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Turbocharge: A change is coming: Fortune favours the brave automotive manufacturer

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Perodua is embarking on its first-of-its-kind electric vehicle study, as well as long-term mobility as a service market study involving 300 subscribers of its limited Ativa Hybrid model

The automotive industry is investing more heavily than ever in electrification and digitalisation, upgrading its legacy manufacturing to achieve the promise of a greener, more sustainable future.

One could say that carmakers are putting (almost) all their eggs in the electrification basket, and it is showing. Independent research published by Hexagon Manufacturing Intelligence shows that

almost half of the automotive industry is increasing investment in smart manufacturing and Industry 4.0 (4IR) strategies in order to speed up the electrification of vehicles.

In fact, 84% of the 416 automotive industry professionals surveyed by Hexagon say they are increasing investment in improving their electric vehicle (EV) range, while 60% are increasing investment in design that will enable lower production and retail costs. Fifty-eight per cent are also increasing investment in improving EV performance.

To be sure, there is a lot of commitment to electrification, not just due to increasingly strict regulations on environmental impact, but also because of unrelenting and indisputable evidence of climate change.

People are increasingly environmentally-conscious and are curious and interested in EVs and hybrid vehicles. It is no different in Malaysia — Malaysians are more willing to consider EVs or hybrid vehicles than before.

BMW Malaysia announced last August that it would be introducing the fully electric i4 in Malaysia, while local carmaker Perodua has already begun research and planning with its partner Daihatsu on a future EV road map plan.

In addition, the Ministry of Science, Technology and Innovation (Mosti) has announced that e-mobility/EVs are among the three focus areas for this year, with the other two being national health security and social innovation.

Recently, Tenaga Nasional Bhd entered into a strategic partnership with the Malaysian Automotive, Robotics and IoT Institute (MARii) to create a platform to tackle the challenges in the EV space. Tenaga is the largest energy provider in Malaysia and this signals that EVs are quickly becoming top-of-mind for the future of mobility.

Getting there, but not nearly fast enough

The investment may be coming in, but here's the catch: it's not necessarily in the way that counts. Investing in electrification takes more than throwing money at it. New technologies, smart manufacturing and 4IR processes are leading the way in making electrification happen, and that's where the investment is truly going to make a difference.

Today, Big Tech and unicorn start-ups from Silicon Valley, the UK and China are disrupting the EV market with advanced digitalisation and automation capabilities, enabling time-to-market reductions from several years to as little as three months.

These disruptors, who have embraced these smart manufacturing processes, report cutting time to market by 25%, with the methods producing lighter, more recyclable materials, and more autonomous manufacturing to help resolve the tension between consumer demand and impact on the planet, progressively reducing costs and development timelines for greener designs.

Furthermore, the synchronising of design, testing and engineering is shown to dramatically reduce physical testing and failed products, providing engineers with the opportunity to address efficiency and sustainability at the drawing board stage.

Despite this, only 48% of the auto industry report they plan to invest more in the types of smart manufacturing strategies their competitors are using, while 25% have no plans, according to research conducted by Hexagon.

And, only 8% of traditional carmakers see pure-play EV manufacturers as a threat, yet Tesla is already the market leader for battery electric vehicles (BEVs), while the likes of Lucid are rapidly scaling up with vertically-integrated EV production.

Herein lies the disconnect. While there has been a definite increase in interest in smart automotive manufacturing, research shows that recognition of its value is not always accompanied by implementation. Instead, the data reveals that the industry sees sourcing the required volume of parts and the inability to achieve economies of scale as the greatest perceived risk to the success of EV supply chains.

Hexagon's report also showed that carmakers feel challenged to make EVs truly green.

When asked about their challenges in achieving greener EVs, the majority of carmakers (56%) identify a lack of alternatives to rare-earth metals for batteries as the major obstacle. Half (49%) are also concerned about the lack of recyclable battery materials, closely followed by the lack of recycling programmes and infrastructure (47%).

Suffice to say, with the EV market projecting to soar to global sales of US\$34.7 billion by 2030, it is critical for original equipment manufacturers, or OEMs, to match the disruptors' pace of innovation in order not to lose out, and for carmakers to truly fulfil the "green" promise of EVs.

This means that they must embrace intelligent data-driven manufacturing approaches; approaches that support the development of sustainable solutions for every part including batteries, as well as creating recyclable cars.

Only by designing for a circular economy — from the factory to consumer and beyond — can we reduce demand for energy and materials in the coming years.

So, what will it take?

It will, without a doubt, take a lot of effort and investment from carmakers and other industry players alike. But the more important question is: Why should carmakers take the leap, and not wait and see?

For starters, going green is already impacting the bottom line — there are cost savings to be had. EVs are far cheaper to manufacture. With no internal combustion engine (ICE), EVs have fewer moving parts — thus less wear, tear and replacements — and they require less labour to assemble. Ford estimates that an EV will take 30% fewer hours of labour to assemble than a traditional ICE car.

Over time, too, the cost of batteries will drop. Our research has concurred with the literature out there that batteries are the single most expensive car component, yet power trains account for up to 51% of the cost of EVs, so there are clear opportunities for efficiency savings elsewhere in the manufacturing process.

Already, investment in EV batteries — more than any other investment in EV technology — is paying off. Battery prices are down about 85% over the past 20 years, according to industry estimates. Our research also shows that 73% of the industry expect to see remote battery health monitoring and control to be available by 2025, which is good news for better range, battery efficiency, lower cost and safety.

New innovation is also on the horizon for batteries. In December last year, Japanese paper producer, Nippon Paper, successfully lit an electric bulb with a battery made of wood pulp. This revolutionary breakthrough brings light to a future where batteries will not lead to depletion and use of rare-earth minerals, and are sustainable.

For now, the wood pulp bulb remains lit for seven seconds, but Nippon Paper is aiming to increase the battery capacity to power a drone in the next two years, and perhaps smartphones by 2030. Eventually, they plan to put them in cars.

Furthermore, there is a consensus in the industry that “a tipping point is approaching”. Industry analysts and executives think that mass adoption of EVs will be unavoidable sooner than we think, as cheaper batteries, pressure from regulators and government policies come together to create the perfect conditions for EVs to thrive, and for carmakers to ramp up electrification.

However, let us consider that as recently as 10 years ago, annual EV sales were close to zero: today, Tesla alone sells close to 500,000 of its fully electric cars a year.

If all goes according to plan, industry analysts estimate that by 2040, electric cars will outsell ICE. Already, sales of EVs have gone up threefold in just two years — 9% of all cars sold were electric in 2021, compared with 2.5% in 2019.

We can no longer ‘wait and see’

But we will say that the greatest compulsion to push for EVs is the planet we live on. We cannot afford to wait and see.

Without a doubt, the automotive industry is facing pressure to be more sustainable, to go greener and cleaner, and phase out the ICE cars of old. Statistics show that 41% of all carbon dioxide emissions come from passenger cars and that the transport sector is a major polluter, producing about 7.3 billion metric tonnes of CO₂ emissions in 2020.

And, the No 1 cause of global warming is, well, us: the carbon pollution from emissions and our burning of fossil fuels, as well as the destruction of natural resources, forests and environmental reserves.

The carbon dioxide, methane, soot and other pollutants released into the atmosphere act like a blanket, trapping the sun’s heat and causing the planet to warm. Evidence shows that the 2010s were hotter than any other decade on record — and every decade since the 1960s has averaged hotter than the previous one. This warming is altering the Earth’s climate system, including its land, atmosphere, oceans and glaciers, in far-reaching ways — analysts estimate that Earth’s temperature will be at least 2°C warmer in just 43 years.

Time is running out, and carmakers must move fast. EVs are the future of mobility, and it’ll take everything we have to make it happen.

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