisation (Socso) and the Department of Occupational Safety and Health (DoSH).

According to their joint statement, the WRRS OSH-C programme was introduced to produce trained individuals recognised by the DoSH to help employers practice OSH aspects, promote OSH culture at the workplace and reduce the risk of road accidents involving their workers.

Miros director-general Dr Khairil Anwar Abu Kassim said it was an initiative of the WRRSM (Work-Related Road Safety Management) Research Cluster developed by Miros. "It is specifically for sectors that involve work-related road safety such as operators of commercial vehicles, public transport, emergency service, as well as road monitoring and maintenance.

"Based on Socso's statistics, the number of road accidents involving workers going to and returning from work as well as the use of vehicles while working had seen an increase of almost 80 percent over the past 10 years," Khairil Anwar said in the statement issued in conjunction with the Work-Related Road Safety Symposium 2021 held in Putrajaya today.

### Commuting Accidents

Drivers of commercial vehicles had a special status during the lockdowns in 2020 and special attention was given to a phenomenon called "Commuting Accident." It describes accidents that occur while staff is on the way to or from work. As major causes for these accidents, fatigue and rushing to work were identified. Of these accidents, 76.9 percent involved motorcyclists (drivers of commercial vehicles getting to or back from the yard), with 80 percent of persons involved being male and 65 percent under the age of 40.

While the absolute number of accidents was reduced in 2020, due to driving restrictions, it was observed that e-hailing and p-hailing riders were at an increased risk. One issue identified is the fact that delivery drivers do not have to undergo compulsory defensive driving training. Also, the number of fatalities among riders handling food deliveries were higher as there have been more drivers deployed during the lockdown. The group of e- and p-hailing riders now requires special consideration as it can be expected that this business model will remain popular beyond the pandemic.

### Fatigue as Safety Issue

One of the contributing factors to road accidents is fatigue. Long term studies have shown that increased workloads and mental stress are adding to fatigue in drivers of commercial vehicles. Contributing factors to increased mental workload are divided into driving related and non-driving related issues. For instance, the condition of roads or the handling of the vehicle have been identified as such factors.

Generally, fatigued driving is underreported and a problem that goes mostly unrecognised as a safety hazard. In a presentation by MyRest the issue of fatigued driving was highlighted as an issue that deserves the same attention as other safety issues: education, enforcement and engineering is needed to combat it.

It is important to point out that fatigue can have its roots in off-work causes as well as in work-related conditions. However, the effects of being fatigued can spill over from off-work situations, thus affecting drivers during their operating hours. ■





## Trust Issues and Autonomous Buses

needed that the bus will be able to get to the destination even without uninterrupted internet connection. I am sure that the smart people developing these vehicles could come up with something.

One of the current megatrends is the push for autonomous vehicles. In some cities, pilot test have been started and the signs seem to be clearly pointing into the direction that this is how we will be travelling in the future. However, there seems to be a bit of reluctance when it comes to the adaptation of this technology. For instance, pilots project are usually carried out in confined areas with limited distances travelled. There has yet to be a long-distance trial that I have to be made aware of.

Strangely, when we hop onto the LRT or MRT, there is no hesitation to get onboard, although there is no driver on board. We know that the train is monitored from a central command centre and that is good enough for us, knowing that the trains are bound to a specific route. Taking things up a bit, planes are hardly being flown by pilots anymore and antics have it that even the old 747 could land on its own. True enough, the reliance on technology has since been highlighted as a problem where pilots are said to have trouble flying a plane manually. Yet, we have no hesitation to fly somewhere.

One argument is that it is easier to manage autonomous vehicles in smaller places. But is that really true? To me, 300 kilometers of straight highway seem easier to manage than an urbscape with pedestrians, cars, other buses and traffic lights. On a highway, at least everyone on your side of the road is heading into the same direction with the same speed, given they adhere to speed limits. Maybe the issue is with the patchy internet connection? After all, an autonomous vehicle still needs guidance. Reassurance may be

I once sat on a bench in front of my hotel in Phnom Penh, waiting to get picked up. Although I was the only passenger from that hotel and the bus clearly came for me, I still asked the driver if this was the right bus. Of course it was, but it made me feel better. I imagine, that this is a common scenario and that bus drivers are being asked this question all the time. In the case of autonomous vehicles we may not be able to have this re-assurance that we are on board the right vehicle. How can we ensure that the bus I am hopping on is the one that I really want to be on? The novel-writing author in me can already see how a story would unfold with passengers on board, displaying a certain amount of Angst as to not knowing if the final destination for them is part of the buses route. Trust me: I managed to even go the wrong direction in places like Hong Kong, where there are literally just two general directions: East or West.

While certainly hoping that every trip is accident free or uneventful in the sense that there are no break-downs, we cannot rule out that a bus may run into trouble. In such a case, the bus captain is no longer just a driver, but someone that may need to organise the passengers, make decisions or even administer first aid. Stories of babies being born on board of buses have been heard before... With a truly driverless vehicle, there is obviously a void that needs to be filled so that there can be a response to issues that arise during the journey. Again, with all the airtravel that I have been doing, there is still some uncertainty and I have always been grateful for the steward(ess) that can help me sort out my problems, even if it is just a headset that is not working. Could it be that at the moment the engineers are focusing too much on technical issues to be solved while overlooking the human factor? Acceptance of a new technology would, as I would argue, require trust that it is performing better than what we have. Otherwise, why would we bother. I am sure that there are simple measures that could be taken to increase the trust level for people to try and experience autonomous vehicles. Let me know what you think about this as I would like to know your feelings towards transport systems that may not need our bus captains anymore. ■

# Gemilang Coachworks Teams up with Altair to Enhance Commercial Vehicle Passenger Safety



With global public transport operators placing greater emphasis on passenger safety and security, mainboard-listed Gemilang International Limited (Gemilang), through its subsidiary, Gemilang Coachworks Sdn Bhd, has teamed up with Altair, to boost passenger safety for commercial buses and coaches by capitalising on simulation technologies.

Under this agreement, Altair, a global technology company providing solutions in data analytics, simulation, and high-performance computing (HPC), will provide its industry-leading simulation solution to help Gemilang automate bus rollover crash tests. This effort will generate critical data for Gemilang engineers to build and design safer commercial vehicles. ■

## China First Level-4 Autonomous Driving Bus Operated in Chongqing

At 12:00 noon on April 12th, a red King Long bus slowly drove into the driverless bus platform of Yongchuan where lines of awaiting citizens ready to get onboard orderly. This is the first trial operation of self-driving bus in China, marking a major commercialization breakthrough for Chinese autonomous driving industry.

On the same day, Yongchuan District of Chongqing held a signing ceremony for the kickoff of self-driving bus operation and strategic cooperation of intelligent transportation project, through which Chongqing Yongchuan and Baidu reached strategic cooperation on the pilot project of intelligent transportation in Yongchuan District with the aim to build Yongchuan as a national benchmark city of intelligent transportation. The official launch of driverless bus is just an important part of intelligent transport, which substantially benefits the public transit through intelligent travel.

The first self-driving bus route in the country covers a round-trip distance of nearly 10km where the first three King Long self-driving buses robobus are operated with a cruising range of 40-60km/h. As self-driving buses for open road operations, these buses

feature precise stops and can easily adapt to bus stop scenarios and more complex urban road conditions to fully meet the needs of normal bus operations.

With laser radar, millimetre wave radar, monocular cameras and other "black technology", King Long Robobus will be able to detect its surrounding at 360 degrees broad vision without dead corners which driving. Combined with V2X (Vehicle to Everything) vehicle-road synergy, it can realize Level-4 vehicle-road cooperative sensing driving via the communication between the on-board OBU and intelligent network-connected roadside units. The V2X communication technology enable the vehicle to receive real-time high precision sensing data of comprehensive traffic participants on the road from the roadside intelligent sensing system, including the current flow of pedestrians and vehicles on the road, blind spots that are not visible, which will be processed and displayed on the dashboard screen for driver's convenience. By means of V2X, vehicles can even anticipate when the traffic lights will change and figure out the waiting time in advance, which facilitate the planning in advance to improve traffic efficiency and to realize the close integration of smart cars and intelligent roads. ■

# Moovit Launches New Feature Enabling Transit Riders in 3 400 Cities to Help One Another Avoid the Masses on Mass Transit



feature enabling public transit riders in 3 400 cities across 112 countries to help one another avoid the crowds as COVID restrictions ease and public transit riders return. Moovit's Android and iOS users can now report crowding levels at stations and on lines, allowing others to see how crowded the station is before entering, or how packed a bus or train line is before boarding.

In February, Moovit released real-time crowding information, in collaboration with 70+ transit agencies, which is dependent on their real-time feeds. However, most transit agencies still do not provide real-time crowding information due to no, or lack of, crowd counters installed on their fleets or at stations. Now, Moovit is minding the gap and using the wisdom of the crowd to allow users to view and report crowding levels at stations and on lines. This information is seen, validated or updated by other nearby users within a 10 minute time window to ensure the data is precise, and helps people feel safer riding public transportation.

"Our experience in using the wisdom of the crowd via our Mooviter Community, a network of more than 720,000 passionate local editors that help map and maintain transit information in their cities, has been very positive and impactful and has shown us that people are keen on contributing to the common good," said Yovav Meydad, Moovit's Chief Growth and Marketing Officer. "We're drawing on this belief again, empowering millions of Moovit users to help one another feel comfortable returning to public transit."

**M**oovit, an Intel company, a leading Mobility as a Service (MaaS) solutions provider and creator of the #1 urban mobility app, is launching a new

## Mobileye, Transdev ATS & Lohr Group to Develop and Deploy Autonomous Shuttles

Mobileye, an Intel Company, Transdev Autonomous Transport System (ATS), part of Transdev Group dedicated to autonomous mobility solutions; and Lohr Group, a mobility solutions manufacturer, announced a strategic collaboration to develop and deploy autonomous shuttles. The companies are integrating Mobileye's self-driving system into the i-Cristal electric shuttle, manufactured by Lohr Group, with plans to integrate it into public transportation services powered by fleets of self-driving shuttles across the globe, starting in Europe.

By integrating the autonomous i-Cristal shuttle into Transdev's existing mobility service networks, the companies aim to improve the efficiency and convenience of mass transportation solutions.

Autonomous mobility can be woven into the fabric of transportation networks to distribute service when and where it's needed, while also optimizing the fleets, lowering transportation costs and improving customer experiences.

Over the next year, Mobileye will work with Transdev ATS and Lohr Group to integrate and deploy i-Cristal autonomous shuttles leveraging Mobileye's AV technology, Transdev ATS's technology and Lohr Group's industrial expertise. The three companies will initially test vehicles on roadways in France and Israel, aiming to ready technology designs for production by 2022. The companies expect to deploy self-driving i-Cristal shuttles in public transportation networks by 2023.

# German Transport Ministry Includes Mercedes-Benz Hybrid City Bus in Its Electric Mobility Development Program

The German Ministry of Transport, Building and Urban Affairs (BMVBS) will provide funding for Daimler Buses to develop, evaluate, and test the first small fleet of diesel-hybrid city buses able to run solely on electric power. To this end, the ministry (BMVBS) yesterday signed a letter of intent.

The BMVBS has designated eight model regions in which pilot projects will be conducted for the Electric Mobility Model Regions development program. The eight regions were selected following a call for expression of interest, which resulted in submissions of 130 applications for pilot projects. The BMVBS development program endowed with 115 million from Germany's Economic Stimulus Program II provides targeted funding for testing and accelerated market preparation of electric drive vehicles until 2011. The sponsored projects must be launched by late 2010, however.

The Electric Mobility development program will help Daimler to enhance and test the Mercedes-Benz Citaro G BlueTec Hybrid articulated

bus, enabling the company to continuously optimize the vehicle's costs, ease of maintenance, and the state of the innovative drive technology's development. The drive system of the Mercedes-Benz Citaro G BlueTec Hybrid is currently the only publicly presented bus concept that can run for several kilometers solely on electric power.

Next year Daimler Buses will test about 30 Citaro G BlueTec Hybrid buses in everyday operation in presumably model regions. The hybrid buses will demonstrate their suitability for everyday use by operating in regions with different topographies and speed profiles. In March of this year 250 experts from various European mass transit companies had the opportunity to experience the Mercedes-Benz Citaro G BlueTec Hybrid articulated bus in action for the first time. The experts praised the 18-meter-long hybrid city bus for its quiet and smooth operation and its completely emission-free driving for short distances. They also commended the vehicle's unique concept, which features four wheel-



hub motors and the world's largest lithium-ion battery for automotive use. This battery stores the electrical energy from the diesel generator and that recovered by the braking system.

The Mercedes-Benz Citaro G BlueTec Hybrid thus reduces the already low diesel consumption by 20 to 30 percent and cuts CO2 emissions by the same amount. The new hybrid bus was extensively tested during the past several months, including weeks of successful trials at the Arctic Circle under the harshest conditions imaginable. ■

## Hyzon Motors Passes Durability Test for Australian Mining Company

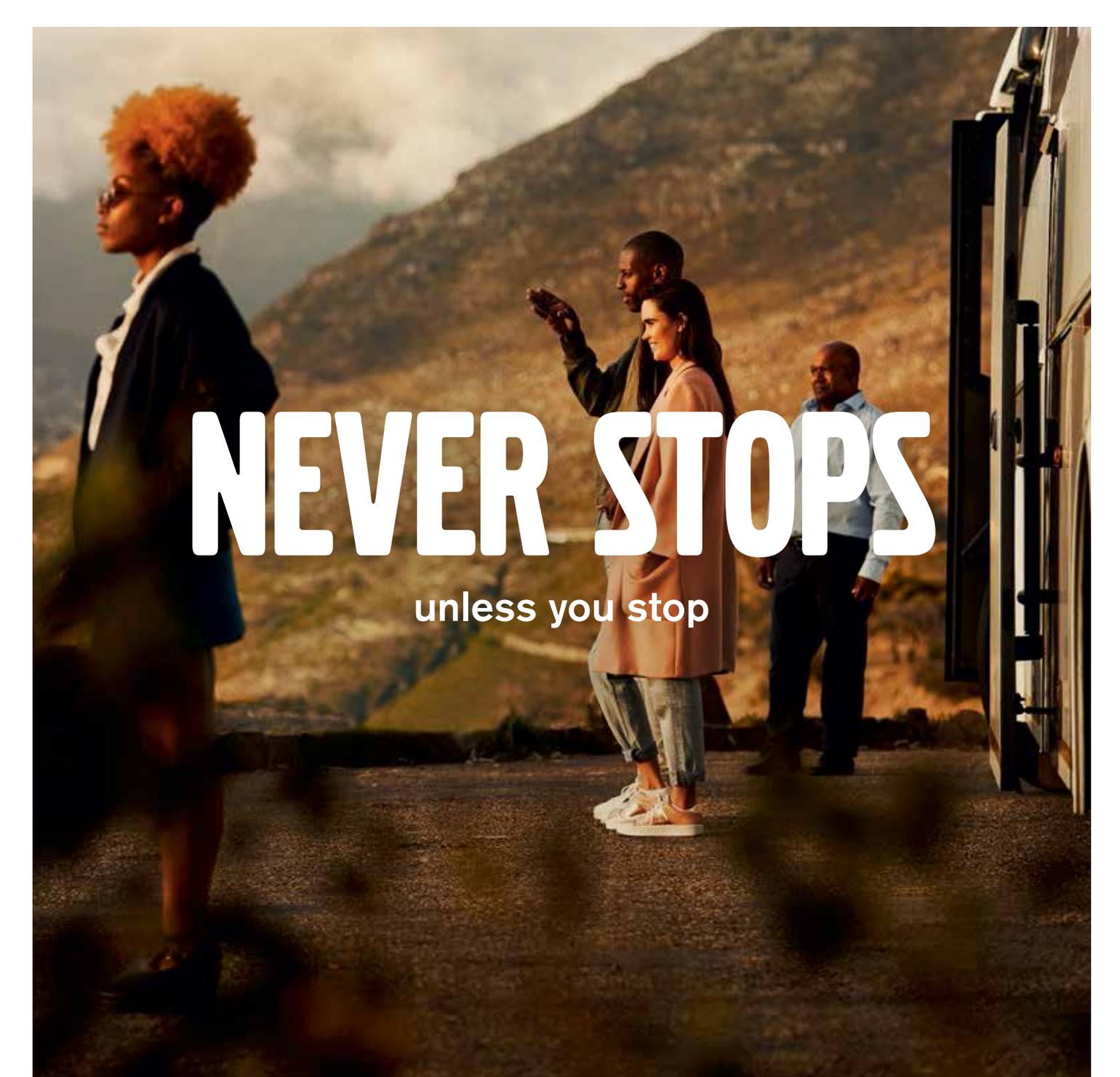
Hyzon Motors Inc. and its hydrogen fuel cell-powered coaches are ready to conquer the harsh mining landscape of Western Australia.

The company, a leading global supplier of zero-emission, hydrogen fuel-cell vehicles, announced that its transport coaches completed a 15 000-kilometer durability road test – a key tryout before one of the world's largest iron-ore producers uses the vehicles in the remote Pilbara region.

Fortescue Metals Group has contracted for up to 10 of Hyzon's custom-built coaches in the Christmas Creek mining hub, where summer temperatures commonly exceed 110 degrees. The endurance road test demonstrated the capability, effectiveness and strength of fuel cell stacks being discharged and recharged repetitively in harsh conditions.

The Hyzon-Fortescue collaboration is the latest sign of increasing industrial and commercial transition to hydrogen mobility and it comes as New York-based Hyzon readies for a public listing soon on Nasdaq via business combination with Decarbonization Plus Acquisition Corp. (NASDAQ: DCRB).

Fortescue expressed interest in Hyzon's proprietary fuel cell technology using hydrogen gas – for which emissions are limited to water vapor – to replace a fleet of diesel vehicles for transporting workers around remote mining sites. The switch is an integral part of the resource company's plans to reduce emissions, diversify its energy mix and become carbon neutral by 2030. The Hyzon coaches for Fortescue will mark the world's first hydrogen-powered coach fleet. ■



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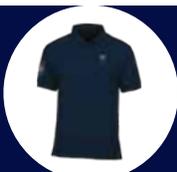
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