

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-673

Relating to Exemptions under
Section 27156 of the Vehicle Code

HydroFuture, LLC
Hydro-Zilla

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That installation of the Hydro-Zilla hydrogen generator device, manufactured by HydroFuture, LLC (23309 Cohasset Street, West Hills, California 91304), has been found not to reduce the effectiveness of the applicable vehicle pollution control systems, and therefore, the Hydro-Zilla is exempt from the prohibitions in Section 27156 of the Vehicle Code for installation on all 1970-2006 model year heavy-duty diesel engines from 5.0 liters to 16.0 liters which do not have oxygen sensors or regeneration systems.

The Hydro-Zilla device consists of an 8-gallon water reservoir and a metal case containing hydrogen booster cells, various electrical components, electrical wiring and connectors, and a rubber supply hose for the hydrogen gas.

This Executive Order is based on Heavy-Duty Federal Test Procedure (FTP) Transient Cycle tests, Euro III European Stationary Cycle (ESC) test, and "Not-to-Exceed" (NTE) test conducted by HydroFuture, LLC with the Hydro-Zilla device.

If evidence provides the Air Resources Board with reasons to suspect that the Hydro-Zilla device will affect the durability of the emission control system, HydroFuture, LLC shall be required to submit durability data to show that the durability of the vehicle emission control system is not, in fact, affected and/or that the add-on or modified parts demonstrate adequate durability.

This Executive Order is valid provided that installation instructions for the Hydro-Zilla device do not recommend tuning the vehicles to specifications different from those of the vehicle manufacturer.

Changes made to the design or operating conditions of the Hydro-Zilla device, as exempt by the Air Resources Board, which adversely affect the performance of the vehicle's emission control system, shall invalidate this Executive Order.

Marketing of the Hydro-Zilla device using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

Exemption of the Hydro-Zilla device shall not be construed as exemption to sell, offer for sale, or advertise any component of the kit as an individual device.

This Executive Order shall not apply to any Hydro-Zilla device advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order does not constitute any opinion as to the effect the use of the Hydro-Zilla device may have on any warranty either expressed or implied by the vehicle manufacturer.

No claim of any kind, such as "Approved by the Air Resources Board," may be made with respect to the action taken herein in any advertising or other oral or written communication.

In addition to the foregoing, the Air Resources Board reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of California Code of Regulations, Title 13, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF HYDROFUTURE, LLC'S HYDRO-ZILLA DEVICE.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order. The Executive Order may be revoked only after a ten day written notice of intention to revoke the Executive Order, in which period the holder of the Executive Order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request, and the Executive Order may not be revoked until a determination is made after the hearing that grounds for revocation exist.

Executed at El Monte, California, this 15 day of April 2010.


Annette Hebert, Chief
Mobile Source Operations Division

EVALUATION SUMMARY

Manufacturer Name: HydroFuture, LLC

Name of Device: Hydro-Zilla

Background:

HydroFuture, LLC of 23309 Cohasset Street, West Hills, California 91304 has applied for exemption from the prohibitions in Section 27156 of the California Vehicle Code for its Hydro-Zilla device. The device is designed for use on all 1970-2006 model year (MY) heavy-duty diesel engines between 5.0 liters and 16.0 liters which do not have oxygen sensors or regeneration systems.

Recommendation:

Grant exemption to HydroFuture, LLC as requested and issue Executive Order D-673.

Device Description:

The Hydro-Zilla device produces hydrogen through an electrolysis process by supplying electricity from the vehicle's battery to stainless steel metal plates submerged in reservoirs containing pre-conditioned water and an activator (sodium hydroxide). The device consists of an 8-gallon water reservoir and a metal case containing hydrogen booster cells (which contain the stainless steel anode, cathode, and neutral metal plates), various electrical components, electrical wiring and connectors, and a rubber supply hose for the hydrogen gas.

Discussion/Basis for the Recommendation:

This exemption is based on the following emission tests conducted on two heavy-duty diesel engines with HydroFuture, LLC's Hydro-Zilla device installed:

1. FTP transient cycle test on a 1991 MY Detroit Diesel Series 60 / 12.7 liter diesel engine.
2. FTP transient cycle, Euro III ESC 13-mode steady-state, and NTE tests on a 2000 MY Cummins ISM 10.8 liter diesel engine.

The emission test results are shown below:

Hot-Start FTP Transient Cycle Emission Test
1991 MY Detroit Diesel Series 60 / 12.7 liter Diesel Engine
Engine Family MDD12.7FZAX

	FTP Transient Cycle Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
FTP Emission Standards	1.3	15.5	5.0	0.25
Baseline Emission Test Results	1.957	5.593	3.842	0.314
Test Results w/Hydro-Zilla Installed	1.540	4.837	3.818	0.319

**Hot-Start FTP Transient Cycle Emission Test
2000 MY Cummins ISM 10.8 liter Diesel Engine
Engine Family YCEHX0661MAI**

	FTP Transient Cycle Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
FTP Emission Standards	1.3	15.5	4.0	0.10
Baseline Emission Test Results	0.220	1.213	3.477	0.073
Two Test Average w/Hydro-Zilla Installed	0.202	1.138	3.476	0.073

**Euro III ESC 13-Mode Steady-State Emission Test
2000 MY Cummins ISM 10.8 liter Diesel Engine
Engine Family YCEHX0661MAI**

	Euro III ESC Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
Euro III Emission Standards	1.3	15.5	6.0	0.10
Baseline Emission Test Results	-	-	-	-
Test Results w/Hydro-Zilla Installed	0.19	0.41	5.42	0.059

**Not-to-Exceed (NTE) Test Cycle Condition
Condition: Engine Speed - 1400 RPM / 1000 lb-ft Torque / 266 HP
2000 MY Cummins ISM 10.8 liter Diesel Engine
Engine Family YCEHX0661MAI**

	NTE Emissions (grams/bhp-hr)			
	HC	CO	NOx	PM
NTE Emission Standards	-	-	7.0	-
Baseline Emission Test Results	-	-	-	-
Test Results w/Hydro-Zilla Installed	-	-	5.57	-

1. Testing laboratory – Olson-EcoLogic Engine Testing Laboratories in Fullerton, California

All comparative exhaust emission test results for FTP transient cycle testing on the 1991 Detroit Diesel Series 60 engine modified with the Hydro-Zilla device did not cause emissions to exceed baseline by more than the allowed limits of 10 percent for HC and NOx and 15 percent on CO and PM. All exhaust emission test results for FTP transient cycle testing, EURO III ESC emission testing, and NTE emission testing on the 2000 Cummins ISM engine modified with the Hydro-Zilla device showed that the modified engine met the exhaust emission standards. Similar results are expected when HydroFuture, LLC's Hydro-Zilla device is used on the 1970-2006 model year heavy-duty diesel engines stated in this application.