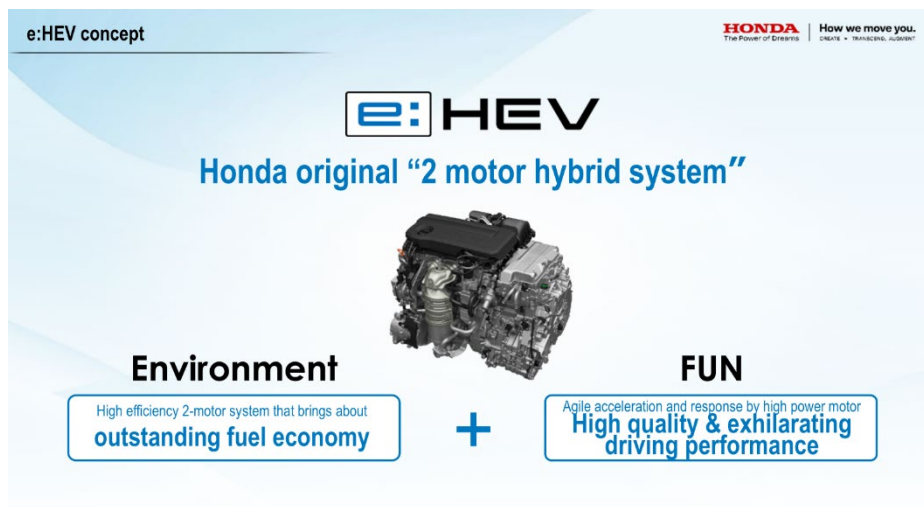


December 18, 2024

Honda Presents Next-generation e:HEV Technologies at Press Briefing on Honda e:HEV Business and Technology

TOKYO, Japan, December 18, 2024 – Honda Motor Co., Ltd. held a press briefing to introduce the direction of its hybrid-electric vehicle (HEV) business and the latest advancement made to its original 2-motor hybrid system, Honda e:HEV.^{*1} Honda also presented next-generation technologies scheduled to be installed in its future hybrid-electric vehicles.



e:HEV, original Honda 2-motor hybrid system

Striving to realize carbon neutrality for all Honda products and corporate activities by 2050, Honda has set a target to make battery-electric and fuel cell electric vehicles represent 100% of its new vehicle sales globally by 2040. Honda has been working to establish a strong EV brand and EV business foundation from a mid- to long-term perspective with an eye toward the period of EV popularization, which is expected to begin in the second half of the 2020s.

In the meantime, demand for hybrid-electric vehicles remains high in the current market, within the EV shift period through the mid-2020s. To accommodate such high demand, Honda will continue making steady progress in the development of new hybrid-electric vehicles.

Honda hybrid-electric vehicles equipped with the e:HEV system realize outstanding fuel economy (environmental performance), achieved by the highly efficient two-motor hybrid system, and high-quality and exhilarating driving experience (driving performance), delivered by the high-powered traction motor.

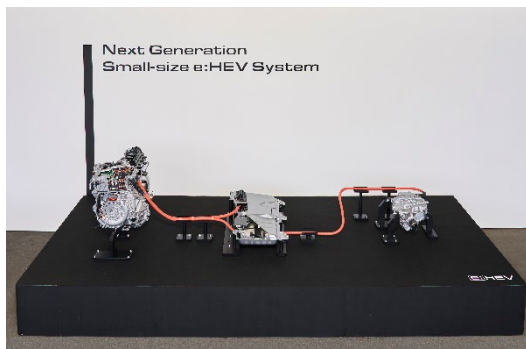
With the renewal from the current system to the next-generation system, Honda will further refine the existing strengths of e:HEV to offer “the joy of mobility that resonates with all of the driver’s senses” through its new and more attractive hybrid-electric vehicles. In doing so, Honda will strive to achieve its global annual hybrid-electric vehicle sales target of 1.3 million units^{*2} by 2030. Moreover, by improving production efficiency and pursuing cost reduction, Honda will ensure high profitability and further growth of its hybrid-electric vehicle business, which will continue to play a fundamental role that supports future EV business.

<Overview of the next-generation e:HEV system>

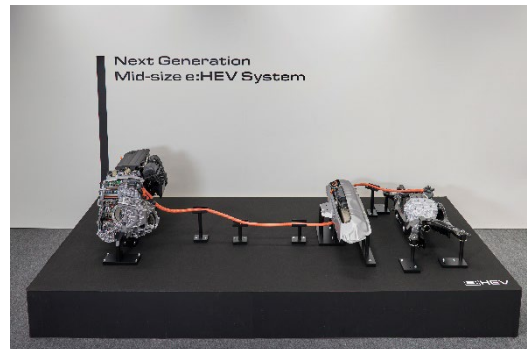
The e:HEV realizes highly efficient driving in all situations by seamlessly and automatically switching between three modes: 1) the EV Drive Mode, where the vehicle runs using only electricity from the battery; 2) the Hybrid Drive Mode, where the vehicle runs on the motor alone using electricity generated by the engine; 3) and the Engine Drive Mode, unique to Honda e:HEV, where the engine is directly connected to the wheels via a clutch.

For the next-generation e:HEV, component parts, including engine and drive unit, and control technology will be renewed respectively for both the small-size system (with a 1.5-liter engine) and the mid-size system (with a 2.0-liter engine) to further improve environmental performance and a high-quality and exhilarating driving experience of e:HEV models.

- The all-new 1.5-liter and 2.0-liter direct-injection Atkinson cycle engines, front drive unit and integrated cooling system will be developed, and by combining them with the new Next-generation Mid-size Platform currently being developed, Honda will aim to improve fuel economy of the next-generation e:HEV models with the mid-size system by more than 10% compared to the first-generation 2-motor hybrid models.
- In light of compliance with future environmental regulations around the world, the new engines are designed to realize a theoretical air-fuel ratio^{*3} without compromising power output for all driving situations, from everyday driving and situations where powerful acceleration is required such as merging onto an expressway, realizing both excellent power output and fuel economy.
- The new 1.5-liter engine will achieve a significant improvement in fuel economy by expanding the range where engine RPM becomes highly efficient in balance with engine torque, by more than 40% compared to the current 1.5-liter engine for the e:HEV system.
- The new front drive unit will feature both downsized packaging and increased efficiency. By maximizing the commonality between the drive unit for the small-size and mid-size systems, the cost will be reduced significantly, which contributes to the improvement of business viability.
- Moreover, engine and motor performance in each drive mode will be made even more efficient. In Engine Drive Mode, the fuel economy will be improved by increasing torque transmission efficiency when the engine is directly connected and also by expanding range where highly-efficient Engine Drive Mode will be used during high-speed cruising by utilizing battery assist.
- The power conversion and engine efficiency will also be improved for EV Drive Mode and Hybrid Drive Mode. As a result, both 1.5-liter and 2.0-liter engines will achieve the highest^{*4} combustion efficiency.



The Next-generation Small-size e:HEV system



The Next-generation Mid-size e:HEV model

<Honda S+ Shift>

The next-generation e:HEV will feature Honda S+ Shift, a new function designed to pursue the “joy of driving” that further accentuates the sense of oneness between the driver and the vehicle, while fully leveraging the characteristics of the e:HEV system. Without compromising high environmental performance unique to hybrid-electric vehicles, the Honda S+ Shift precisely controls the engine RPM during acceleration and deceleration to realize direct drive response and sharp gear shifting. Honda plans to install Honda S+ Shift in all of its future hybrid-electric vehicle models featuring the next-generation e:HEV, starting with the all-new Honda Prelude scheduled to go on sale in 2025.

●Adoption of electric all-wheel drive (E-AWD) unit

Starting with the next-generation e:HEV models, Honda will adopt an electric AWD drive unit (E-AWD) that can be shared between hybrid-electric vehicles and EVs. Compared to the mechanical AWD, the E-AWD increases maximum driving force and contributes to the realization of more powerful starting acceleration performance. The technology to control distribution of driving force to the front and rear tires, which Honda has amassed through the development of mechanical AWD, will be further advanced to enable the E-AWD system to optimize front-rear driving force distribution based on changes in tire ground contact load during acceleration/deceleration and turning. Moreover, by precisely controlling the highly precise and responsive motor torque control, the vehicle’s ability to trace the desired driving line and driving stability will be improved regardless of road surface conditions, enabling driving at the will of the driver and with greater peace of mind.

●Adoption of the Next-generation Mid-size Platform

In line with the advancement of the next-generation e:HEV system, Honda will completely renew current mid-size platform for its hybrid-electric vehicles and pursue the further wholistic advancement of the vehicle. New body rigidity management was adopted to realize high driving stability and lightweight. A sporty and exhilarating driving experience will be achieved by adopting a new steering stability index, which provides the ability to flex the vehicle body to control load on each tire during cornering. The simplified body structure also contributes to an overall vehicle weight reduction by 10% compared to current Honda e:HEV models.

Moreover, Honda is striving to develop the lightest platform in its class by reducing the platform weight by approximately 90kg compared to the platform for the current e:HEV models through the adoption of a new design method and a new lightweight body. Based on the modular architecture concept, which realizes a high commonality ratio among various models, series models will be developed while common sections, such as the engine room and rear floor, and unique sections such as the rear cabin are developed separately. With this development method, Honda is striving to achieve a commonality ratio of more than 60% among all models that adopt this Next-generation Mid-size Platform. This will enable production of unique and diverse models more efficiently and cost-effectively.

<For the improvement of hybrid-electric business viability>

In the 25-year history of its hybrid-electric business which started with the introduction of the Insight in 1999, Honda has taken a variety of measures to improve production efficiency in addition to enhancing product appeal and advancing technologies for its hybrid-electric vehicles.

In particular, Honda has been pursuing the reduction of the cost of its hybrid-electric vehicles, mostly with the key components such as batteries, power control units, and motors, through measures such as the improvement of production efficiency through cooperative development activities with suppliers and the establishment of a local production system and capability, and commonization of parts across different models.

As a result, the cost of hybrid-electric systems has been reduced dramatically. For example, the current version of the North American Accord hybrid has achieved a 25% cost reduction compared to the Accord hybrid model that went on sale in 2018, contributing significantly to improved profitability.

Moreover, for next-generation hybrid-electric vehicles, Honda is aiming to reduce the cost of each hybrid-electric model up to 50%, comparing the model to be launched in 2027 and the same model launched in 2018, respectively.

*1 e:HEV is a global communication name for the Honda high-efficiency two-motor hybrid system with outstanding fuel economy, which is the core of Honda electrification technologies. The e: represents the Honda desire to 'energize' people and bring about a smile and high spirits by using 'electricity' as the 'energy.'

*2 Unit sales of finished vehicles of Honda Motor Co., Ltd. and its consolidated subsidiaries.

*3 The ideal mixing ratio of oxygen to fuel to achieve the highest combustion efficiency during the combustion of gasoline.

*4 Based on Honda internal research.