

14-18 Takatsuji-cho, Mizuho-ku,
Nagoya, 467-8525, Japan

October 15, 2014

NGK SPARK PLUG CO., LTD.

New Product Announcement
The World's First Intake Oxygen Sensor for Passenger Cars

Nagoya, October 15, 2014 —NGK SPARK PLUG CO., LTD. (President and CEO: Shinichi Odo, Headquarters: Nagoya, hereafter NGK SPARK PLUG) are pleased to announce that we decided to commercialize the intake oxygen sensor for the control of the “EGR system” of passenger cars in response to the future, more stringent global exhaust gas emissions regulations ahead of others on a global basis.

Background and Purpose of Commercialization

NGK SPARK PLUG has leading global market share of automotive “oxygen sensors”, which performs feedback to the ECU by measuring the oxygen concentration in the exhaust gas, leading to the appropriate air-fuel ratio. We have developed this product as one of the core products of our business. In the future, automobile exhaust gas regulations are going to become more stringent, and emission regulations of CO₂ and NO_x (nitrogen oxide) are expected to be tightened severely.

The newly developed the "intake oxygen sensor", which is attached on the intake side of the engine EGR (*1) system, achieves the optimum combustion efficiency by precise sensing and controlling of oxygen concentration for EGR environment. This will enable us to reduce the amount of NO_x generated in diesel engines, and to improve fuel efficiency by reduction of pumping losses (*2) in gasoline engines, therefore, this will contribute greatly to reducing the exhaust gas emissions.

We will continue to develop new technologies and products in the future to contribute to improving the environments and society as a leading manufacturer of automotive sensors.

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(*1) EGR (Exhaust Gas Recirculation) system:

System of recovering a portion of the exhaust gas after combustion in an internal combustion engine, circulated again into the intake side to reduce nitrogen oxide (NOx) in the exhaust gas and improve fuel efficiency.

(*2) pumping loss:

The energy loss occurs in the intake and exhaust stroke of the engine. In general, the engine has a pumping action, which sucks gas from the intake side, low pressure and pushes gas to the exhaust side, high pressure. Energy loss occurs during this action, and this loss increases as the intake negative pressure is low. As a means to suppress this loss, Exhaust Gas Recirculation (EGR) system is effective and the use of the intake oxygen sensor is able to optimize the EGR control.

Product Features

- Compact package integrated with connector

Assuming the installation on the intake side, we have achieved a remarkably compact body and reduced the weight by approximately 35% compared with the conventional "exhaust oxygen sensor". Specifically, we have integrated the sensor body and the connector to the vehicle for connection to create a compact shape and shorten the height of the protrusion, protecting pedestrian safety in a vehicle collision event, and improving the options of installation location.

Application and Utilization of "Conventional Exhaust Oxygen Sensors" Technology

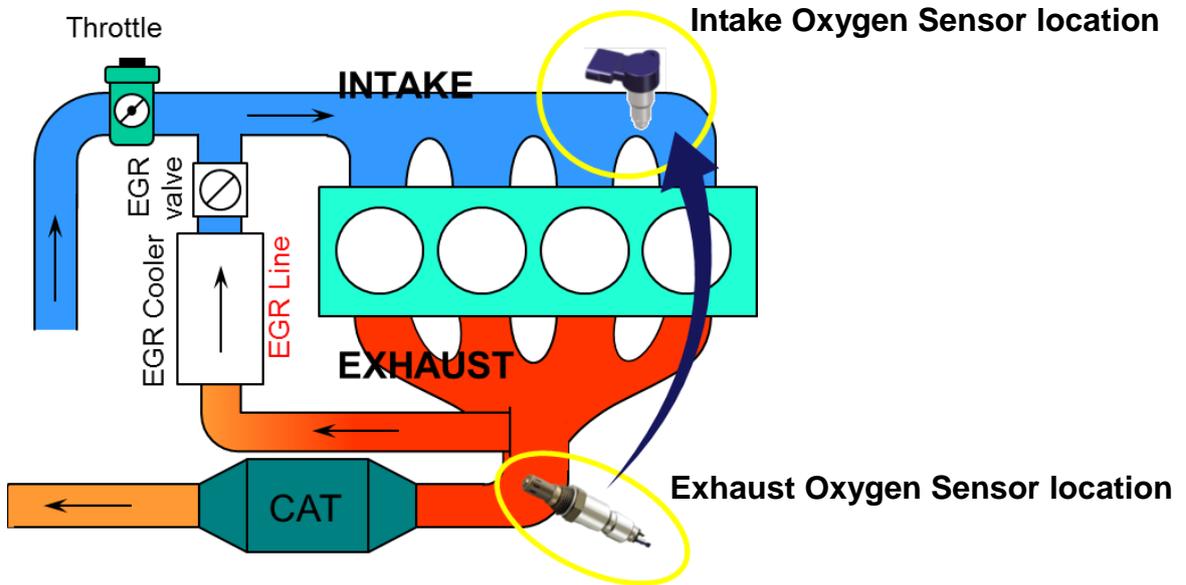
In the "ceramic element", a sensing part of the intake oxygen sensor, we use our technology from "exhaust oxygen sensors" extensively used in many automotive sensors. In addition to developing a high accuracy, long life and high reliability element, we are able to offer the same full technical support and production facilities as the exhaust oxygen sensors, by sharing our production facilities, evaluation equipment, core technologies etc.

The Future Development

The intake oxygen sensor target is to apply to both gasoline and diesel engines with EGR systems. We expect market expansion in developed countries including the North America, Europe and Japan, where growth of the EGR system is expected. In addition to the features and qualities of the product, we aim to expand deployment in the future by improving the price competitiveness.

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Example of the Intake Oxygen Sensor installation



Appearance of the Intake Oxygen Sensor



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■About NGK SPARK PLUG CO., LTD.

NGK SPARK PLUG CO., LTD., headquartered in Nagoya, Japan, is a comprehensive ceramics processing manufacturer. We hold a world leading share of spark plugs and automotive sensors for internal combustion engines, and also offer a broad lineup of packages, cutting tools, bio ceramics and industrial ceramics. Our global network of sales and manufacturing organizations, and over 12,000 employees deliver creating values to the world. We are now pursuing to contribute the growth of a sustainable society by developing products related to the environment energy and next generation vehicles and medical field. In the future, with the aim of "manufacturing only-one and number-one products", we strive to challenge and change continuously.

For more information, please visit our website:

<http://www.ngkntk.co.jp/english/index.html>

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