Development

Creating Clean Automobiles: Development Stage and Products

POINT

(1)The Stella, a new mini car released in June of 2006, was designed to provide a user-friendly and comfortable interior for all passengers in the car and to realize smooth acceleration and first-rate fuel economy for its class.

(2)The Impreza underwent a partial model change in June of 2006. The Impreza, which is now equipped with a newly developed 1.5L horizontally opposed four-cylinder engine, was designed to significantly improve user friendliness, fuel economy and emissions performance, while at the same time enhancing agile, sporty driving performance.

Improving Fuel Economy

Automobiles emit carbon dioxide (CO_2) proportional to the amount of fuel consumed. By improving fuel economy, CO_2 will be reduced resulting in the better conservation of limited energy resources and the prevention of global warming. Subaru, while utilizing the advantages of AWD and high power engines, has been working to improve fuel economy by developing technologies that make engines more fuel efficient, reduce transfer loss in the drivetrain and reduce vehicle weight and running resistance, and we are in the process of introducing vehicles which meet the Japanese fiscal 2010 Fuel Economy Standards, the target for gasoline vehicles.

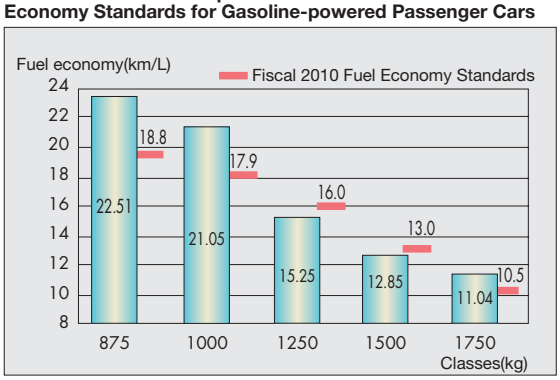
Objective:
Achieve the fiscal 2010 Fuel Economy Standards for all vehicle weight classes by fiscal 2006.

Status of Subaru's Efforts to Meet the Fiscal 2010 Fuel Economy Standards

Fiscal 2010 Fuel Economy Standards Were Met by Applying Credits

The objective could not be achieved in two of the five classes of gasoline-powered passenger cars. However, the achievement rates for the 1250 kg and 1500 kg classes were 95% and 99%, respectively. The standards were considered met after credits system*1 was applied. The objective is set to be achieved for all classes in fiscal 2007. For gasoline-powered mini-sized trucks, the objective has been met every year since fiscal 2001 for all applicable classes.

Status of Subaru's Compliance with the Fiscal 2010 Fuel Economy Standards for Gasoline-powered Passenger Cars

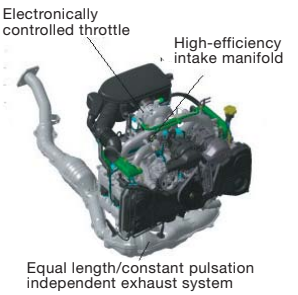


Improved Engine: Impreza

The Newly Developed 1.5L DOHC Engine Installed in the Impreza

In the newly developed 1.5L DOHC engine (EL15), gas flow in the combustion chamber and intake/exhaust ports was improved by adopting a long stroke, which is useful for improving combustion efficiency and torque at low and medium speeds, and combustion efficiency at all speeds was improved by adopting variable valve timing. Both fuel economy and dynamic performance were enhanced by reducing friction between the basic components through enhanced stiffness of the cylinder head and cylinder block.

The newly developed 1.5L DOHC engine (EL15)



Improved Engine: Stella

The Stella Achieves First-Rate Fuel Economy

The Stella has achieved a first-rate fuel economy among tall wagons by installing the DOHC naturally aspirated (NA) engine whose fuel economy was demonstrated in the Subaru R1 and R2, and also by proactively adopting a cooperative control system with CVT (continuously variable transmission).

The In-line four-cylinder DOHC-NA engine

Improved Drive-Train: Stella

Fuel Economy Further Improved through the New i-CVT

Subaru started development of CVT ahead of other companies and released the world's first passenger car with CVT installed in 1987. As a pioneer manufacturer of CVT, Subaru also installed CVT in mini cars and consequently has achieved first-rate fuel economy among mini cars in Japan. A new

The New i-CVT

*1 Under this system, any excess amounts from other classes that have already achieved the objective can be applied towards classes which have not achieved the objective.

i-CVT has been installed in the new mini car, the Stella, which in comparison to conventional transmissions has an improved fuel economy, a wider transmission gear ratio, a more dynamic performance and enhanced quietness because it has reduced friction between its components.

Improved Fuel Economy

Received the "e-nenpi"(Good Fuel Economy) Award for Excellent Actual Fuel Economy

Subaru's vehicles, such as the R1, the R2 and the Stella, are topping the list of the "Top 10 Fuel Economy Gasoline Powered Mini Cars in 2006," (announced by the Ministry of Land, Infrastructure and Transportation) with the result that the new Stella with the NA engine exceeds the 2010 Fuel Economy Standards by 10% (AWD) or 20% (2WD). Moreover, both the FF and AT Impreza with the new 1.5L DOHC engine exceed Fuel Economy Standards by 10%.

Subaru is actively working to improve actual fuel economy based on a survey of customers' driving patterns.

The Stella and Stella Custom models were presented with the "e-nenpi (Good Fuel Economy) Award 2006-2007" in honor of the fact that they were ranked first in the new vehicle category for average fuel economy ranking for the year (Jan. thru Dec. 2006) by IRI Commerce and Technology, Inc. which provides the "e-nenpi*2 (Good fuel economy)" service for managing information on personal vehicles via cellular phones.

Stella Custom R Special

Cleaning Exhaust Gas

Substances such as carbon monoxide (CO), hydrocarbons (HC), and nitrogen oxides (NOx), which are emitted from automobiles, are one of the causes of air pollution in metropolitan areas where there is intensive motor traffic. In order to improve the state of the air, Subaru is gradually launching low emission vehicles (certified by the Japanese Ministry of Land, Infrastructure and Transport) that meet standards stricter than the regulations.

Objective:
The goal is to have the exhaust emissions of 80% of the cars sold be either 50% or 75% reduced beyond 2005 standards (out of this 80% figure, half should be vehicles with emissions reduced 75% beyond 2005 standards) by the end of fiscal 2006

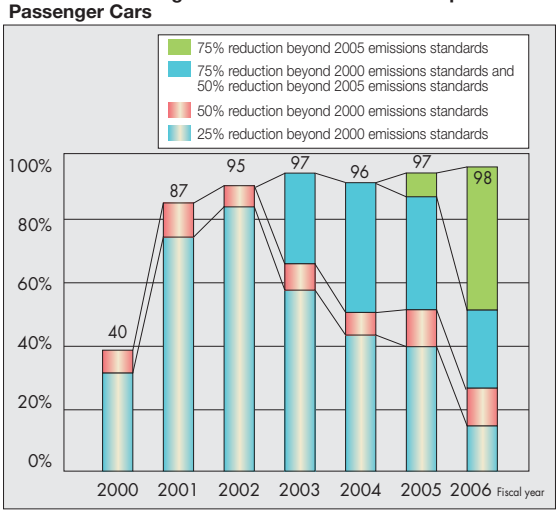
Creating Low Emissions Vehicles

Over 50% of Vehicles Reached the "☆☆☆☆" Level

The ratio of Subaru vehicles with emissions reduced by 75% compared to fiscal 2005 standards has been over half (the monthly average) of the sales volume since June of 2006; for example, in fiscal 2006, the Stella, a new mini car with a naturally aspirated (NA) engine, all cars with NA engines excluding the Legacy 2.0L, which underwent a significant number of minor changes, and the Impreza, with a new 1.5L DOHC engine, reached the "☆☆☆☆" level, which is 75% reduction beyond 2005 standards. However, the objective was not achieved, even though the total percentage of vehicles with emissions reduced by 50% or 75% compared to 2005 standards has risen to 67-77% per month (the average is 74%). The total ratio of vehicles whose emissions have been reduced by 50% and 75% compared to 2005 standards is expected to reach 80% in fiscal 2007.

Subaru will continue to our proactive efforts to reduce emissions. For example, the third-generation Impreza with the NA engine, which underwent a complete model change in June of 2007, immediately reached the "☆☆☆☆" level due to a new emissions gas test mode (the JC08C mode) that allows for more precise measurement of emissions performance.

Trends in Percentages of Low Emission Gasoline-powered Passenger Cars

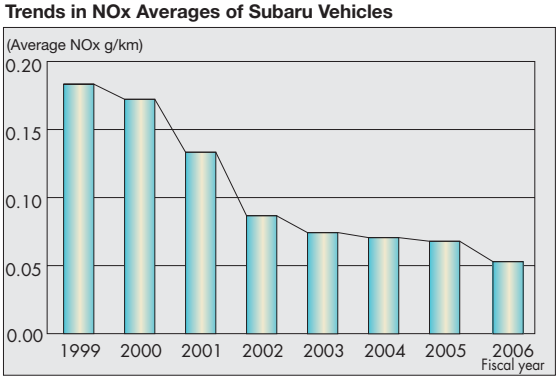


Trends in NOx Averages

Launching low emission vehicles reduces NOx year after year

By launching low emission vehicles which meet the standards represented by the low emission vehicle certification standard into the market, Subaru has been able to reduce the average amount of NOx emitted by Subaru vehicles every year as shown in the chart below.

Trends in NOx Averages of Subaru Vehicles



[Notes]
-The figures calculated from the regulation values (10/15 mode and 11 mode) at the time of shipment.
-Going back to fiscal 2000, calculations were made with regulation or conversion values for the current test mode. The current test mode is a combined mode of the 10/15 mode and 11 mode.
-In fiscal 1999, the figures were calculated from the regulation values for the 10/15 mode.

*2 "e-nenpi" is the average fuel economy for each vehicle type. This average value was determined based on the on-line managed fuel economy, which is derived from the data entered by approximately 400,000 drivers through their cellular phones on the calculated amount of fuel used and the distance traveled.

Clean Energy Vehicles

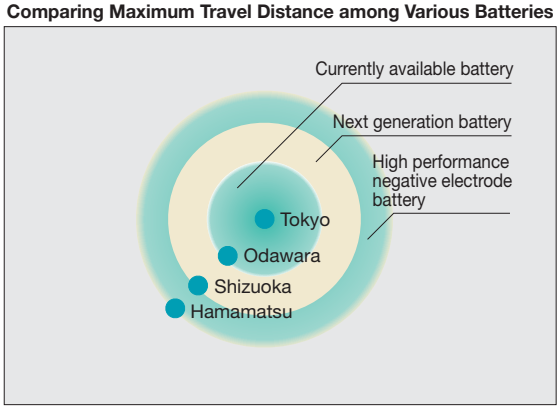
Clean energy vehicles have such features as emitting fewer global warming substances (carbon dioxide) and air pollutants (carbon monoxides, hydrocarbons, nitrogen oxides, etc.) and have less environmental impact than gasoline engine vehicles. However, there are technical problems related to cost and driving distance. Subaru has been developing clean energy vehicles such as electric vehicles that have the gasoline engine vehicle-level performance and utility. Also, we are positively working on developing next generation batteries for hybrid vehicles and fuel cell electric vehicles.

Developing a Next Generation Battery

Doubling or Tripling Maximum Travel Distance on a Single Charge

Subaru is developing next generation batteries in order to increase the travel distance of electric vehicles on a single charge by at least two to three times. We are striving to develop these next generation batteries by combining newly developed materials that can absorb and store more lithium ion on the positive electrode than conventional batteries with the production technology of a lithium-ion capacitor, which allows doping of lithium ions on the negative electrode, in order to increase weight-energy density to up to 200 Wh/kg. This energy density is approximately double that of the lithium-ion secondary batteries used in current electric vehicles, and hence increases maximum travel distance on a single charge from 80 km (equivalent to the distance between Tokyo and Odawara) to 160 km (equivalent to the distance between Tokyo and Shizuoka). We will continue our development efforts to further increase energy density in order to succeed in creating electric cars that can run over 300 km.

Comparing Maximum Travel Distance among Various Batteries



Development of Lithium-Ion Capacitor

Developed Earth-Friendly Storage Device with Our Unique Technologies

Employing our unique technologies and using environmentally friendly materials, Subaru has been developing the Lithium-ion Capacitor. This capacitor is environment friendly and ideal for the next generation clean ECO cars and for the storage of energy from wind, solar power and etc. by replacing lead batteries. We are working towards its practical application and commercialization.

Technological Development of Future Power Supplies

Developing Energy-Saving Gasoline Engines, through a Joint Effort by Industry, Academia and Government

Developing technologies to create a power supply for the future that is cleaner and saves more energy requires a joint development effort on a national level by industry, academia and government. Subaru, together with Chiba University and Nihon University, has been involved in the Energy Use Rationalizing Technology Strategic Development Project organized by the New Energy and Industrial Technology Development Organization of Japan (NEDO) in its pioneering phase from 2002 to 2005, and has developed a breakthrough technology that improves thermal efficiency by 6 to 11% while avoiding knocking with a compression ratio of 14 to 1. In 2006, Subaru moved into the commercialization study phase aiming to put it to practical use.

In addition, since fiscal 2006, together with the National Traffic Safety and Environment Laboratory and Toyama University, Subaru has been involved in the Program for Promoting Fundamental Transport Technology Research organized by the Japan Railway Construction, Transport and Technology Agency (JRTT), which aims to develop technologies to reduce knocking by means of chemical effects. The Program's goal is to develop a new gasoline-powered engine that is as efficient as a diesel engine yet emits fewer pollutants.

Noise

Measures to Reduce Noise:

Reducing the Noise of Traffic by Promoting Technological Development

Subaru has been proactively working to reduce traffic noise generated by cars. We are studying ways to effectively reduce noise from tires, engines, intake and exhaust, which are the major sources of traffic noise.

In fiscal 2006, we reduced noise on the new Stella by taking the measures shown in the illustration. Also, by restructuring the exhaust system to reduce the weight of the vehicle, then optimizing the layout of the muffler, we were able to guarantee the desired noise quality with only a small-sized muffler.

The Main Countermeasures Employed to Reduce the Noise the Stella Generates