Emissions Control Technology

Overview

Mercury's Emissions Control Technology ***(ECT)*** was chartered to develop sterndrive and inboard engines that comply with the California Air Resource Board ***(CARB)*** & the Environmental Protection Agency ***(EPA)*** emission requirements.

To meet these emission standards, Mercury Marine utilizes a reliable ***catalyst system***, that is comparable to the base MerCruiser performance.

Transition to Emmission Control Technology

California requires on all engines sold with a MFG date after ***January 1, 2008*** have to be ECT models.

For the 49 States, as of ***January 1, 2011***, all engines will require Emission Control Technology.

CARB Labeling

Four Stars - Super Ultra Low Emission
The Four Star label identifies engines that meet the Air Resources Board's sterndrive and inboard marine engine 2009 exhaust emission standards.

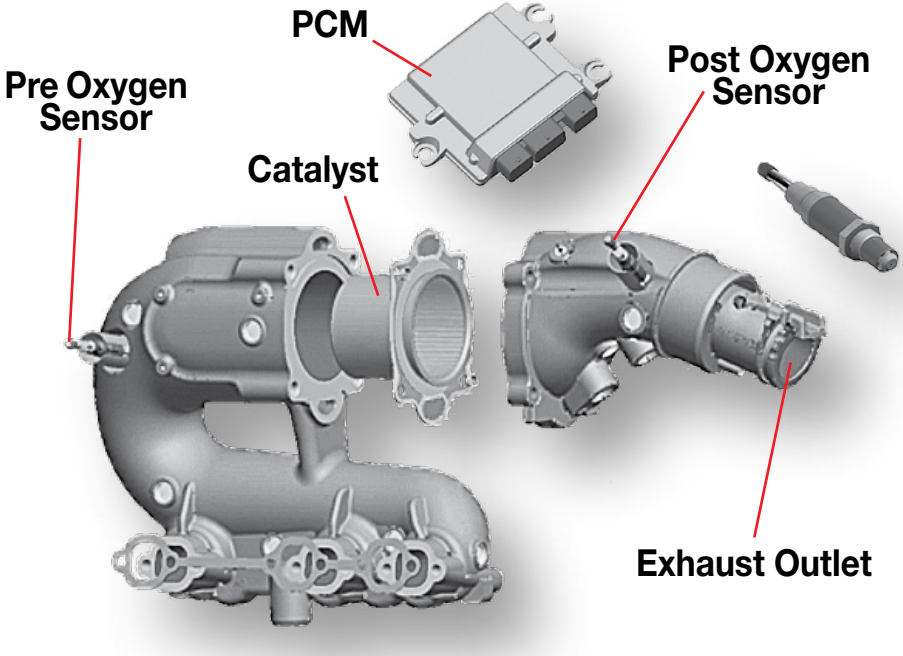
Engine Emissions Control Features:

✔ Multiport Fuel Injection. ***Precisely meters the fuel / air ratio.***

✔ Three-way catalyst ***consists of a metallic honeycomb design which is coated with Platinum, Palladium, and Rhodium, known as the wash coat.***

✔ PCM Engine Controller *(the brain of the engine).*
A closed-looped control system, This computer can increase or decrease the amount of oxygen in the exhaust by adjusting the air-to-fuel ratio.

✔ Pre & Post Oxygen Sensors *(located on exhaust manifolds).*
These sensors tells the PCM computer how much oxygen is in the exhaust.

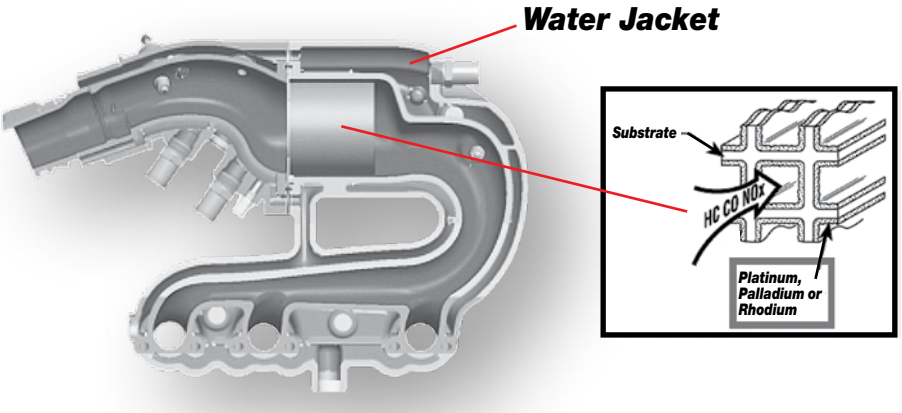


4.3 V6 Exhaust Manifold

Emissions Control Technology

MerCruiser Technical Solution

A ***Catalytic Converter*** is a device that uses a catalyst to reduce ***HC, NOx & CO*** emissions.



Mercury's Catalytic Converter has a honeycomb substrate coated with platinum, rhodium and/or palladium. This is the best design because it creates a structure that exposes the maximum surface area of catalyst to the exhaust stream, which effectively converts the harmful gas to safe gas.

Water-Jacketed Exhaust and air gap regulates the outer manifold surfaces from high temperatures generated by catalyst operation while maintaining the required catalyst operating temperature.

Catalyst & Oxygen Sensors contamination can lead to component failure!

- ✔ ***Phosphorus in some oils***
- ✔ ***Acetoxy Silicone***

Use Mercury's Full synthetic catalyst "Friendly" engine oil

MerCruiser Technical Solution

How It Works:

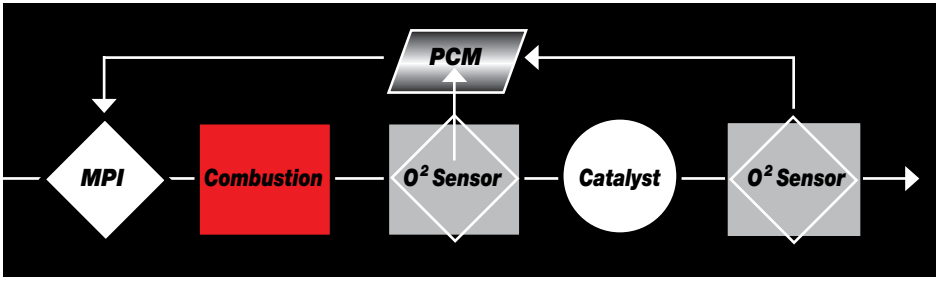
1. Fuel / air mixture enter combustion chamber from ***MPI.***

2. Combustion occurs and the hot exhaust gases exit the engine and head into exhaust manifold to the ***catalytic converter.***

3. On the way the pre-oxygen sensor measures the amount of oxygen and sends information to ***PCM***

4. Next the exhaust gases are being washed thru the honeycomb substrate coated with the ***precious metals***.

5. Now the post-oxygen sensor measures exhaust and again provides feedback to ***PCM***, which in return adjusts the Air/fuel mixture.



Mercury's ECT Benefits

✔ ***Meets today's emissions standards with 90% total reduction.***

✔ ***Moving from TKS technology to MPI, Customers will benefit from better throttle response, improved fuel economy and an increase in power.***

✔ ***ECT engines suffer no power loss. Consistence performance.***