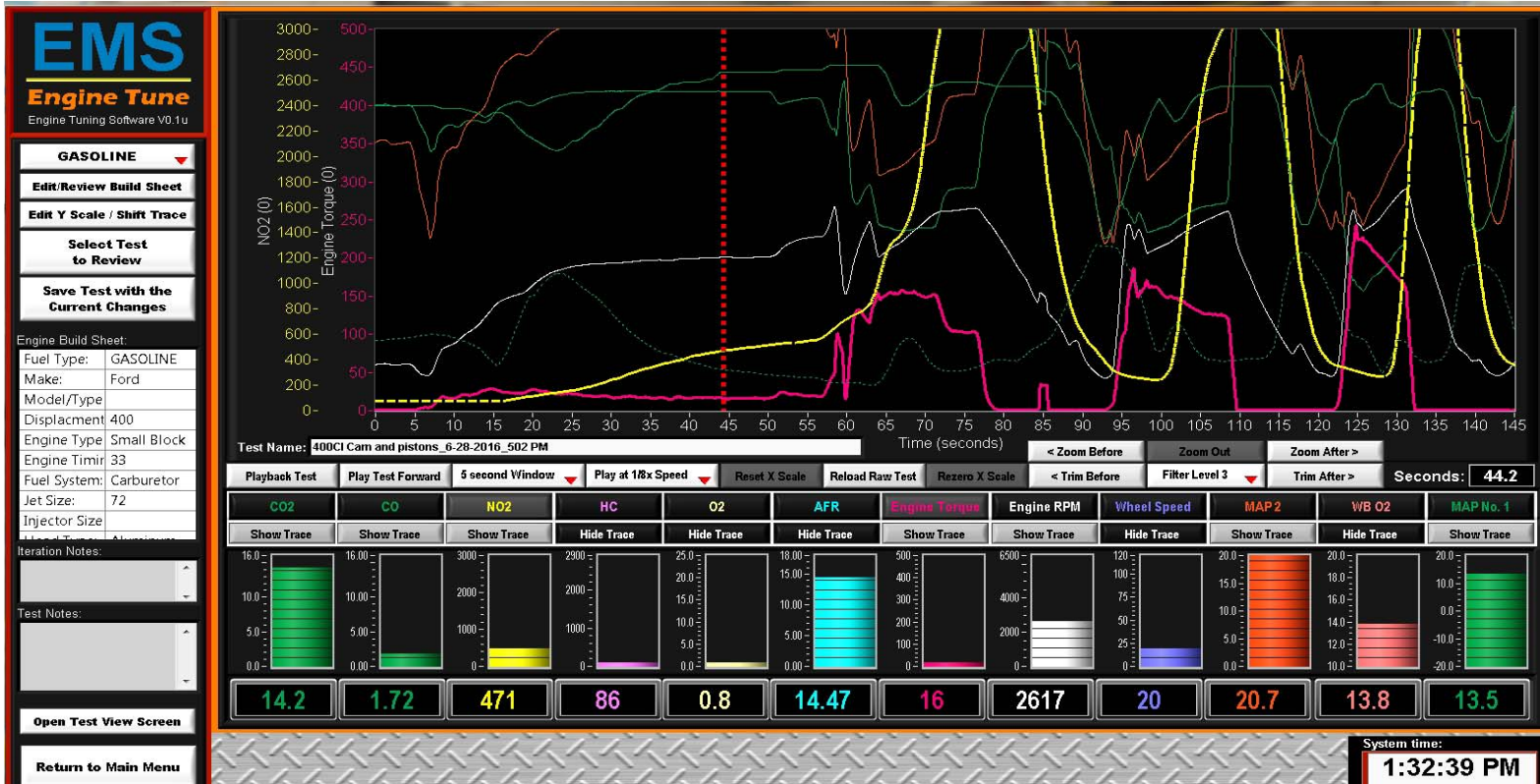


# EMS

EMISSIONS SYSTEMS, INC.

EMS ENGINE TUNE  
SOFTWARE "MAKE MORE HP  
SNIFFING THE POOP"



THE EMS ENGINE TUNE SOFTWARE HAS BEEN DEVELOPED TO GIVE YOU FLEXABILITY CONDUCTING & REVIEWING ENGINE TEST RUNS. TURN DATA ON/OFF TO CLEAN UP GRAPH, HIGHLIGHT YOUR INTEREST, CO/CO2 OR NOX/TORQUE. ENTER ENGINE BUILD DATA TO TRACK CHANGES, FIND TESTS EASILY WITH A UNIQUE TEST NAMING/SAVING MECHANICS OF CHANGES. LARGE NUMERIC DISPLAY FOR IDLE TUNING.

THE EMS TEST REVIEW SCREEN GIVES VARIOUS OPTIONS FOR REVIEWING, PLAYBACK FUNCTION, VERTICAL BAR TO ZOOM IN ON GAS DATA AT A SPECIFIC POINT LIKE FUEL ENRICHMENT, ZOOM IN OR TRIM PARTS OF A TEST, ADJUST VERCAL SCALE VALUES AND SHIFT GASES TO LINE UP WITH DYNO DATA, REVIEW BUILD SHEET AND UPDATE IF NEEDED, OPEN 2 REVIEW SCREENS TO REVIEW A BEFORE/AFTER TEST .

The screenshot shows the 'EMS Engine Tune Engine Build Sheet' form. It includes fields for 'Tuning Project', 'Tuning Test Type', 'Enter Test Type', 'Tuning Test Iteration', 'Select Iteration', 'Test Iteration Notes', 'Iteration Delimiters', 'Tuning Test Revision', and 'Test Revision Notes'. There are also buttons for 'Reset all fields', 'Save Build Sheet Data', and 'Cancel Edits'. The form is divided into sections for 'Make', 'Model/Type', 'Displacement', 'Engine Type', 'Engine Timing', 'Fuel System', 'Fuel Type', 'Jet Size', 'Injector Size', 'Head Type', 'Compression Ratio', and 'Spark Gap'. A summary table on the right displays engine parameters:

CO2	CO	NO2	HC
0	0.00	0	0

O2	Engine RPM	Torque	Horsepower
0.0	0	0.0	0

MAP	Dyno WB 1	Dyno WB 2	Water Temp 1
0.0	0.00	0.00	0.0

# TUNING WITH WB O2 ONLY VERSES WITH COMBUSTION GASES



THE EMS ENGINE TUNE SOFTWARE HAS BEEN DEVELOPED TO GIVE YOU A DYNAMIC LOOK AT THE DATA. THE ABOVE TEST IS WITH WB O2, MAP, RPM, TORQUE, WHEEL SPEED, AND TPS. THE TEST BELOW GIVES YOU A GLIMSE OF WHAT YOUR MISSING WITH COMBUSTION GASES.



# FEATURES.

### EMS Engine Tune: Software & Hardware Setup

**System Settings**

Buffer Length in Seconds:

Runtime Graph Display Length:

Samples Per Second:

Main Graph Refresh Rate:

Secondary Graph Refresh Rate:

Graph Color:

Default Save Path:

**Fuels and AFR Constants**

FUEL:	HCV:	OCV:	K:	AFR:
<b>Fuel:</b>	<b>HCV:</b>	<b>OCV:</b>	<b>K:</b>	<b>AFR:</b>
GASOLINE	139.8	0	0	14.7
ETOH	29.8	0	0	13.5
METHANOL	22.8	0	0	14.5
PROP	4	0	0	17.45
ETOH	29.8	0	0	13.5
GAS (Oxy)	60	1.80	0.01	14.71

Default Fuel:

**Test Type:**

Add Test Type

Delete Test Type

**Device Settings**

Gas Bench Type:  Gas Bench Comm Port:  Gas Bench Baud Rate:  Calibrate Gas Bench

Dyno Comms Type:  Dyno Comm Port:  Dyno Comms Baud Rate:  Calibrate Dyno Comms

EMS Data Hardware:  EMS Comm Port:  EMS Comms Baud Rate:  Calibrate EMS Hardware

Iteration Tag:

Add Iteration

Delete Iteration

### Device Channel Setup:

Device Channel	Device Channel Name	Units Type	Units
Axis 1	Engine RPM	rpm	1000
Axis 2	MAP2	psi	100
Axis 3	MAP No. 1	psi	100
Axis 4	Engine Torque	lb-ft	100
Axis 5	TPS	%	100
Axis 6	Wheel Speed	mph	100

Device Channel:  Device Channel Name:  Unit Type:  Units: 

### Dyno Comms Calibration

Device Channel Reading:

1st Point Reading:  Apply 1st Point

2nd Point Reading:  Apply 2nd Point & Cal

Raw Signal:  Calibration Zero:  Calibration Span:

Apply from Signal

Key in Values



### EMS Engine Tune: Trace Editor

Trace Names	Shift Trace	Scale Minimum	Scale Maximum
CO2	4 Seconds	0.0	16.0
CO	4 Seconds	0.00	16.00
NO2	4 Seconds	0	3000
HC	4 Seconds	0	2900
O2	4 Seconds	0.0	25.0
TPS	No Shift	0	100
Engine Torque	No Shift	0	500
Engine RPM	No Shift	0	6500
Wheel Speed	No Shift	0.00	120.00
MAP 2	No Shift	0.0	20.0
WB O2	3 Seconds	10.0	20.0
MAP No. 1	No Shift	-30.0	20.0

### EMS Engine Tune

Engine Tuning Software V0.1g

**Export to CSV**

**Export to ZIP**

**Import from ZIP**

### Export and Import Tuning Tests

**Test Files**

- Test 1\_9-28-2015\_126 PM.tst
- Test 1B\_9-28-2015\_224 PM.tst
- Test 2A\_9-28-2015\_411 PM.tst
- Test 3B\_9-28-2015\_535 PM.tst
- Test 4D\_9-28-2015\_638 PM.tst
- Test 5\_9-29-2015\_1032 AM.tst
- Test 13\_9-28-2015\_131 PM.tst
- Test 5\_9-29-2015\_1141 AM.tst
- Test 6a\_9-29-2015\_441 PM.tst
- Test 6b2\_9-29-2015\_619 PM.tst
- Test 84\_10-27-2015\_340 PM.tst

### EMS Engine Tune: Display Channel Setup

Display Channel	Data Input Device	Device Channel	Channel Color	Scale Min	Scale Max	Linetype	Decimal Places
Channel 1	Sensors 5 Gas	Carbon Dioxide (CO2)		0	11	Solid	0

Channel Color Selector:

Channel	Data Input Device	Device Channel	Scale Minimum	Scale Maximum	Linetype	Decimal places
Channel 1	Sensors 5 Gas	Carbon Dioxide (CO2)	0	11	Solid Line	0
Channel 2	Sensors 5 Gas	Carbon Monoxide (CO)	0	100	Dashed Line	0
Channel 3	Sensors 5 Gas	NO2	0	1000	Dashed Line	0
Channel 4	Sensors 5 Gas	Hydrocarbon (HC)	0	1000	Dashed Line	0
Channel 5	Sensors 5 Gas	Oxygen (O2)	0	25	Dashed Line	0
Channel 6	Map 2 Expanded	Engine Speed (RPM)	0	6500	Dashed Line	0
Channel 7	Map 2 Expanded	Engine Torque (lb-ft)	0	500	Dashed Line	0
Channel 8	Map 2 Expanded	Engine Power (Horsepower)	0	100	Dashed Line	0
Channel 9	Map 2 Expanded	Exhaust (MAP No. 1)	0	20	Dashed Line	0
Channel 10	Map 2 Expanded	Exhaust (WB O2)	10	20	Solid Line	0
Channel 11	Map 2 Expanded	Exhaust (MAP No. 1)	0	20	Solid Line	0
Channel 12	Map 2 Expanded	Exhaust (WB O2)	10	20	Solid Line	0
Channel 13	Map 2 Expanded	Exhaust (MAP No. 1)	0	20	Solid Line	0

SOFTWARE AND HARDWARE SET UP SCREEN. DISPLAY CHANNEL SET SCREEN. EXPORT IMPORT SCREEN.

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