

CAN WE ACCURATELY MEASURE IN-USE EMISSIONS FROM HEAVY-DUTY DIESEL ENGINES?



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Summary

- A research study was conducted to determine the measurement accuracy for gaseous emissions of Portable Emissions Measurement Systems (PEMS)
- The primary goal was to investigate the Transient Behavior, Repeatability, and Agreement with a Certified Engine Test Cell of two different PEMS.
 - Commercially available PEMS
 - Research grade PEMS
- It was concluded that the measurement of in-use emissions (even pre-2007) demands:
 - An “acceptably broad” measurement allowance
 - A very strict QA/QC protocol, which includes a regularly scheduled comparison with a heavy-duty engine FTP test cell.
 - Measurement errors with PEMS-1 were observed to span the following ranges (mass emissions):
 - NO_x: 16% - 23%, CO₂: 8% - 15%, CO: 20% - 36%, THC: 20% - 80%
 - Exhaust Flowrate: 2% - 8%
 - NTE region error was lower
- To complete this study a PEMS vs. Raw laboratory measurement comparison will be conducted