

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER D-634

Relating to Exemptions under  
Section 27156 of the Vehicle Code

H2XOP, Inc.  
Hydrogen Injection Device

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 Hydrogen Injection Device, manufactured by H2XOP, Inc. (17211 Valley View Ave., Cerritos, California 90703), has been found not to reduce the effectiveness of the applicable vehicle pollution control systems, and therefore, the Hydrogen Injection Device (HES 210) is exempt from the prohibitions in Section 27156 of the Vehicle Code for installation on 1984-2004 model year Caterpillar, Cummins, Detroit Diesel, and International heavy-duty diesel engines from 7.2 liters to 16.2 liters.

The HES 210 device consists of a metal case containing a 3-gallon ABS water reservoir, 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 H2XOP, Inc. with the HES 210 device.

If evidence provides the Air Resources Board with reasons to suspect that the HES 210 device will affect the durability of the emission control system, H2XOP 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 HES 210 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 HES 210 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 HES 210 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 HES 210 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 HES 210 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 HES 210 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 H2XOP, INC.'S HES 210 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 27 day of March 2008.



Annette Hebert, Chief  
Mobile Source Operations Division

## EVALUATION SUMMARY

Manufacturer Name: H2XOP, Inc.

Name of Device: Hydrogen Generator Device (HES 210)

Background:

H2XOP, Inc. of 17211 Valley View Ave., Cerritos, California 90703 has applied for exemption from the prohibitions in Section 27156 of the California Vehicle Code for its HES 210 device. The device are designed for use on 1984-2004 model year (MY) Caterpillar, Cummins, Detroit Diesel, and International heavy-duty diesel engines between 7.2 liters and 16.2 liters.

Recommendation:

Grant exemption to H2XOP as requested and issue Executive Order D-634.

Device Description:

The HES 210 device produces hydrogen through an electrolysis process by supplying electricity from the vehicle's battery to stainless steel metal plates submerged in a reservoir containing distilled water and an activator (potassium hydroxide). The device consists of a metal case containing a 3-gallon ABS water reservoir (which contains the metal plates), a solid-state solenoid and circuit breaker, 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 H2XOP's HES 210 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	0.068	1.928	5.142	0.283
Test Results w/HES 210 Installed	0.088	1.913	5.106	0.269

**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	0.194	1.211	4.986	0.134
Test Results w/HES 210 Installed	0.197	1.180	4.983	0.105