



Foton EST Super Truck Development

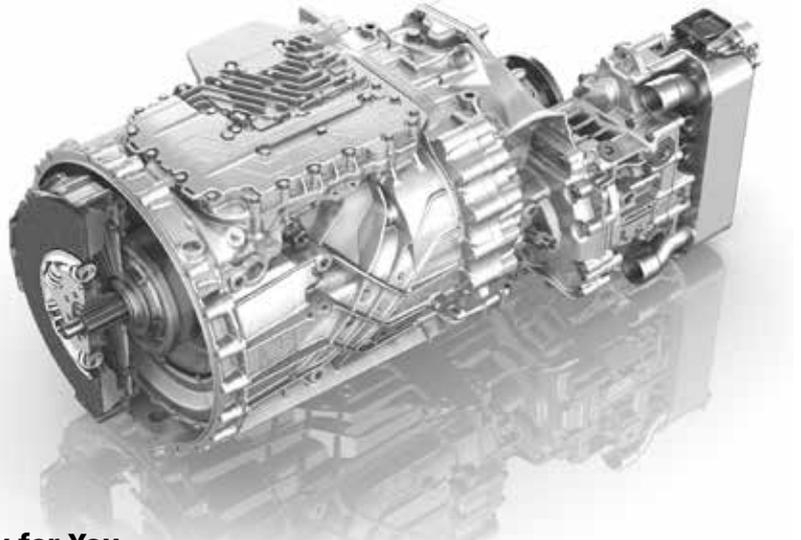
Now a common sight on Malaysian roads, the Foton EST Super Truck has proven to be a valuable addition to many transport operations. We take a closer look at this vehicle.

While the vehicle itself maybe a China-made product, there is more to it than meets the eye. The Foton EST is the result of for four years of research and development, based on European standards. Putting the vehicle through the ringer, it has also been subjected to 10 million kilometres of actual road tests. EST stands for Energy Super Truck, which indicates the approach taken by the designers when they conceptualised this truck. As the official distributor, Dato Billy Goh, Managing Director of Mpire Group, describes it as a "Type of high-quality and high-performance super heavy truck built using European science and technology through the European test and listing.

Energy Super Truck (EST) AMT

Foton has technical supply agreements with transmission specialists Getrag and ZF (Germany) and Aisin (Japan), BorgWarner (USA) for two to four wheel drive transfer units, BOSCH (Germany) for electronics and dependent systems, Dana (USA) for axles and differentials and Cummins (USA).

One of the cornerstones of the vehicle's design is the drivetrain. A powerful engine and transmission which could transfer power with precision have to be used in order to conquer the difficult terrain and ensuring work efficiency. ZF Ecosplit is the optimum power transmission and thereby provides the solution to these requirements.



Safety for You

Besides performance, safety was a major concern during the development phase. The cab has been designed to conform with the European Union collision regulations. The World Forum for Harmonisation of Vehicle Regulations agreed in March 2010 on the need to review and update the 1958 Agreement. Regulation (EC) No 661/2009 on the general safety of motor vehicles (the GSR 6) repealed numerous EU Directives and replaced them with UN ECE Regulations. As of 31 December 2010, the EU had acceded to 106 Regulations under the 1958 Agreement and to all 11 Global Technical Regulations under the 1998 Agreement (see box below). Discussions started in 2010 to develop a new GTR concerning the safety of vehicles with hydrogen propulsion. Also, a working group has been established to develop another new Global Transportation Regulation on pole side impact.

Considering the size and weight of trucks, accidents are a smaller but treatable part of vehicle problems, though heavy vehicles have disproportionate involvement in fatal accidents. In case needed, iBrake engine braking provides an extra stopping power. The Foton EST further features a hydrodynamic retarder. In such hydrodynamic retarder a rotor and a stator wheel oppose each other, separated by oil. The volume and pressure of oil determines the amount of braking torque available. The oil acts on the rotor with a damping effect that opposes its movement, which in turn brakes the retarder shaft. Adding such system reduces wear and tear of the brakes and provides additional deceleration.

Fuel-saving

Using a ZF Manual Transmission or Automatic Manual Transmission (AMT) gives the EST another advantage. The ZF TraXon is the new standard in many respects. It is light, therefore the truck can pull larger loads compared to other vehicles using different transmissions in the same performance class. Pulling power is key to reducing fuel consumption. Here, the extra high transmission spread along with an exceptionally powerful torque keeps the truck moving forward in every situation. As an intelligent gearbox, the ZF-supplied design achieves a 0.72s interval for gear shifts.

Versatile software functions support fuel-efficient driving and create additional customer value. Goh describes this as product image of Foton EST AMT being a "Money master with German quality". By using a ZF transmission, Foton is redefining the meaning of AMT truck from automated manual transmission to be the AMT truck: Advanced, Money making and Trusted.

TraXon - International benchmark
Nm/kg ratio **12.83** • Transmission spread **16.78** • Efficiency **99.7 %**

Versions 12-speed DD/OD 16-speed DD/OD		Quiet operation 25 % quieter than predecessor (-4 dB)
Torque OD up to 3,400 Nm DD up to 2,800 Nm		Extreme tractive force i = 16.69 (OD)
High reliability 66 % more gear changes, 50 % more clutch operations than predecessor		Safety Intruder with up to 600 kW braking performance
Functionality PreVision GPS Rolling function Free the vehicle by rocking, etc.		Lightweight Up to 100 kg more payload in comparison to competitor
		Service Datalogger

© ZF Friedrichshafen AG

Thanks to the innovative design of the exterior, the wind drag coefficient of driving cab reaches 0.564, which is the minimum value in the industry. ZF's original hydraulic retarder reduces the amount of long-distance downhill braking, thus avoid brake failure caused by brake overheating. This reduces driving fatigue and significantly improves safety at the same time as improving fuel economy.

Why Foton Choose ZF Traxon for Foton EST Advanced Technology all Around



The technical specifications read like an accumulation of all the latest advances in technology. Owning an EST means that one has a Cummins ISG engine with lightweight and modular design ready to provide ample power. The 2 000bar ultra-high pressure injection technology is managed using LBSC intelligent rotation speed control and i-Telligent vehicle management.

Through Intelligent automatic gear-shifting, drivers can operate the truck left foot and left hand-free. Easing the burden on the driver, our pilots experience less driving fatigue. On the road, maneuvering, breaking-out, liquid transportation and other functions can be customized for various road conditions and cargo. And when needed, the driver can use the unique creeping mode for traffic jam to ensure safer transportation.

Buy the Truck, Make Money

With highly dependable components, operators reduce the number of number of maintenance stops. the chassis bridge needs an oil change only every 100 000 kilometres, which is significantly reducing the frequency and cost of maintenance. Being easy to operate, it is easier to recruit drivers.

Auman calibration matching gives owners more advantages. Thanks to the benefits of having a supplier alliance in place, the super powertrain (Cummins engine +ZF gear box+ Meritor axle) realizes calibration based on Auman heavy duty truck for better matching. As a result, the truck is running over 70 percent of the operating time within the economic range. This alone can potentially save three to five liters of fuel per 100 kilometres. Pointing out its lightweight structure, Goh explained that "the vehicle structure upgrade and application of new materials and technology results in a vehicle that is sturdier, yet can take a higher payload. This heavy truck is produced by Foton-Daimler Automotive IV in China and complies with German production standards with guaranteed quality. It may be a China brand, but there is a lot of European know-how in it."

Torque Calibration Unit

In order to receive the best fuel efficiency and transmission power output, Foton China, together with the assistance from ZF China and Mpire Commercial Sdn Bhd has organized a ZF TCU (Torque Calibration Unit) adjustment for Malaysia's Foton EST AMT vehicles.

In September 2019, one unit Foton EST 6X4 AMT from Mpire Commercial has been used for this ZF TCU experiment. Over the course of two weeks, the vehicle travelled 3 000 kilometres, with different cargo and load carried. The vehicle was driven through various Malaysia road conditions: highway, urban roads, country roads, off-road, continuous climbing and downhill road sections. This is a severe challenge for both the vehicle and the driver. From this experiment, valuable data has been collected by Foton China and ZF Engineers, whereby the data will be input into the TCU for future Foton EST AMT units exported to Malaysia.



Good Reasons for EST

For the Malaysian market, Goh lists fuel saving, high efficiency, safety, cost reduction, as four factors that address the indicators that are most important for transport industry companies. "From the market feedback in China, in the first half of this year, Foton EST AMT continues to maintain the lead. Having achieved 13 000 units sold, this signifies a year-on-year increase of more than six times. It is an outstanding performance," he proudly said.

While the gearbox may be a major consideration, a good AMT transmission alone is far from enough. Developing a truck that is fit to meet the needs of the market also involves the matching between the engine and the transmission, the axle, as well as the matching and calibration of the powertrain and the vehicle. Thanks to the perfect layout of powertrain resources by Foton, the EST also incorporates technologies at its core. For high horsepower for example, the diesel engines from Cummins are mated to the automatic transmission.

In Malaysia, AMT gearboxes are a relatively new option. However, the development of AMT has been going on for over four decades. This offers strong and mature technology, offered through the cooperation with global brands involved in the development of commercial vehicles and passenger cars, such as ZF. Meanwhile, a trusted source of power, Cummins engines are synonymous with 100 years of quality assurance. In the USA, Cummins commands more than 50 percent of the market share. Putting these together, matching Cummins and ZF, increased the reliability by 20 percent. This reduction of downtime translates into operation time being increased by one hour every day .



MPIRE GROUP OF COMPANIES

Founded in 2002, the Group today has been focused on the Malaysia automotive industry two decades. Mpire Group Businesses covers Proton 4S Dealerships in Batu Pahat Johor as well as light commercial vehicles, being the exclusive Distributor of the JAC Brand in Malaysia and distribution of FOTON pick-up and vans. Rounding out the offering are heavy duty commercial vehicles as the distributor of Foton EST, car rental and leasing and venturing into assembly plant and credit facilities for motor vehicles. Mpire Commercial Sdn Bhd, distributor of Foton EST /EST-A, was founded in December 2017.

Foton in Focus

Founded in 1996, Foton was ranked number one in the commercial vehicle industry for 16 consecutive years. The brand has won the trust of the Chinese market and has been the top exporter for 10 consecutive years. Foton is a member of the BAIC Group, which is a Fortune 500 company. With 32,000 employees and USD 14 billion operating revenue, Foton has sold its products to more than 110 countries and regions across the world. It has developed into a state-owned internationalised leading manufacturer of commercial vehicles in China.

Within 25 years, global sales have exceeded 10 million. As a trusted partner, Foton has cooperated with the world's top brands such as Daimler, Cummins and ZF, bringing together the global class-leading resources to create most reliable products.





Foton has been able to attract a world class research and development team which is always committed to the development of innovative products. With an eye on overseas markets, Foton is developing products with the notion to make them tailored to meet the needs of customers from different industries.

As for intelligent driving technology, Foton takes the lead in introducing China's autonomous trucks in 2016. Foton is proud to state that they are continuously achieving technological breakthroughs, winning glorious awards with cutting edge technology to ensure the safety and efficiency of logistic and transportation, and to maximise the economic benefits of users.

From global collaborations spring the creative concepts of the super power supply chain, involving Cummins engines + ZF transmissions + Daimler vehicle technology. This is now paired with the established Foton Motor's unique advantages in integrating and matching vehicle and power train.



Supporting its distribution network, Foton has a strong spare parts and services network. Foton maintains three global spare parts distribution centres (CDC) in Beijing, ShanDong & GuangZhou in China, and two RDC's in Panama and Dubai; meanwhile, there are 2 NDC's in Thailand & Russia. The services network covers the major region in Asia, Central & South America, Africa & Europe. Foton assures customers that the only thing one needs to do is to make a call, and a commonly used accessories can be shipped directly from the NDC or RDC.

Foton adheres to the "Customer Centric" service concept, which aims to improve customer's satisfaction and forms diversified service solutions for full life circle service. This includes customised service, on-site service and in-store service. At the same time, the brand is busy to further build the national service brand, truly "Foton Total Care" to provide operators with accessories and services.

Called Foton iBlue Auto, one of Foton's core brands, is covering passenger, freight and special vehicle products series. It has successfully achieved cooperation with Charoen Pokphand Group, Master Motor, Hascol, KE, PTN and other internationally renowned companies.

Foton is committed to promoting the development of green logistic and realising three product lines of pure electric, plug-in hybrid power, and hydrogen fuel cell. Thus far, Foton has accumulated a decade worth of product and technology development in the field of hydrogen fuel cell commercial vehicles and is continuously carrying out in-depth research on key technologies. 

