MRC TECHNICAL eBULLETIN

RAISING STANDARDS FOR THE AUTOMOTIVE INDUSTRY

NEWLY LAUNCHED CARS

EV/HEV VS ICE VEHICLE COLLISION PARTS STUDY

> "MRC Malaysia continues to keep up to date with the evolution of vehicle technology."

Introduction

Hello everyone,

We bring insights into a number of new vehicles recently launched in Malaysia, along with information regarding recalls for the Nissan X-Trail as well as a recall on the Mercedes Benz vehicles, with concerns regarding Takata airbags. We also include the study between Electric Vehicle (EV), Hybrid Electric Vehicle (HEV) and Internal Combustion Engine (ICE) Vehicle Collision Parts Study.

At the time of writing, Malaysia is heading into the Endemic Phase of Covid-19 where several economic sectors are expected to recover further and operating as normal with some revised standard operating procedures (SOPs). This is likely to have a positive impact on vehicle sales, production and aftersales.

Until then, stay safe.

Steve Miller
Chief Executive Officer,
MRC Malaysia

Contents

NEWLY LAUNCHED CARS

INDUSTRY NEWS

NEWLY LAUNCHED CARS

Specification

	Isuzu D-Max 1.9 4x4 Single Cab MT	Isuzu D-Max 3.0 4x4 Single Cab MT	Isuzu D-Max 1.9 4x4 Standard MT	Isuzu D-Max 1.9 4x2 Plus AT
Retail Price	RM88,599	RM95,538	RM99,599	RM100,999
Horsepower (PS)	150	190	150	150
Engine	1.9T	3.0T	1.9T	1.9T
Length*Width*Height (mm)	5325*1810*1770	5325*1810*1770	5265*1870*1785	5265*1870*1785
Transmission	6-Speed MT	6-Speed MT	6-Speed MT	6-Speed AT
Fuel Economy	8L/100km	8L/100km	8L/100km	8L/100km

Isuzu D-max Pick-up Truck Launched

Isuzu Malaysia has now officially launched and announced the D-Max variants for the Malaysian market. There are eight variants priced between RM88,599 to RM141,938. All of the variants are fully imported from Thailand.

The D-Max is priced at RM88,599 for 1.9L 4×4 Single Cab model and RM95,538 for the 3.0L 4×4 Single Cab. The twin cab models start from RM99,599 for 1.9L 4×4 MT Standard, RM100,999 for 1.9L 4X2 AT Plus, RM106,999 for the 1.9L 4×4 AT Standard, RM121,549 for 1.9L 4×4 AT Premium and RM128,038 for 3.0L 4×4 AT Premium. The highest range is the 3.0L 4X4 AT X-Terrain priced at RM141,938.

In terms of engine, the existing RZ4E-TC 1.9 litre common-rail four-cylinder diesel engine with variable geometry turbo has been refined further and offers better throttle response at 150 PS and 350 Nm of torque. For the 3.0 litre engine received even bigger upgrades, courtesy of a new engine head and turbocharger which produces 190 PS and 450 Nm of torque.

The new D-Max rides on Isuzu's new Dynamic Drive Platform offering better structural rigidity, crash protection, driving stability and the reduction of NVH levels. The intake system has been raised, thus increasing wading depth from 600 mm to 800 mm.

	Isuzu D-Max 1.9 4x4 Standard AT	Isuzu D-Max 1.9 4x4 Premium AT	Isuzu D-Max 3.0 4x4 Premium AT	Isuzu D-Max 3.0 4x4 X-Terrrain AT
Retail Price	RM106,999	RM121,549	RM128,038	RM141,938
Horsepower (PS)	150	150	190	190
Engine	1.9T	1.9T	3.0T	3.0T
Length*Width*Height (mm)	5265*1870*1785	5265*1870*1810	5265*1870*1810	5265*1870*1810
Transmission	6-Speed AT	6-Speed AT	6-Speed AT	6-Speed AT
Fuel Economy	8L/100km	8L/100km	8L/100km	8L/100km

Mercedes Benz Malaysia Recalls Various Models

Mercedes Benz Malaysia (MBM) has announced safety recalls of various Mercedes Benz models that may have been fitted with potentially faulty Takata airbag modules. This exercise is part of a global recall for the automaker's passenger and commercial range. Under this campaign, the affected Mercedes Benz models involved the vehicles were manufactured between 2004 and 2016 as listed below.

- W169 A-Class
- W203 and W204 C-Class
- X204 GLK Class
- C207 E-Coupe and A207 Convertible Class
- W212 E-Class
- W164 ML-Class and X164 GL-Class
- W251 R-Class
- W171 SLK Class
- W197 SLS AMG Class

According to MBM, they said: "Mercedes-Benz Malaysia and Daimler AG reassure its customers that all presently produced Mercedes Benz passenger cars are no longer equipped with airbags which are based on ammonium nitrate as the primary propellant."

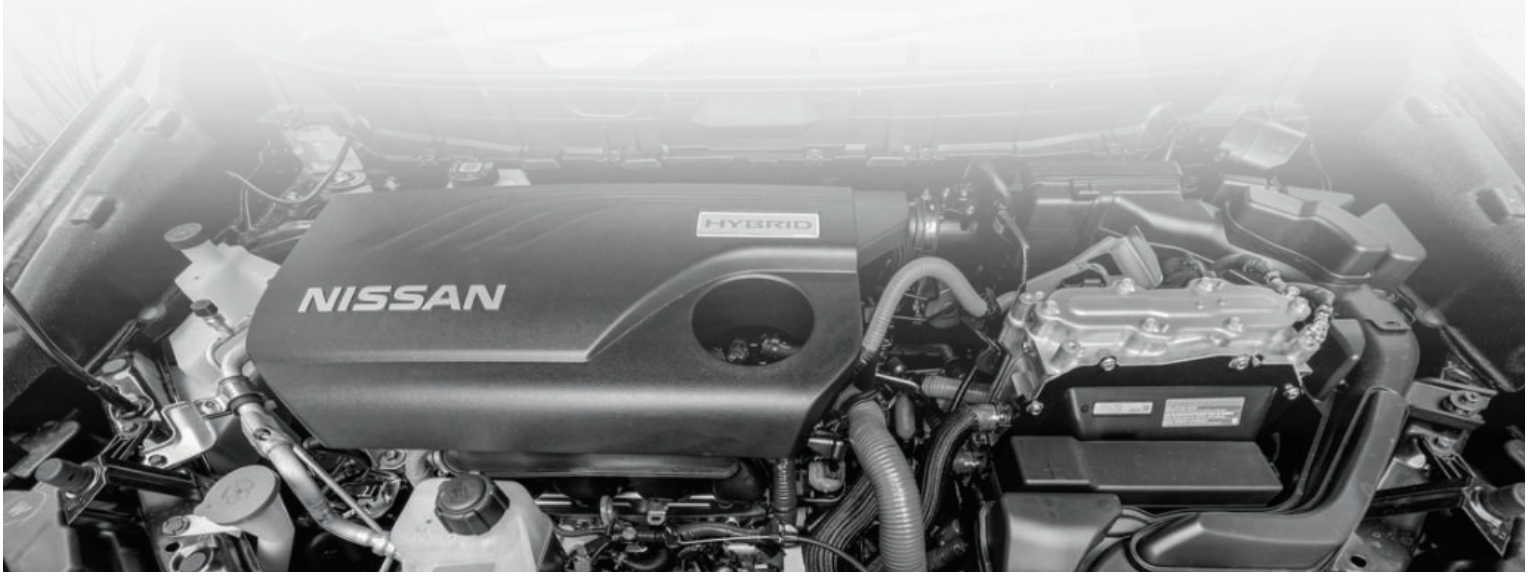
Owners of these vehicles are urged to check their Vehicle Identification Number (VIN) on the Mercedes-Benz microsite or call its customer care centre. All rectification and airbag module replacement costs will be borne by the company.

Edaran Tan Chong Motor (ETCM) Recalls X-Trail Hybrid

Edaran Tan Chong Motor (ETCM), Malaysia's official distributor for Nissan has issued a recall for Nissan X-Trail 2.0L Hybrid over an issue involving their engine room harness fuel pumps. Under this recall campaign, affects a vehicle built from June 2018 to May 2021.

According to ETCM, affected vehicles may have their hybrid power lines damaged due to interference with the edge of the engine or transmission bracket.

On top of that, models otherwise not listed in this recall campaign are not affected and Tan Chong Ekspres Auto Servis (TCEAS) will send a notification letter or SMS/Whatsapp to affected owners to schedule replacement work at no charge to the customer. Affected owners are advised d to contact their nearest TCEAS service centre to schedule an appointment to have the necessary parts replaced.



EV / HEV VS ICE VEHICLE

COLLISION PARTS STUDY

*EV = Electric Vehicle *HEV = Hybrid Electric Vehicle *ICE = Internal Combustion Engine

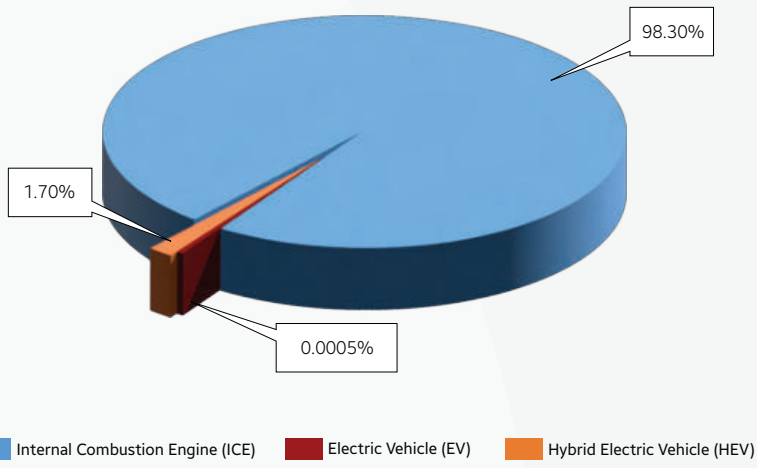
Malaysia is moving ahead to adapt new technology in the automotive industry by selling eco-friendly vehicles such as HEV and EV vehicles. Presently, most vehicle manufacturers have built and sold their HEV or EV vehicles to the automotive industry market. For Malaysia, the sales of HEV vehicles are higher compared to EV vehicles.

For the record, Toyota Prius is the first HEV vehicle that was introduced in Malaysia in 2009 followed by Honda Insight which was introduced in 2010. For EV, Nissan Leaf is the first EV vehicle that was introduced in Malaysia in 2012 followed by Mitsubishi i-MiEV in 2013 and Renault Zoe in 2016. In Malaysia, currently, there are many vehicle manufacturers offered HEV and EV in their vehicle line-ups such as Toyota, Honda, Mercedes Benz, Nissan, Renault, Lexus, Infiniti, Porsche, BMW, Mini, Hyundai, Volvo, Audi and Tesla.

Aligned with the increase of HEV and EV vehicles, Malaysia is moving forward to the future with the Green Technology Master Plan 2017 – 2030, that planned 85% of private vehicles sold is to meet the Carbon emission standards in the definition of EEV by 2020, and 100% in 2030.

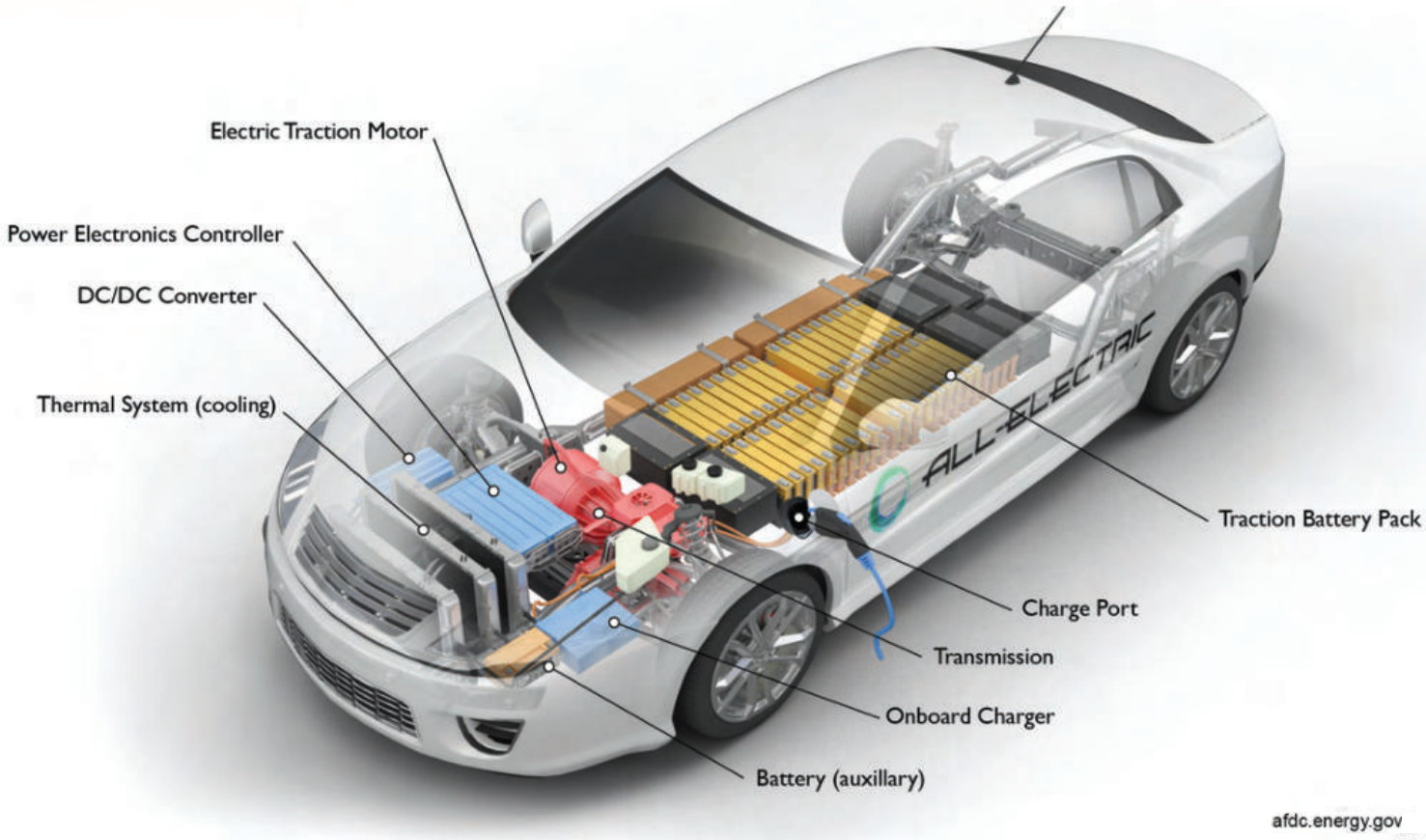
Therefore, keeping abreast with the latest technology, it is very important for MRC Malaysia to study the accident claims trend for HEV and EV by using the accident claims data extracted from MRC's iCAP database.

MRC Accident Claims Database 2019



Based on the MRC approved accident claims database 2019 for passenger cars, we found that there are 678,890 accident claims reported. From these figures, there are 11,517 claims that involved HEV vehicles and 4 claims of EV vehicles.

All-Electric Vehicle



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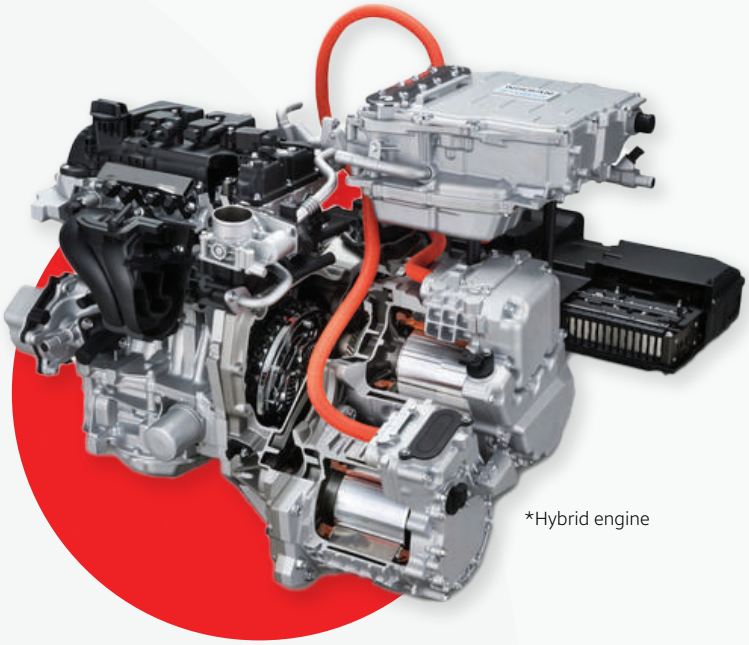


*Hybrid engine

HEV vs ICE Research

MRC Malaysia study the accident claims trend for HEV and EV by using the approved accident claims data extracted from MRC's iCAP database using the BI Tools from January 2019 to December 2019.

The reason why 2019 data is selected instead of 2020 and 2021 because during the pandemic of Covid-19, the number of accident claims is much reduced due to the Movement Control Order imposed in Malaysia.

Based on the extracted data, we found that the approved accident claim for EV in 2019 is only 4 units compared to 11,517 units of HEV vehicles.

Three models have been selected for this study. The selected models are BMW 3-Series 2018, Toyota Camry 2016 and Volvo XC90 2015. These models were selected based on the top popular models sold in Malaysia which come both with the HEV and ICE variants.

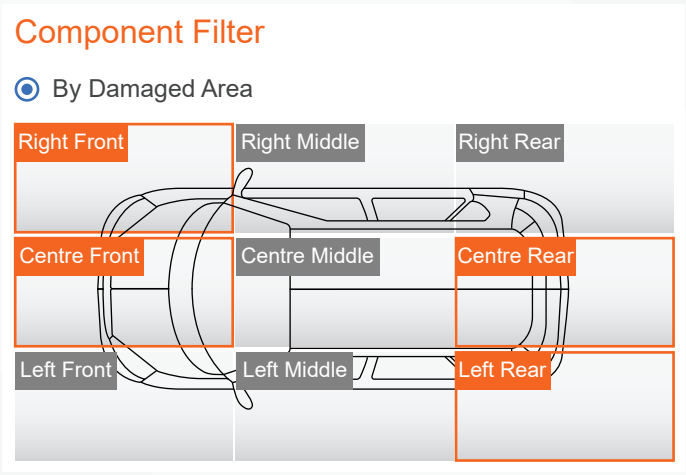
Methodology

As mentioned, the source of data for this study was extracted from the MRC's iCAP through the BI Tools from January 2019 to December 2019.

*Figure 1

There are many types of accident claims in the MRC's iCAP database. To simplify the research, the selected vehicles must have the same model that comes with both HEV and ICE models as illustrated in the figure 1 above.

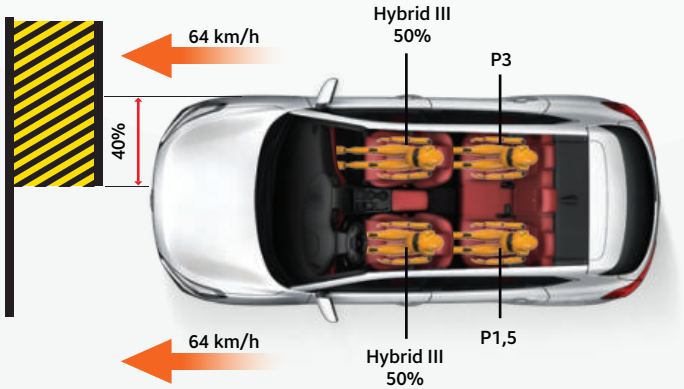
From the extracted data, we evaluated the replacement parts price with Thatcham's escribe based on the damaged area as a reference. The area is shown below.



*Thatcham escribe by damaged area

The claim parts study for each vehicle is defined by the parts involved in the area of configuration for frontal and rear crashes. In this study, the Right Front and Centre Front configurations are defined as frontal crashes and the Left Rear and Centre Rear configurations are defined as rear crashes.

The selection of damaged areas is followed by the ASEAN NCAP protocol to pass the scores for the New Car Assessment Program (NCAP). The selection of damaged areas is subjected to the 40% of frontal offset crash test with the speed of vehicle test at 64km/h. The cumulative scores will indicate the safety rating of the vehicle.



*ASEAN NCAP frontal offset crash test

Parts Replacement Criteria

The parts replacement criteria is referring to the Thatcham's escribe damaged area. The Thatcham's escribe describes the group of parts replacement within the selected area or configuration in the vehicle body. The selected parts replacement samples are shown below:

Centre Front Component	Right Front Component	Centre Rear Component	Left Rear Component
Air Conditioning Condenser	Headlamp RH	Boot Floor	Boot Floor Side Extension LH
Active Grille	Shock Absorber Front RH	Boot Floor Reinforcement	Chassis Leg Rear Section LH
Grille Front	Spring Road Front RH	Boot Lid	Drain Channel Rear LH
Bonnet	Steering Knuckle RH	Boot Lid Rear Facing Camera	Lamp Assembly Rear LH
Bumper Front	Suspension Arm Front Lower Wishbone RH	Bumper Rear	Quarter Panel A LH
Bumper Front Proximity Sensor	Wing Front RH	Bumper Rear Reinforcement Panel	Radar Rear LH
Radar Front	Anti Roll Bar Front Link RH	Rear Panel Assembly	Rear Lamp Panel LH
Radiator	Suspension Arm Front Lower RH	Bumper Rear Proximity Sensor	Bumper Rear Bracket LH
Auxiliary Radiator	Track Rod Arm RH	Spoiler Rear	Bumper Rear Proximity Sensor LH
Steering Rack or Box PAS	Wing Front Inner RH	Anti Roll Bar Rear	Bumper Rear Retainer Guide LH
Anti Roll Bar Front	Wing Front Inner Side Reinforcement RH	Exhaust Silencer Rear	Shock Absorber Rear LH
Bonnet Catch	Airbag Impact Sensor RH	High Level Brake Light	Wheel Hub Rear LH
Bonnet Hinge	Bonnet Landing Support Panel RH	Screen Rear	Anti Roll Bar Rear Link LH
Bonnet Landing Panel	Bonnet Landing Support Reinforcement RH	Subframe Assembly Rear	Boot Side Trim LH
Subframe Front	Bumper Front Proximity Sensor RH	Suspension Arm Rear Lower	Quarter Light Rear LH
Bonnet Landing Panel Cover	Headlamp Washer Jet Cover RH	Tailgate	Quarter Panel Lower Extension LH
Bonnet Pull Cable	Headlamp Washer Jet RH	Tailgate Catch	Suspension Arm Rear LH
Bumper Front Reinforcement Panel	Moulding Wheel Arch Front RH	Tailgate Hinge	Suspension Rear LH
Camera Front Grille	Suspension Arm Front RH	Tailgate Striker	Wheel Arch Outer Rear LH
Suspension Arm Front , etc.	Wing Front Inner Assembly RH, etc.	Tailgate Support Strut, etc.	Lamp Assembly Rear Inner LH, etc.

*Toyota Camry Hybrid XLE

Toyota Camry 2.0G & 2.4 Hybrid

From the research study, the total frontal parts replacement price for Toyota Camry Hybrid is 55% higher compared to the rear parts replacement for the same Toyota Camry Hybrid. Meanwhile, for the Toyota Camry 2.0G, the frontal parts replacement costs is 36% higher compared to the rear parts replacement for the same 2.0G Toyota Camry.

For the actual comparison between Toyota Camry 2.4 Hybrid and Toyota Camry 2.0G, the frontal parts replacement cost is 15% higher compared to the 2.0G version. The rear percentage was around 0.21% higher compared to the 2.0G version.

From this result, the cost for hybrid frontal parts replacement is higher compared to the 2.0G due to the additional parts that are needed for the Toyota Camry Hybrid. For example, the air conditioning condenser for the hybrid model is RM4,753 more expensive compared to the 2.0G version. Besides, the hybrid system is also equipped with an auxiliary radiator which may affect the total cost of replacement parts compared to the 2.0G version where the auxiliary radiator is not fitted.

For the rear parts replacement comparison, the difference is due to the rear lamp assembly price being more expensive for a 2.4 Hybrid model compared to the 2.0G version.

BMW 330i & 330e

From the research study, the total frontal parts replacements price for the BMW 330e (G20) is 6% higher compared to the 330i model. Meanwhile, for the rear parts replacement price, the 330e model is 4% higher compared to the 330i model.

For the 330e model, there is a PHEV access point located on the left front side of the vehicle. Therefore, the Left Front area is selected for this frontal parts replacement comparison instead of the Right Front area. The reason for the price difference is due to the additional parts that are fitted on the 330e. For example, the 330e is equipped with the high voltage parts such as a charging socket, socket lock, charging housing and charging flap, additional cost amounting to RM3,869.73.

For the rear parts replacement comparison, the parts replacement price for 330e is 4% more expensive compared to the 330i model. The difference is due to the cosmetic component such as the bumper rear cover and the suspension system that contribute to a higher cost between model selections.

Volvo XC90 T8 & T5

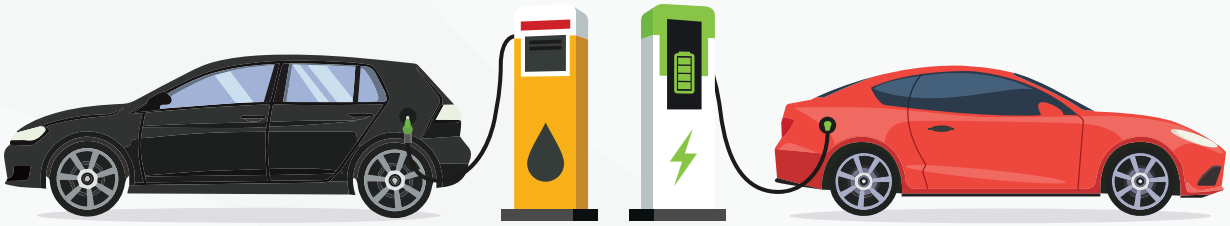
From the research study, the total frontal parts replacements price for the Volvo XC90 T8 is 6% higher compared to the Volvo XC90 T5 model. The combination of the frontal parts replacement cost is contributed by the additional component on the T8 PHEV model which is equipped with the auxiliary radiator compared to the T5 model where the auxiliary radiator is not fitted.

For the rear parts replacement comparison, the XC90 T5 is more expensive compared to the T8 model with a 9% difference (RM9,552) in parts replacement price. Although the T8 is equipped with additional parts such as traction motor rear, the price of boot floor and rear differential for the T5 model are more expensive compared to the T8 model.

In conclusion, the data acquired from MRC's Automotive Claims Database (iCAP) from January 2019 to December 2019 contributed significant results for replacements parts of the selected HEV and ICE vehicles. The result is shown as below:

Internal Combustion Engine | **Hybrid Electric Vehicle**

The HEV parts replacement price is up to **15%** more than ICE models, depending on the type of vehicle manufacturer.



Additional Parts Replacement in HEV for Accident Claims Repair

Besides, another part that contributes to the price difference between HEV and ICE vehicles such as a suspension system that is equipped in HEV is different from the ICE vehicles. The suspension needs to support additional HEV parts such as the battery stack and traction motor. From the study, some vehicle manufacturer has designed their vehicle by locating the component of the HEV as same as the ICE model parts which can protect the expensive parts when the vehicle met an accident.

The main and expensive component of the HEV is the high voltage battery or traction battery. The high voltage battery is not covered in this parts price research due to the location of this component. It is located in a secure and protected area. The common area of placement of this component is normally inside the boot area, rear seat or the floor panel area. This area is far from the crumpling area and protected from the impact force of accident.

It can be concluded that the difference in parts replacement price between the HEV and ICE vehicles is due to the additional or different parts equipped to both HEV and ICE vehicles.

Database Releases At A Glance

MRCDB P57.1

OCTOBER 2021

Manufacturer's Price Updates

Manufacturer	VW	Mitsubishi	Ford	Perodua	Hicom	Isuzu	Lexus	Toyota	Infiniti	Nissan
No. of Parts Price Changes	185,615	30,920	446	72	7	7	97	109	200	208
No. of New Parts	216,133	525	167	60	1,012	1,013	1,395	1,383	30	35
No. of Supersession	51,944	0	0	138	8,280	8,281	0	0	4,114	4,117

MRCDB P58.0

OCTOBER 2021

New Vehicles in Detail

Manufacturer					
Model	Honda CR-V	Hyundai Kona	Proton Exora	Proton X70	TOYOTA Vellfire
Model Year	11/2020 on	10/2020 on	2/2021 on	7/2021 on	2/2020 on
TPS Project Code	HD168 / HD169 / HD170	HY123 / HY124 / HY125	PR263	PR264	TY272
TTS Project Code	TC031	TC025	PR175	PR240	TC047
Body Shape	5 Dr. SUV	5 Dr. SUV	MPV	5 Dr. SUV	MPV
Engine Size	2.0 lit / 1.5 lit / 1.5 lit	2.0 lit / 2.0 lit / 1.6 lit	1.6 lit	1.8 lit	2.5 lit
Trim	2.0 2WD / 1.5TC-P 2WD / 1.5TC-P 4WD	2.0 / 2.0 Active / 1.6 Turbo	Black Edition	SE	2.5 (AGH30R-NFXLK)
Total Line Items	2,298	1,841	836	672	890

Manufacturer's Price Updates

Manufacturer	Mitsubishi	Ford
No. of Parts Price Changes	58	236
No. of New Parts	7	118
No. of Supersession	0	0

Database Releases At A Glance

MRCDB P58.1

Manufacturer's Price Updates

NOVEMBER 2021

Manufacturer	Land Rover	Proton	Suzuki	Volvo	Infiniti	Nissan	Lexus	Toyota
No. of Parts Price Changes	876	24,787	6,864	1,578	121	134	193,068	193,460
No. of New Parts	4,363	194	0	3,226	121	113	493	477
No. of Supersession	0	0	0	0	4,141	4,141	0	0

MRCDB P59.0

New Vehicles in Detail

NOVEMBER 2021

Manufacturer							
Model	ISUZU D-MAX						
Model Year	4/2021 on	4/2021 on	4/2021 on	4/2021 on	4/2021 on	4/2021 on	4/2021 on	10/2021 on
TPS Project Code	IS081	IS082	IS083	IS084	IS085	IS086	IS087	IS088
TTS Project Code	TC063	TC063	TC064	TC064	TC064	TC064	TC064	TC064
Body Shape	S/Cab Pick-Up	S/Cab Pick-Up	D/Cab Pick-Up	D/Cab Pick-Up	D/Cab Pick-Up	D/Cab Pick-Up	D/Cab Pick-Up	D/Cab Pick-Up
Engine Size	1.9 lit	3.0 lit	1.9 lit	1.9 lit	1.9 lit	3.0 lit	3.0 lit	1.9 lit
Trim	4X4 (MT)	4X4 (MT)	4X4 Standard (MT)	4X4 Standard (AT)	4X4 Premium (AT)	4X4 Premium (AT)	4X4 X-Terrain (AT)	4X2 Plus (AT)
Total Line Items	374	376	416	401	422	420	416	395

Manufacturer's Price Updates

Manufacturer	Perodua	Isuzu	Ford
Reference	Myvi	All Range	All Range
No. of Parts Price Changes	21	9	139
No. of New Parts	251	1,015	95
No. of Supersession	0	8,294	0

Database Releases At A Glance

MRCDB P60.0
DECEMBER 2021

New Vehicles in Detail

Manufacturer			
Model	**Perodua Myvi**	**Toyota Fortuner**	**Volkswagen Tiguan Allspace**
Model Year	11/2021 on	2/2021 on	8/2020 on
TPS Project Code	PE199 / PE200 / PE201 / PE202 / PE203	TY285 / TY286 / TY287	VW052 / VW053
TTS Project Code	TC022	TC031	VW041
Body Shape	5 Dr. H/back	5 Dr. SUV	5 Dr. SUV
Engine Size	1.3 lit / 1.3 lit / 1.5 lit / 1.5 lit / 1.5 lit	2.4 lit / 2.7 lit / 2.8 lit	1.4 lit / 2.0 lit
Trim	G w/o PSDA / G / X / H / AV	2.4 (GUN155R-SETLXE B1) SRZ (TGN156R-SETHKE B3) VRZ (GUN156R-SETHXE B2)	TSI Highline / TSI 4Motion R-Line
Total Line Items	3,562	3,161	2,050

Manufacturer's Price Updates

Manufacturer	CITROËN	HYUNDAI	inokom	KIA	NAZA	LEXUS	TOYOTA	mazda		PROTON	SUZUKI
No. of Parts Price Changes	840	177	155	985	892	72,153	72	1,936	1,432	295	40
No. of New Parts	1,324	605	625	785	825	7,382	6,876	2,272	754	16	0
No. of Supersession	0	3,273	3,273	0	0	0	0	5,382	0	0	0

Database Releases At A Glance

MRCDB P60.0

Alternative Parts Price Database

DECEMBER 2021

Manufacturer	PROTON	PERODUA	HONDA	NISSAN	TOYOTA
Reference	Exora, Iriz, Inspira, Preve, Persona, Satria Neo, Saga & Suprima S	Alza, Axia, Bezza, Myvi, & Viva	Accord, City, Civic, HR-V & Jazz	Almera & Grand Livina	Avanza, Corolla Altis, Camry, Fortuner, Hilux, Innova & Vios
No. of Parts Price Updates	153	101	218	9	605
No. of New Parts	0	0	0	0	0

MRCDB P60.1

Manufacturer's Price Updates

JANUARY 2022

Manufacturer	Ford	INFINITI	NISSAN	SUBARU	HICOM	ISUZU
No. of Parts Price Changes	127	1	6	414	7,386	8,398
No. of New Parts	162	75	45	312	992	217
No. of Supersession	0	4,156	4,111	0	1	0

Contact Us

Thank you for reading the Issue #01/2022/004 MRC Technical eBulletin. If you have any questions regarding the content, or suggestions for improvement, please contact MRC Malaysia via

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