Message

From: Brad Edgar [brad.edgar@44energytech.com]
Sent: 11/17/2017 7:47:39 PM
To: Bunker, Byron [bunker.byron@epa.gov]
Subject: Touching Base
Attachments: PastedGraphic-1.tiff

Byron:

My apologies for the long silence. Our client asked us to shut down communication for a little while.

We are continuing to perform testing on a variety of diesel engines and I want to bring a finding and a question to your attention.

This is related to emissions on hills, which I believe you mentioned was of interest to you, and a challenge for your own testing given the topology of the Ann Arbor area.

In our PEMS testing of diesels we are noticing almost a step function increase in NOx once the vehicles starts running up a grade of 3% or more. We suspect the EGR valve is turning way down or even closed.

As we thought about this a little more we decided to look at the NOx emissions mapped onto torque(engine load) and speed. What we find is that once the engine is out of the speed/load range of the FTP75 and the HWFET cycles, the NOx goes up by a factor of 10 to 30. We are thinking that unlike the heavy-duty engine dyno test protocols which cover a much broader range of speed and load, along with NTE and other checks, it might be possible to come up with a strategy that offers emissions within the standards while in the 'zone' of test conditions, while increasing them substantially while outside the zone.

The question is how this strategy would be viewed by EPA in terms of being a defeat device? We are aware AECD's could be disclosed based on the need to protect the engine, but I would think revealing the emissions impact would raise eyebrows.

We are happy to provide data and more information as needed.

Thanks,

Brad

Bradley L. Edgar
CEO
44 Energy Technologies | **www.energytech.com**

+1 510-789-9917 direct
+1 510-338-3243 office and facsimile

4055 Linden Street
Oakland, CA 94608

Energy
Technologies