

Environment and Safety



In January 2005, Honda delivered an FCX, the world's first fuel cell vehicle capable of starting in sub-zero to the Hokkaido Prefectural Government.

Honda proactively employs advanced environmental and safety technologies, reflecting its commitment not only to comply with regulations but also to pass the “joy of mobility” on to future generations.

Environmental Initiatives

May 2005 saw the enactment of the Kyoto Protocol Target Attainment Plan in Japan, and the nation has since joined together to expedite efforts to meet the Plan's targets.

Honda began actively tackling environmental issues from an early stage. In 1992, we announced the “Honda Environment Statement,” which clarifies our stance with respect to the environment. Following the principles outlined in the Statement, Honda will step up efforts across all product categories, focusing on such challenges as making exhaust gases cleaner, improving fuel economy and increasing the recyclability of products and materials. We will also boost development of next-generation energy technologies, including fuel cells. In addition to establishing “green factories” within our various production facilities, we will employ Life Cycle Assessment (LCA) techniques to lower the environmental burden of all of our business activities—including distribution and sales. In these ways, we will strive to minimize the impact of our operations on the environment.

Achievement of 2005 Targets

In 1999, Honda announced companywide 2005 targets for reducing exhaust emissions and increasing fuel efficiency, and has since reported annually on its progress in meeting these targets. We intend to meet all of these targets by the end of fiscal 2006.

Motorcycles

In the area of motorcycles, we completed the changeover to four-stroke engines in all models, with the exception of some specialty products, in order to achieve cleaner exhaust emissions and higher fuel efficiency. We are also incorporating more fuel injection technologies into our small-displacement models and we are stepping up development of new technologies and expanding their application in our mass-produced models.

1. Cleaner Exhaust Gas

2005 Target

To reduce total hydrocarbon (HC) exhaust emissions (total for Japan, the United States, the European Union and Thailand) of new vehicles to approximately one-third of the fiscal 1996 level.

Progress

•Target attained

In the previous fiscal year, ended March 2004, total HC emissions from new motorcycles were up 3.3% from the preceding period. In the fiscal year ended in March 2005, however, we achieved a 4.9% reduction (compared with fiscal 2004) thanks to increased development and

application of new technologies. This means that Honda has reduced HC emissions to approximately one-quarter of 1995 levels—representing major progress since 2000, when it reached its original target (one-third of 1995 levels). In Japan, total HC emissions in fiscal 2005 were equivalent to 13.3% of the 1995 level, down 2.9% from fiscal 2004. This stemmed from the full-scale adoption of four-stroke engines and incorporation of FI technologies in small-displacement models, as well as further technological developments and their expanded application in mass-produced motorcycles.

2. Improvement in Fuel Economy

2005 Target

To improve fleet average fuel economy (total average in Japan, the United States, the European Union and Thailand) by approximately 30% compared with fiscal 1996.

Progress

•Target attained

Honda expanded the use of four-stroke engines in motorcycles not only in Japan, but overseas, as well. It also developed and applied new technologies that enhance fuel economy, including by increasing fuel injection-equipped motorcycles in Japan and abroad. As a result, we achieved a 34.2% improvement in average fuel economy in fiscal 2005 (compared with the fiscal 1996 level), surpassing the 30% milestone attained in fiscal 2004.

Automobiles

Besides achieving cleaner exhaust gas and improved fuel economy for Honda automobiles, efforts are under way to develop products using alternative forms of energy.

1. Cleaner Exhaust Gas

2005 Target

To reduce total hydrocarbon (HC) and nitrogen oxide (NOx) exhaust emissions by approximately 75% for new vehicles in Japan, compared with 1995.

* Practically all of Honda's passenger vehicles have been approved as "★★★ low emission vehicles" or "★★★★ low emission vehicles."

Progress

•Target attained

The target of a 75% reduction in total exhaust emissions in Japan (compared with the fiscal 1996 level) has been attained since fiscal 2004.

* Total HC emission level: Reduced by around 86.0% (compared with fiscal 1996)

* Total NOx emission level: Reduced by around 86.0% (compared with fiscal 1996)

2. Improvement in Fuel Economy

2005 Target

To achieve the new fuel efficiency standards of Japan for fiscal 2011 in all weight categories; and to improve fleet average fuel economy for gasoline-powered vehicles by approximately 25% compared with fiscal 1996.

Progress

•Target attained

Honda has achieved the new fuel efficiency standards in all weight categories. In fiscal 2005, fleet average fuel economy had improved approximately 30.9% compared with the fiscal 1996 level. Honda reached the 25% target in fiscal 2002 and continues to record further improvements.

Power Products

In this segment, Honda focuses on cleaner exhaust emissions and improved fuel economy in anticipation of more stringent regulations being implemented in various countries.

1. Cleaner Exhaust Gas

2005 Target

To reduce average exhaust emissions (average emission levels worldwide) of HC and NOx by approximately 30% for new products (compared with the fiscal 1996 level).

Progress

•Target attained

We achieved the target of a 30% reduction in average HC and NOx emission levels in fiscal 2002. For fiscal 2005, average HC and NOx emissions were 38% lower than the fiscal 1996 levels, thanks to ongoing efforts in this area.

2. Improvement in Fuel Economy

2005 Target

To improve average fuel economy by approximately 30% (compared with fiscal 1996).

Progress

•Target attained

By March 2005, the average fuel economy had improved by approximately 28% of the fiscal 1996 level.

Global Activities

Honda's global mission is to create products with the highest level of environmentally friendly technologies through the adoption of the most efficient manufacturing systems in all regions. Below are some examples of Honda's overseas activities involving automobiles.

Thanks to its proprietary technologies, Honda is able to offer a wide range of products that deliver environmental performance beyond legal requirements adopted in various parts of the world with regard to reducing exhaust emissions and improving fuel economy. The Company continues to make a valuable contribution to today's mobility-oriented society by reconciling demand for transportation with the manufacture of products that have minimal impact on the global environment. Honda has adopted the following three key approaches in all product categories.

1. Further improvement in exhaust emissions and fuel efficiency of internal combustion engines;
2. Advances in hybrid vehicle technologies;
3. Widespread adoption of alternative energy vehicles.

1. Further Improvement in Exhaust Emissions and Fuel Efficiency of Internal Combustion Engines

•North America (United States)

Honda is one of the leading automakers in the United States and has achieved the industry's highest corporate average fuel economy (CAFE) ranking for its 2004 year models. Consistently supplying the U.S. market with vehicles that surpass emissions requirements, Honda was the first automaker to launch Low Emission Vehicles (LEVs), Ultra-Low Emission Vehicles (ULEVs) and Super Ultra-Low Emission Vehicles (SULEVs) in this market.

Today, more than 60% of Honda and Acura vehicles have either achieved or surpassed the federal government's Tier2/bin5 exhaust emission standard (NOx: 0.07g/mile)*1. Based on such successes, in December 2004, Honda received the "2004 Greenest Automaker" award from the Union of Concerned Scientists (UCS).

Corporate Average Fuel Economy (United States)



•Europe

In Europe, Honda offers low-fuel-consumption vehicles, hybrid vehicles and clean diesel vehicles in an effort to reduce carbon dioxide levels. It is making steady progress toward attaining its 2009 target of 140g/km (carbon dioxide emissions) set voluntarily by the industry.

•Asia

In Thailand, Honda offers the *Jazz*, whose performance exceeds Euro4² emission regulations due for implementation in 2007. In calendar 2004, vehicles meeting Euro4 regulations accounted for 40% of Honda's sales in Asia. All Honda models sold in China already meet Euro3 regulations, due for gradual implementation in Beijing starting in November 2005.

2. Advances in Hybrid Vehicle Technologies

In November 1999, Honda unveiled the *Insight*, its first hybrid vehicle, equipped with the Company's original Integrated Motor Assist (IMA) system. The *Insight* delivered the world's highest-level fuel efficiency* for a gasoline-powered vehicle. In December 2001, Honda launched the *Civic Hybrid*. This was followed in December 2004 by the *Accord Hybrid*, launched in the United States as the world's first V6 hybrid vehicle, combining Honda's IMA hybrid technology with its Variable Cylinder Management (VCM) engine technology. Production of Honda's hybrid vehicles currently takes place at two facilities in Japan, in Suzuka and Saitama. The mass-market *Civic Hybrid* model is sold in 19 countries, including North America, Europe, Japan and Asia/Oceania. Global sales of hybrid vehicles stood at around 100,000 units as of April 2005 (89,000 units in the United States, 5,900 in Japan, 3,800 in Europe and 1,500 in Canada).

* Fuel efficiency of the *Insight* (10-15 mode, 5-speed MT) was 35.0 km/l at the time of its introduction in 1999. The current model achieves 36.0 km/l.

3. Widespread Adoption of Alternative Energy Vehicles



In April 2005, Honda began selling its natural-gas-powered *Civic GX* sedan in California, together with a home natural-gas fueling system called *Phill* (left of photo).

Honda leads the automotive industry in promoting the widespread adoption of alternative energy vehicles. By the end of fiscal 2005, Honda had delivered a total of 19 FCX fuel cell vehicles in the United States and Japan. We are also working to increase sales of

our natural-gas-powered *Civic GX* sedan in North America. In addition, we are working on the infrastructure to supply alternative forms of energy, including development of hydrogen fuel stations and promotion of a home fueling system for natural-gas-powered vehicles.

*1: Tier2/bin5 (NOx: 0.07g/mile)

This standard for exhaust emissions went into effect in 2004, as established in the United States by the Environmental Protection Agency as part of the U.S. Clean Air Act. There are 11 "bin" emission categories. Bin 5 is a stringent level that must be met in order to continue selling vehicles in the United States.

*2: Euro4

Exhaust emission regulations implemented in Europe from 2005. Although China and many Asian countries have introduced European regulations, at present they only comply with Euro3 standards. Euro4 is a stringent level that Thailand is considering adopting from 2008.

Note: For further details, please refer to the *Honda Environmental Annual Report 2005*.

URL: <http://www.honda.co.jp/environmental-report/2005/>

Safety Initiatives

As a manufacturer of mobility products, Honda is committed to making products that provide high levels of safety, not only for drivers and passengers but also for pedestrians. We are committed to promoting safer driving and to making mobility safer for everyone.

Safety Technologies

Honda is committed to improving and adopting a wide range of safety technologies. These include accident avoidance technologies, technologies that minimize the impact on passengers and pedestrians in the event of an accident, and technologies that mitigate the impact of a collision on other vehicles.

Seeking to increase stability and ensure more effective braking control, Honda has set the target of incorporating its Hydraulic Combined Anti-Lock Brake System^{*3} into all new touring and sports bikes (250cc and above) and large-displacement scooters by the end of 2007. We also plan to adopt the system in all 250cc-and-above bikes, except off-road models, as standard by 2010. Moreover, all on-road and off-road models will be equipped with ABS braking. As a leader in the European motorcycle market, Honda is committed to actively incorporating the aforementioned safety technologies into its motorcycles, to help realize the European Commission's plan to cut road deaths in half by 2010.

In our automobile business, Honda is demonstrating its "Safety for Everyone" commitment by incorporating a core set of safety features as standard equipment on every vehicle we sell. By the end of 2006, all Honda and Acura models sold in the United States and Canada will feature

front-side airbags, side curtain airbags, anti-lock brakes and pedestrian safety technologies in all but a few niche models; with Vehicle Stability Assist (VSA) and side curtain airbags with rollover sensors as standard features in all light trucks. Finally, Honda's Advanced Compatibility Engineering (ACE) body structure is being introduced to all vehicles as new platforms are introduced during full model changeovers.

Promoting Safer Driving

Honda will expand its driver safety promotion activities, which have been in place for some time, to include Asian countries undergoing rapid motorization. We will continue promoting our traffic safety education programs to meet the diversifying needs of customers and step up safety initiatives conducted at the local level through our sales outlets. By enhancing education of riders and drivers, we are dedicated to creating an even safer society for drivers, passengers and pedestrians.

Driver safety programs modeled on Honda's activities in Japan are now operated by 22 corporations in 16 countries. These programs are modified to reflect the various driving conditions and licensing systems of each country. In 2004, four more countries began such driver safety programs. They include in-house instructor training programs conducted by our motorcycle distributors in South Korea, Malaysia and Turkey, with the goal of promoting safer driving practices among dealerships. In Germany, Honda has joined forces with the German Automobile Association to run education programs to enhance the safety skills of people returning to motorcycles after a long absence. In 2004, we upgraded the content of programs offered in China since 2003 and in Thailand since 1989, accelerating Honda's commitment to the local communities.

In 2005, Honda plans to add Russia to the list of countries where it provides full-scale driver safety activities, in anticipation of further growth of the automobile market in that nation.

Honda will continue seeking the opinions of customers and society as it strives to further enhance its "Safety for Everyone" initiatives.

*3: Hydraulic Combined Braking System with ABS

This is an original Honda development. It integrates a hydraulic combined braking system, which links both front and rear wheels when the left brake lever is engaged, with an anti-lock braking system (ABS), which prevents the front and rear wheels from locking when the brake is engaged too forcefully.

Note: Although this system is designed to support the braking action, both the front- and rear-wheel brakes should still be applied simultaneously.