

iii ; ii ; i

MT4-244

() ()

ExByDz

ECE R-96

(RPM) (RPM)

HC PM CO₂ CO

NO_x

:

Effect of Ethanol, Biodiesel and Diesel Blend Fuel on Performance and Pollutants Parameters of Diesel Engine

B.Najafi; R.Ebrahimzadeh; A.Hajir

ABSTRACT

In this research, for correction the combustion properties of biodiesel fuel, ethanol was added. Therefore, effect of using ethanol, biodiesel and diesel blend fuel on MT4-244 diesel engine performance pollutants emission parameters and emission were investigated. The biodiesel in this research produced from waste cooking oil that at (5, 10, 15, 20, 25 and 30% on volumetric basis) blended with Ethanol (2, 4 and 6%), and diesel fuel. So far, 18 samples including variable percent of three fuels were prepared which showed as BED forms. Engine testes were performed on ECE-R96 standard on full load and two engine rotations maximum torque (1300 RPM) and maximum power (2000 RPM). It was found increasing of biodiesel, decreased the pollutant emissions of CO, CO₂, PM and HC in comparison to diesel fuel but BSFC and NO_x emission increased. It also, Using biodiesel did not change the engine power and torque.

KEYWORDS : Alternative Fuels, Biodiesel, Ethanol, Performance Parameters, Pollutants Emission, Diesel Engine.

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// :

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i

ii

iii

[] [] NO_x HC CO
 [] [] [] [] [] []

[]

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B_xE_yD_z
 z y x

(:)

[]

C ₁₆ H ₃₄	C ₂ H ₅ OH	C ₂₀ H ₃₉ O ₂	-	
/		/	-	
/	/	/	MJ/kg	
/	/	/	Cst	°C
/	/	/	g/cm ³	°C
		/	%W	

[] [] [] []

MT4-244

[]

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:()

mm		
mm		
Lit	/	
-	/	
hp		(rpm)
N-m) (rpm
rpm		

(rpm)

(rpm)

rpm

ECE R-96

:()

%	%	%	%	(rpm)	
	%	%	%	(rpm)	

()

)

(rpm rpm

()

()

:()

PMID CO	E400	
AVL Dicom Ditest Gbhm	A-8020	

% %

rpm rpm

/ /

% %

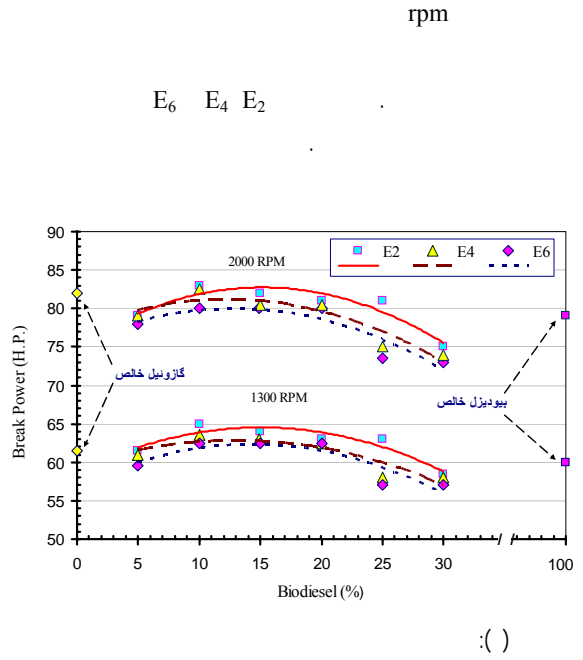
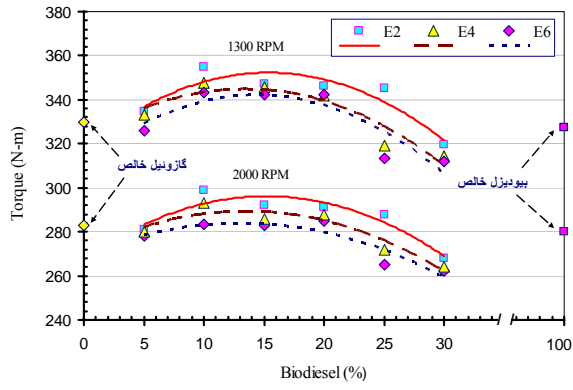
rpm rpm

/

rpm

(/)

/



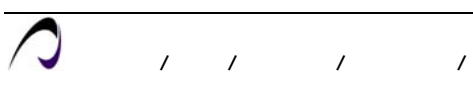
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%
/ / rpm rpm

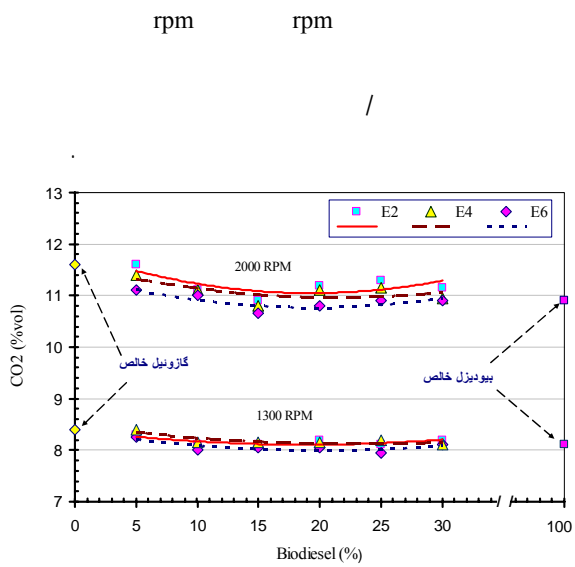
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% % rpm /

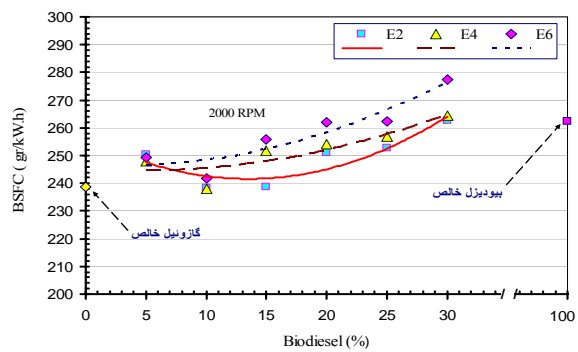
rpm

% / % % %

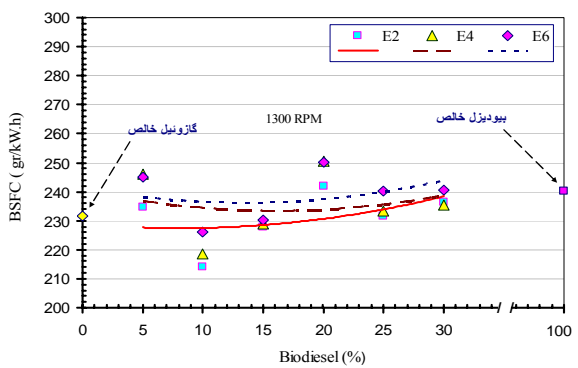




CO₂ (%) ()



(rpm) ()



(rpm) ()

CO₂ rpm rpm /

CO₂ /

NO_x (NO₂) (NO)

NO₂

O₂ NO

NO

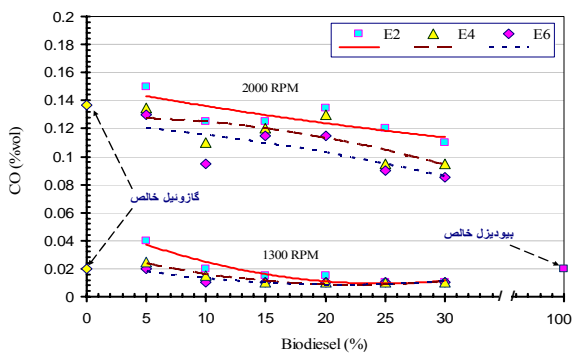
NO₂

NO_x

NO₂

CO CO

CO



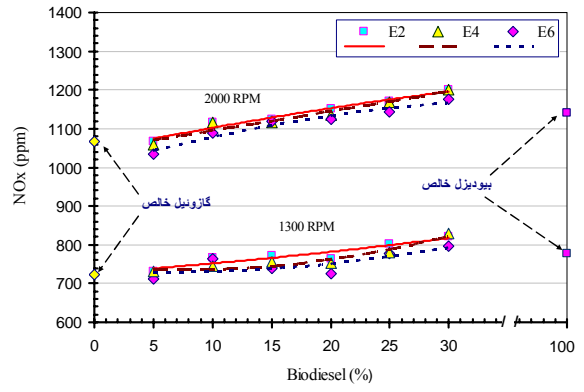
CO ()



NO₂

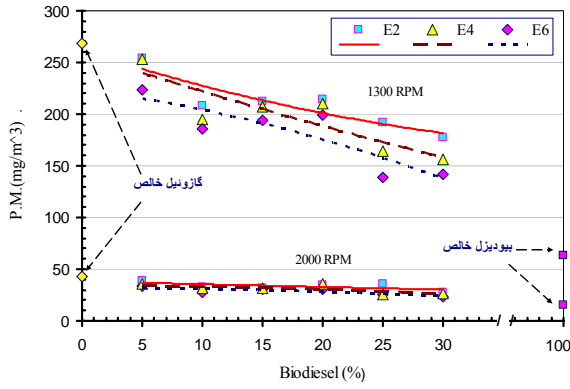
NO

NO₂



(NO_x)

()



PM

()

NO_x

rpm

NO_x

/

/

NO_x

rpm

NO_x

/

/

rpm

rpm

(PM)

PM

rpm

PM

rpm

PM

PM

/

PM



% % :

PM CO₂ CO
NO_x

B ₁₀ E ₂ D ₈₈			
	/	rpm	
		rpm	
		rpm	
		rpm	
		rpm	
/	/	rpm	(CO)
/	/	rpm	
/	/	rpm	(CO _v)
/	/	rpm	
	/	rpm	(NO _x)
		rpm	
/	/	rpm	(PM)
/	/	rpm	

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¹ Full Load

