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END OF AN ERA

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BACK ISSUES

EYES WIDE OPEN

What makes Subaru's EyeSight one of the most innovative active safety suites?

By JUSTIN HILLIARD

HAVE you ever wanted a second set of eyes, be they in the back of your head or elsewhere?

Think about it – another pair could have prevented all those times that you were embarrassingly hit from behind with a foreign object with little or no time to prepare.

You know, kind of like when you're driving – or even walking – and someone comes out of nowhere and cleans you up. It's a grim thought and a harsh reality that happens every single day.

Thankfully, we live in an era where technology is more often than not here to save the day. In particular, advanced driver-assist systems are playing a key role in ensuring roads become safer and safer.

And while Subaru is hardly the only car-maker gradually democratising these active safety features across its model line-up, it has been one of the most prevalent since the early stages of their emergence.

Case in point: the Japanese brand's EyeSight suite is now in its third generation. To put that into perspective, some high-volume manufacturers still have not even rolled out their first versions of similar systems. ›

‹ For what it is worth, having experienced EyeSight over its first three iterations, we can safely say it is one of the best-executed and broadest suites available on the market today.

But, as with any type of technology, things keep getting better and better, quicker and quicker. Subaru's loyal customer base should not be deterred, though, as the company responds better than most.

And where is most of the pressure to evolve coming from? Mainly, independent automotive safety authorities like the Australasian New Car Assessment Program (ANCAP) and its global counterparts.

As always, the goalposts keep shifting as to what five-star safety actually entails, and while these ratings are undoubtedly becoming even more confusing for consumers as the years go by, brands like Subaru are not resting on their laurels.

With no intention of losing a star neither here nor there, suites like EyeSight – which are necessary to a certain degree to achieve all five stars – are improving out of sight (pardon the pun).

The third-generation EyeSight suite is standard across Subaru's SUV range (excluding XV's 2.0i entry-level variant) and bundles in all the usual suspects. However, not all advanced driver-assist systems are created equal.

Autonomous emergency braking (AEB) is one of the big 'buzz terms' in the automotive industry at the moment, so it is no surprise that it is one of the headline acts here, even if it is known as Pre-Collision Braking System in Subaru speak. ›

‹ Like most of EyeSight, AEB is underpinned by a forward-facing camera with a CMOS sensor that provides higher-resolution imagery than a traditional CCD unit. As a result, it can even recognise low-contrast objects.

The stereo images produced by EyeSight's camera are in colour, while optimised recognition via a 3D processing engine quickly enables 'vision' of multiple objects simultaneously.

As a result, longer distances and wider angles are accounted for, improving the suite's overall performance, particularly on multi-lane roads, while enhanced control logic ensures better operational stability at speed and in poor weather conditions.

While this version of AEB works in a similar manner to many others, it is worth noting that it operates on speed difference, monitoring the speed of the vehicle in front and comparing it with that of its driver.

If the difference is 50km/h or less and a collision is imminent, the brakes will automatically be applied on behalf of the driver. This is particularly useful in sudden traffic jams on the highway.

EyeSight's Pre-Collision Throttle Management goes a step further by reducing throttle response if the driver mistakenly attempts to accelerate when an object is detected in front. Hello, car parks.

And even in those situations when the driver does recognise a collision is imminent and applies the brakes themselves, Pre-Collision Brake Assist will step in if the braking pressure is insufficient. At this point, full force is automatically enabled. ›

‹ While lane-keep assist (LKA) is hardly an innovation in itself, EyeSight's version goes a step further with Emergency LKA, which is currently only available on the new-generation Forester.

It engages when the driver appears likely to depart their lane and go into another that is either occupied by an oncoming or following vehicle. This feature will be mandated by ANCAP under its upcoming 2020 protocols.

What about Lane Sway Warning? If the driver is drifting within their lane, EyeSight will step in and provide an audible warning to get them back on track.

Adaptive cruise control is another favourite of drivers who embark on regular long-distance journeys, with EyeSight's version offering up four distance stages – one more than most.

If you're in the market for the latest Forester, you'll also gain a manual speed limiter that is sure to help drivers with only a few demerit points remaining to keep their licenses.

However, the most intriguing active safety feature that Subaru has begun rolling out recently does not relate to anything that is happening outside. Instead, it's all about what is happening inside.

We are, of course, talking about the innovative Driver Monitoring System (DMS) that made its debut in the fresh Forester, which is claimed to be a first in a series-production model. ›

‹ Yes, similar systems are available in other models, but DMS goes a step or two further than its counterparts by doing more than just alerting driver if they are distracted (eyes not on the road ahead) or drowsy (eyes closing constantly for a prolonged period of time).

Using a dedicated infrared LED camera located above the multi-function display (MFD) in Forester's instrument cluster, DMS can recognise the driver's face and seat area and responds to them in kind.

Up to five drivers can be registered, with DMS recognising their presence by automatically adjusting the driver's seat, side mirrors, climate controls and instrumentation to their individual preferences (depending on variant).

And in a personal touch, the MFD displays an individual greeting for each driver when they are recognised by DMS, while personal fuel consumption is also kept. Cool, right? And to think that this is only the beginning!

Make no mistake, this is a true innovation that will underpin many enhancements that are yet to see the light of day. Needless to say, it would be best to keep your eyes on this one.

END OF AN ERA

We take a look back at the history of an automotive icon, the Volkswagen Beetle

By ROBBIE WALLIS

JULY 2019 marked the end of an era in the automotive world, with the last Volkswagen Beetle rolling off the production line at the German car-maker's Puebla plant in Mexico.

With a production run that first began in the 1930s, the Beetle will go down in history as one of the undisputed icons of the automotive world, both as a standalone model as well as its impact in the cultural zeitgeist.

As the era of the Beetle draws to a close (for good this time), let's take a look back at the history of the German icon that sold more than 23 million units during its production run.

The beginnings of the Volkswagen Beetle story occurred in a contentious time in history, with the Nazi Party commissioning designers including Ferdinand Porsche to create a 'People's Car' (aka volks-wagen) with a brief that demanded the car must be able to seat four people, travel at 100km/h on Germany's new Autobahn and cost no more than 1000 Reichsmarks.

By 1935, prototypes under the name Type 60 were developed, and by the next year, three more prototypes were undergoing testing. ›

‹ The prototypes already featured distinctive Beetle styling elements including the round, bulbous styling, and rear-mounted, air-cooled flat four-cylinder engine.

First iterations of the Beetle featured a 995cc flat-four engine producing just 19kW.

It is suggested that many facets of the Beetle's design, including the exterior styling and air-cooled engine, were borrowed from Czech manufacturer Tatra, which successfully sued Volkswagen after the end of the war, resulting in a payment of 3 million Deutschmarks to Tatra.

Customer deliveries of the Beetle – then called KdF-Wagens or 'Strength through Joy Cars' – began in 1938, however with the outbreak of the Second World War the next year, only a small handful were built before production focus shifted towards military use.

The main vehicle produced during the war was the Type 82 Kubelwagen, a utilitarian 4x4 vehicle that featured reduction gears, locking differentials, larger tyres and revised torsion-beam suspension.

An amphibious version of the Beetle, called the Type 166 Schwimmwagen, was also produced, making use of a folding propeller attached to an extended crankshaft.

Following the war, the Volkswagen factory in Fallersleben (later renamed Wolfsburg) was reopened under the control of the British military, with an estimated 38 per cent of the factory rendered useless after been bombed.

By May 1945, two vehicles were able to be constructed from parts lying around the warehouse, and by the end of the year, 56 cars were produced, largely similar to the pre-war versions except for some small changes including a 1.1-litre engine. ›

‹ After a couple of years of producing Beetles for the British military, civilian production ramped up in 1947 following an appearance at a Hannover fair, and by 1948, nearly 20,000 examples were produced.

With steadily increasing sales, 1949 saw the introduction of a higher-specification 'export' model for foreign markets, featuring a flashier design with chromed bumpers, hubcaps, doorhandles and headlamp bezels, high-gloss paint and a new steering wheel.

By 1951, 29 export markets had been established for the Beetle, with Belgium, Sweden, Switzerland, Holland, Finland and Brazil among the countries warming to the little car's charms.

Volkswagen's millionth vehicle rolled off the production line in 1955, with the Beetle now outgunning rivals such as the Citroen 2CV for performance with its 25kW engine, capable of achieving a top speed of 115km/h and a blistering zero to 100km/h time of 27.5 seconds. In total, 279,986 Beetles were produced in 1955, including 35,581 sales in the US.

Sales continued to climb throughout the 1950s and 1960s, and by 1963, Volkswagen had become the world's largest vehicle exporter, with markets including Australia.

The mid-1960s saw some major revisions to the Beetle's design including new body panels that increased the size of the car's windows, and a range of new engines including 1.3- and 1.5-litre units, the latter of which pumped out 40kW at 4200rpm. ›

‹Along with the Kombi van, the Beetle was synonymous with the hippie movement and achieved worldwide fame through the Herbie franchise, starting with the 1968 movie The Love Bug.

As the 1970s rolled around, the Beetle's age started to show with competition coming from newer Japanese competitors including the Honda Civic and Toyota Corolla, while Volkswagen models including the Golf, Polo and Scirocco exacerbated the age of the Beetle, resulting in the icon going out of production by the end of the decade.

During its production run, a massive 21.5 million units of the Beetle were produced, solidifying its legacy in the automotive landscape.

The Beetle nameplate remained dormant until the late 1990s, when the retro-styled successor, called the New Beetle, was released in the US in March 1998.

Based on the Golf IV platform, the New Beetle was released with an 85kW/170Nm 2.0-litre petrol engine and a 66kW/210Nm 1.9-litre turbo-diesel unit, with the choice of coupe and convertible body styles.›

A range of other engine choices were offered during the New Beetle's production run, topped by the 3.2 RSI engine, a 3.2-litre V6 shared by the Golf R32, capable of producing 165kW/320Nm.

Styling clearly evoked the original, with circular headlights, bulbous wheelarches and roofline, and a sloping rear profile that made it immediately identifiable as a Beetle successor.

The last iteration of the Beetle, the A5, was released in 2011, featuring similar styling to the previous model and built on the same platform as the Jetta sedan.

A range of petrol and diesel powertrains were offered globally, however no performance versions were offered. The quirky Dune version went on sale in 2016, with raised suspension but no addition of four-wheel drive, like the Type 82 Kubelwagen.

By the end of its second run, the Beetle sold a further 2.2 million units, a respectable figure but nothing close to the history-making numbers of the original.

With the A5 Beetle's Mexico factory being retrofitted to produce a new Volkswagen SUV, it is evident consumer tastes have changed in 2019. However, there is no doubt that the Beetle is firmly entrenched in history as one of the most iconic vehicles of the 20th century.

POWER ON

There is a new breed of hypercar on the way and it is all about electric boost – lots of it

Dendrobium D1 concept

By NEIL DOWLING

POWER numbers are going ballistic as the electric vehicle (EV) hypercar craze hits automobilia and new entrants plan unprecedented performance to validate their million-dollar pricetags.

At the latest count, power output is up to a claimed 1471kW, with the Lotus Eviya taking the top honours. And the figure is rising. Bespoke manufacturers are turning the humble electric vehicle, once the saviour of urban pollution and city-traffic congestion, into 300km/h battery-powered cars that appear to make the internal-combustion engine obsolete.

The move to high-performance EVs started with sniggers at electric cars on European Formula One circuits. It showed many motorsport fans had little doubt that nothing could replace the howl and urgency of the traditional breed of conventionally-powered racecars.

But the quiet revolution that first charged in anger in the Formula E at Beijing in 2014 has not only hushed Formula One fans, but stepped over to the streets with high-performance electric dream cars now being proposed by bespoke and top-tier manufacturers, while demand is surging from wealthy buyers. ›


Dendrobium D1 concept

‹ It could be seen as a transformation of the hypercar sector and bringing with it the so-called disruptive technology of electric motors and onboard batteries. In fact, it's more like history repeating itself, rekindling the awe of electric speed-record cars in the 19th century with the first vehicle to exceed 90km/h (1898) and then 100km/h (1899).

By 1900, 38 per cent of cars on US roads were electric. By 1924, the internal-combustion engine had turned electric cars into a rarity, with them only appearing again as a viable power plant for private-vehicle ownership in the 1990s.

Now, the EV is in its renaissance, not only as a passenger car but as a medium for exotic sports-bred machines that take performance and technology to a new level.

Many are just concepts, but production reality is not that far away for most.

XING MOBILITY MISS R

FROM Taiwan, the Miss R leapfrogs all the rival claims with a plan to build with a 1000kW output from four motors and a 0-100km/h time of 2.0 seconds.

Xing also claims a 0-200km/h time of 5.1 seconds and a top speed of more than 400km/h. The plans also extend to a range of 250km using a 52kWh lithium-ion battery.

As a point of difference, it can go off the bitumen thanks to adjustable magnetic-ride suspension to raise the body.

TESLA ROADSTER

FROM the masters at marketing EVs, Tesla returns to its roots with the Roadster. Although no longer based on a Lotus Elise shell and not even with a removable bit of cloth over the head to rekindle the days when sportscars weren't crash-tested, the Roadster promises to be a wild ride.

The Roadster – it honours the name with a removable roof section – has three motors and claims 0-100km/h in 2.1 seconds, 0-160km/h in 4.5 seconds and a 400km/h top end. That's faster than a Bugatti Chiron, which has a proven 2.4 second run to 100km/h and a verified 400km/h top speed. Other figures to stun you are the 10,000Nm of torque (no kiloWatt output has been announced) and huge 200kWh battery for a claimed 1000km range.

It doesn't actually exist, so you can't yet test drive it but Tesla promises you can get on the waiting list for $US50,000. If you want one of the Foundation Series – the name of the first 1000 to be built – you'll have to cough up the total price of the car at $US250,000. No firm launch date has been announced.

DENDROBIUM D1

WILLIAMS Advanced Engineering is one of the partners in this EV hypercar shown at this year's Le Mans race.

There's a lot to come but the UK maker suggests a full carbon monocoque body, two motors per wheel, a target weight of 1750kg and a 0-100km/h time of 2.7 seconds with a top speed in excess of 320km/h.

It has a skateboard platform to give flexibility to battery layout. There's no word on the final battery choice as the company is still looking at options, one being solid state.

Expect a running car by 2022 and volume of 50 cars a year.

LAMBORGHINI TERZO MILLENNIO

YOU know the name but won't recognise the exhaust note. The concept is the result of an exercise by Lamborghini and the Massachusetts Institute of Technology (MIT) to create something for the third millennium.

It uses supercapacitors to store energy instead of batteries, has motors in each wheel to maximise space in the body, and has a monocoque body using Lamboghini's forged composite carbon-fibre technology as used on the Aventador SVJ and Huracan Performante.

Some of the out-of-world ideas are for the carbon body to be able to store energy (no, don't know how that happens) and be able to automatically detect cracks and damages in the carbon body and repair them by filling the body's microchannels with "healing chemistries", said the MIT.

The concept is also the basis for the Aventador successor, now coded the LB48H that is Lamborghini's first hybrid, with an expected 2021 launch.

ASPARK OWL

JAPAN has decided to throw itself into the ring with the most un-Japanese named Aspark Owl. It claims to become the world's fastest accelerating EV with 0-100km/h coming up in two seconds.

It gets there with two motors rated at 320kW and 765Nm, and claims that the car's light weight – a mere 850kg, which is less than half that of its playmates – will be a major factor in achieving that blistering acceleration.

The Owl is about the size of a Lamborghini Aventador but much lower at 990mm. Claimed top speed is 280km/h but range is rather small, at 100km. All over quite quickly, it seems. There's no proposed launch date and no expected pricetag.

RIMAC C_TWO

THIS is the second hypercar announcement from Croatia's Rimac Automobili following the Concept_One and promises to be more powerful and therefore faster.

The C_Two has four motors with a total of 1420kW and 2300Nm. The front motors drive through a single-speed gearbox while the rear units have a two-speed unit to max out the top speed – now proposed to be 412km/h.

Other numbers to astound include 0-100km/h in 1.97 seconds (just to ensure it beats 2.0 seconds) and to 160km/h in 4.3 seconds.

The C_Two weighs in at a hefty 1950kg and has a lithium-manganese-nickel battery with a 640km range that takes 30 minutes to charge to 80 per cent.

Rimac, which has Porsche as a 10 per cent owner, has run the car at the Nurburgring and is expected to return for a lap-record attempt.

The car is designed for maximum aerodynamics with a rear wing with positions for low-drag and high-downforce, a flat underbody, venturi tunnels, and cooling intakes that open and close automatically.

PININFARINA BATTISTA

THIS is touted as the most powerful road car ever to be built in Italy and boasts 1417kW and 2300Nm of torque from four motors and a 120kWh battery.

All this is good for 0-100km/h in 1.9 seconds and to 300km/h in less than 12 seconds. Claimed range is about 480km and recharging from zilch to 80 per cent is planned for 40 minutes.

The Battista is the product of Automobili Pininfarina, based in Munich, and is the car-making arm of Pininfarina SpA, the 91-year-old Italian design house. Both Pininfarina businesses have been owned by Indian vehicle manufacturer Mahindra since 2015.

The electrical work is a partnership with Rimac (of which Porsche owns 10 per cent and has its own EV hypercar in the making) and testing and chassis tuning is being done by former F1 driver Nick Heidfeld and former Porsche, Pagani and Bugatti chassis engineer Peter Tutzer.

The company wants to make 150 Battistas at about $A3.6 million each.

LOTUS EVIJA

LOTUS outed its production version of the Type 130 concept shown first at this year's Shanghai motor show and has given it a name, picking another "e" word to follow its siblings. The Evija – "the first in existence" and pronounced "ev-eye-ya" – is planned for a 2020 launch, will cost about $A3.0 million and is the first all-new Lotus car since the company was bought by Geely.

Shown at this year's Shanghai motor show, the all-wheel-drive Eviya is claimed by Lotus to become the world's most powerful production car, with 1471kW and 1700Nm of torque – more than double the torque of the McLaren Senna.

Lotus is also targeting 0-100km/h in under three seconds and a top speed above 320km/h. The four-motor coupe has a 400km range and can charge to 80 per cent battery capacity in 12 minutes using a 350kWh charger. Only 130 Evijas will be made.

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ARIEL P40

LIGHTWEIGHT and minimalistic car-maker UK Ariel is plugging itself into a new project with the HiPerCar that uses four motors and a battery pack recharged on the run by a small jet turbine range-extender.

The HiPerCar, which weighs 1500kg, claims a 0-100km/h acceleration time of about two seconds and 0-160km/h in 3.8 seconds on the way to a 250km/h top speed. The four motors – one per wheel – total 880kW and 1800Nm of torque.

The 42kWh battery pack is fed by a turbine similar to that proposed on the Jaguar C-X75 concept. The turbine operates at 120,000rpm and makes 35kW to charge the battery.

The battery alone has a 200km range. Ariel plans an all-wheel-drive version in 2020 along with a less-expensive 2WD version with 515kW.

No pricetag yet, but perhaps it can be made more affordable after Ariel received $A3.6 million in funding from the British government's Innovate UK foundation.