

HELPING TO SHAPE A MORE SUSTAINABLE ENERGY FUTURE

In the coming decades, more and cleaner energy will be needed for economic development in the face of growing environmental pressures. We continue to contribute to the public dialogue on energy and climate policy. Yet, the global challenges that the world faces are too great for one company, or one sector, to resolve. We advocate that businesses, governments and civil society work together to shape a more sustainable energy future.



PROMOTION OF SUSTAINABLE DEVELOPMENT

At Shell, our business principles are underpinned with sustainable development. To remain a viable world-class investment opportunity, Shell looks beyond a singular bottom-line. **(103-1)**

In keeping with our principles and values as a Shell company, Pilipinas Shell behaves responsibly by adhering to all applicable laws, respecting human rights, and ensuring that benefits to communities are maximised, as the negative impacts of our operations are reduced. **(103-2)**

We advocate for reliable infrastructure and through our bitumen products, we have been instrumental in the construction of the country's roads and runways. Currently, we are building our solar-powered sites to reduce our dependence on the electrical grid. Pilipinas Shell is also supporting the establishment of the first batch of electric vehicle (EV) fast-charging posts in the Philippines with its partnership with QEV Philippines Electromobility Solutions and Consulting Group, Inc.

SHELL ECO-MARATHON: PUSHING BOUNDARIES IN ENERGY EFFICIENCY



Held every year in Asia, Europe and the Americas, the Shell Eco-marathon is a platform for students and young engineers to hone their skills in designing, building, and driving energy-efficient cars.

The Shell Eco-marathon Asia was held in Singapore from March 16-19, 2017. Prior to this, the Shell Eco-marathon Philippine teams participated in a Challenger Event at the Clark International Speedway in Mabalacat, Pampanga from February 3-4, 2017. In all, 26 teams, composed of over 260 students from 17 schools, vied for top spots in the competition.

Team Aguila from the Mapua Institute of Technology emerged as the champion in the Internal Combustion Engine (ICE) Prototype Category as their car reached a mileage of 401.35 kilometres per litre (km/l). DLSU Eco-Car Team I.C.E. from the De La Salle University-Manila (DLSU) won in the ICE Urban Concept Category as their vehicle clocked in a record 86.33 km/l. Finally, first-time competitors Team Dagsisik from the University of the Philippines won in the Urban Concept – Battery Electric Category with a mileage of 110.03 kilometres per kilowatt hour (km/kWh).

Shell looks at the competition as an avenue to help students explore their love of science, hoping that the passion ignited by their experience places them on the path to securing an energy-efficient future.

LUBRICANTS TECHNOLOGY FORUM: CREATING SYNERGIES FOR BUSINESS SOLUTIONS



Through the use of effective lubricants, companies can reduce total cost of ownership (TCO), or the total amount spent on vehicles or equipment over its entire working life, including cost of acquisition and operation, as well as costs due to lost productivity during downtime.

Pilipinas Shell held its 6th Lubricants Technology Forum at the EDSA Shangri-La Hotel, Mandaluyong City on June 24, 2017.

With the theme, "Synergy: Innovate. Learn. Collaborate.," the annual forum gathered industry leaders, government officials, and Pilipinas Shell's distributors and customers to tackle the importance of synergies in sustaining business and economic growth.

Experts from the Shell Global Technology team also showcased the company's latest innovations in lubricants. Opportunities in the transport, construction, and manufacturing sectors were presented in the breakout sessions, followed by a discussion on the lubricant solutions specific to each sector.

Events like this strengthen Pilipinas Shell's relationships with key industry players and support the development of innovative lubricants and services that meet the challenging demands of their operations.

Through the use of effective lubricants, companies can reduce total cost of ownership (TCO), or the total amount spent on vehicles or equipment over its entire working life, including cost of acquisition and operation, as well as costs due to lost productivity during downtime.

NEW SERVICES AND PRODUCT INNOVATIONS

There is a global drive to look for opportunities in energy solutions that combine wind and solar power with gas, for example, and new ways to connect customers to energy. As of 2017, the Company has 15 solar-powered stations.

SHELL STATIONS IN THE PHILIPPINES TO CATER TO ELECTRIC VEHICLES



In 2017, Pilipinas Shell partnered with QEV Philippines Electromobility Solutions and Consulting Group, Inc. to put up electric vehicle (EV) fast-charging posts in an initial 100 of its 1,044 retail stations.

ABB, a Swiss multinational company specialising in robotics power and automation technology, has been tapped to supply the electric charging posts.

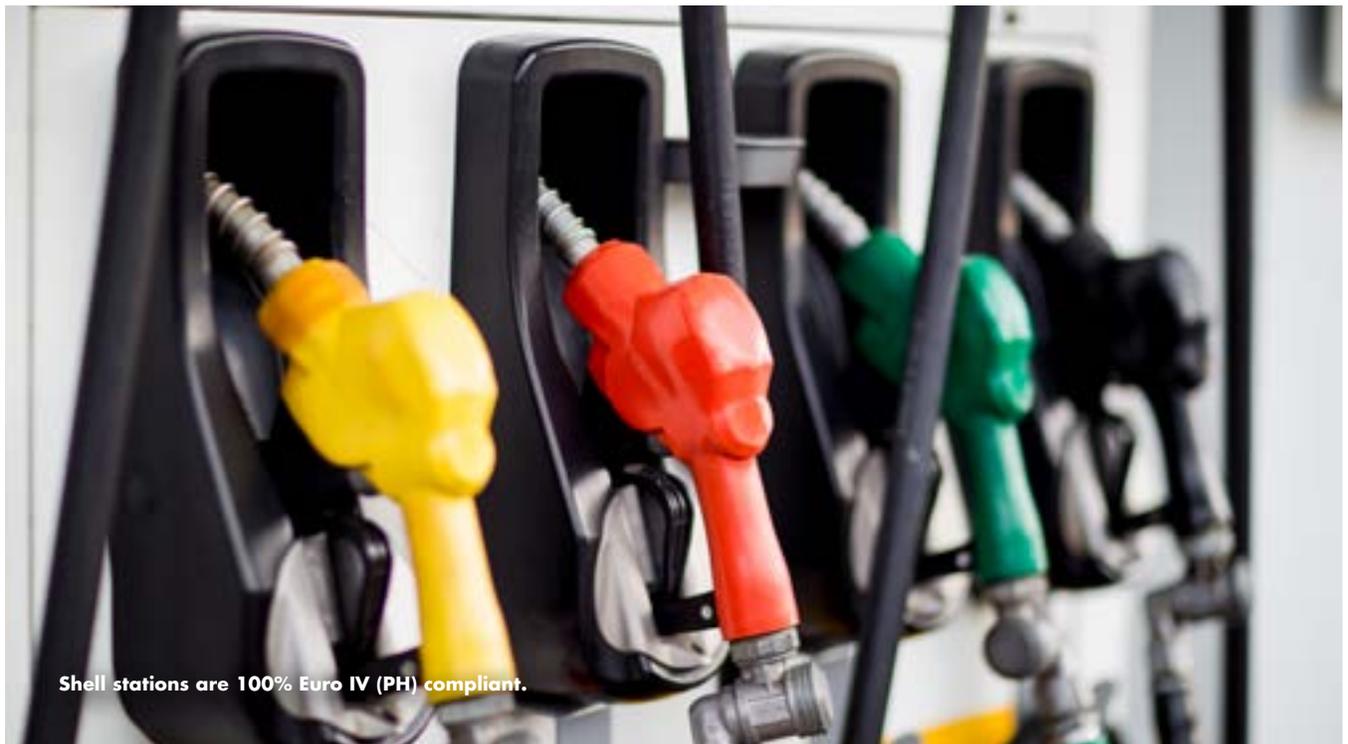
EVs were introduced in the Philippines in 2008. Local government units were early adopters of EVs and, more recently, real estate developments have started utilising them.

Apart from leveraging on the large retail network of Pilipinas Shell, QEV Philippines also intends to set up charging areas for EVs in malls and other popular establishments.

Pilipinas Shell's partnership with QEV Philippines supports the push for diversifying the country's energy mix towards a low-carbon energy future.

NEXT-GENERATION FUELS AND LUBRICANTS

There is a need to constantly innovate fuels in response to changing consumer needs and preferences, and to evolving vehicle engine technologies. "At Shell, we develop new fuel formulations, while also considering the different qualities of fuels in the markets where Shell operates," said Mae Ascan, Shell Senior Fuel Scientist and Regional Technical Lead for Asia.



Shell stations are 100% Euro IV (PH) compliant.



**FRESH FROM THE LAB:
Our latest product
innovations**

The Tabangao Refinery laboratory tests the fuels and other fuel products before these are distributed to the retail stations and commercial customers.

To make the future more sustainable, Shell’s research and development teams create innovative fuel and lubricant formulations that are suited to modern vehicle engine technology, safe and reliable for motorists, and backed by extensive science-based tests.

“Customer needs are changing; engines are changing. The intention is to be able to cope with more modern engines, which are becoming smaller but more powerful,” explained Mae Ascan, Shell Senior Fuel Scientist and Regional Technical Lead for Asia.

Challenges that fuel scientists have to contend with include higher operating temperatures and pressure, higher engine load, and exposure to harsher conditions. Some of these challenges are market-specific, such as climate, and the average age of the vehicle fleet or machinery in use. Add the human factor, and the focus is not just on enhancing performance but also safety, efficiency, and economy.

“Our customers are working in highly competitive industries, where operating efficiency and vehicle or equipment reliability is critical to success. As their business partners, we develop high-performing fuels to help customers get the most from their equipment investment, reducing their total cost of ownership in the long run,” said Sarah Rose Lim, Commercial Fuels Marketing Manager.

Shell studies what the market needs so it can deliver the necessary functionalities. For example, the Shell V-Power with DYNAFLEX technology took five years of research and development, testing more than 250 cars with driving time exceeding more than three million kilometres in varying road conditions. Meanwhile, the Shell Rimula R4 L was subjected to more than 64 million kilometres of testing, similar to driving around the world 1,500 times.

For 2017, Pilipinas Shell introduced the following products, with their attendant benefits:

INNOVATION	CATEGORY	VARIANTS	FUNCTIONAL BENEFIT
Shell V-Power with DYNAFLEX Technology (introduced June 2017)	Fuel	Shell V-Power Racing Shell V-Power Gasoline Shell V-Power Diesel	Designed to help clean key fuel system components such as intake valves and/or fuel injectors from the build-up of performance-robbing deposits. Shell V-Power Gasoline with DYNAFLEX Technology helps to remove up to 80% of performance-robbing deposits. Shell V-Power Diesel with DYNAFLEX Technology helps restore up to 100% of engine performance (Actual effects and benefits may vary according to vehicle type, vehicle condition, and driving style).
Shell FuelSave with DYNAFLEX Technology (introduced August 2017)	Fuel	Shell FuelSave Diesel with DYNAFLEX Technology	Designed to help provide better fuel economy ¹ , improve engine efficiency ¹ , and increase load pulling power when needed ¹ in heavy-duty diesel engines
Shell Helix High Mileage with Flexi Molecule Technology (introduced April 2017)	Motor oil	10W-40 (for petrol-powered vehicles) 15W-50 (for diesel-powered light vehicles)	Designed to provide up to 40% better wear protection and prolong engine life for high-mileage vehicles (Compared with API SN specification and based on Sequence IVA engine test)
Shell Rimula R4 L (introduced June 2017)	Engine oil	15W-40	Designed to improve engine protection against deposits, wear, oxidation, heat, and corrosion from acids formed as fuel burns; and meets the CK-4 oil specification without sacrificing oil life or wear protection.
Tellus S2 MX (introduced June 2017)	Hydraulic oil		Designed to protect equipment operating in severe conditions, and achieve longer maintenance cycles; and meets the new Bosch Rexroth approval standards for hydraulic fluids

¹ Compared to regular diesel without fuel economy formula. Actual savings may vary according to vehicle, driving conditions and driving style. Internal Shell tests and with our customers have shown a range of fuel savings depending on age of vehicle and type of operations

PRODUCT QUALITY AND ASSURANCE

Product stewardship at Shell means that all products are assessed and managed throughout their lifecycle and at each stage of the supply chain, in line with relevant standards and external commitments. Shell makes an assessment of the risks from end-to-end, including any potential health impacts and safety considerations in the formulation itself and in terms of product handling. (103-1)

We are governed by the Product Stewardship Control Framework. All products are assessed on health and safety impacts prior to launch or introduction or if there have been significant changes to the formulation. (416-1)

Shell conducts extensive product-testing based on a confidence-building test matrix that is able to discount any inherent biases in the process, eliminate any potential errors, account for practical scenarios, and increase the statistical acceptance of the test results. We also collaborate with leading engine manufacturers on fuels research and development projects, and have technical partnerships with some of the leading players in motorsport, including Scuderia Ferrari. Between development and deployment of any formulation, Shell also conducts market trials, set against either extreme conditions (e.g. very cold weather, very hot ambient temperatures) or a worst-case scenario (e.g. manual handling of a sensitive product).



All Shell products are assessed and managed throughout their lifecycle and at each stage of the supply chain.

We have taken steps in the refining process to reduce the levels of sulphur, benzene and the addition of lead in fuels. Sulphur is reduced via hydro-treating of the gasoline and diesel components. Benzene is reduced by adjusting unit operating conditions to limit feeding the benzene-precursors to the reforming (gasoline upgrading) unit. Furthermore, all specifications of products released out of the refinery meet the requirements of the national regulation. (OG8)

In general, we have a market-based approach to product development and testing. Our pre-deployment market trials ensure that our products fit the purpose they were designed for, and meet the specifications of the particular market (e.g. aromatics, benzene, and sulphur content per volume based on regulatory requirements). We conduct market-specific assessments to minimise any health and safety or environment risks.

Since January 2016, all Shell diesel and gasoline fuels in the Philippines have been Euro IV (PH) - compliant, as per Philippine National Standards specifications. The fuels have a sulphur content of 50 parts per million compared with 500 parts per million, previously, according to Department of Energy Circular No. DC2015-06-0004.

Any information needed to understand and manage the risks associated with our products is communicated to employees, contractors, and customers. Product claims and evidences are also documented in confidential technical reports to the Advertising Standards Council.

Customers are given copies of Safety Data Sheets which contain material information about the product. Pilipinas Shell conducts product/safety seminars for customers to educate them on the chemical properties (including hazards) of products as well as possible benefits vis-à-vis their requirements.

BUILDING WITH BITUMEN



Our Bitumen Production Facility, as part of the Tabangao Refinery in 2018, will enable Pilipinas Shell to produce bitumen locally. As the only local player who will no longer need to import its bitumen, Pilipinas Shell will be better able to manage its product allocation and logistics, and offer more competitive pricing.

In the Philippines, Shell bitumen is being used for the ongoing construction of the Bohol International Airport. Our bitumen has also been used to rehabilitate sections of the North Luzon Expressway (NLEX), as well as the 180-kilometre Agusan-Surigao Road which was damaged by a 6.7-magnitude earthquake in February 2017.

Pilipinas Shell has been relying on its Bitumen Import Facility in Villanueva, Misamis Oriental and in the Tabangao Refinery. With the newly upgraded facility, Pilipinas Shell is poised to be a part of the public-private partnerships to build the necessary infrastructure to aid Philippine businesses.

QQ VANS: VANGUARDS OF PRODUCT QUALITY



Pilipinas Shell takes product quality assurance on the road through the Shell Quality and Quantity Vans (SQVs). The SQVs conduct surprise product quality and quantity testing at Shell retail stations nationwide.

The SQV team tests and analyses gasoline and diesel products at designated retail stations against Shell product standards. They are equipped to calibrate dispensers in compliance with local legislation on volume delivery tolerances, and to measure pump meter readings to reconcile periodic sales versus withdrawals, or fuels purchased from the site.

The SQV team provides a monthly visit plan to the Operational Excellence Manager, and consolidated weekly results to the Sales and Operations Districts via the Territory Managers. After providing retailers the results of the testing, the SQV team can train retailers to address minor issues such as defective cam locks, pump meters, or over- and under-dispensing pumps on-site.

Each station that passes the SQV testing can proudly hang the streamer, "Tiwala Ka Sa Shell." Currently, there are four active SQVs, with each SQV able to visit around 60 sites per month nationwide.