Gasoline Engine Management System

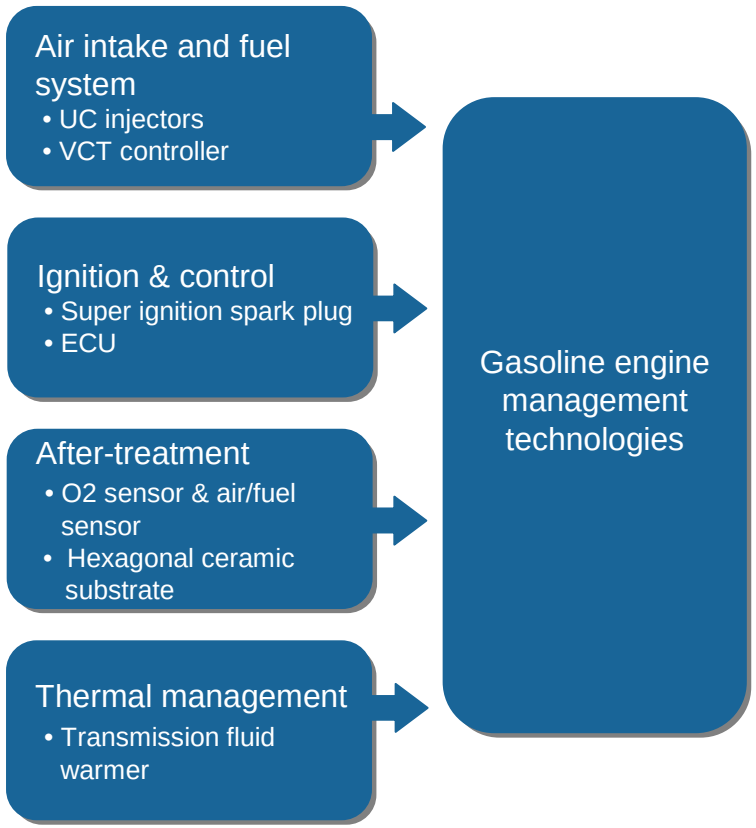
TECHNOLOGY

A system for low fuel consumption, low emissions, and high torque

TECHNOLOGY
Gasoline Engine Management Technology

Gasoline Engine Management Technology consists of UC injectors, which produce ultrafine mist fuel injection to limit hydrocarbon production at startup; intake air timing adjustment; variable cam timing (VCT) which reduces fuel consumption and NOx production; super ignition spark plugs with improved ignitability; 02 sensors and air/fuel sensors which optimize the fuel-air ratio and maximize catalytic performance; a hexagonal ceramic substrate for high conversion efficient catalyst; a transmission-fluid warmer which speeds the transmission's warmup time and improves fuel efficiency directly after startup, and an ECU that provides integrated control over all these elements.

The Gasoline Engine Management System boosts fuel efficiency by 18% overall, and complies with the J-ULEV standard for ultra-low emissions vehicles set forth by Japan's Environment Ministry.



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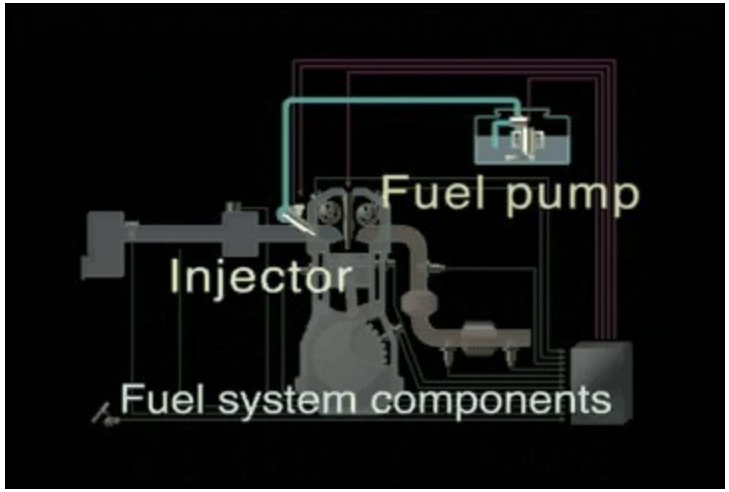
TECHNOLOGY 1 UC Injectors

Injectors that produce smaller droplets, precise fuel-flow control, and a fine-tuned fuel/air mixture all work together to limit hydrocarbon production when the car is first turned on and is warming up. The UC injector nozzles have a fan-shaped taper that produce droplets with an average size of 50 microns, the smallest in the world and a leap forward from the 65-micron size that earlier nozzles produce.



TECHNOLOGY 2 VCT Controller

The variable cam timing controller alters the timing of the air-intake valve opening and closing, and works in tandem with the internal EGR control valve to minimize NOx production and raise fuel efficiency. It works by continuously varying the phase of the intake valve.

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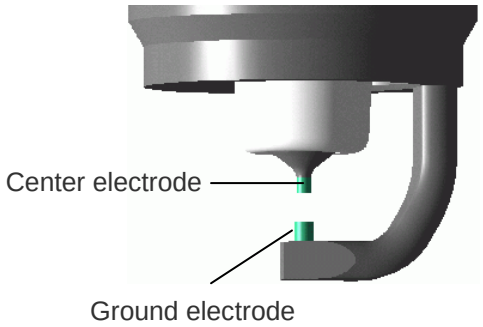
TECHNOLOGY 3 Super Ignition Spark Plug

By using a special alloy, both center and ground electrodes, much smaller in diameter than conventional, have improved ignitability and achieved better fuel economy.

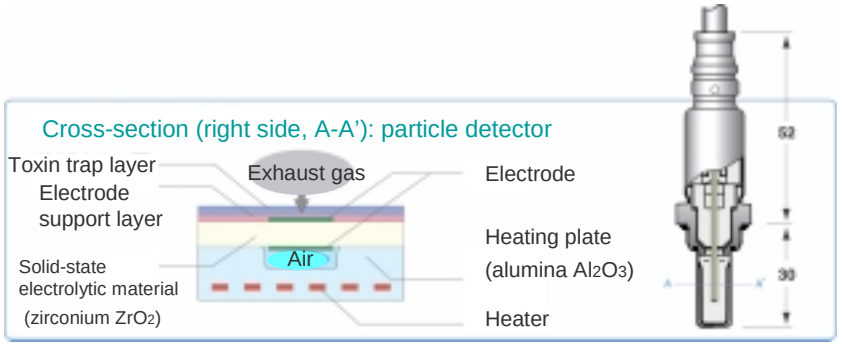


TECHNOLOGY 4 ECU

The engine control unit coordinates the operation of all the various parts of the gasoline engine management system using precisely tuned control algorithms that result in maximum performance from the system.

TECHNOLOGY 5 O_2 Sensor & Air/Fuel Sensor

These work together to hold the air/fuel mixture at its theoretical idea (14.6%) and minimize NOx production. The O_2 sensor makes a binary determination of whether the mixture is lean or rich; the air/fuel sensor, much faster acting than typical models, responsively takes continuously variable readings of the mixture ratio.



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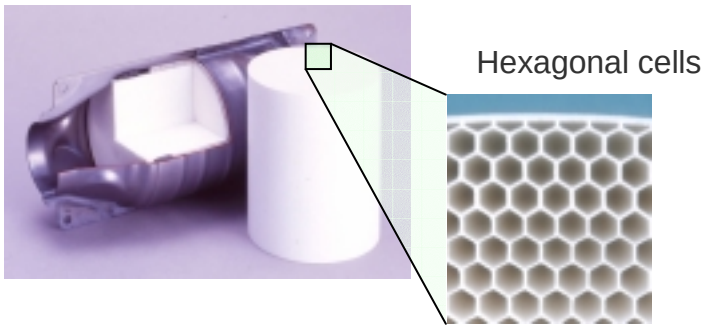
TECHNOLOGY 6
Hexagonal Ceramic Substrate

DENSO has designed a new hexagonal cell with thinner walls, which gives quick warm up and low pressure drop.

Hexagonal ceramic substrate



TECHNOLOGY 7 Transmission Fluid Warmer

The transmission fluid warmer shortens the warm-up period for the automatic transmission and helps it work more efficiently immediately after startup. Cold transmission fluid is relatively viscous and is a cause of poor fuel efficiency. The warmer reduces the viscosity problem and contributes 1.5–2% to fuel efficiency.