MEMP USA
MOBILE EMISSIONS & MAINTENANCE PRODUCTS

ECO SYSTEM
Inline Fuel Device (IFD) · U.S. patented · CARB Executive Orders

Fuel Economy & Emissions Test Protocol: Diesel Vehicles

How we measure the ECO System on your diesel trucks and buses, before and after installation

This protocol gives your fleet a fair, repeatable way to measure the change in fuel economy and emissions from the ECO System Inline Fuel Device (IFD) on your own diesel vehicles. It uses a consistent odometer-and-fill-up method for fuel economy, and the standard test period is **30 days**.

STEP 1	STEP 2	STEP 3
Prepare	**Measure baseline**	**Install and re-test**
Select vehicles, record details and send engine photos.	Fuel records or road test, plus emissions readings.	MEMP installs ECO, re-measures and reports.

1. Before installation

1. Select the test vehicle(s) and record their details on the **Vehicle Profile & Installation Form**. Note any condition or access issue that could affect installation or results.
2. Establish each vehicle's baseline fuel economy (Section 2) and take **three high-resolution photos** of its engine compartment showing the fuel filters and fuel lines.
3. Email the form and photos to **kevink@mempusa.com**. MEMP confirms the installation plan and parts needed within **24 hours**, and we agree on installation and road test dates.

2. Baseline fuel economy

Option A: Historical fuel records (preferred)

Provide at least **2 months** of fuel and mileage records for each test vehicle (fuel-card or telematics data) and attach them to the Vehicle Profile form.

Option B: Controlled road test

If records are not available, run the test below and record it on the **Road Test Form**.

1. Fill the tank at a chosen station and pump. After the automatic shut-off, add three more clicks. Record the odometer, reset the trip meter and note the test conditions (weather, temperature, tire pressure, load) on the form.
2. Drive at least **120 miles** of freeway at a steady **65 mph**. Note the distance from the station to the freeway.
3. Return to the same station and pump and refill the same way. Record gallons added, odometer and trip meter.
4. **MPG = miles driven ÷ gallons added.** Miles driven = ending odometer − starting odometer (check against the trip meter).

3. Installation and post-install test

1. Measure baseline exhaust emissions (HC, CO, CO_2, NOx) with a **5-gas analyzer** and record them on the Vehicle Profile form. If using Option B, run the baseline road test.
2. A qualified technician approved by MEMP installs the ECO System (see the **ECO System Installation Guide**).
3. If using Option B, repeat the road test on the same route, station and pump. Measure emissions again and record the after readings.
4. Run the **14-day test period**, recording each fill-up on the Fuel Consumption Log (MEMP will show your team how). MEMP then compiles a written before-and-after report on fuel economy and emissions.

For the most reliable results: Use the same driver and route, check tire pressure before each run, keep load and idle time consistent, and avoid extreme weather. Note any DPF regenerations and DEF use.

Questions or to schedule your test: Kevin Kuykendall, MEMP, LLC · 214-886-5733 · kevink@mempusa.com

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Vehicle Profile & Installation Form

Complete one form for up to four test vehicles and send it with the engine photos to kevink@mempusa.com.

	VEHICLE 1	VEHICLE 2	VEHICLE 3	VEHICLE 4
Unit / VIN (last 6)				
Make				
Model				
Year				
Engine (size / type)				
Odometer				
Baseline MPG				

Baseline method (check one): ☐ Historical fuel records (2+ months) ☐ Road test

Emissions readings (5-gas analyzer)

	VEHICLE 1		VEHICLE 2		VEHICLE 3		VEHICLE 4	
	Before	**After**	**Before**	**After**	**Before**	**After**	**Before**	**After**
Hydrocarbons (HC)								
Carbon monoxide (CO)								
Carbon dioxide (CO_2)								
Nitrogen oxides (NOx)								

Installation

Engine photos sent (3)	☐ Yes Date sent: _____
Installation plan	
Issues / notes	
Scheduled install date	
Fleet contact / phone	

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Fuel Consumption Log

One log per vehicle. Record every fill-up during the baseline and 30-day test periods.

Vehicle		**Start odometer**	
Start date		**Baseline MPG**	

DATE	ODOMETER	GALLONS	COST ($)	MPG	INITIALS

MPG = miles since last fill ÷ gallons added. Fill to the first automatic shut-off at the same station each time.

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Road Test Form

Use for Option B. Run Test 1 before installation and Test 2 after, on the same route and pump.

Make / model		**Year**	
Unit / VIN		**Technician**	
Station / pump #		**Miles to freeway**	

Road Test 1: Baseline (before install)

Date / time		**Odometer start**		**Odometer end**	
Trip meter		**Miles driven**		**Gallons**	
MPG		**Avg. speed**		**Load / weight**	
HC		**CO**		**CO_2 / NOx**	
Conditions	Weather: Temp: Tires (psi): Road:				

Road Test 2: After install

Date / time		**Odometer start**		**Odometer end**	
Trip meter		**Miles driven**		**Gallons**	
MPG		**Avg. speed**		**Load / weight**	
HC		**CO**		**CO_2 / NOx**	
Conditions	Weather: Temp: Tires (psi): Road:				

Result: MPG change = (Test 2 MPG − Test 1 MPG) ÷ Test 1 MPG = _____ %