Press Information

November 1, 2021

Daihatsu Installs the e-SMART HYBRID, a Hybrid System Ideal for Small Cars, in the Rocky

- Product Appeal Enhanced through Steps such as the Adoption of a Newly Developed 1.2L Engine -

Premium G HEV (two-tone manufacturer's option)

e-SMART HYBRID (exclusive emblem)

Daihatsu Motor Co., Ltd. (hereinafter "Daihatsu") has announced that it has newly developed the "e-SMART HYBRID[*1]" system ideal for small cars and installed it in the Rocky compact SUV. The new Rocky will go on sale nationwide on November 1.

Based on the basic concepts of "high quality at affordable prices," "mastering the smallest details," and "providing advanced technologies to everyone," Daihatsu has been working to create cars tailored to the lifestyles of its customers, focusing on details even at the level of 1 mm, 1 g, 1 yen, and 1 second.

Recognizing the increasing need for decarbonization, Daihatsu has been comprehensively pursuing optimal electrification for small cars friendly to the environment based on LCA[*2]. Daihatsu developed its unique e-SMART HYBRID system utilizing the electrified vehicle R&D assets it has accumulated since the 1960s, as well as the Toyota Group's technologies and know-how. After installing the new system in the new Rocky, the company plans to expand its use to other mini vehicles in the future.

The newly developed e-SMART HYBRID system has adopted a series system, in which the engine generates electricity that is then used to drive the motor. A simple mechanism that uses a newly developed 1.2L engine exclusively for generating electricity has resulted in a compact hybrid system that is ideal for small cars. In addition to highly responsive acceleration and extremely quiet performance provided by the 100%-electric motor drive, optimally controlling electricity generation and charging/discharging has achieved class-leading[*3] fuel efficiency[*4] among compact SUVs as well as affordable price[*5].

The new 1.2L engine will also be installed in two-wheel drive gasoline vehicles. This engine is ideal for daily use as it offers a high level of fuel efficiency performance and enables the car to powerfully and smoothly accelerate due to the increased torque at low rpm. The popular 1.0L turbo engine will also continue to be used in four-wheel drive vehicles. Thus, three types of powertrains, including the hybrid, will be available to satisfy a wide range of customer needs. Daihatsu has also enhanced the product appeal of its cars by, for example, advancing their safety and security performance, as well as adopting electric parking brakes and hybrid-specific designs.

Built on its “Light you up” approach, Daihatsu will continue striving to make high-quality small cars at affordable prices that are tailored to its customers and offer excellent environmental performance based on LCA, toward the realization of a carbon-neutral society.

*1: e-SMART HYBRID
Expresses a high-quality hybrid system at an affordable price by combining the letter “e” from electric and the word “smart.”
*2: LCA(Life Cycle Assessment)
*3: Compact SUV class: Class of hybrid vehicles with 1.5L or smaller displacement that are jeep-type 4WD vehicles according to the Japan Automobile Dealers Association classification that includes station wagons and vans (including two-wheel drive vehicles). As of November, 2021, according to Daihatsu research. Other companies also have vehicles with the same value.
*4: The fuel consumption rate of both the Premium G HEV and X HEV is 28.0 km/L based on WLTC-mode test cycle of values measured by the Ministry of Land, Infrastructure, Transport, and Tourism) (meets 100% of the FY2030 fuel efficiency standard). Fuel consumption rate is a value measured under specified test conditions. Therefore, actual fuel consumption rate will differ depending on the customer’s usage environment (weather, congestion, etc.) and driving method (abrupt take-off, air conditioner usage, etc.). The WLTC mode is an international driving mode composed of an average of urban, rural and expressway driving cycles.
*5: Manufacturer suggested retail price of 2,116,000 yen for the X HEV (two-wheel drive model).

Sales Overview

Monthly sales target: 2,000 units (of which 700 are HEVs)
Special test driving event: November 20 (Saturday) and 21 (Sunday)
Unveiling and test driving event: November 27 (Saturday) and 28 (Sunday), December 4 (Saturday) and 5 (Sunday)

Production plant

Daihatsu Motor Co., Ltd., Shiga (Ryuo) Plant

Manufacturer’s Recommended Retail Prices

[New Rocky] (prices include consumption tax)(Price range: 1,667,000 yen - 2,347,000 yen)
(Prices are recommended retail prices and are intended for reference purposes only. Prices are independently set by sales companies; for further details, please visit your nearest sales company. Expenses incurred for insurance fees, tax (exempt from consumption tax), recycling costs, registration will be charged separately.)

Grade	Engine	Transmission	Drive system	Price (in yen)
L	1,200cc NA*6	CVT	2WD*9	1,667,000
X				1,810,000
Premium G				2,058,000
X HEV	1,200cc HEV*7	-		2,116,000
☆Premium G HEV				2,347,000
L	1,000cc TC*8	CVT	4WD	1,944,800
X				2,086,700
Premium G				2,318,200

☆Photograph included on the first page

∗6: Naturally aspirated engine
∗7: Hybrid Electric Vehicle
∗8: Turbo Charger
*9: The prices of 2WD grades are different in the Hokkaido region.

Vehicle Overview

1. e-SMART HYBRID

<Technical characteristics>

Adoption of a series hybrid system

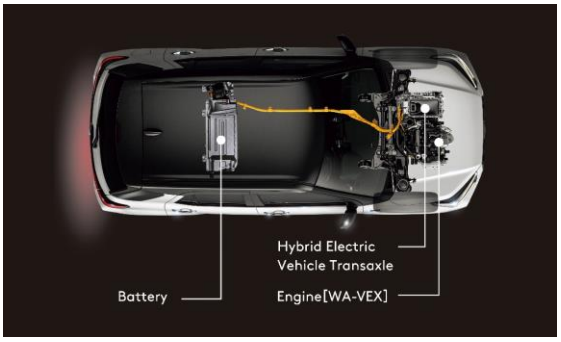
The new Rocky has adopted a series hybrid system that uses electricity generated by a gasoline engine to drive the vehicle. By using the engine exclusively for generating electricity, the new hybrid system has achieved a simple structure and compact size. Additionally, its 100%-electric motor drive makes this hybrid system strong in low- to medium-speed driving and thus ideal for small cars, which are most frequently used in urban driving.

Adoption of the newly developed 1.2L engine (WA type)

The newly developed 1.2L engine was optimized for the hybrid system and installed in the new Rocky. Controlling the engine to stay in the high-efficiency operating region contributes to improvements in fuel efficiency performance.

Compact design

- A transaxle is a power transmission mechanism consisting of a motor generator (MG) for power generation and driving, a reduction gear, and a differential mechanism. Positioning two motors in parallel shortened the overall length and width, resulting in compact size.
- The vehicle weight was reduced by adopting a lithium ion battery, which has a high energy density. Additionally, an excellent balance was achieved between performance and cost by taking advantage of the lightness of the base vehicle body to achieve a compact battery capacity (4.3 Ah) suitable to the needs of customers who mostly drive in urban areas.



<Providing joy to customers>

”Electric drive feel” that can only be obtained with 100% motor drive specifically designed for everyday use

- Highly responsive acceleration performance

  The e-SMART HYBRID system has achieved excellent driving performance, including the excellent responsiveness, smooth acceleration, and extremely quiet performance that are only possible with motor drive, which puts out maximum torque from take-off. For example, the instant the accelerator is depressed, the system instantaneously demonstrates power and achieves ample acceleration when passing other cars.

- Ease of operation

  The “Smart Pedal” feature enables the driver to control the vehicle speed by simply adjusting the depth to which the accelerator pedal is depressed. This reduces the frequent need to switch to the brake pedal and results in easy driving in urban settings, downhill situations, on snowy roads, or on continuous curves. The driver can choose between the normal mode, which is characterized by powerful acceleration during take-off, and the eco mode, which is more fuel efficient. The Creep mode at low speeds has also been retained, making urban driving and parking easier. For those who prefer the conventional driving feel, the Smart Pedal can also be turned off.

- Extremely quiet performance

  The e-SMART HYBRID has achieved extremely quiet performance that facilitates conversation inside the cabin through several measures, including utilizing only the battery to drive the motor without running the engine when the vehicle is stopped or being driven at low speed. In addition to the use of triple layers in the dash silencer, improvements were made in the soundproofing characteristics of the hood silencer, soundproofing performance was enhanced by adding a sound-absorbing material to the engine undercover, and the damping material was improved.

Class-leading[*10] fuel efficiency and low price

- A new engine optimized exclusively for hybrids, along with optimization of charging/discharging control, has achieved class-leading[*10] fuel efficiency among compact SUVs of 28.0 km/L (WLTC mode)[*11].
- In light of the way customers use the vehicle, a battery capacity (4.3 Ah) that achieves a balance between performance and cost was adopted, and the class-leading affordable price[*12] among compact SUVs was achieved through measures such as in-house manufacturing of the transaxle.

*10: As of November, 2021, according to Daihatsu research. Compact SUV class: Class of hybrid vehicles with 1.5L or smaller displacement that are jeep-type 4WD drive vehicles according to the Japan Automobile Dealers Association classification that includes station wagons and vans (including two-wheel drive vehicles). As of November, 2021, according to Daihatsu research. Other companies also have vehicles with the same value.

*11: The fuel consumption rate of both the Premium G HEV and X HEV is 28.0 km/L based on WLTC-mode test cycle of values measured by the Ministry of Land, Infrastructure, Transport and Tourism (meets 100% of the FY2030 fuel efficiency standard). Fuel consumption rate is a value measured under specified test conditions. Therefore, the actual fuel consumption rate will differ depending on the customer's usage environment (weather, congestion, etc.) and driving method (abrupt take-off, air conditioner usage, etc.). The WLTC mode is an international driving mode composed of an average of urban, rural and expressway driving cycles.

*12: As of November, 2021, according to Daihatsu research

2. Developed (WA type) engine

<Technical characteristics>

A 1.2L, 3-cylinder engine with long strokes that balances output performance with fuel efficiency and is ideal for compact cars has been selected.

1.2L WA-VE engine

Adoption of new technologies has achieved the class-leading[*10] thermal efficiency (maximum 40%) among engines for HEVs.

- High -tumble straight ports
  These ports achieve overwhelmingly high-speed combustion, improve anti-knocking performance, and efficiently convert combustion energy into motive power.
- Dual ports + low-penetration atomization
  Atomizing the fuel into a finer particle mist has reduced the amount of fuel that adheres to the ports and valves, promoting combustion and cleaning the combustion gas.
- Two cooling systems (gasoline vehicle only)
  Minimizing the volume of water and oil inside the engine, coupled with two cooling routes that open and close depending on temperature, has improved the warm-up performance.
- The layout was revised to achieve an engine width (in the crank shaft direction) equivalent to that of a 1.0L-class engine, making it installable in a compact vehicle body and also helping reduce the vehicle weight.

<Providing joy to customers>

Powerful and smooth take-off acceleration made possible by high low-speed torque

- High low-speed torque has achieved a linear acceleration feel and excellent response in accelerator operation, making daily driving pleasant with smooth acceleration performance.

High combustion efficiency has achieved the No.1[*13] fuel efficiency[*14] among compact gasoline-powered SUVs.

- The new Rocky has achieved WLTC mode fuel economy of 20.7 km/L[*14], which is approximately 10% better than previous models, making it eligible for an eco-car tax break and tax incentives for environment-friendly vehicles[*15] and thus reducing the financial burden on customers.

*10: As of November, 2021, according to Daihatsu research. Compact SUV class: Class of hybrid vehicles with 1.5L or smaller displacement that are jeep-type 4WD drive vehicles according to the Japan Automobile Dealers Association classification that includes station wagons and vans (including two-wheel drive vehicles). As of November, 2021, according to Daihatsu research. Other companies also have vehicles with the same value.

*13: Compact SUV (gasoline-powered): No.1 among gasoline-powered vehicles with 1.5L or smaller displacement that are jeep-type four-wheel drive vehicles according to the Japan Automobile Dealers Association classification that includes station wagons and vans (including two-wheel drive vehicles). As of November, 2021, according to Daihatsu research. Other companies also have vehicles with the same value.

*14: The fuel consumption rate of the L, X, and Premium G is 20.7 km/L based on WLTC-mode test cycle of values measured by the Ministry of Land, Infrastructure, Transport and Tourism (meets 75% of the FY2030 fuel efficiency standard). Fuel consumption rate is a value measured under specified test conditions. Therefore, the actual fuel consumption rate will differ depending on the customer's usage environment (weather, congestion, etc.) and driving method (abrupt take-off, air conditioner usage, etc.). The WLTC mode is an international driving mode composed of an average of urban, rural and expressway driving cycles.

*15: Excludes 4WD grades.

3. Evolution in Safety and Security

The newly developed stereo cameras, first adopted in the Taft, have been adopted in the new Rocky to create an evolved Smart Assist active safety system.

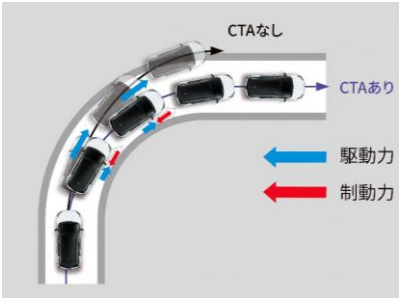
- **The new Rocky is equipped with a total of 19[*16] different active safety functions[*17], the most among Daihatsu vehicles.**
- The collision warning function and the collision-avoidance braking function now support nighttime pedestrian detection, and the traffic sign recognition function has been enhanced to recognize "Maximum Speed" and "Stop." A lane departure alert and lane tracing alert functions have also been added.

Adoption of an electric parking brake (with an automatic brake hold feature)[*18]

- Equipping the new Rocky with the electric parking brake has added a brake hold function to the full-speed range Adaptive Cruise Control (ACC), making long-distance driving more comfortable.

Adoption of Cornering Trace Assist (CTA)[*19]

- During cornering, if the vehicle is detected to be drifting toward the outside of the curve, the newly added CTA function applies a small amount of braking force to an inside wheel to correct the cornering direction, thereby stabilizing the vehicle.



Schematic diagram of CTA in action

【上記イラスト内文字】

日本語	英語
CTA なし	Without CTA
CTA あり	With CTA
駆動力	Driving force
制動力	Braking force

Inclusion of an external power supply function[*20], which provides peace of mind during emergencies such as power outages

- The new Rocky is equipped with an external power supply function that can charge a smartphone or power electrical appliances with combined wattage of 1500 W or less during an emergency as long as the vehicle is parked.

*16: Some functions are available only in some grades or as manufacturer's options. For details, please check with a sales company or on the official website.
*17: Since the active safety functions are intended to support the driver's driving, they are limited and may not operate depending on the road surface and weather conditions. Please drive safely without overconfidence in the functions. For details, please check with a sales company or on the official website.
*18: Equipped as standard on the Premium G HEV, X HEV, and Premium G.
*19: Equipped as standard on the Premium G HEV and Premium G.
*20: Available as a manufacturer's option on Premium G HEV and X HEV.

4. Refined Design Dedicated to HEVs

Design with an advanced feel dedicated to HEVs has been added to the existing powerful performance.

Premium G HEV (two-tone manufacturer's option)