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Air quality

Air quality policies and philosophy

Nissan approaches air quality by focusing on two points: greener exhaust emissions and providing a pleasant in-cabin environment to customers.

In this way, we will strive to consider ecosystems while pursuing mobility that provides more comfort and security to customers. According to the State of Global Air 2018 report issued by the U.S.-based Health Effects Institute (HEI), 95% of the world’s population currently live in regions where particulate matter smaller than 2.5 μm (PM2.5) exceeds the 10 μg/m3 basic level specified by World Health Organization (WHO) Air Quality Guidelines. Furthermore, the Organisation for Economic Co-operation and Development (OECD) predicts that the global population will exceed nine billion by 2050, with around 70% of people concentrated in cities, making air pollution in urban areas an even more pressing issue.

For an automaker, air pollution stands alongside climate change and congestion as an issue for cities in particular that must be remedied. Nissan is advancing its efforts to improve air quality with two approaches:

1. Promoting zero-emission vehicles

EVs such as the Nissan LEAF, which has cumulative global sales of 640,000 units (as of the end of March 2023), are an effective tool for reducing air pollution in urban areas. As a leader in this field, we are promoting zero-emission mobility and infrastructure construction in partnership with national and local governments, electric power companies, and other industries.

2. Enhancing internal combustion engines

We have proactively set voluntary standards and emission-reduction targets for internal combustion engines. With the ultimate goal of making automotive emissions as clean as the atmosphere itself, we have developed a wide range of technologies and achieved the results listed below through cleaner combustion technologies, catalysts for purifying emissions, and countermeasures against gas vapors from gasoline tanks.

- Sentra CA (released in the U.S. in January 2000): The world’s first gasoline-powered vehicle that satisfied all the exhaust gas requirements set by the California Air Resources Board to receive Partial Zero Emissions Vehicle (PZEV)*1 certification.
- Bluebird Sylphy (released in Japan in August 2000): The first passenger vehicle made in Japan to achieve Ultra-Low Emission Vehicle (U-LEV)*2 certification.

We will continue our efforts to ensure cleaner exhaust emissions from internal combustion engines, which remain the most commonly used in the automotive market.

Improving in-cabin air quality

With circumstance of spreading advanced driver assistance systems and developing fully autonomous driving technologies, drivers are expected to spend more time in their vehicles, making it even more important for that space to be pleasant and safe.

Under NGP2022, we conducted research and development aimed at cleaner vehicle emissions, as well efforts to improve the cabin environment, including better air quality, to enhance comfort. As part of these efforts, starting with specification enhancements in April 2021 for the Nissan LEAF, several vehicle model interiors are equipped with materials providing verified*3 antibacterial properties.

As part of our continued efforts concerning volatile organic compounds (VOCs)*4 such as formaldehyde and toluene, Nissan is further reviewing and reducing materials for seats, door trim, floor carpet, and other parts as well as adhesives. We voluntarily set more stringent standards than those of the Japanese government and automotive industry body regulations, and have applied them to all new vehicles introduced to the market from July 2007 onward.

*1 PZEV: Certification set by the California Air Resources Board

*2 U-LEV: Vehicle that produces 75% less nitrogen oxide (NOx) and nonmethane hydrocarbon (NMHC) than the 2000 emission standards level in Japan.

*3 Results were verified using specific bacteria and usage environments, and are not guaranteed to be effective against all bacteria.

*4 VOCs: Organic chemicals that readily evaporate and become gaseous at normal temperature and pressure conditions.

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Reduced emissions from production activities

Nitrogen oxide (NOx), sulfur oxide (SOx), and VOCs are recognized as common forms of emissions created by vehicle manufacturing facilities. We are taking firm measures to ensure that management standards and systems for atmospheric emissions are thoroughly followed; and working to reduce both VOC exhaust volumes and the use of VOC-emitting substances to levels lower than required by national regulations.

Air quality: Achievements

Compliance with Air quality emissions regulations (Passenger cars only)

Nissan not only works to develop and promote zero-emission EVs but continues to promote cleaner exhaust emissions from all of our engines. For example, the Qashqai released in Europe in October 2018 has a new fuel-efficient 1.3-liter turbo gasoline engine fitted with a particulate filter that meets the Euro 6d-Temp*1 emissions standard. In Japan, our product with electrification technology, e-POWER has achieved 75% reductions in exhaust emissions from 2018 standards and improved fuel economy at the same. As part of these efforts, our compliance with air quality emissions regulations goes far beyond current legal requirements to meet more stringent specifications. The following table shows the percentage of Nissan vehicles in each location produced to the strictest local standards.

Compliance with Exhaust emissions regulations (By region) *2

Country	Standard	unit	2022 (FY)
Japan	50% lower than 2018 standard	%	90.2
Europe	Euro 6d	%	100
U.S.	U-LEV / SULEV / ZEV	%	100
China	National 6	%	100

Plant emission management

We thoroughly implement systems and control standards at our production plants to reduce the amount of air pollutants emitted during operation. Our air pollution control targets are more stringent than those mandated by the countries in which we operate.

In Japan, we have promoted strict countermeasures for emissions of NOx and SOx as air pollutants. We have lowered NOx and SOx emissions by introducing low-NOx burners in the ovens and boilers that provide heat for painting lines, and by switching the fuel used by those burners from heavy oil and kerosene to alternatives with low SOx emissions.

From a carbon-neutral perspective, facilities that use fuel will be increasingly electrified. As a result, emissions from production plants are expected to be further reduced. We will continue to implement appropriate management on an ongoing basis.

Reduced VOC from production processes

Volatile organic compounds (VOCs)*3, which readily evaporate to become gaseous in the atmosphere, account for approximately 90% of the chemicals generated as the result of our vehicle production processes. Lowering VOC emissions is a challenge that we are working to address. We strive to increase our recovery of cleaning solvents and other chemicals in order to limit the amounts of these substances emitted from our plants ahead of implementation of new regulations in each country where we operate, while also advancing planned measures to increase the recycling rate for waste solvents. We are also introducing water-based paint lines that limit VOC emissions to less than 20 grams per square meter of painted surface. We have adopted these lines in the Nissan Motor Kyushu Plant as well as at two plants in Aguascalientes in Mexico, the Resende Plant in Brazil, the Smyrna Plant in the U.S., the Huadu Plant in China, and the Sunderland Plant in the U.K. We achieved a reduction of 35.8% in fiscal 2022 in VOC emissions per painted surface area compared with fiscal 2010 levels.

*1 Euro 6d-Temp: All Euro 6 standards and the initial Real-Driving Emissions (RDE) limit for new car models.

*2 Passenger cars only.

*3 VOCs: Organic chemicals that readily evaporate and become gaseous at normal temperature and pressure conditions. [Click here for more information on air quality. >>> P152](#)