

Reaching New Levels of Safety... How Adoption of New Standards & Regulations Are Ensuring Cars Are Safer Than Ever

by Aman Pkrdan



Mr. Abdul Rashid Musa
Chief Technical Officer
PROTON Holdings Berhad

Mr. Abdul Rashid Musa, graduated with a Bachelor Degree of Engineering (Mechanical) with honours from the University of Malaya in 1989. With a career spanning over 25 years in various automotive projects and organisations tied to the automotive industry which are not only limited to local industries but also at an international level when he was posted to Group LOTUS (England) and Mitsubishi Motors (Japan). His involvement in the automotive field started in 1990 when he joined Automotive Industries Sdn. Bhd. (a subsidiary of UMW Toyota) followed by Mitsubishi Japan in 1993, HICOM Engineering Sdn. Bhd. in 1995 and Lotus UK in 1997. In 2000 and 2012, he was entrusted to lead HICOM Automotive Manufacturers (Malaysia) Sdn. Bhd. (formerly known as AMM) at DRE-HICOM, Pekan Complex, Pahang. He was given the challenge to turn around the company's image and performance with a vision to be the preferred Automotive Assembler. There, he was able to hone his skills and knowledge further when he worked with global renowned partners like Volkswagen, Mercedes Benz and Suzuki.

Rashid holds several portfolios here in PROTON Holdings Berhad, where he oversees project collaboration as Chief Technical Officer mainly on the New Perdana introduction and several new developments that include PROTON's new and technologically advanced hatchback, the Itz. Apart from that, Rashid also holds several Board of Director positions of several PROTON affiliated companies. He has diligently contributed indirectly and directly to uphold the corporate governance, integrity of decisions and policies in PROTON. With his passion to elevate the quality standards of our locally produced cars, Rashid is also involved with several non-profit governmental bodies & relevant authorities on policies and regulations. Rashid has been very vocal on advocating passenger safety regulations to be at par with international standards. He has led a strong team to ensure PROTON's latest models namely the Suprima S, Preve and Itz achieve the highest rating (5 stars) in terms of safety from ASEAN NCAP and Australian NCAP respectively. In the education arena, Rashid was involved in the early stage of the setting up of ICAM (International College of Automotive) in Pekan, Pahang. He was appointed as an ICAM Academic Advisory Panel and has participated in project collaboration with Warwick University, England.

WP.29 was established in 1952 as the Working Party on the Construction of Vehicles, a subsidiary body of the Inland Transport Committee (ITC) of the United Nations Economic Commission for Europe (UNECE). In March 2000, WP.29 became the "World Forum for Harmonisation of Vehicle Regulations (WP.29)" with the objective to initiate and pursue actions aimed at the worldwide harmonisation or development of technical regulations for vehicles. Providing uniform conditions for periodical technical inspections and strengthening economic relations worldwide, these regulations are aimed at improving vehicle safety, protecting the environment, promoting energy efficiency and increasing anti-theft performance (Source: UNECE website).

JURUTERA interviews Proton Chief Technical Officer and an EM member **Mr. Abdul Rashid Musa** on how Proton is complying with international regulations like UNECE WP.29 and meeting new standards such as New Car Assessment Programme (NCAP) to improve safety for its customers and venture in to newer markets.

What are the various aspects of safety when it comes to ensuring overall safety of a passenger in a vehicle?
There are basically three areas when it comes to the safety of vehicles and transportation.

Firstly, there is the safety of the road itself. This is an aspect that concerns civil engineers. They try to make the road safer in terms of turning radii, gradients and so on.

Secondly, there is user behaviour. This is an important aspect, because it is the trigger for the other two. We can create a safer car, but if the consumer doesn't wear his seat belt then the outcome is still the same.

In Malaysia, we need to improve more on this. Thirdly, it is the safety of the vehicle itself. This is an area where our community is increasingly gaining awareness for.

The Malaysian government has signed up with World Vehicle Type Approval (WVTA). It was gazetted in 2010 and commenced enforcement in 2012. We are approaching it via



Regulation applicable for Malaysia Vehicle Type Approval (VTA) by categories

the process of gradual enforcement. Malaysia will be in full compliance of WTA by the year 2020.

The need for world certification only came about because PROTON is a manufacturer that designs, tests and builds its cars entirely, for sale worldwide. As a long time employee who has been with the company since it built its first in-house designed car, what are the challenges faced in making a product that is sold on the world stage?

Our former prime minister Tun Dr Mahathir Mohamad had this aspiration of having a national car back in 1979. I joined the company in 1990. Back in 1979, Malaysia only had plantation as the main thrust of our economy. It was mostly agriculture - with oil palms and rubber plantations mostly.

In those days people used to say that Malaysia doesn't even have the skill to produce a needle. As engineers, we took this as a challenge. In 1982, Tun Dr Mahathir found a partner, Mitsubishi, to create a national car. In 1983, PROTON was set up and the first rollout of its car was in 1985.

How PROTON works is actually beyond business. It's not just talking about buying and selling or trading, but more about the national interest of developing a national industry. Why? Because it can spin off a lot of other industries.

Then we come to the aspect of world standards. Being in this business, PROTON must be a global company. We have to comply with international requirements. This is what the WTA is all about.



Passive safety



Active safety

There are 232 countries in the world. Out of this, only 14 countries cars and have the capability and capacity to build their own car. Out of the 14, only one is from a developing country. The car itself is very international in nature.

Can you briefly describe the UNECE regulations which PROTON now needs to comply to?

There are 134 regulations in total under this regulation. It goes back to the safety aspect, which is paramount to any design.

In the Asean region, we are the only OEM that comply to this regulation. We started in 2012, and will achieve full compliance by the year 2020.

In the world, there are many other similar regulations as well. For example, there is the Japanese International Standards (JIS) in Japan and The Federal Motor Vehicle Safety Standards for the US.

Many countries in the world are changing to ECE based European Economic Commission regulations. Even Russia is changing to the European-based regulation.

Is this regulation an important step for the motoring industry in the country as well?

Malaysia has a high proportion of cars to people. At 1 car per 2.5 persons it is quite high, compared to Indonesia and Thailand.

We have more than 10 million cars on the road currently. Of this, 3.7 million are Proton cars. This means that out of 10 cars, 3 or 4 of them will be Proton cars. Unfortunately, we have many older generation cars on the road right now. In my opinion, the government should have "end of life" policy on this matter.



Crashworthiness



Environment



General safety

Roadworthiness is very important. Many regulations have been introduced, and the old vehicles have become obsolete. They are no longer safe. The seat belts are not safe. Other things like emission levels are also not up to par.

What are the basic principles used in UNECE regulation testing?

The testing of components is done on three levels.

Firstly, they are done on the component level, consequently at system level and finally, vehicle level. In order for a vehicle to comply, it must have all three test reports.

All 134 items have to be done on three levels. When the vehicle is fully built up – a crash test is done.

Who are the custodians of the standard in Malaysia, and why is it important now to regulate car makers?

The authority who oversees the implementation in Malaysia is the Road Transport Department (RTD). In order for approval to be obtained, it must first be approved by a committee. The committee consists of representatives from the Ministry of Transport, Ministry of International Trade and Industry or MITI, PUSPAKOM, SIRIM and so on. I'm also recommending that the Fire and Rescue Department (Bomba) be on the committee. This is because when a car is involved in an accident, they

are the ones who have to handle the situation first hand. Our cars today are made with Hot Press Forming (HPF) parts. Their steel structure strength is at 1500 MPa, or five times stronger than normal steel. Therefore, the rescuers can't simply cut the roof. In most cases, they would just need to open the door.

Today's cars are designed so that the passenger cage does not collapse. It is very strong. If they try to cut through it, it will take a very long time and is almost an impossible feat.

If we export cars to certain countries which have adopted the UNECE, then we have to comply. This is regulation. When they do type approvals for certain things, we can carry over the results.

We try to harmonise the enforcement. In Malaysia, we are the only ones in the region who are so far advanced. Even our northern neighbouring country, despite having signed the WTA, has yet to enforce it. That's why there are new cars there without airbags. Meanwhile, our closest neighbour, Indonesia has yet to sign the WTA. This is probably why some car makers are taking advantage of low regulatory practices in these countries. In Malaysia, we have one of the highest regulations in ASEAN countries.

In terms of safety, we are ahead of the others in the ASEAN region in two aspects. Our Total Industry Volume (TIV) is relatively small at 700,000 as opposed to Thailand at 1.2 million and Indonesia, 1.4 million but in terms of regulatory safety requirements and education, we are way ahead.

What are some of the new regulations introduced recently under UNECE?

Safety is not the only aspect regulated under UNECE. It also regulates such diverse aspects such as tyre rolling sound - which is also a detailed part in this regulation. It takes into consideration of the level of decibels (dB) allowed on each type of tyre. It details how to conduct proper tests by the authorities. In 2015 there will be 19 new more regulations.

In 2017, there will be mandatory UNECE R101 regulations for fuel consumption and emissions.

How do the changes in regulations affect PROTON? Is it challenging to comply with the regulations compared to other car companies operating here?

This makes it very dynamic for us. It takes a minimum of two years to design a car. PROTON builds complete vehicles with its own platform, powertrains and top hats. It has registered 2,865 intellectual property rights over the years.

We make our own engine, and we have a casting plant. Because the supporting industries in the country are relatively weak, we have to play a bigger role.

We are not just assemblers. Even for our tooling, we have a company that supplies tooling. Since we know that investors don't have the money to invest in say, a casting plant, we invested in casting plants that make cylinder blocks. As I've mentioned, PROTON is beyond business. We are more responsible than that. We develop the vendors, industry and capabilities. We can make our own engines, platforms and cars of our own.

I'm very proud that even though we have less than 1,000 engineers working with us – they nevertheless have been



Mr. Abdul Rashid Musa
Photo courtesy of
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producing world class cars. At the end of the day, to get your car sold in UK, you must meet all the requirements.

The Road Transport Department (RTD) is the authority in Malaysia. There is a committee led by RTD. That is their role. For example, during the submission of our Iriz car, the RTD has to send a witness or receive documentation every step of the way. They even have to audit the vendors supplying our parts, as every element must be submitted and accounted for.

Even the glass is tested and submitted. Often people ask why it costs so much to build a car. Sometimes it is unfair, because we are a true OEM, and as an OEM we must have this capability. For crash testing alone, we spend roughly RM7 million.

We are now employing a lot of CAD and CAE as well as virtual testing so that we can reduce the number of tests done but it is still challenging. The safety requirements are not segmented, and stand on their own.

If a car has 10 airbags but the body structure is not strong, it will collapse, so we must consider safety from the design stage itself.

How has UNECE regulations changed the motoring landscape so far?

Before UNECE, there were no standards here. Suffice to say, before this, there were many abuses to the system. That's why a car that looks the same elsewhere in the world, may not have the same specification when it is sold in Malaysia.

Some cars may look the same, but they have different specifications when sold in this country. The European cars however, often only have one set of specifications.

You can clearly see this when some models are not even sold in other parts of the world. They tailor-make these vehicles to comply with affordability issues and so on. I'll be frank and say that I'm quite upset that the authorities sometimes give exemptions. This is something that we protest. There is a recently launched car from a China car maker. Third seat belt is now mandatory for new models. Cars have to have a center seat belt. It has to be a three point seat belt. I had a look and there were only two seat belts. This does not follow regulations. Apparently, they asked for an exemption. If we (PROTON) go to Australia, will we be given exemptions? Why do the authorities give exemptions here?

In 2012, I made a report on this - stating that 70 car makers had been given exemptions.

Besides regulations under UNECE, what other standards does PROTON aspire to achieve?

Market expectations are very different now. Many consumers are aware of the New Car Assessment Programme (NCAP). This is a voluntary test for cars. In Malaysia, we have the Malaysian NCAP. This is handled by Malaysian Institute of Road Safety Research (MIROS).

On the international level, there is World NCAP, so that consumers know a car's safety rating before they buy it. It's sort of like reading the ingredients and safety label at the grocer. When we buy food, we can find out how many calories from the packaging.

PASSIVE SAFETY

CRASH TEST - PREVE

- BMW 3-series 2012 320d 6 (F+S+C) 5-star 36.76
- VW Jetta 2011 TSi 6 (F+S+C) 5-star 35.20
- Honda Civic 2012 All 6 (F+S+C) 5-star 34.91
- Audi A4 2008 All 6 (F+S+C) 5-star 34.45
- PROTON PREVE 2013 ALL 6 (F+S+C) 5-STAR 34.25**
- Ford Focus 2011 All 7 (F+S+C+K) 5-star 34.17
- Toyota Corolla 2010 All 7 (F+S+C+K) 5-star 33.63
- Hyundai Elantra 2011 1.8 GSL 6 (F+S+C) 5-star 33.21
- Mitsubishi Lancer 2007 ES 3 (F+K) 4-star 31.56
- Kia Forte 2009 S Sedan 6 (F+S+C) 4-star 28.13

F: front
S: side
C: curtain
K: knee

Source: ANCAP website



Photo courtesy of PROTON Holdings Berhad



*SAVED!!! The driver standing by the roadside, after the accident.
Photo courtesy of PROTON Holdings Berhad*

Similarity for cars, this is the rating standard to measure safety. The ASEAN NCAP has just been formed. It's a process of gradual implementation as well.

How does NCAP ratings ensure passengers buy safer cars?

When we talk about the safety aspect of passenger cars, we are talking about safety on three levels. Firstly, there is passive safety. This relates to the safety provided by the passenger cage, airbags, and other design features during the accident.

The second level is active safety. These are features that help prevent an accident, such as Anti-Lock Braking Systems (ABS), Electronic Stability Control (ESC), Brake Assist (BA) as well as Traction Control (TC). A manufacturer needs to have good active safety set of system to get a very good rating.

If a car only has good passive safety features, you will not score a five-star rating.

If you have a strong body structure and you score very highly on passive safety with more than 14 points but you don't have active safety, you will not get five-star NCAP.

For example, without ESC and seat belt reminder, you can get a maximum 4-star even though you score highly. This is because it is important to prevent an accident from occurring. As they say, prevention is better than cure.

By 2017, there will be more stringent requirements. In NCAP, points are calculated based on the level of injury as measured by the crash test dummies.

Cars hit an offset deformable barrier at 64 km/h. Side impacts are tested at 50 km/h. From points obtained, they calculate the car safety level.

The next level is cognitive safety. PROTON is now developing it but it's not in the market yet. This includes items such as autonomous braking system. Our Iriz demonstration vehicle has an autonomous braking system. If there is an obstruction ahead it will brake by itself. It works by using radar with the doppler effect and a 3D camera. You don't have to press the brake, it will stop by itself.

Then there are things such as lane departure warning indicators and signage recognition.

For example, if you are in a 90km/h area, and you drive at 100 km/h it will trigger off an alarm. There is also the collision avoidance system. If a motorcycle comes from the rear, it will trigger an alarm.

In the Iriz, when you come to a slope, you don't have to worry while you press the brakes. The car will automatically lock the hydraulics so it doesn't roll back. The Iriz has Electronic Brake Distribution (EBD) which means that if passengers are in the rear, the car will electronically distribute more forces to the rear.

Although it is a 2-wheel drive car, it behaves almost like a 4-wheel drive. We can manipulate the brake power to the rear, by controlling the rotation of the rear brake. It also has keyless entry. The doors can be programmed, not only for safety, but also for security.

You can program it to open only one door. Therefore, if you are alone, it is safer.

Many of these features we have developed for the Iriz. Iriz is our new technology car. It has a platform that can be powered by a traditional internal combustion engine, a hybrid or even fully electric.

Is safety becoming a Unique Selling Point with Proton cars?

Well, the Iriz is a RM40,000 car with a 5-star ASEAN NCAP. Some features, like the ESC can only be found on RM100,000 cars.

This is the best ever Proton car. We have evolved in technology. All the best knowledge and features are in the Iriz.

Under the Australasian NCAP, Proton cars are performing better. We are better than many other foreign cars that come into our market. For our Prevé, we scored just 0.25 points behind Audi A4 under Australasian NCAP. This is a great achievement for us. But it's still hard to convince the public. Our Prevé has won an award on safety. Now safety has become our Unique Selling Point (USP).

What is the determinant factor of safety in a vehicle?

The behaviour and attitude of the occupants is the most important. For instance, Proton cars have seat belt warnings. I know many users connect the seat belt and sit on it. At an accessories shop, they sell seat belt buckles to be inserted into the belt holder so that the alarm doesn't go off. They don't want to wear seat belts. ■