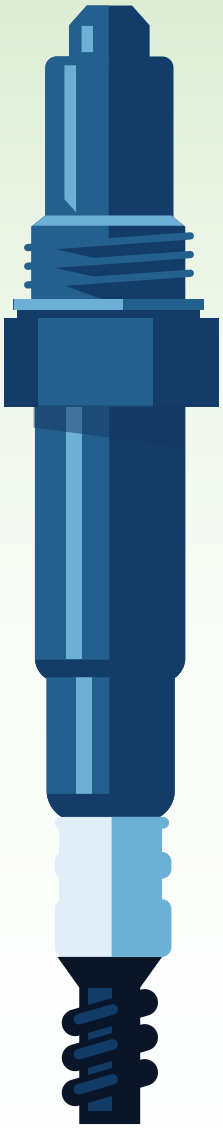
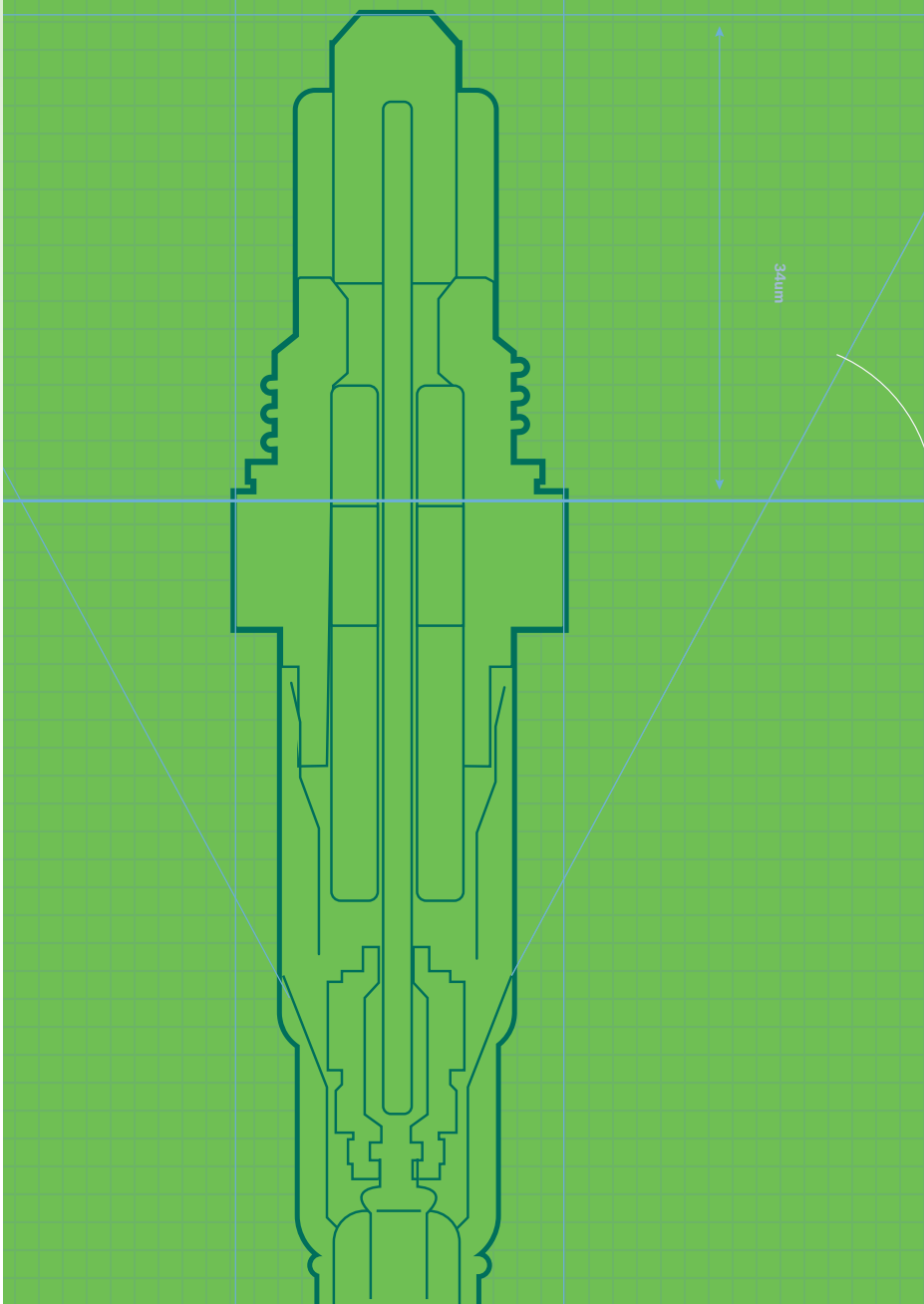
BOSCH
Invented for life

Oxygen Sensors from Bosch

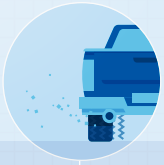
Aftermarket Leader for Over a Decade



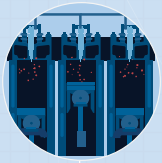


Oxygen Sensors from Bosch

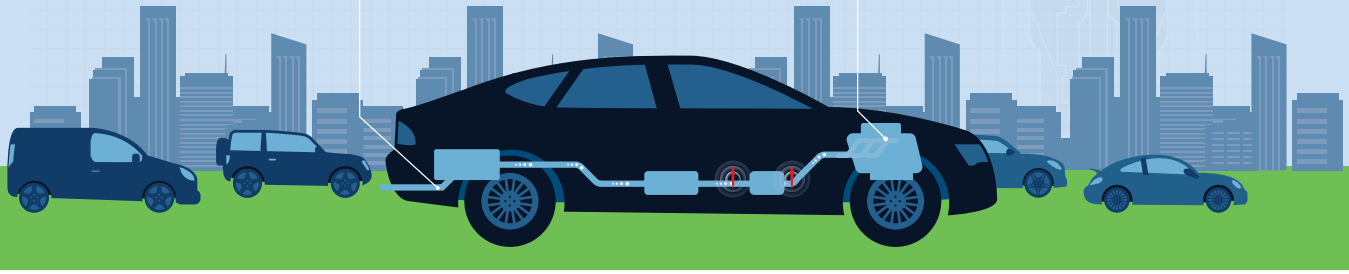
Oxygen (O2) sensors are critically important for your vehicle.



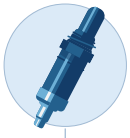
They help reduce emissions to protect our environment.



They keep your engine running efficiently, so you save money on gas.



O2 sensors are used in vehicles all over the world. That all started with Bosch.



Bosch invented the first automotive oxygen sensor in the late 1960s.

In 1976, Volvo placed their first oxygen sensor in a production vehicle: the Volvo Lamba Sond.

Soon, O2 sensors became a globally required feature for all gasoline and most diesel engines.

1960s 1970s 1980s 1990s

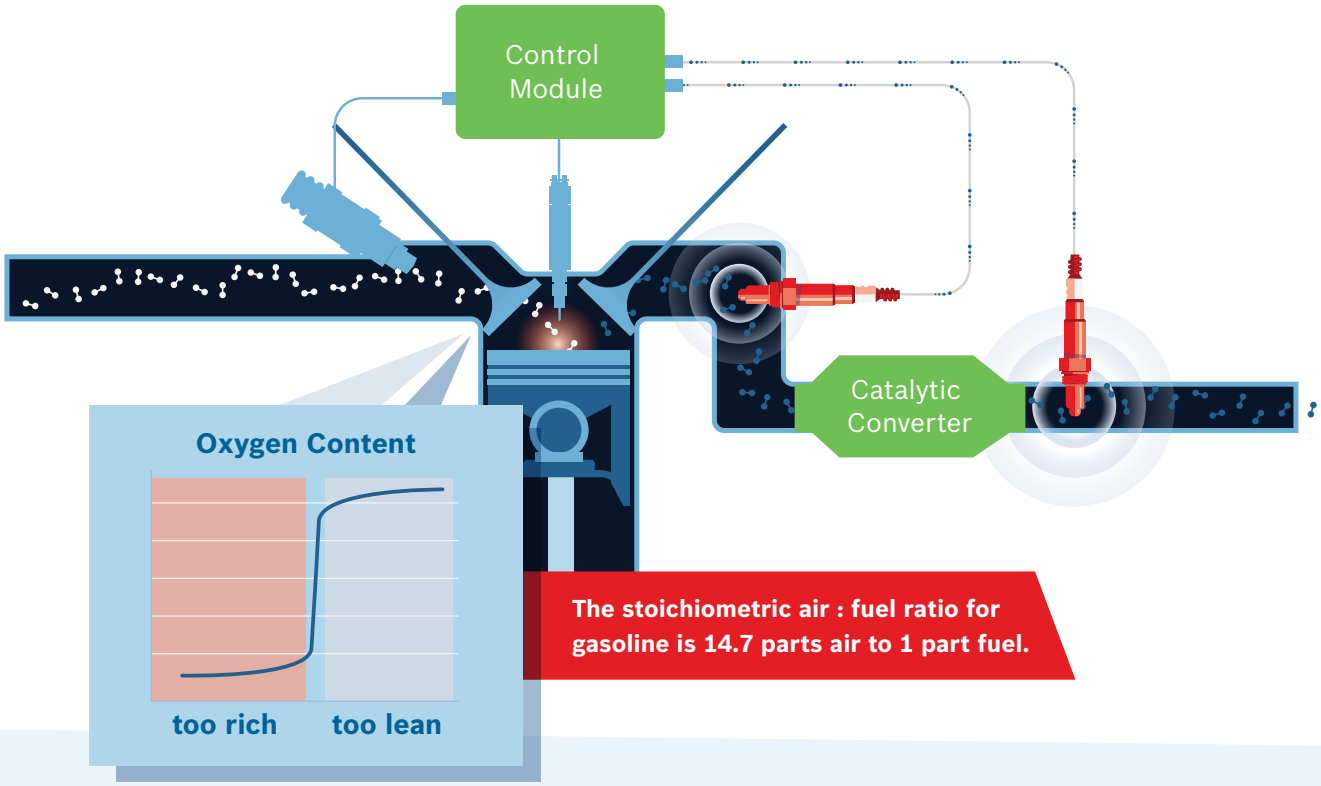
40+ Years
Oxygen sensors since 1976

Bosch has been producing oxygen sensors for more than 4 decades.

Why are oxygen sensors so important?

Oxygen sensors are the most effective way to monitor and regulate the combustion process.

They determine the oxygen content of a vehicle's exhaust gas and help the engine achieve "perfect combustion" by maintaining the ideal, or stoichiometric, air : fuel ratio.



When perfect combustion is maintained...

- Your engine runs smoothly.
- Your engine lasts longer.
- Your car is fuel efficient.
- Your engine produces far fewer harmful emissions.

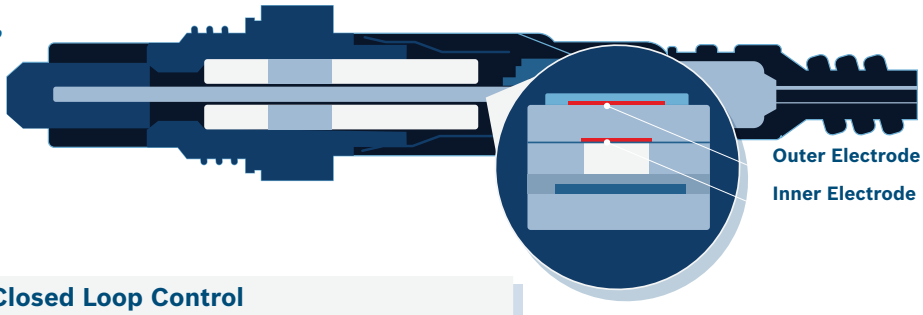
When the perfect combustion ratio is not maintained...

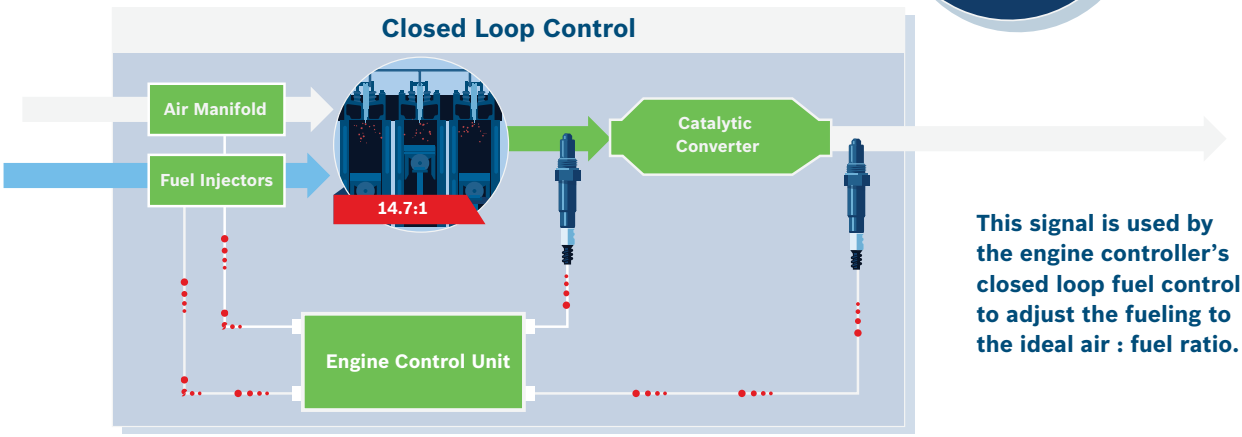
Hazardous chemical compounds can form in large amounts:

- NOx gases (greenhouse gases) (NO or NO_2)
- Carbon monoxide (CO)
- Excess hydrocarbons (which indicate low fuel efficiency)

How do Bosch O2 sensors work?

At the core of the sensor, a heated zirconia- and yttria-based ceramic element with two electrodes generates an electrical signal by transferring oxygen ions to the exhaust.

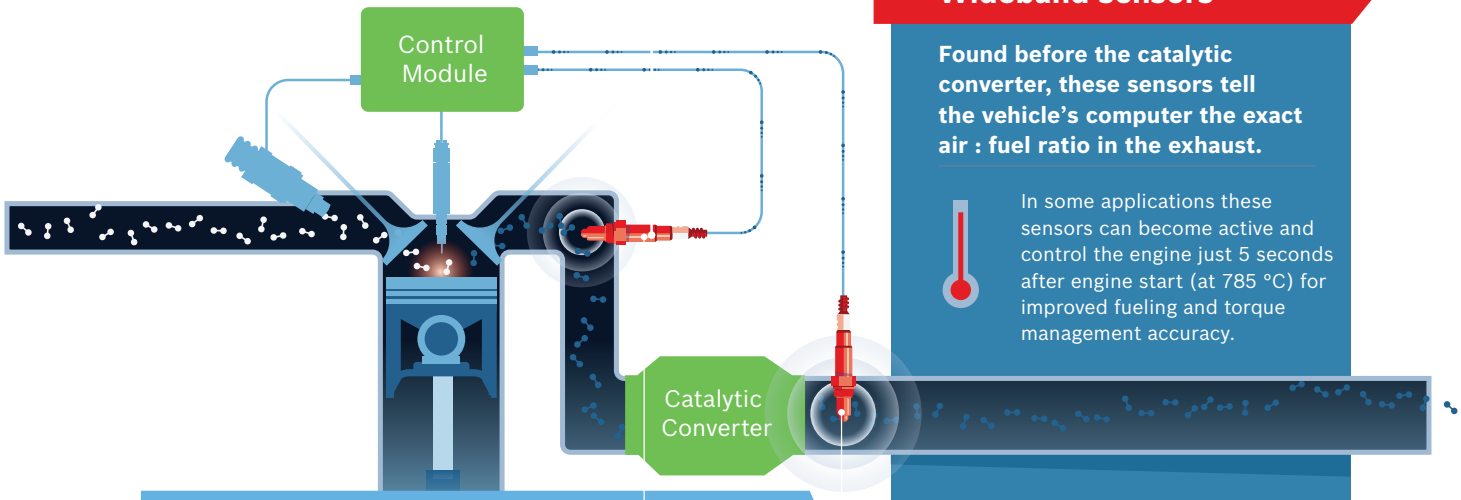




This signal is used by the engine controller's closed loop fuel control to adjust the fueling to the ideal air : fuel ratio.

Switching vs. Wideband sensors

There are two kinds of Bosch O2 sensors, and both of them are commonly found in modern vehicles.



Wideband sensors

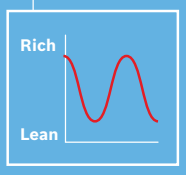
Found before the catalytic converter, these sensors tell the vehicle's computer the exact air : fuel ratio in the exhaust.

In some applications these sensors can become active and control the engine just 5 seconds after engine start (at 785 °C) for improved fueling and torque management accuracy.

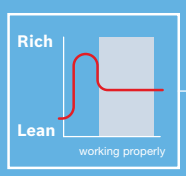
Switching sensors

Found both before and after the catalytic converter depending on the application.

When placed **before** the catalyst, they switch between rich (too much fuel, not enough oxygen) and lean (too much oxygen, not enough fuel). The Engine Control Unit uses this signal to maintain the ideal air : fuel ratio.

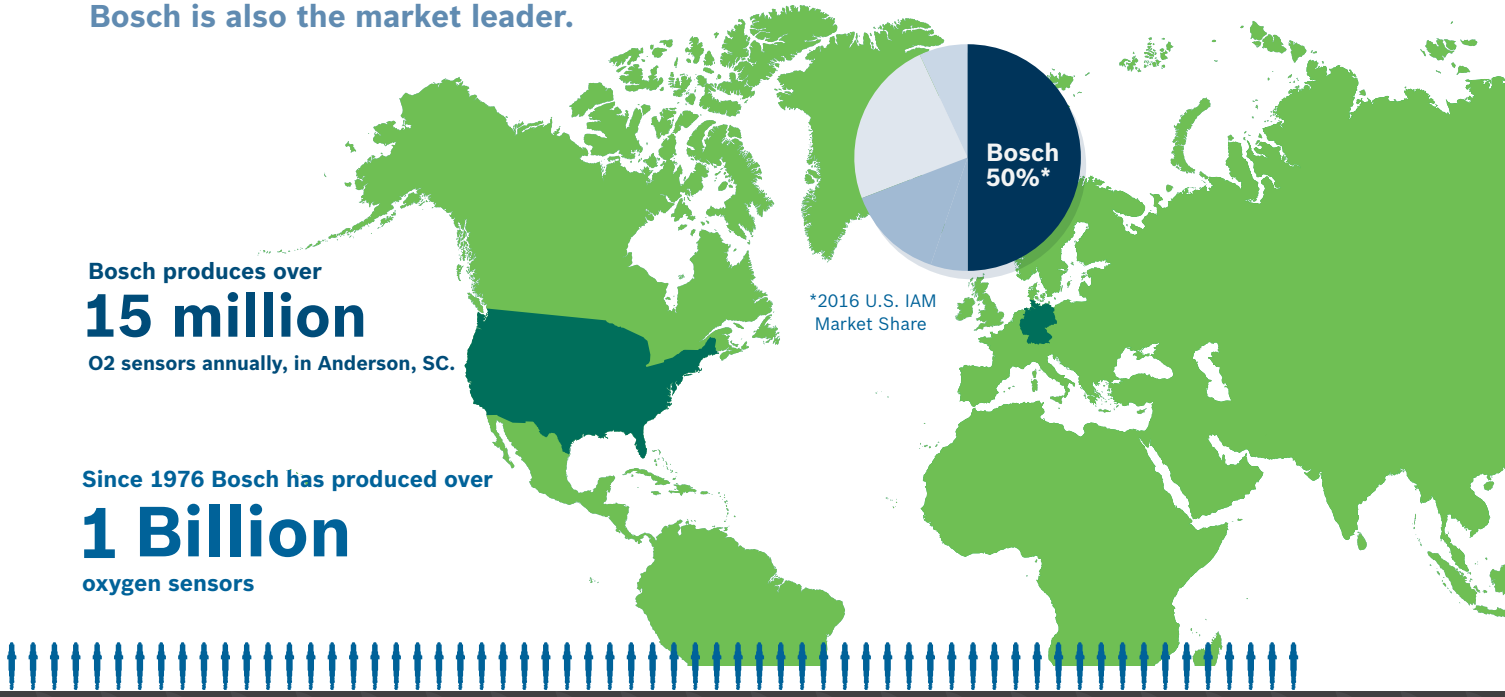


When used **after** the catalyst in the "diagnostic" position, the sensor outputs an almost flat signal, which indicates that the catalyst is working properly.



Bosch is the aftermarket leader

In addition to being the originator of this important technology, Bosch is also the market leader.



*2016 U.S. IAM Market Share

Bosch produces over

15 million

O2 sensors annually, in Anderson, SC.

Since 1976 Bosch has produced over

1 Billion

oxygen sensors

Durability

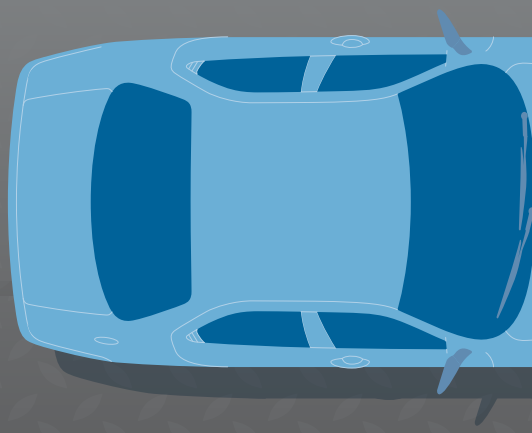
Bosch isn't just a market leader in oxygen sensor sales, but also in product durability.

Bosch O2 sensors are designed and tested to last

150,000 miles.

This is equivalent to over 6 times around the Earth.

Each new Bosch O2 sensor generation adds further improvements in poisoning resistance and water shock protection, which are the leading causes of sensor failure.



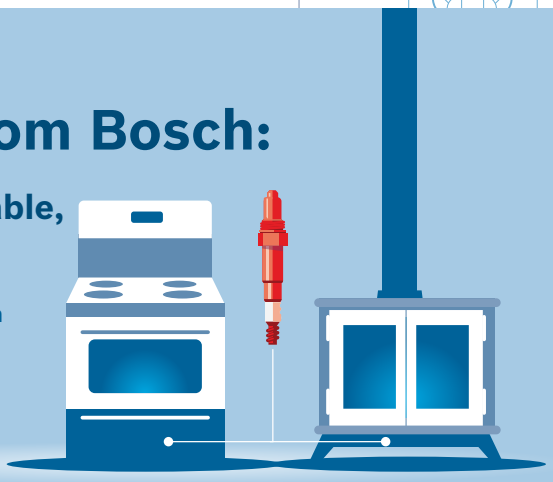
Bosch offers unique reverse-engineering capabilities...

For oxygen sensors where Bosch is not the OE supplier, the sensors are reverse-engineered and produced on exactly the same production lines as Bosch OE oxygen sensors.

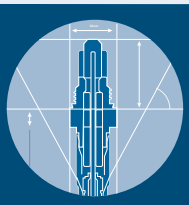
O2 sensors from Bosch:

Clean, durable, affordable, and not just for cars...

Bosch O2 sensors are also used in ovens and wood-burning stoves!



Bosch O2 sensors



American and German engineering

+

American manufacturing

=

The only O2 sensor you'll ever need.

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