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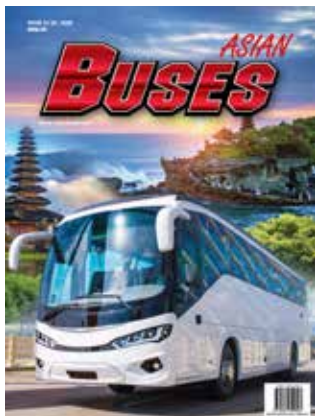
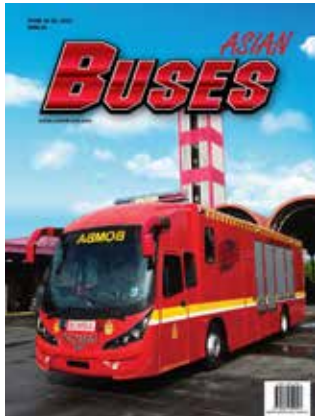
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EDITORIAL

EDITOR Stefan Pertz

GRAPHIC DESIGNER Tony
PHOTOGRAPHERS Stefan Pertz

CONTRIBUTORS David Bowden
Bhushan Mhapralkar

ADVERTISING

Nicole Fong
Nicole@asiantrucker.com

SINGAPORE

Floyd Cowan
Floyd@asiantrucker.com

THAILAND

Songyot Kamontavikun
Songyot@asiantrucker.com

ON THE COVER

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CIRCULATION, CONTRIBUTIONS and SUBSCRIPTION

info@asiantrucker.com

WEBSITE and E-NEWSLETTER

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No. 27-1, Block C, Zenith Corporate Park,
Jalan SS7/26 Kelana Jaya, 47301 Selangor

Tel : 03 7886 5313





stefan@asianbuses.com

The Vehicle is Only the Start

Whenever we hear about the decision to expand a business, the discussion is usually around the type and brand of bus that is to be added to the inventory. While certainly important, this should not be the only consideration. For example, the character of the driver should play a role as well. Someone more calm and collected may be better suited for inner city routes than a young chap that would drive long distance with overnight stops. It is a matter of hardware and software that needs to be considered to be working together.

The chassis of a bus may be most important, however, it is all the periphery that makes it a money-generating machine. Take for instance lubricants and fuels: picking the right one can reduce operating cost. In this issue we dive deep into the issues around fluids in commercial vehicles. Also, of equal importance are the "accessories" that you can bolt on. To fight the pandemic and to provide a generally safe environment, giving passengers peace of mind, air purifiers and filters can be added. These items, also featured in this issue of Asian Buses, may not command an increase in the fare, but the added user comfort will surely ensure repeat business.

In our cover story we look at how it all comes together and how buses of various shapes and forms play an important role for a seemingly unrelated industry. Together with David Bowden, I looked at medical tourism and the opportunities that there are for the local bus industry. What we found is that there is a vibrant and highly sophisticated underbelly that is not often recognised. Many may think of foreigners coming to Malaysia for a treatment, but I would argue that by now we could all use a short trip to a nearby attraction, the sea or a weekend away in another city. What better way to get there than by bus? Without the need to drive, the relaxation starts right away.

In our Thought Leaders section we learn a lot about the future of commercial vehicles. Some of our readers may wonder why we are also talking about trucks in the article, but it will become clear that in an ecosystem, such as a country or a city the various types of vehicles need to share and coexist. What is fascinating is that the development of a autonomous, connected bus may be relatively easy, considering the infrastructure that needs to go around it. Whenever I get the chance to interview one of the think-tank-type departments of commercial vehicle OEMs, it becomes clear that there is so much around the vehicle that needs to be considered when developing a new range: insurance, road networks, IT infrastructure, service centres and of course, the people operating and owning all the various components.

Hopefully, we will not need them, but ambulances are interesting vehicles too. I spoke to an expert in designing and building ambulances and what I was being made aware of again is that these vehicles are the true kinds of the road. While they may not be the biggest, they do command respect and typically, they are not bound by the usual rules we all ought to follow. Having come a long way over the past decades, these vehicles are now very specialised and packed with high-tech.

Coming back to the idea of expanding ones business: events are an integral part of the industry and I am looking forward to welcoming you all to our own exhibition, MCVE, in March 2022. It is here where potential buyers will be able to see, touch and experience the tools, components and chassis that maketh buses. I encourage you to exhibit as the industry is hungry to get back to a platform where it all comes together.

Please keep safe, buckle up and enjoy the ride!

Stefan Pertz
Editor, Asian Buses



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IAA 2021: MAN Electric Bus takes Visitors to their Destination with Zero Emissions

Visitors to the IAA in Munich experienced sustainable and forward-looking mobility in the truest sense of the word. This was because the all-electric MAN Lion's City E was in operation on the so-called "Blue Lane", which connected the trade fair and the city.

This year's IAA was held in Munich for the first time. From September 7 to 12, the mobility and technology industry met in the Bavarian capital. But it's not just the location that's new, the concept is too: the aim of the organisers with the IAA 2021 is to offer visitors an exhibition, a smart mobility platform and an attractive dialogue forum at the same time. For this reason, the event took place at the exhibition grounds, but also at many Munich locations where visitors were able to exchange ideas about mobility concepts of the future and experience innovative technologies. The MAN eBus was in operation between the city centre and the trade fair centre – on the so-called Blue Lane – and took passengers to their destinations safely, comfortably and in an environmentally friendly manner.

"Visitors to the trade fair could experience future-oriented and sustainable mobility with our MAN Lion's City E. A real talent when it comes to sustainability, it cracked the 550-kilometer mark under real conditions in the Efficiency Run

in May," said Andreas Tostmann, CEO of MAN Truck & Bus. "The MAN Lion's City E is locally emission-free on the road and represents the future of inner-city mobility," said Tostmann.

"The potential for reducing CO2 emissions in local public transport is enormous," said Rudi Kuchta, Head of Business Unit Bus at MAN Truck & Bus. The European Union has also recognized this and passed the Clean Vehicle Directive. This provides for binding emission standards in municipal fleets from the beginning of August 2021. Cities must thus set their course for emission-free mobility. The goal is to move from "low emission" to "no emission". Solutions for the mobility of the future are therefore more in demand than ever. More and more public transport companies are relying on the MAN Lion's City E, which is not only on the road in Munich, but now in many European cities.

MAN Truck & Bus offers an overall concept that brings together tailored, forward-looking solutions such as the Lion's City E and holistic eMobility consulting. The aim is to provide transport companies with the best possible support on their way to emission-free mobility. "We are convinced that electromobility is the key technology for urban mobility of today and tomorrow," concluded Kuchta. ■



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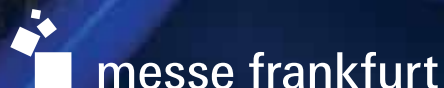
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Christopher Heine (CEO) and Jens Röttgering (Owner)

Filters can do More than just Filter

Professional filtration provides for clean water and pure air, but the filtration specialist wants to do even more by making a social contribution. As a first milestone on the way to achieving climate neutrality at all of the Hengst Group’s locations around the world, the headquarters in Münster will already implement this goal next year. Other locations will follow every year until 2030.

Filters and filter solutions are intrinsically important for sustainability. The importance of reliable filter systems for protecting people and the environment has become clear as a result of the pandemic. Intelligent filter technologies, however, are not only able to filter out hazardous substances. They also enable energy-efficient, and therefore increasingly CO₂-reduced operation of machines and systems – from wind turbines to industrial plants.

“Our filters make the world a little bit cleaner”

“We want to preserve our planet. Every filter manufactured and every filtration solution developed by Hengst makes our planet a little bit cleaner”, CEO Christopher Heine sums up the company’s vision. For the father of three, mankind is at a crossroads. “That means that businesses also have to make their contribution. It’s the only way to give future generations a chance to have a fair life”, says Heine.

And at Hengst, “How” is just as important. The Group is setting the first milestone at the company headquarters

in Germany, which produces more than 50 million filters every year. The ambitious goal is for Münster to become climate neutral in 2022. That is why only electric power from regenerative sources is used at the location. In addition, the roofs of the company buildings are being used to install a solar power system, which will further reduce the consumption of electric power. Additional optimization of resource-efficient processes and production technologies emphasizes the company’s goal of eliminating unnecessary CO₂ emissions.

The remaining CO₂ according to Scope 1 and Scope 2 of the “Greenhouse Gas Protocol” will initially be compensated through selected and certified climate protection projects, and reduced to zero over the coming years. The process of CO₂ compensation, which is based on the “clean development mechanism” of the Kyoto Protocol, is an established process for management of greenhouse gases in the corporate environment.

Münster is only the first waypoint on the overall route. Every year, other Hengst locations will implement climate neutrality measures. And new locations will be climate neutral from the first day of operation. Because the intention of achieving total climate neutrality by 2030 is possible only if all locations around the globe make their contribution and live the Hengst vision: “Making our planet a purer place”. 🚀

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Stefan Pertz,
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By Wong Thiam Boon



70 Years of MANN-FILTER: Proud of Every Wrinkle

The premium filtration brand celebrates its round birthday, looks back with pride on a successful history of development and sets the course for a promising future with great confidence.

How it all began: Adolf Mann and Dr Erich Hummel established “Filterwerk Mann + Hummel” back in 1941 in Ludwigsburg as it was called back in the day. Today, eight decades later, MANN+HUMMEL has grown to become one of the world’s leading filtration experts, employing more than 21000 people at over 80 locations, with sales totaling 3.8 billion euros (in 2020). MANN-FILTER was there from the very beginning and is still part of the company today as a globally valued brand.

Unusual Start

Adolf Mann and Dr Erich Hummel did not start the former company “Filterwerk Mann + Hummel” in a typical sense. Both held leading positions at a textile manufacturer based in Stuttgart southern Germany called Bleyle. The long-established company was in a twofold crisis in 1938: on the one hand, the renowned company was struggling with declining profitability and losses, and on the other hand, it came into conflict with the Nazis.

In this dramatic situation, the Bleyle family turned to long-time employees Adolf Mann and Dr Erich Hummel. The idea was for them to take over the management of the company as managing directors, in the interest of “preserving Bleyle’s legacy”.

Because Bleyle’s textile production was classified as “not important for the war effort”, parts of the workforce were repeatedly withdrawn - to the front or to armament factories. Through courageous decisions Adolf Mann and Dr Erich Hummel succeeded in completely transforming the former textile factory in 1940 into a filter manufacturer for the automotive industry. When the Stuttgart-based piston manufacturer Mahle offered them the chance to take over the production of engine filters shortly after the outbreak of the Second World War in 1941, they seized the opportunity - and laid the foundation stone for MANN+HUMMEL.

Adolf Mann and Dr Erich Hummel were both more or less “career changers” and got to know each other at the Stuttgart-based textile manufacturer Bleyle, where they both advanced to become managing directors over time. Adolf Mann came from a simple background and started his career as a mathematics teacher. After the First World War, Mann exchanged the “classroom for

the sewing machine". The Stuttgart-based textile entrepreneur Fritz Bleyle, with whom Adolf Mann had fought together in World War I, was looking for someone "who could do maths, who knew how to do balance sheets and whom he could trust blindly". All of this applied to Adolf Mann, and so he joined the family business in 1921 and quickly advanced in various functions.

Dr Erich Hummel also joined Bleyle rather by chance. Before he could study law, he had to complete a commercial apprenticeship and survive the First World War. Freshly graduated, he found no job with the state as a predicate lawyer and therefore decided to look for a job in the industry. He joined Bleyle as a company lawyer and met a colleague who had also left the civil service three years earlier and who soon was to become his co-founder: Adolf Mann.

MANN-FILTER: Then and now

70 years ago, on August 16, 1951, MANN-FILTER was first registered as a trademark. What started as a small national brand in Ludwigsburg also gained international popularity starting in the 1960s. Today, the premium brand is an undisputed force in filtration technology for the automotive and industrial sectors worldwide. Their filters combine the entire know-how and experience of the MANN+HUMMEL Group in a comprehensive product portfolio – and in 100 percent OE quality for the aftermarket around the globe.



"We look back with pride on the very successful 70-year history of our premium brand, which we continue to write every day," affirms Cedric Dackam, Vice President Automotive Aftermarket Asia-Pacific, Middle East & Africa (AMEA) at MANN+HUMMEL. "We are taking the anniversary as an opportunity to thank our customers around the world – for their many years of loyalty and for good and successful collaboration. This development would not have been possible without our customers," adds Dackam.

As one of the few brands in the automotive aftermarket, MANN-FILTER has managed to become an icon with cult status over the years with its striking yellow-green color scheme. For a few years now, they've been enjoying the same success in motorsports as well. Here, it is the yellow-green mamba that is generating a lot of excitement among its growing fanbase.

Important Breakthrough Innovations

The technical requirements placed on air, oil, fuel and cabin air filters have been increasing for several decades in every vehicle generation since the beginning of the automobile era. This trend has currently accelerated and applies in particular to the required filtration efficiencies.

It also has an impact on MANN+HUMMEL who produced its first filters in 1941 and had them constantly improved since then. Therefore, there is no single breakthrough which one could mention here but as a representative example one very important innovation which protects the drivers themselves stands out, and one that provides clean oil to the motor with a very user friendly service.

In the 1990s for the first time the protection of vehicle drivers was subject of discussion and MANN+HUMMEL's solution to the new requirements was a particulate cabin air filter which retains almost 100 percent of the incoming dust, soot, and pollen. It was continuously improved since then and put onto a new innovation level in 2014 with the biofunctional cabin air filter MANN-FILTER PreciousPlus.



For the protection of the engine itself, MANN-FILTER offers more than 6800 filters worldwide for all kinds of vehicles. One of those is a particularly service-friendly oil filter for which MANN+HUMMEL had been granted patents in several countries. What is special about this HU 1291/1 z oil filter is its bayonet connection and double-concentric sealing. The advanced and functional design of the filter element and housing cover makes an effortless, quick and clean service possible and is therefore a considerable relief for mechanics.

Currently, we are in the age of massive development of alternative drives. Further filter applications and types are emerging in this area. There is no end in sight to this development, since the functionality of highly developed electrical and mechatronic components can only be guaranteed by high purity classes of the fluids that come into contact with these components. Within the MANN+HUMMEL Group there are more than 1 200 researchers and developers and the company will continue to offer high-performance, precision-engineered filtration solutions from MANN-FILTER for the filters of tomorrow in the engines of today.

Expansion Outside of Germany

MANN+HUMMEL pursued a consistent export strategy and early internationalisation. By the end of 1956, MANN+HUMMEL already had representatives in Finland, Sweden, Norway, Denmark, Holland, Belgium, Luxembourg, France, Switzerland, Italy and Austria. Spare parts were also distributed in the former British Empire, the USA, Greece, Spain, Portugal and some Latin American countries.

The internationalization followed a clear strategy. In the wake of the automotive industry, MANN+HUMMEL sought to be close to its customers, who were becoming increasingly international. In addition to the sales agencies, the customers’ demand for the proven quality of the products was initially met by granting licences - for example to Egypt, Chile, India, Yugoslavia, Mexico, South Africa, Hungary, Iran and Turkey.

Two licensees later became the first subsidiaries: The Argentinian TIDEM S.L.R. and the Brazilian Naumann Gepp were the first steps of the Ludwigsburg filter factory on its way to becoming a globally operating company.

Steeped in Tradition

The first MANN+HUMMEL location emerged from the former textile company Bleyle in Stuttgart. After the end of the second World War, production was successively expanded. In 1954, a second plant was set up in Ludwigsburg, as well as branch locations in Bössperde (1946) and Marklkofen (1962). Internationally, Brazil (1964) and Argentina (1971) were the first locations outside Germany.

MANN+HUMMEL’s headquarters are still located in Ludwigsburg near Stuttgart. The new technology centre, which opened in 2016, reflects the company’s commitment to this location. It is a clear commitment by the family-owned company to the Ludwigsburg site and plays a key role in maintaining and further expanding the company’s innovation leadership in filtration technology. Meanwhile, Marklkofen is currently MANN+HUMMEL’s biggest site with more than 2400 employees.

Award-winning Worldwide

MANN-FILTER is a big hit. This is certainly evident from the many awards received worldwide. The fact that customers independently choose their favorites further reinforces this. “Our numerous awards make clear how much our customers appreciate MANN-FILTER. We are very proud and happy about every single one, such as the “Best Brand” award from ETM Verlag in cooperation with the Automechanika trade show,” says Dackam. “To receive this award for the tenth time in a row on our 70th anniversary is a great gift and a great honor. It motivates us to continue developing innovative products for vehicles and machines while offering comprehensive service packages.”

Reacting to Trends

“Our top priority is to offer customers customised solutions. The central principles of MANN+HUMMEL’s entrepreneurial activities have

always been, and still are, intensive research and development activities and close cooperation with customers from the very early stages of a new development," Dackam explains.

These two principles still contribute significantly to the success of the family business today and enable the company to closely accompany its customers in the transformation of mobility with customised filter solutions. That is why they have such a long-term business relationship with most of their customers. "They trust us because we are there when they need us."

Working with Customers

Being at customers' service means not only working with them on forward-looking solutions and thus actively driving forward the transformation of mobility, but of course also being a reliable partner for existing mobility solutions.

While MANN+HUMMEL works together with its customers to improve the performance of the current portfolio, develop products for alternative engines and reduce particulate emissions, the company is also committed to serving original equipment and aftermarket customers with a wide range of existing filtration solutions.

Evolving Filtration

Modern vehicle engines are very demanding. For long-term performance, reliable and high-quality filters are more important than ever. At earlier times of the automobile era, the protection of the motor was the main duty. Nowadays this has been extended by a protection of driver and occupants but also by the steadily growing importance of an environmental protection. MANN+HUMMEL as filtration expert with MANN-FILTER as its premium filtration brand in the independent aftermarket have the right products to all these demands.

Just to name a few examples: The high-efficient cabin air filter MANN-FILTER PreciousPlus provides clean air in the vehicle cabin and reliably filters harmful gases as well as particles such as fine dust. Its biofunctional coating binds allergens, filters virus aerosols and prevents the growth of bacteria and molds on the filter.

Holistic Approach

When it comes to the protection of environment, the company provides solutions such as the innovative brake dust particle filter. In fact: every time you brake, you produce brake dust. A significant part of that dust consists of fine dust, which is harmful to the health and environment due to its small particle size. Thanks to its robust housing directly next to the brake caliper, the filter acts directly at the point of production to prevent the escape of fine dust into the environment, especially in city traffic requiring frequent braking. This is particularly important because braking in city traffic causes dust that is finer than exhaust gases.

MANN+HUMMEL already offers today many applications for vehicles without conventional combustion engines. One of these products for vehicles with electric drive is the transmission fluid filter for E-axes who ensures clean oil for lubrication and cooling of the gear wheels and other components within the transmission. A further important component for electric vehicles is the battery venting device, which MANN+HUMMEL already went into serial production with for purely electric as well as plug-in hybrid vehicles.

Decades of Knowledge

MANN+HUMMEL transfers its decades of experience in filtration to the requirements of alternative drives. Regardless of which drive technology will prevail in the future, or whether there will be a future with different technologies on an equal footing: Filters will still be needed. In addition to

the complete range for combustion engines, numerous products for alternative drive technologies are already integrated in the portfolio. MANN-FILTER as a strong and competent filtration brand has the ambition to offer innovative products in 100 percent OE quality and a wide performance portfolio also in future both for combustion engines as well as for alternative drives.


Tailored to Technical Needs

Generally, the use of high-quality filters is important everywhere and the answer to this question differs depending on the region. The technical performance of a filter is strongly tailored to different applications which can vary widely from region to region. MANN+HUMMEL responds to these various requirements by developing specific products. In order to find answers to questions of the future, to further improve products and ensure they meet the requirements of its customers, MANN+HUMMEL relies on its global research and development network.

Founders Spirit Living on

With curiosity, true entrepreneurial spirit and courage, Adolf Mann and Dr Erich Hummel transformed a textile company into a world market leader in filtration during very difficult times. Still today, it is the courage and entrepreneurial spirit of every one of us that makes MANN+HUMMEL so successful. The company therefore relies on empowerment and deep trust to give its employees the freedom to develop entrepreneurially to preserve the spirit of the founders.

A glimpse into the future

Dackam concludes by saying "Seven decades of successful brand history also means we bear a great responsibility for the future. And it goes without saying that we want to live up to this obligation. To meet the challenges ahead, we are developing the filters of tomorrow in the vehicles and machines of today. After all, we want to still make the same promise to our customers in the future: MANN-FILTER – Perfect parts. Perfect service." 



Volvo Buses Launches New Global Electromobility Offer



Volvo Buses is expanding its electromobility offer worldwide. With the launch of the new Volvo BZL Electric chassis, Volvo Buses provides a solid platform for sustainable and efficient public transport in cities around the world, along with reliable and profitable operations for customers.

"We are committed to leading the transformation of our industry towards a more sustainable future. With the launch of the new Volvo BZL Electric, our ambition is to offer the world's most responsible electric bus systems. We do it by focusing on sustainability, safety and reliability," says Anna Westerberg, President of Volvo Buses.

The global demand for electromobility solutions in the public transport sector is rising and Volvo Buses expects a rapid increase in the coming years. "With the new Volvo BZL Electric we offer a global platform for clean, silent, and energyefficient public transport to meet the rising demand on important markets that are ready for the shift to electromobility," she says.

Circularity is Important

Environmental care is at the heart of Volvo and sustainability, less noise, lower emissions, and reduced CO2 is essential. Volvo Buses has a wider scope than just that. "We have a lifecycle perspective and take responsibility

for the environmental impact of our products, from the cradle to the grave. This means we ensure that materials, manufacturing, operation and recycling meet the highest environmental standards," adds Westerberg. At Volvo Buses, circularity is important, and the new Volvo BZL Electric has been developed to be over 90 percent recyclable.

Volvo Reliability, Efficiency and Safety

Volvo Buses has years of experience of electromobility solutions from working closely together with

operators all over the world. The new Volvo BZL Electric is designed for both single and double decker applications with multiple options for bodybuilders.

“The new Volvo BZL Electric is based on proven and successful technologies already implemented in Europe. All the chassis and driveline components have been developed and manufactured by Volvo. To safeguard the premium qualities of our buses we partner up with selected bodybuilders around the world,” says Dan Pettersson, Head of International at Volvo Buses.

An electric bus is always part of a system. Route length, frequency, capacity, charging and local regulations all translate into different solutions. “Through experience, we know that we need to work closely together with our customers and partners to be able to tailor electromobility solutions to each individual city. And through our worldwide service network and dedicated service teams, we can ensure the reliability and efficiency of our products and services even in the long-term perspective. It’s all about delivering zero unplanned downtime,” comments Pettersson.

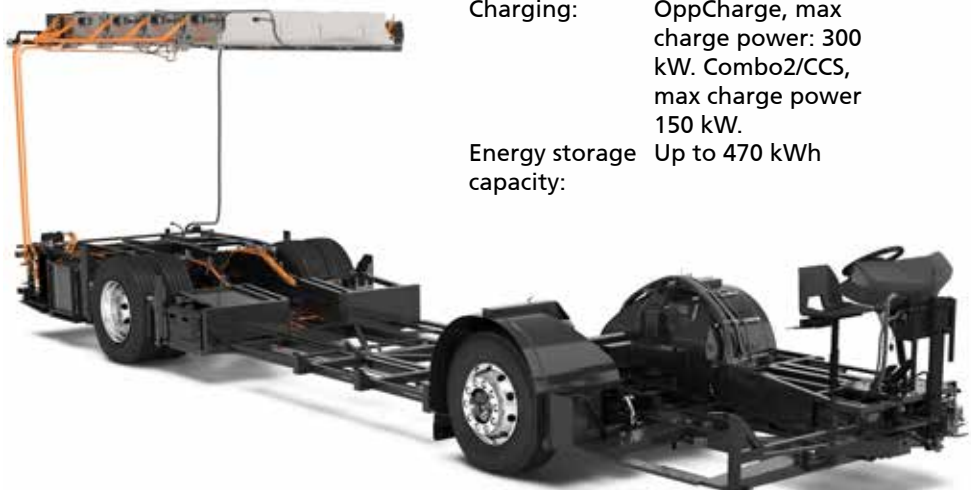
Safety is a guiding star at Volvo, and the new Volvo BZL Electric meets the highest European standards for superior drivability and safe operation. It includes Volvo Buses’ latest connected technology offer, Volvo Connect. With features




such as Volvo’s Zone Management, the operator can create safety zones where the maximum speed is limited, for example outside a school or in a bus depot.

A first-class driving experience and charging flexibility

The Volvo BZL Electric features a driveline developed entirely by Volvo. The 200 kW electric motor is coupled to a two-stage automated gearbox. This increases wheel torque at low speed and evens out current peaks, thus reducing energy consumption and sustaining motor and battery health. The driveline can be configured as a single or dual motor unit with a power output of no less than 540 hp. This makes the Volvo



BZL Electric an untiring hill climber and allows for swift and smooth operation.

The Volvo BZL Electric is designed for charging flexibility using hardware interfaces for both OppCharge high-power charging on route as well as CCS charging in the depot. Volvo Buses also offers a usable energy commitment, which means that Volvo Buses guarantees capacity for an agreed amount of energy for the operation – thus eliminating any customer worries about batteries. 

Facts Volvo BZL Electric



- Length (mm): 11,815 (single decker), 10,585 (double decker).
- Driveline: Electric motor, max output one/two motors: 200/400 kW (single decker), 200 kW (double decker).
- Gearbox: 2-speed automated manual transmission.
- Charging: OppCharge, max charge power: 300 kW. Combo2/CCS, max charge power 150 kW.
- Energy storage capacity: Up to 470 kWh



Bus-iness Opportunities from Medical Tourism

By David Bowden and Stefan Pertz

Asian Buses puts medical tourism under the microscope to identify what Malaysia has to offer and the ramifications for those in supportive industries such as bus and coach services.

Medical tourists to Malaysia can save from 65 to 80 percent on fees compared to those in the US. Rising global medical charges, mostly in developed countries, have created an opportunity for medical tourism in Malaysia. Tourism is one of the largest contributors to global economies, involving many categories from adventure tourism, to cultural, nature, sports, religious and medical tourism.

Medical tourism is a growing market segment and Malaysia is well positioned to capitalise on this.

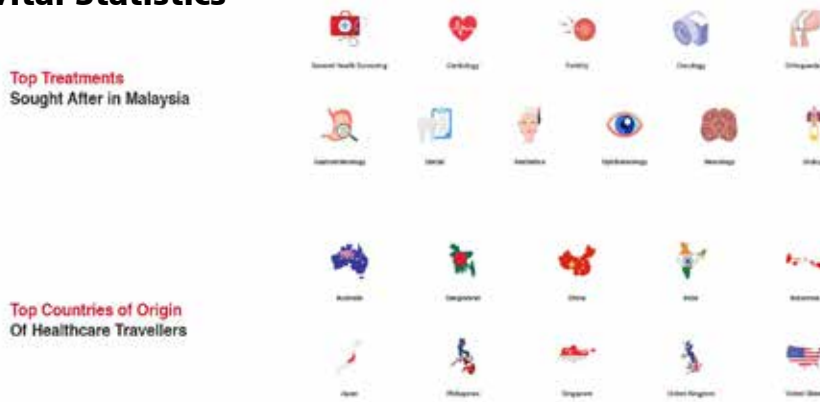
Medical tourism is a growing market segment and Malaysia is well positioned to capitalise on this. The country is not only strategically located in the heart of Asia but is well equipped with excellent medical facilities and highly qualified English-speaking professionals supported by well-trained para-medical staff. Many private medical centres have attained certification for internationally recognised quality standards. Malaysia also offers excellent patient comfort with five-star rooms that resemble hotel accommodation.

This industry is under the purview of the National Committee for the Promotion of Medical and Health Tourism which addresses the needs of patients who travel from regional destinations especially Indonesia.



BlueCare+ unit as a bolt-down option. Image provided by Hengst Asia Pacific Pte Ltd

Vital Statistics



Malaysia also offers superb tourism infrastructure to enable easy movement around the country. Taking a bus from the airport to the city or across the country to relax in a luxurious resort with spa facilities is a breeze. Once COVID-19 is behind us, buses will be at the fore in moving passengers in great numbers. Coaches, city buses and vans shuttling patients to their medical appointments provide essential support to the medical tourism industry.

Malaysians are eagerly anticipating greater vaccinations so that everyone can start travelling again and returning to pre-COVID days. The country's travel and medical industries are unanimous in seeking the return to pre-COVID conditions and, this day is getting closer with every vaccination. Malaysia's leading centres for medical tourism in Kuala Lumpur and the resort island of Penang are prepared for an increase in medical tourism in post-COVID days.

Health Tourism is Big Business

The number of Malaysia Healthcare Travel Council-endorsed medical facilities in Malaysia has increased over the years from 35 in 2009, to 76 in 2019, and plays a role in increasing figures of foreign patients. Malaysia is listed in the top ten tourism destinations in the world by Patients Beyond Borders. Malaysia is also listed as winning multiple awards for health care provided by internationally renowned bodies.

In terms of business opportunities, tourist arrivals are a good indicator. Having grown significantly from 643 000 arrivals in 2011 to 1.22 million in 2019, medical tourism in Malaysia is valued at RM 1.7 billion, up from RM 527 million in 2011.

Bus Transformation

During the pandemic, buses have made a contribution to combating the virus. When we think of medical tourism, we automatically assume that patients need to travel to centres that provide medical care. Accepting the challenge, local bus manufacturer Terus Maju Services Sdn Bhd (TMS) reconfigured its most popular model to a mobile clinic. Johor was one of the first to place an order for these re-purposed vehicles to assist with rural vaccinations.

Coaches, city buses and vans shuttling patients to their medical appointments provide essential support to the medical tourism industry.



Terus Maju Services Sdn Bhd (TMS) converts buses into mobile vaccination centres



TMS Managing Director Loo Kok Seong noted: "It's the very nature of this vehicle to offer abundant space inside as well as storage areas. What we did was remove the seats and install tables so that nurses could attend to patients receiving their jab. In the rear of the bus, we placed a bunk bed so that anyone feeling unwell after being vaccinated could rest."

Storage compartments offer sufficient space for all equipment required to establish a temporary vaccination centre - canopies, chairs, signs and medical supplies.

The advantage of this type of vehicle is that it is flexible and able to accommodate smaller numbers of patients that need to be vaccinated. Using such a TMS-designed bus, villages can be visited on one day after which the bus relocates. It is also cheaper than having to rent a hall for the period required for full vaccination. Once the vaccination programme is complete, these buses can be converted back to normal buses.

Healthy Devices on Board

Besides seat belts, bus operators have a range of new devices at their disposal to ensure passenger safety and well-being. German filtration expert Hengst has responded to industry needs by offering a standard mobile anti-viral BlueCare+ unit as a bolt-down option. The BlueCare L is simply bolted to the floor and connected to the buses' electrical power system, this filter produces clean air at a rate of 1800m³/h max and M 800m³/h while eliminating 99.99 percent of germs. This system features low electricity consumption and can be connected into the on board system, requiring 75 W.

"One of the crucial issues we found is that the filter needs to sit tight. There's no point having an expensive device that's leaking contaminated air. The Blue.care filtration system has repeatedly proven that it's one of the most effective in the market," claims Frank Maergner of Hengst Asia Pacific Pte Ltd.

and passengers. When air is thick with pollutants, drivers' concentration can suffer, resulting in a higher risk of accidents. Interior cabin air filters create healthy, comfortable air. Filtered and de-contaminated air is crucial inside a passenger carrying bus or van.

One in five people suffer from a pollen allergy and allergies are increasing. More and more children are among the sufferers. Drippy noses and watery eyes can also noticeably affect the driver's attention. Another aspect are fine dust particles, which can significantly affect our health. They can penetrate deep into bronchial tubes or even enter the blood stream. In tropical climates, mold spores are all around but can also be a health hazard. Spores spread even more quickly when the weather is moist and warm.

An infinite number of bacteria are also in the air. Providing the same high level of protection, Hengst's Blue.care cabin air filters are a way to effectively protect all vehicle users: Blue.care filters stop almost all these hazards from entering the vehicle's cabin via the ventilation system.

Local Travel

After prolonged periods of lockdown, everyone craves a weekend escape. Medical tourism doesn't just involve medical treatments and hospital visits. To ensure mental health for instance, a short trip, stimulating the senses or calming the nerves may just be what the doctor prescribes. Buses and coaches are part of this tourism equation as many hotels offer coach shuttle services to health care facilities as well as airport transfers and sightseeing.

Capital Commitment

It's not surprising that Malaysia's most comprehensive medical services are concentrated in the capital Kuala Lumpur and the Klang Valley. Kuala Lumpur is also the principal air gateway for those travelling from overseas and outstation destinations. Its airports (KLIA and Subang) are transportation hubs that are well-connected by rail and road links to the city. Buses and coach services are an integral component in enabling tourists to visit Malaysia.

In addition, hotels and serviced hotels/apartments provide an extensive choice of accommodation options for those seeking medical services.



Seamless integration with air purifiers that can be deployed in properties and buses. Image provided by Hengst Asia Pacific Pte Ltd



Prince Court is the hospital of choice for expatriates living in Malaysia and is still able to receive international patients who have special permits.

Cindy Choe, CEO Prince Court Medical Centre

Clean Healthy Air

Multiple studies have shown that air quality inside vehicles has a significant influence on the safety of the driver

A Princely Court

Prince Court Medical Centre offers comprehensive clinical services, world-class facilities and outstanding patient care. It is strategically positioned to support Malaysia as a healthcare hub in Asia with its clientele mostly coming from Asia, Europe, the Middle East, Australia and Africa.

The hospital's CEO, Cindy Choe claims that worldwide cross-border travel restrictions since 2020 have resulted in a significant drop in medical tourists seeking treatment. "However, Prince Court is the hospital of choice for expatriates living in Malaysia and is still able to receive international patients who have special permits," she remarked.



Physio Pool at Prince Court Medical Centre

Prince Court Medical Centre is a multidisciplinary hospital providing holistic clinical solutions through advanced medical technology and dedicated teams of sub-specialised practitioners. Its centres of excellence include Orthopaedic and Rehabilitation (minimally invasive surgical capability with a state-of-the-art rehabilitation facility), Renal and Urology (the only Malaysian private hospital to have successfully completed over 100 renal transplants), Cosmetology and Dermatology (the only Malaysian private hospital with a purpose-built burn facility for treating regional patients), Eye and ENT (including an eye lab, LASIK centre, audiology lab, sleep lab and facilities for Cochlear implantation), Heart and Lung, Digestive System, Neuroscience and Spine, Women and Children and Oncology.



The centrally-located EQ is ideal for patient recuperation

We have had guests staying here for important surgeries and specialist medical attention.

Sebastian Lochbrunner, Hotel Manager for EQ



Cindy Choe, CEO Prince Court KL

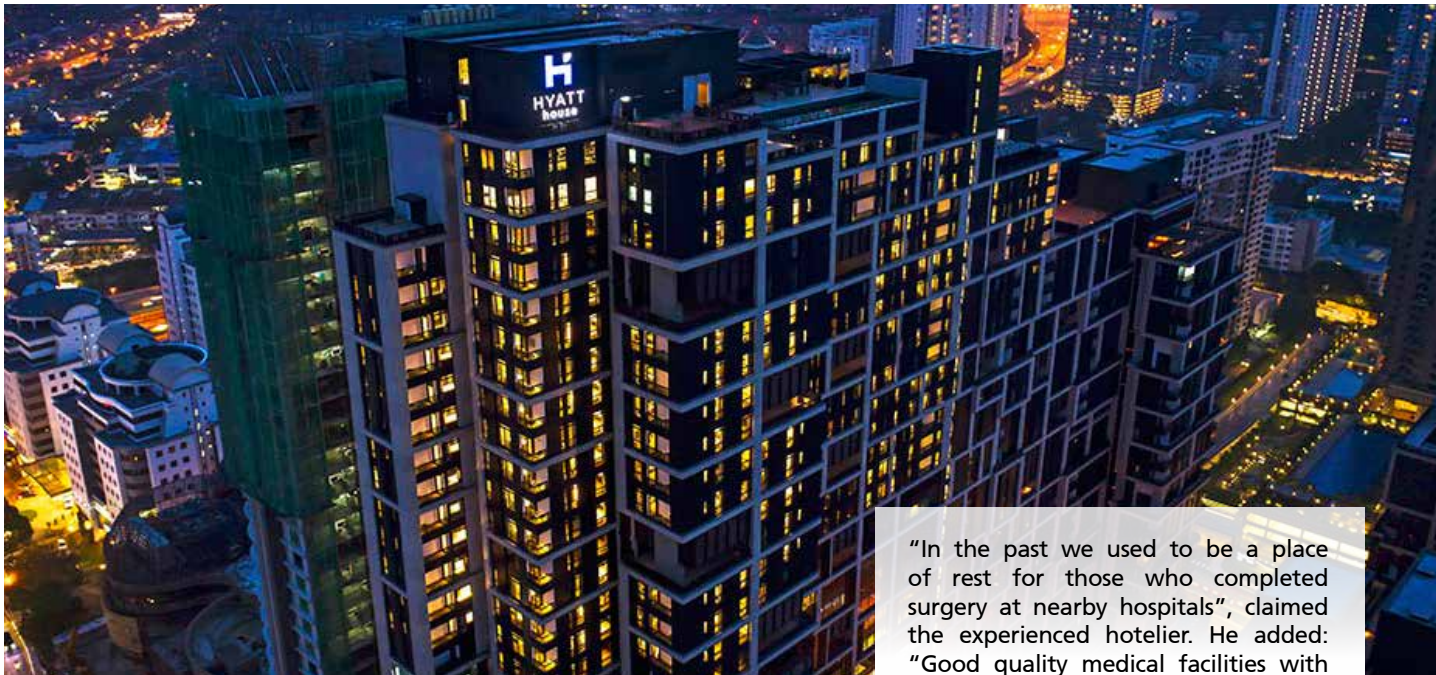
As part of its exclusivity, the hospital offers single-bedded rooms only with 10-12 rooms per ward. This effectively enables safe physical distancing and ventilation for patients and their family members. Healthcare workers are vaccinated and the hospital continuously observes stringent hygiene and infection control policies.

Prince Court operates an international business lounge to ensure a seamless experience for medical tourists and family members. Services include assistance with visas, insurance, accommodation, translation and transportation to and from airports, hotels and the hospital.

Equatorial Retreat

There are several hotels in the vicinity of medical centres like Prince Court with the recently opened EQ hotel in Kuala Lumpur being one that provides excellent accommodation for recuperating medical tourists and their families. This strategically located city hotel continues the refined hospitality established by the hotel's predecessor, the Hotel Equatorial Kuala Lumpur.

Hotel Manager for the EQ, Sebastian Lochbrunner is optimistic about the nation's vaccination programme and expects domestic tourism to fully resume at the end of 2021. He commented: "Even as the Hotel Equatorial, we've always had guests staying for medical procedures because of our central location. The new hotel was purposely designed to meet the needs of guests, their family and carers. These include features like connecting rooms with multi-combination bed types, private elevators from the carpark,



Hyatt House Mont Kiara offers apartment living

An important part of medical tourism is recuperation as patients seek out resorts to rest while recovering from treatments and post-operative procedures.

accessible rooms and in-room dining. Privacy and security are important too.” Lochbrunner continued: “We have had guests staying here for important surgeries and specialist medical attention. Once restrictions are lifted, we will see those with elective surgeries making bookings with us and their medical specialists.”

Most of the hotel’s medical tourism guests are domestic but some travel from Singapore and Indonesia. During the downtime, the hotel has reviewed and improved its menus, promotions, recipes, service delivery and systems. EQ has many facilities that appeal to all guests. Whether guests are recuperating or simply relaxing, they will enjoy lazing by the pool or seeking serenity in Sanctum Spa. The hotel also prides itself of its dining options including restaurants like Sabayon with commanding city views from the hotel’s panoramic highest level. Ease of accessibility and safety are key points too with the hotel’s concierge facilitating all transport requirements.

Negotiating competitive rates with nearby hospitals is also part of the hotel’s marketing strategy. The hotel is actively getting all staff immunised and soon it will be all systems go according to the Hotel Manager.

Suburban Serviced Accommodation

For long-stay guests, the spacious surrounds offered in serviced apartments also appeals to medical tourism guests.

Bennett S. Peter, General Manager at Hyatt House in suburban Mont’ Kiara is cautiously optimistic about the current COVID-19 situation and has faith that the vaccination programme will revitalise the economy. He believes rooms at Hyatt House are built like an apartment with fully-equipped kitchens to offer guests a sense of space.

Hotels and serviced hotels/apartments provide a comprehensive range of accommodation options for those seeking medical services.

“In the past we used to be a place of rest for those who completed surgery at nearby hospitals”, claimed the experienced hotelier. He added: “Good quality medical facilities with affordable fees make Malaysia a great destination for medical tourism. These services range from simple services such as dental work to more complicated procedures.”

Hyatt House, certified a CLEAN Malaysia property by the Tourism Ministry and a GBAC-star facility, is ready to welcome back guests principally from China, Indonesia, the Pacific Islands and Japan. While the hotel appeals because of its proximity to several hospitals it has a special working relationship with Global Doctors in Mont’ Kiara.

Penang – A Resort Island

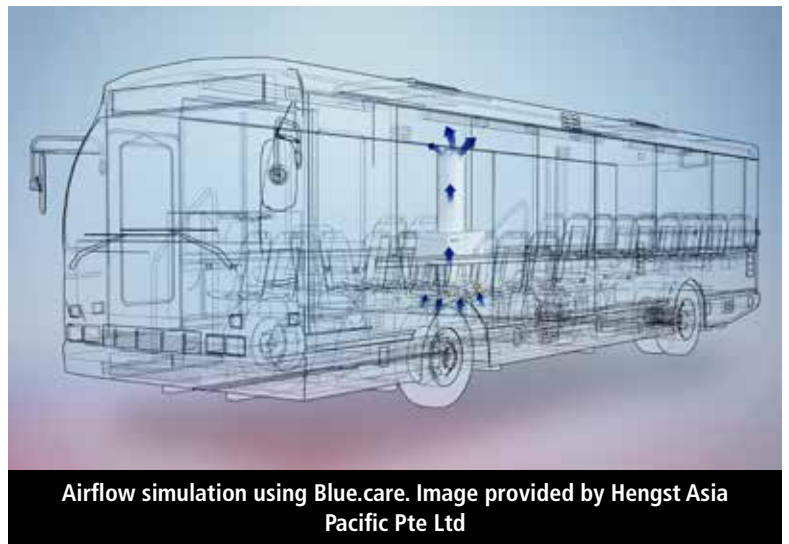
Penang’s history appeals to inquisitive travellers. While the island has always captured the attention of tourists, the 2008 listing of historic George Town as a UNESCO World Heritage Site provided tourism with an important shot in the arm. This led to the renovation of old shoplots and their refurbishment as trendy restaurants, cafés, bars and boutiques. Owners quickly appreciated that tourists wanted to experience the historic site whilst enjoying the trappings of contemporary life.

In addition, Penang has some of Malaysia’s finest hospitals and medical infrastructure and prior to COVID-19, many visitors travelled to the island for medical tourism.

One such medical facility is the Island Hospital Penang where medical tourism has been important for several decades. The hospital began



Medical tourism guests in Penang can recuperate in the spacious grounds of Lone Pine Resort



Airflow simulation using Blue.care. Image provided by Hengst Asia Pacific Pte Ltd

Buses and coach services are also an integral component in this medical tourism equation.



Volvo Buses offer comfort, safety and relaxing rides

servicing the Indonesian city of Medan, Penang's sister city. Having won over the hearts of the Medanese, the hospital expanded its services to those living in Jakarta, Surabaya and Aceh. Now, one in four Indonesian medical tourist arrivals in Malaysia is treated at Island Hospital.



Now, one in four Indonesian medical tourists in Malaysia is treated at Island Hospital.

The hospital began specialising in general surgery but now more complex Surgical Oncology cases are handled. Over time, it moved into Orthopaedics as well as well as Spine Surgery. Having covered a wide spectrum of services, the hospital is able to focus on the overall wellbeing of its patients to include Gastroenterology, Urology and Neurology while Nuclear Medicine will be offered in the future.

Like other hospitals, Island Hospital has been severely impacted by the closure of Malaysia's borders. Meanwhile, the hospital has been transitioning to the 'new normal' from the start of the pandemic and using it as a catalyst for positive changes and patient improvements. While teleconsultation, medicine delivery and reaching out to patients were something new, it has become the norm that will continue beyond COVID-19. The hospital has been facilitating healthcare travellers, mainly from Medan with arrangements for chartered flights into Penang and is planning to continue this service post COVID-19.

The hospital offers patients an airport minibus shuttle to the hospital. However, services aren't limited to just transport as the hospital offers a holistic journey even before patients land in Penang. Patients have access to online consultation with medical and clinical teams as well as customer service to accommodate all patient needs the moment they arrive.

Resort Recuperation

An important part of medical tourism is recuperation as patients seek out resorts to rest while recovering from treatments and post-operative procedures. While some patients choose to stay in hotels close to Penang's city centre with its hospitals, other choose the beaches of Batu Ferringhi.

One of the well-established resorts here is the Lone Pine which opened in the 1940's when a beachfront bungalow was converted to a family-owned hotel. Its near-deserted seaside location appealed to expatriates working in the country. In the 1950s, the property was extended with two annex accommodation blocks while more rooms were added in 2010. However, there's always a sense of space with just 90 rooms overlooking landscaped gardens with whispering casaurinas lining the beach.

Its large rooms make the property more comfortable for longer stays and have proven ideal for guests recuperating from medical procedures. In a post COVID-19 recovery, its ventilation system and seaside location will

After prolonged periods of lockdown, everyone is craving a weekend away to de-stress.

ensure adequate distancing as will large balconies and individual air conditioning. The property also provides ease of access for wheelchair patients. Another bonus is that the resort is located on a bus route for those who need to visit city-based hospitals and post-treatment specialist consultations.

Francois Sigrist, General Manager at the Lone Pine Resort claims that: "Once the vaccination is completed the future will be bright as people are tired if not exhausted of the crisis and want out. I remain optimistic that the future will be good and business will boom when we pass this stage."

Sigrist added that city hotels closer to hospitals are more favoured by medical tourists as they offer easier access for medical treatment but for post-treatment recuperation; the Lone Pine is perfect.

The hotelier is expecting a surge in travel and medical tourism for elective treatments, once things return to normal. Currently most medical tourists are Indonesian but Sigrist says there is a market for Australians and Europeans due to Malaysia's high standards and lower medical costs.

The Swiss-born General Manager said: "Lone Pine can't wait to start again but the main issue will be staffing as





Local distributor Sendok Group offers vans to be used as ambulances or shuttle buses for hotels and hospitals

hotels are currently being operated on the bare minimum and when the travel boom restarts we will need to hire fast. There is huge potential for medical tourism in Penang.”

Heritage Hospitality

Alison Fraser, the General Manager at the Eastern & Oriental Hotel (E&O), a preferred hotel for many when they travel to Penang, believes that once interstate borders open there may well be a surge in domestic business and eventually from overseas.

Rising global medical charges, mostly in developed countries has created an opportunity for medical tourism in Malaysia.

The E&O Hotel is situated in George Town and has easy access to private hospitals for those people who are visiting patients and are looking for a luxury experience. The hotel often accommodates long-stay clients by offering personalised service to cater to their needs. Fraser believes that the hotel's larger than normal suites easily enable an extra bed to be placed in each room for an additional guest.

Fraser believes that Penang is well-gearred for medical tourism as it has an abundance of superior medical facilities and a high quality of healthcare. For carers who are travelling with patients there are many attractions for them to pass the time, a wide variety of great food to indulge in and many great hotels to stay in. The weather is good and moving around on public transport is very affordable.”

Looking Ahead

Be it local or foreign tourists, getting around is an easy task With bus terminals scattered across the country, one can easily get away for a weekend or prolonged stay without the hassle of dealing with a car. Modern terminals, such as Terminal Bersepadu Selatan (TBS) connect to a myriad of places and with even a post office inside, one can also send a postcard straight from the platform.

Once COVID-19 is behind us, buses will once again be at the fore in moving passengers in great numbers. Having upgraded facilities and buses to be ever-ready with procedures and equipment to tackle even a pandemic, tourists can rest assured that their entire journey to a healthier life is taken care of.

Once flights take off again and borders open, buses, ambulances and vans stand ready to tap into this market as it is set to grow even further.

Asian Buses acknowledges the assistance of the Malaysia Healthcare Travel Council (MHTC) in compiling this story. ■





What is NXT for Scania?

While the NXT and AXL may be concept studies at this point only, they show the way that Scania is going to take in the coming years in order to address the modern needs of the transportation industry.

This article may be a bit different from our normal reporting as it covers both, bus and truck related thoughts. It is deliberately so as there are many parallels that can be drawn between the two segments, with cause and effect crossing the boundaries of the purpose of the respective vehicle type. The idea of a connected vehicle, which is what we are seeing more and more happening, is already transcending not only the vehicle type, but also brands. Eventually, every vehicle will be talking to everything else on the road, and it simply has to do so.

Dawn of New Vehicles

When debuting, Scania's AXL made (truck) heads turn. Addressing the need of a very specific market segment, the concept showed how a truck can still look like a truck, but incorporate the latest technology that allows the vehicle to operate without a driver on board. In the slipstream of the AXL followed the NXT, Scania's vision of what the future for transport in cities could be. It is a self-driving electric vehicle that can change shape from a bus to a distribution truck to a refuse collector. The NXT has been designed as a prototype for testing and evaluation, but also to exhibit to get feedback on the concept. But what would this new creature look like? Many of the features

have been designed with the future always-online generation in mind. Their lives will be closely intertwined with technology, and we think this concept vehicle will appeal to them. James Cooper, XYZ, Scania Sweden, Title here, heaps up the information on how these two vehicles are the precursors of what we can expect from Scania in the future.

These two vehicles are the result of Scania looking at the levels of autonomous driving, going from 1 to 5 and deciding that level 3 is best to be skipped. Cooper explained that this particular level creates too much of a challenge, so that it is better to go straight to the next one up. Level 3 autonomous driving describes a situation whereby the vehicle drives itself, however a person is still sitting in a cab to get involved if needed. "We don't want to make a distinction between level 4 or 5 as we focus on

developing autonomous vehicles. To do so, we can already draw on data and insights we have gathered from the driver assist functions that are currently available”, Cooper said. Tasked with the development of such vehicles, several hundred team members of Scania are concerned with issues around making this ambition a reality.

Lighthouse Projects

Within the environment of this “thinktank-like” department, members of Scania from all departments contribute with their thoughts on how a truck could look like and function in the future. The idea is that there are no restrictions. Addressing the idea of “Urban Transport”, the NXT finds answers as to how this could look like, while the AXL is to be a more traditional approach, just without a cab. Another leap for the NXT is the fact that the modular system can satisfy the needs of both, goods and passenger transport.

Scania’s NXT is not only addressing the need for driverless vehicles, but takes it a step further by being modular. Literature published sees an initial three broad applications, however, more possibilities are certainly on the cards. Internally called “Lighthouse projects”, the two concepts we are discussing are culminations of inputs from all corners of the business in order to provide an indication of where the development is heading. According to Cooper, this is vital in both, internal and external communications. “The challenges to initiate change are tremendous. Think about the individual teams, for instance the one dealing with gearboxes or the engine. How do we manage to solidify and focus them all in their effort to work towards a different way of thinking?”

Traditionally, all platforms have been build around the positions of the driver and the internal combustion engine. Both NXT and AXL incorporate two megatrends, e-mobility and autonomous driving, and are thus pushing the envelope when it comes to what the platform will actually be. Cooper puts in a very simplistic way by saying that a future platform will be a skateboard with a camera in the front. Once there is no

more need to have fixed positions for a cab and engine, anything can be put on top of the “skateboard”. With these constraints being removed, the modular system, which Scania is already known for from the New Truck Generation, opens up the possibilities for new thinking.

Systems Thinking

One cannot fail to notice that the AXL looks more than a traditional truck. This can be traced back to the design brief and the fact that a tipper truck is largely defined by the function of having to have a bucket. In this case, the cab being omitted still results in a vehicle that very much looks and feels like a Scania. The design of NXT on the other hand is very much governed by the infrastructure that is present in cities. “Sure, you can have maglev systems, but these need to be build into cities to make this work. If a vehicle is too long, it may not be able to turn corners in narrow streets.” For passenger transport, the need for a driver is a determining factor. As a major cost factor, salaries for drivers determine the size of the vehicle as the bus will have to be accommodating as many passengers as possible in order to be economical. Once the driver is taken out of the equation, the consideration can be about putting more, smaller vehicles on the road that can be deployed along more flexible routes.

Similarly, the same concept applies to trucks. With the driver being the biggest cost factor, everything is designed around that person. Once the truck is taken out, the size of the truck, the warehouse and the routing can be re-designed. Smaller trucks can do more trips, be more flexible and offer reduced costs as they are becoming more efficient. For example, the unstuffing and re-loading of big trucks has an impact on the layout of a warehouse. “Remember, the optimal batch size is one.” And again, this same idea applies to buses where we are currently making compromises when we share the route with others that are going in the same direction, but not to the same destination. For public transport, the implication is that the hub and spoke system can become much finer and better defined. Eventually, the batching is crucial in order to not over-specify the system, being it trucks or buses.

Known for vehicles on the larger end of the spectrum, the findings of these project may very well point at the scenario where robot taxis are the end-result of the thinking. However, Scania can be expected to stay true to their ethos by providing transport solutions for bigger batch sizes. Cooper admits that there might be a need for smaller vehicles, but also pointed out that many cities are still growing and that will need transport solutions along main arteries, being it goods or people. What Scania is to focus on are transport solutions that are based on the need to connect fixed points and to service these points frequently, rather than offering vehicles that will be deployed to offer always changing routes. Bulk delivery will still be the heart of the matter, rather than last mile transportation.



Coexistence and Safety

With the anticipated growth in transportation needs comes also an increased need for people that handle the vehicles. Admittedly, there is a certain degree of romanticising around the commercial vehicle industry. However, the reality is a harsh one: drivers are away from home for days on end, there are not enough or well-equipped rest stops for them and ultimately, it is a very demanding job to be driving a commercial vehicle. Although the interior of a cab is very comfortable these days, it cannot substitute the comfort of a home. It is also not uncommon nowadays to see petrol stations along European or US highways to be short on fuels as there are not enough truckers to ensure sufficient supply. With autonomous vehicles, the global driver shortage may not be an issue anymore as control centres, manned with pilots, will ensure that the vehicles are programmed according to their missions.

Drivers don't have to be afraid that these vehicles will take away their jobs. The focus for autonomous vehicles is the short, repetitive distance in confined areas and controlled environments or the hub-to-hub transport which is highly monotonous and does not require real driving skills. However, this also presents a moral dilemma for Scania. Valuing drivers and wanting to empower them, the company cannot be responsible for jobs being destroyed. As Cooper explains, "These are niche applications that we are targeting and we can expect it to take decades before autonomous vehicles will become real mainstream products. In the meantime, the applications that we are developing are to address specific needs where the use of a driverless vehicle would improve safety in a big way." In other words, for now, autonomous vehicles are still a long way off from replacing drivers.

A vehicle design that does not need a driver has a different set of issues though. For instance, in case of an accident, the question of guilt needs to be answered. A favourite philosophical question is the trolley problem. Where this is leading to is that the vehicle would have to make a programmed decision to opt for one of two negative outcomes. However, at the moment, this is science fiction. For now, the vehicle would have a predefined trajectory, constantly monitoring and evaluating risks. When the vehicle "sees" another participant in traffic, the algorithm is evaluating the risk that this object may enter the trajectory. At a certain level of risk, a autonomous vehicle would react by keeping a safe distance. For now, the default reaction would be to simply stop. "If we are providing the hardware, software and training, who else would be responsible than us as the OEM?" Cooper asked, answering the question of who will be ultimately responsible for the vehicles.

Re-Engineering it All

Drawing a parallel to air-travel, one can see how rapidly things can improve. There is no doubt that autonomous vehicles will be failing and causing problems, however, these can be expected to be swiftly rectified. Over the last 100 years, there has been an exponential drop in death in air travel while the number of fatalities in other industries has been more or less a flatline. The difference is that the accountability is assigned to a system, rather than a single person. If there is a problem in the airline industry, the system will be analysed and changed in a manner that eradicates the problem. However, this is not the case when the problem is assigned to a single person that may have made a mistake. Take for instance one accident involving a Tesla car hitting a pedestrian. In this case, everything was under scrutiny, down to the level of lighting provided by the lamps installed at a pedestrian crossing, and even the location of the crossing. Had the same accident occurred involving a car driven by a person, then there would have been no such investigation. Through these repeated improvements of the entire system, its interfaces and components, autonomous driving will become relatively safe, relatively fast. "At least one thing will be eliminated and that is human error." Within Scania, the shared belief is that Sweden's vision of zero fatalities on the road can only be achieved with autonomous vehicles. Using the systems approach, every accident will lead to a re-evaluation of the systems, constantly improving it.

By now it has become clear that it is one resource that is needed to make autonomous vehicles viable, and that is cash. Ironically, the development of a driverless vehicle requires even more people in a car. One person would be monitoring the vehicle,



**James Cooper Product Manager
Autonomous Solutions**

Where to Start?

Scania has, as described above, picked a very specific segment of the commercial vehicle market to start with the development of autonomous vehicles: Mining. With good reason, as the level of safety in such a place is already extremely high. Every vehicle is identified, complete with beacons, personnel is very well trained and there are no pedestrians. Traffic is predictable with very little interference and moving patterns are highly predictable.

Highways are another good example of where autonomous vehicles can be deployed as these systems are offering a lot of known factors. For instance, everyone is going into the same direction, at roughly the same speed, there is no stopping, and neither are there participants like bicycles. To gather data, Scania is already running vehicles on motorways, day in and day out. However, even with such a confined environment, Scania has now spent over five years to harvest insights from any and every possible scenario that could happen and the job is still not completed! One has to imagine, that one has to have seen all sorts of erratic behaviour, including road rage.

another what the computer sees while a third would be the back-up driver to take action if the computer does not function properly, e.g. in emergency situations not yet experienced by the AI. Companies like Tusimple, who are



working on specific algorithms, will need to have enough funding to make it through the next five years before they even have a saleable product that they can pitch to the OEMs. With millions of hours of driving needed to develop vehicles fit for autonomous driving in urban settings. The one contender most likely to succeed is Google, as they do have indeed very deep pockets. These unicorns may only become profitable, once autonomous vehicles are feasible and deployed en-masse.

Cash not Enough

However, it is not just money that ensures success in the commercial vehicle market. Putting together a truck or bus, thanks to providers of axles, engines, motors and all other components is certainly possible; even today, no truck is made fully in-house as most OEMs outsource expertise in certain areas. Even then, the addition of LIDAR (Light Detection and Ranging) will double the cost of the vehicle. Adding to that, one needs a control tower, train people and ensure that there are redundancies.

Scania has the luxury of being able to pick certain items that they want to outsource to allow faster and more risk free development. A start-up might be able to source an entire vehicle from various sources and bolt-on proprietary solutions, what they are lacking is an entire support network and the ability to control the entire supply chain of components that reach four or five levels deep, including the interfaces. For instance, an established OEM, like Scania, knows exactly how to configure the gear box to match the performance of the engine, which will fit the chassis, which is fit for purpose. "Yes, we are in partnership with Tusimple, but that touches only on one aspect of producing and selling trucks." Cooper is confident in saying that the perceived competition from the start-ups is still a long way off as the development and monetization of one algorithm or sub-system is not the same as being able to sell and maintain fleets of vehicles in dozens of countries.

It is acknowledged thought that there is also a huge upside in working with small players that are highly specialised. For instance, the agility and speed to adjust is something that an established company might lack. Some are tackling highly sophisticated, yet narrow problems, such as driving in snow. "We need to test for years and have multiple customers testing our products first, whereas these specialised players offer valuable IP that can be swiftly adjusted and can be taken to market much faster." It is a perfect marriage as

these developers have the software, but lack the expertise to build the hardware. Just making a truck go forward for a few meters takes a lot of programming. "Scania knows how to make a truck move though." Cooper expects that the industry will go through a decade of learning, explorations, partnerships, but also bankruptcies.

Storied Brands

One may notice that the stories about the megatrends almost exclusively talk about European or US-based vehicle makers. And there are reasons for that too, and they might surprise us! Interestingly, China has huge initiatives to propel the country forwards in terms of technology development. However, this work is typically performed as outsourced work, handed to them by said OEMs outside Asia. The other aspect is that, especially when talking about autonomous driving, the business cases are in Europe or the US as these regions represent conditions best suited for the exploration of this new technology. Total Cost of Ownership is fast becoming the key driver of the business and if the driver, which in Europe and the US constitutes a huge part of the cost, can be taken out of the equation, then this is the place to start thinking about how to reduce this cost factor. Infrastructure, weather, business case and several other factors all need to be in favour to welcome new technology.

As said in the introduction, NXT and AXL may be concept studies at this point only, and so is everything around them. Right now, there is no mass produced LIDAR system for instance. Once these components become available on an industrial scale, things will rapidly change. In the meantime, Scania is looking for opportunities where the development of new technology can leapfrog. As a parallel, Cooper uses the example of Africa, where the introduction of a mobile based infrastructure was easier as the coverage of landlines was not high and thus, the step of putting the wired network in place could be skipped, allowing for a technology leap.

It may still be a decade or more before we will see autonomous vehicles as standard items, but the future direction is clear: autonomous, electrified and connected. ■



Dedicated to Indonesia: Laksana Bus

Riding on the waves of market demand, Laksana bus has carved a niche for buses that serve the needs of the Indonesian market.

Headquartered in Ungaran, Indonesia, Laksana Bus has been in business for more than 40 years. Until today, the business remains as a family business. Its founder started Laksana as a machine repair shop in 1967. In 1977 he started the automotive division and begun making bodies for buses and minivans. Now 44, years later the company is focused 100 percent on making bodies for buses.

Laksana Bus is well positioned for future growth. Considering the vast expanses of Jawa and Sumatra, buses are integral parts of the Indonesia transportation system. Most major cities in Indonesia rely on city buses as part of the main urban transportation system. For intercity travels, buses are one of the most popular modes of transportation, especially for medium to long distances. The role of buses is emphasised as being even more important in cities outside Java as there are no railway systems there. Buses also play a vital role in the tourism industry in Indonesia. It is the perfect option to transport smaller or larger groups to various tourist destination across Indonesia.

Common Sight

To address the varied needs of the vast domestic market, Laksana Bus offers a wide range of bus models. "We are producing both coaches and city buses. Both are equally important for Laksana Bus as products. We have a long history in building coaches and the Legacy series especially the SR2 series is our best seller of all time," Alvin Arman, Commercial Director. To address the needs for city buses, Laksana Bus offers the Cityline series, which is a bestseller. Almost 80 percent of the buses used in Jakarta are from Laksana Bus' Cityline series. Buses made by Laksana Bus are popular beyond the borders of Indonesia and sold in Bangladesh through a authorised distributor.

Matching Needs with Chassis

The selection of the right chassis is important when manufacturing buses and coaches. Laksana bus is able to build buses onto all the bus chassis available in Indonesia. What we are noticing though is that some brands are better

suited for long distance while some have dedicated products for the construction of a city bus; yet others are better suited for the use as medium size bus. Particular brands appear to be more popular in certain parts of Indonesia. "So all brands are equally important for us," said Arman.

Ready for the Future

Given the current trends, nobody in the industry can ignore electro mobility. Naturally, Laksana Bus is also addressing the question on how they see the future, considering that electric buses and fuel cells are being pushed into the global market. In their mind, there is no doubt that the future is focused on electric buses especially for city bus. It is just a matter of time according to Arman. Right now they are still too expensive for Indonesia, but systems and platforms will get cheaper in the future, as of now, the use and implementation very much depends on government subsidies.

Challenges Addressed

Buses used to be very popular for short distances of trips between 20 to 50 kilometres. However, now as motorcycles becoming really cheap, people prefer to use motorcycles for these short distance trips. For longer


teams. Their two bestselling products, Legacy SR2 and Cityline 3, have won Indonesia's most prestigious design competition.

Wide Range for Many Applications

Some manufacturers offer just one or two products, being highly focused. One cannot fail to notice that this Indonesian maker offers a lot of different models. Laksana Bus has made this a strategic approach based on insights from the market. Initially all the bus manufacturers in Indonesia offered coaches as their main products. Management then saw a lot of coaches being used as city buses. One has to understand that they are meant to serve a very different purpose. Consequently, Laksana Bus started to design a product dedicated for the use of city buses. A more simple yet modern design bus, with easy access, for short distance trips, very easy to maintain and clean. Yet very reliable to operate almost 24 hours a day. It was a huge success, which made the company commit itself to this new growing segment. Today, they built a lot of different variants, offering high floor to low entry and from eight meters long to 18 meter articulated buses.

Looking Ahead

Not standing still, the company is looking ahead with developments planned for the near future. In their ambition to stay on top of things, they will continuously update and further improve all of their products. "We aim to introduce newer generations of our coaches and city buses. Also, we are working together with manufacturers of chassis for electric buses. We are proud to say that we delivered our first prototype using a light weight, high strength stainless steel body."

Although the country is big, the question is if Indonesia is a big enough market or if Laksana Bus would need to be exporting their buses. The response outside of their home market has been encouraging and they started exporting buses in the year 2009. "We have exported more than 200 buses in 3 countries across Asia Pacific. We are looking at few other market which we deemed suitable for our products. But Indonesia will always be our main focus," concluded Arman. 



distance travel, bus operators face fierce competition from low cost airlines. Now that more and more highways are being built across Indonesia, buses are making a big comeback. The time it takes to travel door to door for 400 500 kilometres by bus is almost the same as by plane with the fraction of the cost. Competition among bus operators is getting fierce now. For manufacturers there is always the expectation to deliver better quality buses with lots of new features, but with very competitive price.

Safety the First Feature

Safety is always the most important thing for Laksana Bus. "Thus, we are the first bus manufacturer in Indonesia to start adopting various European Safety Standards. Namely R66, R80, R107 although they are not required by the Indonesia's Regulation," explained Arman. Laksana Bus has always been known for its unique, authentic and most innovative design. Besides safety features, they also introduced the "floating roof" concept for buses. They also introduced the first sleeper bus in Indonesia, which is called Legacy SR2 Suites Class. Obviously, management is very proud of the own, in-house design



Airport Coach Goes the Distance with Volvo

Putting their trust in Volvo buses, Airport Coach is offering a more comfortable and convenient ride. Eventually, using these chassis will pay out in more than just one way.

The business of Airport Coach was set up in 1998 with a clear objective of providing quality transportation services in Kuala Lumpur International Airport (KLIA). Today, Airport Coach together with its group of companies has successfully expanded its scope of services to various modes of bus transportation services that includes express busses, tour busses, charter busses, stage busses, feeder busses, airside feeder busses and factory busses as well with the primary focus of the services still remains at the heart of Kuala Lumpur International Airport (KLIA).

When thinking about bus services connected to an airport, one would typically think of people on their way to a faraway place. However, Airport Coach Group serves multiple services to key stakeholders in KLIA such as MAHB, MAS, POS Aviation, Malindo Air as well as stage bus services to the rather large population of KLIA workforce from Nilai, Bandar Baru Salak Tinggi, Sepang and Banting.

“We have worked hard over the years in the KLIA scenario to be recognised as and awarded by MAHB in 2016. We are proud to have a diversified portfolio of services in the airport especially the airside services where it is very highly regulated,” explained Raj, Managing Director of Airport Coach.

“These are very differentiated services. Stage buses have more seats, but the fares are regulated. Where we charge just RM 1 or RM 2 for the workforce, our express buses are more luxurious, the chassis have higher specs. The trip might also take one hour, but in the case of the express bus we charge at RM



10,” explained Rajkumar Batumalai, Director of Airport Coach. Reliability is a huge issue as the stage bus service are regulated by the government and tardiness will be penalised.

The Pandemic hit the industry hard. However, Airport Coach Group has been in a somewhat unique position. With the airport still operating and planes still flying, although extremely limited, there was still a need for transportation of the workforce to the airport as well as the airside where ground operations were still running. Contracts the company signed with the government, airlines as well as the airport still have to be fulfilled and people still need to go to work. “That said, we obviously suffered as well



as contracts and services were reduced by up to 50 percent of their respective scopes. We had to completely re-structure the business." As the economy is opening up, Raj is bringing back his drivers in stages, which have been idling as they were not let go; it was anticipated that sooner or later the drivers would be needed again, and it was a more practical way to keep them on board. For instance, the long-distance routes are staffed with three drivers per bus, hence a sufficient headcount of drivers must be maintained.

Being adventurous is in the DNA of the company. "We like to try new things, both in terms of the routes and the assets we deploy," he added. Four years ago, Raj started to trial Volvo buses. Having tried other makes, Raj pointed out that the after sales support is extremely important. With the possibilities offered by opting for the Swedes, the company now has 11 Volvo buses, which are primarily serving airport and cross border routes all the way to Thailand. Stressing the importance of having a good support framework, Raj points out that these buses run up to 1 000 kilometres per day. In case of a breakdown, Volvo offers peace of mind as the maintenance agreements in place cover the vehicles beyond their home country. Being convinced, Volvo buses are now planned to be used on stage bus routes that the company covers.

While reliability is the focus, the support provided by the vendor is extremely important. "Naturally, there have been a few small issues, which were settled very quickly by the breakdown service teams." Raj recounts that nowadays, the issues an operator faces are typically related to electronics. When there is a problem with one of them, the service technicians from Volvo will have it sorted within minutes. However, he stressed again that having access to such support is crucial and not every OEM can offer this. "We have also learned how to interpret the data and can react to any signals accordingly." Interestingly, some drivers prefer manual gearboxes as it gives them the feeling of being more in control of the vehicle and the journey.

Each of the long-distance buses is under the responsibility of an experienced bus captain. It is he that is responsible for the bus as a unit, supervising younger drivers and also ensuring that the maintenance schedule is kept. It is this very captain that would be taking the vehicle for servicing. Should there be any questions regarding the operations of the vehicle, it is also the captain that would meet with Volvo's technicians to learn about how to handle different circumstances. Long distance buses will be in operation for about three years before they are cycled into the bus population serving the airport routes. Following a time serving these routes, they are then moved to the fleet of factory buses before eventually

being sold off. Raj explained that this is done to minimise breakdown risks and to minimise impacts in case something does happen with the bus while on duty. The expectation is that a Volvo bus would also catch a higher price on the second-hand market.

Highlighting the advantages of a long-distance bus, Raj highlights how a bus can be a smarter alternative to a flight. Going to Hat Yai for instance would require a trip to KLIA, then the flight itself and transportation from the hotel to town. With Airport Coach's subsidiary company, Hat Yai Express, travellers can enjoy the convenience of getting straight to their destination while the bus itself is a cosy cocoon that allows the travellers to sleep. "You get a good rest and when you arrive, you are literally at the door step of your destination. Taking the bus saves you a lot of hassle with the changes in the modes of transportation needed when you fly." To further enhance comfort, Airport Coach's plan is to remove another row of seats on the buses used by Hat Yai Express and give passengers even more comfort. Typically, buses on such routes would feature ten rows, whereas his buses already have nine and soon only eight.

With the opening of the economy and the foreseen recovery of international travel, Raj expects that the demand for the various routes will increase differently. Trips to the airport will see slow increase in demand whereas the routes to Thailand can be expected to see demand shooting up rapidly. With the mix of products offered, optimising the fleet's usage is a challenge. To further enhance business performance and to react to the changes in demand, Airport Coach has invested in a command centre where the buses are being monitored for speeding and issues like fuel theft. To curb theft, incentives are offered when reaching KPIs, and this practice has paid dividends as many of the bus captains have been with the company for a long time. Raj is hopeful for the expansion of the business, with six new Volvo coaches on order, but delivery has been delayed since the start of the movement restrictions. "We are confident that we can rebound and start from a strong foundation, as we are slowly getting back to what we used to perceive as being a normal situation," Raj concluded. ■



Innovative G-Python

By Bhushan Mhapralkar

The G-Python from Guru Ram Dass (GRD) Body Builders carries the ethos of European coaches.

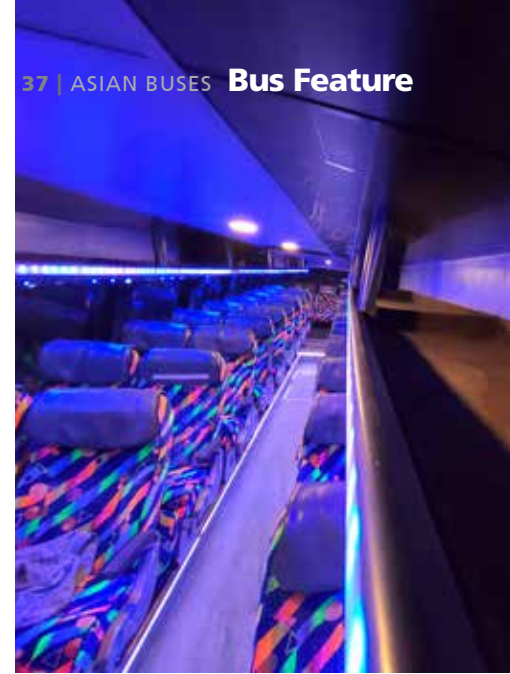
Innovation is a broad-based term in its description. The Merriam-Webster dictionary defines it as a new idea, or a method or a device. It also defines it as a novelty – as an introduction of something new. So, when Mayank Kukreja, CEO, Guru Ram Dass Body Builders, used the word innovation in his comment for the new G-Python coach body design, it made for an interesting start. Of the opinion that his company's motto 'Innovation is Travelling with Us' should provide a good insight into a penchant for innovation and technology, Kukreja mentioned that they were inspired by a python for this new coach body design. The mention of the word 'Python' reminds of a large snake that kills its preys by squeezing it hard. The other, its namesake, is a high-level programming language with dynamic semantics. Both are quite dramatic in their form and function, so should be the G-Python. At least it suggests so from the look of it – and the specifications too. Kukreja expressed, "The G-Python is a limited run edition luxury coach design based on a multi-axle Mercedes-Benz OC 500 RF 2542 DD. It is 15m long."

A good 15m long, the Mercedes-Benz OC 500 RF 2542 has two-axles at the rear and one at the front. Its name suggests it to be German. It is therefore perhaps that a European influence is evident from the smooth surfaces and well-defined lines of the G-Python's exterior design. The standards of fit and finish are good. A sense of sleek and muscular build apparent from the vehicle's exterior design, the G-Python, according to Kukreja, draws inspiration from the python's prowess and size. He drew attention to the fine curves and added, "Look carefully at the headlamps; they will remind you of the eyes of a python. They shine like diamonds". Reflecting luxury, style and an ability to stand out, the sleek and sweeping headlamps of the G-Python coach body work make an interesting part of the fascia. The fascia inturn has a large windshield with a black theme patch at its bottom. The pasted windows and tall sides of the G-Python nicely complement the fascia design, highlighting a good sense of proportion in the process. Like a fully grown python – a reticulated python (*Malayopython reticulatus*) can reach over 6.25m in length and is termed as the longest snake in the world – the G-Python luxury coach design does appear long and attractive on the Mercedes-Benz multi-axle chassis.



Finer detailing

Powering the Mercedes-Benz OC 500 RF 2542 is a 388 hp, six-cylinder Mercedes-Benz OM 470 Euro VI 10.7-litre diesel engine situated transversely at the rear. It is so located that it feeds power to one of the two rear axles. Its access is governed by an engine lid at the rear. When viewed from a three-fourth angle, the rear accommodates the engine compartment access lid nicely in a large black patch. Replicating the colour theme of the fascia (there is a similar albeit smaller black patch under the windshield), the large rear patch of black cleverly hides the enormity of the coach structure. It is no doubt tall and fairly enormous when viewed against a car or a van! On either side of the black patch are



sleek and stylish LED tail lamps. "True to our penchant for aerodynamic styling and discreet elegance, the G-Python coach design is based on a modular concept," said Kukreja. "As much as the exterior, there's much attention that has gone in the designing and building of the interior too," he added. Containing diffused lighting, a warm shade of blue and white, the interior exudes a touch of luxury and elegance, much the same way the exterior does.

Employing CR tubes and fire retardant FRP material in its construction, the interior of the G-Python coach design offers good space between each seat row. The seats of the reclining variety are designed and positioned to offer maximum comfort and leg room for passengers. This makes for a relaxing atmosphere. Cabin isolation is brought up to speed with much use of insulation material. "There's been a good deal of innovation that has gone into the noise isolation of the cabin," averred Kukreja. With maximum luggage compartment space, easy to operate functions and a long list of optional features like heating, AC, LED screens, mobile-laptop charger, metallic paint, infotainment system, pantry and chemical toilet etc., the G-Python, when it comes to features, offers almost all the bells and whistles. "From the very inception of the design, we made sure that we could accommodate each and every feature that a coach operator could ask for," Kukreja remarked. "The colour combination and graphics is optional."

Stating that the attention to European standards has ensured superior built quality, Kukreja said, "From the safety point of view, we have made every effort to exceed the regulatory requirements." The G-Python coach design employs a laminated glass windshield. The pasted windows on the sides are of the toughened variety. The emergency door has been situated at the rear. Conforming to the bus code, the G-Python seeks proximity to a European integral coach design. It is capable of seating 53 passengers. Available in 'semi-sleeper' guise as well, there are no plans to introduce a 'sleeper' version as of now. "We may offer a 'sleeper' version in the future," said Kukreja.

An eye for quality

Built with close attention to quality at Guru Ram Dass Body Builders' Sonipat facility in Haryana, the G-Python coach body design flaunts a super strong reinforced structure that is crash resistant. It is backed by a pan-India after sales support. Offering ease of maintenance and service through easy accessibility to key aggregates and parts, the luxury coach body design is subject to regular updating, according to Kukreja. "This is inline with our philosophy to keep improving a design and incorporate new developments in bus/coach body design and development," he added. Explaining that his company's modern plant at Sonipat has state-of-the-art paint booth, shearing and press brake machines, an R&D centre, shower booth and anFRP moulding facility among others, Kukreja said, "The build quality of the G-Python is inline with the company's quality management system and regulatory requirements."

Stressing on a robust quality control mechanism in place at GRD's Sonipat plant to ensure thorough inspection of every material that is procured and every weld joint that is carried out on the structure, Kukreja expressed, "Trained professionals use calibrated measuring instruments and various other machines as part of the quality management system." "There's a 'Red Table Area' in the Sonipat plant where the selected and reject material are segregated," he added. Explaining that the G-Python will complement the existing G-Dolfino bus body design, Kukreja averred, "They are more or less parallel offerings." "The G-Dolfino was launched in 2019 and the G-Python was launched in June 2021," he said. Asked if the G-Python coach body design would fit a 12m long front-engine bus chassis like the BharatBenz 1624, and Kukrejas quick to answer, "Modifications in the floor structure should make it possible." Whether it would be done at once? Kukreja is not in favour it seems. "We will take a call on whether we want to offer the G-Python luxury coach body design on any other chassis than a rear engine multi-axle one," he announced. "For the 12m long front-engine BharatBenz 1624, we have yet another fine design in the form of the G-Dolfino," he concluded. The G-Dolfino, it should not take long to understand, is inspired by a Dolphin! 🐬



How to Build an Ambulance

Ambulances come in many shapes and forms. Called “The Kings of the Road”, they are highly specialised and packed with specialist equipment. Here we find out what it takes to build them.

Being special purpose vehicles, one would want to have an expert to design and build them. We turned to one of the local body builders that has carved a reputation for themselves to be a leader in this segment. Continental Top Products & Engineering Sdn Bhd has been supplying ambulances for more than 30 years now, drawing on the expertise of Dato’ Dr Yen Yuen Choy. Sharing with us, he is giving us the ins and outs of how to build an ambulance.

Yen started building ambulances in 1988. “I remember vividly how we started with the request from Dr Chong of the Red Cross to build ambulances following the design by Toyota.” At the time, Toyota was a major supplier of ambulances to the red cross, with designs mandated by the UNESCO. Having studied the design of the Toyotas, in 1990, the first ambulance was put together for Malaysia’s Ministry of Health, opting for Nissan and Mercedes vans. Today, Continental Top Products and Engineering supplies mainly to private hospitals as well as to the Ministry of Health (MoH). Among the total product portfolio, ambulances make up about 40 percent, while the company also offers specialised vehicles such as food trucks, mobile operation theatres and mobile eye clinics.

When the company started, ambulances looked very different from the ones we see today. Back then, there was just a normal stretcher or seat inside. However, not satisfied with the simplicity of the vehicle, Yen went to the UK to study the design of the commonplace versions in Europe. An immediate introduction of the Genesis stretchers followed upon his return. This system, which is industry leading, offers many advantages, for example space savings so that two patients could be moved in one ambulance. One thing that Yen learned early on was that it is panel vans are better suited than passenger vans. “Too many adjustments needed!”

Over time, what Yen has observed is that localisation has taken hold. During the time of his visits to the UK, most ambulances around the world would be produced there and exported. Nowadays, high percentages of local content can be found in the ambulances of many countries. Stretchers are now also locally sourced as their standard have improved over time. The only item that is still difficult to source are




the lightbars as these are sophisticated and easier to use as ready-made imports from the UK. Another major change in ambulance design is the use of plastics. Yen explained that 20 years ago, a lot of fibre glass was used; this has been replaced with ABS. ABS has a low melting point, which enables its easy use in the injection moulding process and 3D printing. It also has high tensile strength and is very resistant to physical impacts and chemical corrosion, which allow the finished plastic to withstand heavy use and adverse environmental conditions.

Opting now for vans provided by CAM, one of the latest units delivered was for the Hospital Port Dickson. “What is remarkable about the latest batch of ambulances we have produced is that they are kept simple as they are needed urgently. The pandemic has brought with it an increased demand for ambulances, which may not need



The team onboard an ambulance typically comprises of a driver and a nurse, jobs that are not interchanged in Malaysia. An issue that Yen points out is the fact that ambulance drivers in Malaysia do not require any training specifically to manage this kind of vehicles. "When you see ambulances, they are the king of the road. They don't have to follow most of the rules as they are exempted. They can exceed speed limits for example." This however, as Yen points out, requires special skills. Braking, overtaking and high speed as well as being defensive while having all the exemptions is something that he wishes our local drivers would be trained in, like their colleagues from the UK. Just going fast is not good enough!

When constructing an ambulance, Continental Top Products & Engineering stresses the importance of high quality components. Hinges for the built-in cabinets, as just one example, are high-quality components imported from Germany, easily outlasting the ambulance itself. Service and maintenance is important and here the company relies on CAM chassis. Matching the five year warranty from the OEM, ambulances are covered for the same duration. "As such, users need to worry only about the regular service."

In terms of performance, a typical ambulance as build by Continental Top Products & Engineering would see the CAM van with a 3.0 litre engine to provide ample power. Stopping power is crucial to come to a halt from a high speed upon arrival at the scene. The CAM Ambulance featured is a Malaysia Ambulance project; it is specifically built to conquer all road and harsh driving conditions. It is an ergonomic design built by this particular ambulance builder, seeing expert knowledge being injected, to provide 24/7 medical emergency responses inside the vehicle before arriving Hospital. Warranty coverage for chassis and vehicle is a confident five years and the body work is one year. Yen admits that fuel consumption may not be a concern for hospitals. The cost of fuel is not a factor when considering that a life is at stake when such vehicles are deployed. 

to have all the equipment right away, although complying with all applicable regulations," Yen said. When it comes to selecting a supplier for an ambulance, private hospitals would look for special design. All ambulances under the purvey of MoH are built to the same specifications.

One application commonly found in ambulances used by private hospitals is the HVAC System, where the abbreviation stands for Heating Ventilation and Air Conditioning. Such system will be required during the rainy season in order to maintain consistent temperatures. In addition to the basics, auxiliary heating, ventilation and air conditioning units can save fuel, reduce emissions and maintain an ambient temperature in the ambulance cab and compartment. Beyond that, any fibreglass or ABS used has to be fire-retardant, floors anti-slip and easy to wash and chemical free. In the case of the CAM vans supplied, the added advantage are sliding doors. Oxygen tanks and other equipment can easily be serviced, refilled or replaced as these crucial items are installed near the doors.

Recently, Continental Top Products & Engineering has opted for CAM window vans as the basis for the conversion into ambulances. "There are two reasons for this: one is this particular model is wider and secondly, it is longer." As a result, the body builder is able to pack more life-saving equipment into the vehicle. Also, CAM vans are locally assembled, which means that spare parts are easily available, even in rural areas. Building an ambulance takes about three weeks before the vehicle is released to the client. In the case of ambulances supplied to MoH, an extra test by JKR is required. According to Yen, this market might be niche, but it is significant as MoH alone has requested 490 units for 2021.

Ambulances are under a lot of stress as they operate 24/7. Hence, the average life-span of such a vehicle is five years. As an asset, an ambulance is also a significant investment. With the basic investment in the van weighing in at about RM 75 000, the completed unit can cost up to a quarter million Ringgit. Items like defibrillators can cost up to Rm 80 000 alone. With all the possible items on board, such units are considered as Class A rated. With an order of 500 units and several other large orders from MoH, Yen is confident to say that the company has produced at least 1 000 ambulances for the local market.



HVAC Systems for Buses

We take a look at a system that could be installed as a standard item in order to provide a better user experience.

With a broad product portfolio ranging from Diesel fired auxiliary heaters, complete and customized HVAC units and systems to support the move towards electric mobility, Webasto can provide comfort across a wide range of buses in the most challenging of conditions. Webasto is your reliable systems provider when it comes to commercial vehicle heating, cooling and electro mobility.



Webasto Roof Top air conditioners use high quality reliable components and offer cooling capacity up to 36.0 kW. With low profile modern aerodynamic designs, the units have been designed to cope with the harshest of climates. Intelligent thermo dynamic management ensures efficient performance and economical energy consumption. The units are easy to install and maintain whilst complying with the relevant industry standards.

Integrated Climate Systems for minibuses from Webasto are extremely versatile and create a pleasant climate for driver and passengers. With cooling capacity up to 16.0 kW and high efficiency, they can be installed under the dashboard, on or beneath the roof, A high level of flexibility is achieved from the wide range of vertical and horizontal evaporators, condensers, ducting and air distribution options. To provide a completely integrated climate solution, various models also have a heating function.

Since 2016 Webasto has heavily invested in products for the rapidly growing e-mobility market. The core of the portfolio is a robust, scalable, plug and play Commercial Vehicle battery which is available in 400v or 800v. Following their systems approach they offer not only the Vehicle Interface Box, but also an intelligent thermal management solution for their Batteries to ensure that they are operating in peak condition throughout their lifetime.

As the portfolio broadens this will include e-thermal management to provide cooling for electric vehicle systems and passenger compartments using robust efficient components and advanced software to balance the available energy with the thermal requirements.

For Webasto, being a systems provider means, above all, to be prepared for any and every application. Whether you're upgrading your fleet by retrofitting it with heating or air-conditioning or outfitting a small series of vehicles. Webasto are ready to work with you. And no matter what, attending to your individual requirements and providing high quality products & services are their top priorities. In their vertically integrated production they put all their experience to work on your heating, air-conditioning and electric mobility solutions, from design concept to testing and validation, all the way to production and installation. All Webasto Products come with a 2 year warranty. ■



Mentally Healthy Bus Captains

In past issues of our magazine we have spoken about aspects of healthy living for bus drivers. Typically, this revolved around the idea of having enough sleep, having a diet of nutritious food and how to incorporate sports into the daily routine to offset the long hours of sitting. Considering the restrictions we are faced with now, and the reduced volume of work, we should also consider the mental health of our truckers.

Over the past months, we have hailed commercial vehicle drivers as the heroes of the economy, the people that kept our people moving and getting them to work. Personally, I am trying to have as little exposure as possible. It gives me a jolt when I see that some place was shut down for a while because they have had positive Covid cases. I am then trying to establish if that could affect me. I imagine that the bus captains would be in a constant state of anxiety. It is their very job to be out and about and they ultimately go many places and meet people. While they surely adhere to SOPs, their risk of getting infected is higher. I can only imagine, the stress that this is adding to the driver and their family. Essentially, the very job they perform puts them all at risk. At the moment, we still need real people to drive the buses and vans.

Many drivers also depend on the trips to make money. The basic salary is seldom enough to tide a family over: it is the daily trips that fill the wallet. With now reduced numbers of trips, the breadwinner may be under more stress as making enough money may be very tough. When having been in close contact with someone that is infected, a driver may have to stay at home for several days, not being able to earn any money. Being not even

infected, this driver will still be deprived of a means to make money. I can only imagine how the search for funding will have an impact on the mood at home. Many times have we talked about fatigue management in our magazine. While that encompasses a bit more than just sleep, I wonder if bus captains are having restful nights these days. I am having trouble falling asleep on many days now, what with the mind still racing.

Meanwhile, I hear from many companies that they are offering virtual gatherings and even sports programs. The latter reminding me of the 1980s trend of TV-Aerobics. It has been generally acknowledged that we are social beings and that the contact to others is highly important. If it wasn't for the pandemic, the bus captains would have their own version of that by meeting in coffee stalls. They would shoot the breeze when they take a break from driving, chilling over a Nasi Lemak or Teh Tarik. I am sure that bus drivers are just as sociable as office staff, just that they have different venues. However, I have yet to hear of any weekly virtual call for the drivers or sports activities meant to keep them moving at home. Surely, they will miss their buddies and the lack of social activities will also take its toll.

Between the brooding at home, threats of financial hardship and the constant fear of bringing home a virus, this group of people must surely feel the impact of the pandemic. I am not saying that others do not suffer, just that I notice that our commercial vehicle drivers have not been mentioned as a group that is being looked after or a spotlight on them. I think we owe it to the drivers that we try to help them making their lives less stressful. I would venture to say that anything we do to help them cope with the stress of the current situation will be less costly than having to deal with the fallout of the pandemic once we have returned to a form of "normal".

We all deal with stress differently. Just because I am keeping busy and my mind occupied may not mean that others do not suffer. As we know, many suffer in silence as they might be too afraid to speak up, appearing to be weak or unable to handle the situation. I would want to know how you and your drivers are dealing with the current situation to create an environment that nurtures mental health and wellbeing. 📌



Taking Care of Your Fleet

A well maintained fleet is a more profitable one. Sharing tips and insights on how to look after your assets, PETRONAS is highlighting the importance of lubricants, fuels and fluids.

In this exclusive session, Eric Holthusen, Group Technology Officer, PETRONAS Lubricants International shares with us best practices and practical tips on how to keep your vehicle's engine in top working condition.

Especially lubricants are of importance to consider. As a product, it is a multi-billion dollar business that is set to grow by three percent over the next four years. The volume is expected to grow from 158 billion USD to 183 billion USD. What is significant to note is that the growth will be stimulated by the increased need for last mile transportation and transportation of goods in general. Meanwhile, for passenger cars, a drop in demand is predicted as electric cars are rapidly replacing vehicles with internal combustion engine. However, the reduced demand for lubricants in the passenger car sector will be outpaced by the need for lubricants in the commercial vehicle sector. Leading this trend are Asia, Europe and the Americas with Africa and the Middle East lagging, simply as a result of a much smaller vehicle population. In Malaysia, the same developments will be seen, with demand to grow from 300 million litres to 340 million litres by 2025.

With vehicles now running around the clock, fleet operators are concerned about how to ensure best uptime and efficiency of their vehicles. While lubricants only constitute a comparatively small amount of the investment in commercial vehicles, the right choice of lubricants can highly impact other areas, such as fuel consumption and maintenance. "Saving on lubricants is a bad idea as the money saved there is never going to offset the extra cost incurred in other areas," Holthusen said.

The first issue Holthusen touched upon was the need to adjust oil-drain intervals, according to the driving conditions one may find in the respective environment one is operating in. "Generally, the oil drain intervals are based on normal driving conditions. However, in many cases, we find that



most vehicles operate under severe operating conditions, thus, the service schedule might need to be adjusted accordingly," he said. Here, viscosity is what is important and it should be the same at the end of the oil drain interval as it has been at the beginning. The purpose of the oil is to bind and hold contamination, such as soot and dust, and transport the contamination to the oil filter.

Doing its job properly, oil will turn black, which is not a sign that there is something wrong, but rather that the oil is actually doing what it is supposed to. Some transporters would take the opportunity to have their oil tested, for example to determine sulphur content levels. However, Holthusen said that regular checks are not necessary but tests may help determine if operating conditions are too severe to help operators better adjust their maintenance. He said that "It is more important to use a high-quality lubricant." As additives may contain sulphur, such tests may not be suitable as a determinant of oil quality status.

Another aspect of how lubricants can help maintain efficiency is the engine type. Older engines may be a little less sensitive overall, however, viscosity is something that needs to be matched to the engine. Modern lubricants are backwards compatible, meaning that a modern fluid can be used as long as the viscosity is right. In contrast, modern engines should only be filled with the recommended lubricants. For instance, the soot load is higher in modern power plants, hence lubricants need to be more robust and to carry more soot. Failing to use the correct and appropriate lubricants, operators risk damaging their engines. Piston rings may get stuck and soot may accumulate in places where it is harming the engine as well. Overheating of the engine is another problem that is associated with the wrong choice of lubricants.

Every operator is aiming at reducing fuel cost, it being one of the biggest contributors to expenses. Here, Holthusen also recommends the use of quality fuels as they would, in tandem with lubricants, also reduce cost. One of the key tasks of fuels is to keep the injectors clean. Clean injectors are a major contributor to the efficiency of the engine. Holthusen recommends using aftermarket additives in case the fuels available from the pump does not contain cleaning agents. One issue observed with the use of biodiesel is that such fuels may not burn as cleanly as fuel derived from crude oil. These unburned portions may find their way into the oil, thus diluting it. When using biodiesel, it may be necessary to shorten the oil drain interval to counter the accumulation of biodiesel residue in the lubricants.

Although lubricants may look more or less the same to us, it is crucial to ensure that one uses the right type of lubricants. One can always use a better quality, as lubricants are developed to be backwards compatible. There is one lubricant that stands out, being a 0W20, which is used in only one engine from Iveco. Using the wrong lubricant may not result in immediate engine failure, but over time, the engine will get damaged and the fuel consumption may possibly increase.

Drivers should also be aware of these issues. When on the road, a driver may have to top up lubricants or pull in for regular service. Knowing about how the specifications matter will ensure that the engine and gearbox will be serviced with the right fluid. Knowing that a high-quality lubricant is engineered to provide an extra margin can help the driver to determine that it might be better to return to base instead of using a lower grade oil, such as sometimes found when travelling across borders. A daily check for leaks and the oil level is highly recommended to be carried out by the driver. During such checks, axles should also be checked for leaks. The temperature in differentials can easily exceed that of the lubricants in the engine. "Dirt is not an issue so much here, but oxidation and the added stress when pulling heavy loads are."


Another crucial fluid is brake fluid. Being hygroscopic, attracting moisture, it should be replaced at least once a year. Should water accumulate in the brake fluid, brakes may fail as the water will boil under the pressure in the system. In our climate, this can be an issue and therefore operators should be very diligent when it comes to changing this particular fluid as a good practice.

Not usually a fluid that is given much attention, anti-freeze is usually also present in the cooling system of trucks here. However, it is not the prevention of the coolant to freeze that we should be concerned about in our region, but the anti-corrosion properties that are also inherent in this fluid. Using



anti-freeze can prevent corrosion. In doing so, the additives contained in the anti-freeze are being exhausted. Therefore, a regular change of the fluid in the cooling system is also highly important.

As all these fluids are chemicals, Holthusen urges everyone to use the right way of disposing of them. "Even the coolant contains chemicals and would therefore need to be handled by an expert." The right channel may depend on the arrangement with the respective supplier, but it is crucial to point out that there are correct ways of handling the recycling of all liquids in a commercial vehicle.

Vehicles have been sitting idle for some time now during the pandemic. As we re-activate them, Holthusen also recommends the following "The oil is aging, there is oxidation as soon as oils are taken out of its container and therefore, after a year latest, the lubricants should be changed before getting back to active duty." 


Tyrexpo Asia 2021 becomes a full Digital Platform Show

In August, Tarsus Southeast Asia – organisers of the forthcoming Tyrexpo Asia 2021 Show in Singapore announced that because of the ongoing global travel restrictions in view of the COVID-19 situation, the show would become a Hybrid exhibition with innovative digital elements working alongside the three day 'live' event.

However, with the latest updates from the Singapore Government, event engagements and experiences are still significantly impaired with high travel restrictions in place which has meant that live international trade shows taking place this year remains difficult. Therefore, Tyrexpo Asia 2021 will be moving into a full Digital event and Tarsus can confirm its recent partnership with a leading specialist in Hybrid Event Platform Management to present a highly professional virtual online show.

Tyrexpo Asia Digital 2021 will provide immersive experience and guidance with live engagement and execution facilities to guarantee a perfect level of business negotiations which will include several special features and benefits to all participants, including - Recommended Buyers/Sellers, Real Time Access to live chats/video conferencing, Q&A

sessions, self-promotion, post sharing, speaker audience interaction, screen sharing, smart matchmaking techniques with event group segmentation.

Alwin concludes, "I cannot thank enough all our amazing stakeholders who have remained strong and supportive of our decision. Our team is confident that the Digital Platform event will provide value to the global tyre and wheel aftermarket sectors during these unprecedented times." Further information for the Tyrexpo Asia 2021 Digital Show can be found on the Tyrexpo Asia 2021 website. 


THACO Donates 30 IVECO Daily Ambulances to Ho Chi Minh City to Support Fight against COVID-19



THACO, a leading player in the Vietnamese automotive industry, is supporting Ho Chi Minh City's efforts to fight against the COVID-19 pandemic, with the donation of 30 IVECO Daily ambulances to the city's 115 Emergency Center. The ambulances will be used to shuttle COVID-19 patients to hospitals throughout Ho Chi Minh City during the ongoing COVID-19 outbreak in Vietnam.

These ambulances have been transformed locally by THACO based on IVECO vehicles, which are imported as CKD kits and assembled in THACO's plant located in Chu Lai Truong Hai Automotive Industrial Zone.

The well-appointed ambulances are fitted with a full complement of medical equipment, including defibrillators, oscilloscopes, suction machines, and oxygen tank cabinets. Use of the spacious interior has been optimized to feature two seats to accommodate a nurse and a doctor with the patient in the compartment. The ambulance is also equipped with a negative pressure disinfection and cleaning system for transporting COVID-19 patients safely.

THACO was established in 1997 and has since become a leader in the Vietnamese commercial vehicles market. It has been appointed as official distributor and assembler of the IVECO Daily Minibus in Vietnam. The Daily Minibus is supplied in component kits by IVECO for assembly at the THACO factory in the Chu Lai Truong Hai Automobile Industrial Zone, and is sold and supported through the THACO distribution network in Vietnam. 

A photograph of a bus driver from a side profile, looking out the window at a scenic landscape of rolling hills and trees under a clear sky. The driver is wearing a light-colored jacket with blue stripes on the sleeves. The bus's interior, including the steering wheel and side mirrors, is visible.

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