SEMTECH GLOBAL NEWS innovation built on experience



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Sensors, Inc.

The New Era of Clean Trucks

Analyzing the EPA's Phase 3 Greenhouse Gas Emission Standards for Heavy-Duty Vehicles

by Dr. Yusuf Khan

Cummins Inc. Technical Advisor - Global Emissions Testing & Regulatory Affairs

The United States Environmental Protection Agency (EPA) recently announced Phase 3 Greenhouse Gas (GHG) emission standards for heavy-duty vehicles (HDVs). This landmark regulation marks a significant step towards reducing the nation's carbon footprint and fostering a cleaner transportation sector. However, the implementation of these standards raises various

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concerns and necessitates careful consideration of their impact on the trucking industry, consumers, and the environment.

The Phase 3 standards, set to take effect in 2027, aim to achieve a 29% (below 2021 levels) reduction in GHG emissions from HDVs by 2032. These stringent regulations encompass a wide range of technologies, including engine and drive train improvements, aerodynamic enhancements, and advanced technologies such as hybrid and electric trucks. Notably, the EPA mandates that at least 25% of new Class 8 tractors (the largest category of heavy-duty trucks) sold in 2032 must be zero-emission vehicles.

The potential benefits of these regulations are substantial. The reduced GHG emissions will contribute significantly to mitigating climate change, improving air quality, and achieving the nation's ambitious environmental goals. Moreover, the shift towards zero-emission vehicles promises a cleaner and quieter transportation future. The advancements in fuel efficiency and technology are expected to reduce operating costs for truck owners, while the increased use of renewable energy sources contributes to energy security and reduces reliance on fossil fuels.

However, the implementation of Phase 3 standards also presents challenges. The trucking industry faces significant

hurdles in transitioning to zero-emission vehicles, including infrastructure limitations, the high upfront cost of electric trucks, and the limited availability of charging stations. Additionally, concerns exist about the impact on driver jobs and the potential for increased costs for consumers as manufacturers pass on the costs of compliance to end-users.

To mitigate these challenges, the EPA has announced financial assistance programs for truck manufacturers and operators. These programs will support the development and adoption of zero-emission technologies, helping to bridge the gap between current infrastructure and the needs of the transitioning industry. Furthermore, collaborative efforts between government agencies, industry stakeholders, and research institutions are crucial to ensure a smooth transition and mitigate potential risks.

Ultimately, the success of the Phase 3 GHG emission standards for HDVs hinges on a collaborative approach. While the initial challenges are undeniable, the potential environmental, economic, and societal benefits are immense. By fostering innovation, supporting industry adaptation, and ensuring a just transition, the US can pave the way for a cleaner, more sustainable future of transportation.

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SEMTECH® NH3 Module

Ammonia Measurement

Sensors has released a NH3 module as part of our SEMTECH[®] DS+ family of portable emissions measurement systems (PEMS). The NH3 module is available as a standalone module or as part of a PEMS package. Customers with a SEMTECH[®] PEMS may use it seamlessly. Customers who wish to only measure NH3 may opt for the standalone version.

The new module measures NH3 concentration in raw exhaust from gasoline or diesel vehicles or non-road equipment using tunable diode laser (TDL) spectroscopy. In order to prevent loss of NH3, the sample is measured "wet" (without removing any of the water vapor from the exhaust) with a heated line and sampling system.

A special heated filter and drain system protects from accidental liquid contamination in the TDL bench, which is always a risk when performing cold start testing.





Learn more about the NH3 module on the Sensors website.

SEMTECH® End of Line Cart



Sensors' fully refreshed design of our next generation Vehicle Mass Analysis System is a complete exhaust measurement system built upon our SEMTECH[®] PEMS technology with greater accuracy and reliability than the first generation from more than a decade ago. This full refresh is housed in a ruggedized roll-around cart for ease of use on the production floor (as an End of Line cart) or in an aftermarket performance (tuning) garage, repair shop, or I&M workshop. Nicknamed VMAS 2.0, our new cart simultaneously measures raw concentrations, diluted exhaust flow and dilution ratio, and performs the required calculations to generate mass emissions rates and cumulative mass of CO, CO2, NO, NO2, and HC (as hexane) on a second-by-second basis.

Learn more about the **SEMTECH**[®] End Of Line cart on the <u>Sensors website</u>.



Watch the End of Line Cart video

From Bob Morreale, President of The Tuning School – a long-time customer of Sensors notes, "The system is robust, reliable and the support from Sensors has been outstanding..."

"The equipment is well built with high accuracy and repeatability, providing us with the ability to perform testing at a level we could not accomplish otherwise. We highly recommend Sensors Inc., and the VMAS EOL system."

The SEMTECH HI-FLOW 2 and OOOOb Regulations

EPA NSPS Subpart OOOOb Rule

On March 8, 2024, The EPA published the final rule that will sharply reduce methane emissions and other pollutants from oil and gas operations. This final rule became effective on May 7, 2024. The regulations apply to wells and facilities that were constructed after December 6, 2022.

Sensors OOOOb Factsheet

We have prepared a fact sheet explaining how the HI-FLOW 2 is the right measurement system for detecting fugitive methane with respect to OOOOb regulations. <u>Download the fact sheet from our website.</u>



HI-FLOW 2 Host Software and OOOOb

The HI-FLOW 2 host software has been updated to include the ability automate the data collection and report generation compliant with OOOOb requirements. This software automation greatly simplifies the tasks for the user, which would otherwise require numerous data recordings and data averaging. This version also automates

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the bi-annual calibration audits required for OOOOb and generates corresponding reports. The reports are stored on the HI-FLOW 2 for later retrieval whenever necessary. All OOOOb requirements for high flow sampling are easy to fulfill with the current HI-FLOW 2 host software.

In addition to testing reports, daily calibration and bi-annual calibration is required.



Request the OOOOb White Paper

Sensors recently published a white paper by David Booker, PhD., Sensors' Chief Technology Officer. This paper offers an explanation of how to meet the new NSPS' OOOOb rule for effectively quantifying Fugitive Methane entitled <u>"Quantification of Fugitive Methane Emissions under the</u> <u>auspices of the new EPA NSPS Subpart OOOOb Rule, the</u> <u>use of high-volume samplers – equipment selection and user</u> <u>recommendations". Request the paper on our website.</u>

Learn more about the SEMTECH HI-FLOW 2 and its capabilities for methane emissions monitoring on the Sensors website.

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Product News

New Features in HI-FLOW 2 Host Software

Click here to register your HI-FLOW 2 for the latest software features.

New features have been added for data management

- Tag assets to location (geofencing)
- New architecture to facilitate testing automation (scripts). For example: ACR Winrock and OOOOb



Are you sure your HI-FLOW 2 is running the latest software? Check the bottom of the menu on the left side of the host software. The current version is 3.4.0.

<u>v3.4.0 (client) - v3.4.0 (API)</u> Copyright © 2024 <u>Sensors, Inc.</u>

HI-FLOW 2 Calibration Kit

Audit checks and calibrations of the HI-FLOW 2 are straightforward; the accessory kit and gas bottle/ regulator combination make it a "walk in the park". This kit contains a flow meter to measure gas overflow, three tubing assemblies and an adapter fitting to use on the recommended gas bottle and regulator. Contact Sensors or your local supplier.



Image: Second second

Graphs

<u>Contact us to register your equipment for future upgrades.</u> To check your latest software status, contact our customer service team by phone at +1 734-429-2100.

CH4 Final Concentration

Sensors recommends using the following compact bottle of gas and regulator with the HI-FLOW 2 calibration kit.



GASCO-2.5 Calibration Gas 50% LEL Methane (2.5% Volume) Balance Air 103 Liter Cylinder C-10 Connection, vendor part number 103L-135A-2.5, available from the <u>Cal Gas Direct website</u>.

GASCO 70-Series Calibration Gas Regulator Fixed 4.0 LPM C-10 Connection, vendor part number 70-4.0, available from the <u>Cal Gas</u> <u>Direct website</u>. The tubing shown is included with the regulator.

Distributor Corner

Montrose Environmental's *Insight Blog* highlights the HI-FLOW 2. In <u>"HI-FLOW 2 – Meeting &</u> <u>Exceeding the High-Volume Sampler Demands</u> of OOOOb", David Booker, PhD. explains how the HI-FLOW 2 meets and exceeds OOOOb demands for high-volume samplers.



HI-FLOW 2 – Meeting & Exceeding the High-Volume Sampler Demands of OOOOb June 19, 2024 By: David Booker, CTO, Sensors Inc.

In the blog, Dr. Booker, Sensors' CTO writes, "The HI-FLOW 2 offers a best-in-class dynamic range of 0.0005 to 25 CFM. This is a very large dynamic range that encompasses the expected range of sampled flow rates and concentrations."

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Sensors on the Move 🕤

Sensors regularly participates in many emissions measurement community activities. From hosting an annual conference that attracts both worldwide regulatory agencies and engine manufacturers to participating in trade shows, there is a wide array of opportunities to meet our team. Look for our products and people.

Automotive

Automotive Testing Expo China August 28 - 30, 2024 Shanghai, China

Automechanika September 10 - 14, 2024 Frankfurt, Germany

Automotive Testing Expo North America October 22 - 24, 2024 Novi, Michigan, USA

Fugitive Methane

CH4 Connections October 15 - 16, 2024 Fort Collins, Colorado, USA

American Public Gas Association Annual Conference July 28 - 31, 2024 Grand Traverse Resort and Spa Acme, Michigan USA

Shale Insight[®] 2024 Conference September 24 - 26, 2024 Erie, Pennsylvania, USA

Join Our Team

We are seeking a dynamic and results-driven Sales Manager for our Americas region. The ideal candidate will be responsible for selling and the execution of sales strategies to achieve set sales targets that align with our overall sales growth while ensuring high levels of customer satisfaction.

This is an on-site position based in our Ann Arbor, Michigan area headquarters. Ability to travel within the Americas is required.

Sensors offers a competitive salary, an excellent benefit package and the opportunity to grow.

Find out more at https://sensors-inc.com/About/Careers.

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Sensors, Inc. was founded in 1969 in the backyard of the University of Michigan and has gone on to become an innovative leader in the supply of gas analysis and particle measurement instrumentation.





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