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چکیده :

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$$E_{in} - E_{out} = E_{storage}$$

$$: E_{storage} = 0$$

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-1

[7] .

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$$P_f = Q_{LHV} \times m_f \quad (1-1)$$

$$m_f = \quad [2]$$

$$Q_{LHV} = 44513 \text{ kJ /kg}$$

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$$m_f = P_b + P_{exh} + P_{cool} + P_{sh} + P_{el} + P_{otf} \quad (1-2)$$

$$P_b = T \times W = T \times n \times \frac{2\pi}{60} \quad (1-3) \quad [2]$$

n (RPM) :

T (N.m) :

$$P_{exh} = m_{exh} \Delta h = m_{exh} (h_{exh} - h_{in}) \quad (1-4)$$

$$P_{cool} = m_w \cdot C_p \cdot T_w \quad (Kw) \quad [2] \quad (1-5)$$

$$C_p = 4.18 \text{ kJ/kg}$$

90

P_b

η

$$F = \frac{P_b}{n} \times \frac{R_o}{r_c} \times \eta \quad [3] \quad (2-1)$$

F(N):

n (rad /s) :

[3] (2-2)

:

:

P_b(kw)R_o:r_c(m)

$$\eta = \eta_g \eta_d \eta_w$$

$$R_o = r_i \times r_d \quad [3]$$

r_d:r_i:

$$\eta_g = 0.98: \quad [3]$$

$$\eta_d = 0.98: \quad [3]$$

$$\eta_w = 0.98: \quad [3]$$

$$[3] \quad (2-2)$$

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$$V = \frac{n \cdot r_c}{R_o}$$

-2-1

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$$F_{ro} = fN \quad (2-3) \quad [3]$$

$$f = 0.0136 + 0.4 \times 10^{-7} V^2 \quad [10]$$

$$N = mg \cos \alpha$$

$$P_{ro} = F_{ro} \times V \quad [10] \quad :$$

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-2-1-2

$$F_l = 0.5 \rho C_w A V^2 \quad (2-4) \quad [5]$$

$$\rho = 1.29 \text{ (kg /m}^3 \text{)} :$$

$$A = L \times h = 1,620 \times 1,419 = 2.28 \text{ m}^2 \quad C_w =$$

-2-1-3

$$F_{st} = mg \sin \alpha \quad (2-5) \quad [5]$$

$$m = 990 \text{Kg}$$

-2-1-4

$$P_n = F.V$$

$$P_{st} = F_{st}.V$$

$$P_w = F_w.V$$

$$P_{Aero} = F_{Aero}.V \quad [5]$$

-

-3-1

$$P_{j_1} = Q \Delta P \quad (3-1) \quad [6]$$

$$P_j:$$

$$\Delta P = P_2 - P_1 \quad P_1 = 35 \text{kpa} \quad P_2 = 200 \text{kpa} \quad [6]$$

$$(3-2) \quad [6]$$

$$n_{s_s} = n_1 \frac{\sqrt{Q}}{H^{\frac{3}{4}}}$$

$$H = \frac{P_2 - P_1}{\gamma} \quad (3-3) \quad [6]$$

$$(3-4) \quad [6]$$

$$\eta_{vol} = \frac{1}{1 + 0/68(n_s)^{-0.66}}$$

:

$$D_1 = 4/25 \left(\frac{Q}{n}\right)^{\frac{1}{3}} \quad (3-5) \quad [6]$$

$$\eta_n = 1 - \frac{0/42}{(\ln D_1 - 0/172)^2} \quad (3-6) \quad [6]$$

$$\eta_w = \eta_n \eta_{vol} \eta_m \quad \eta_m = 0.93: \quad [6]$$

$$P_w = \frac{P_1}{\eta_w}$$

- -

$$P_{fan} = Q(\Delta P)_{path} \cdot \eta_f \quad (3-7) \quad [6]$$

$$\eta_f = 0/6 \quad [6]$$

$$Q = A_f \cdot V_{air} \cdot e \quad (3-8) \quad [6]$$

$$(\Delta P)_{path} = 750^{pa} \quad [6]$$

$$V_{air} = \frac{Q_{rad}}{(\Delta T)_{air} C_p P_{air} A_f} \quad (3-9) \quad [6]$$

$$P_{shaft} = P_{fan} + P_w \quad (3-10) \quad [6]$$

-4

$$: P_{EL} = K\sqrt{RPM} \quad (4-1)$$

500^w

4700RPM

K %

$$\frac{500}{0.9} = k\sqrt{4700} \Rightarrow k = 8.01 \quad [6]$$

-5

%40

2500^{RPM}

(-)

:(-)

	(Kw)		(Kw)		(Kw)
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Excell

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[8] ADVISOR

RPM

$$y = 0.0004x^3 - 0.0784x^2 + 5.3894x - 46.796 \quad (6-1)$$

4100, 3500, 2500, 2000, 1500, 1050 Rpm ,

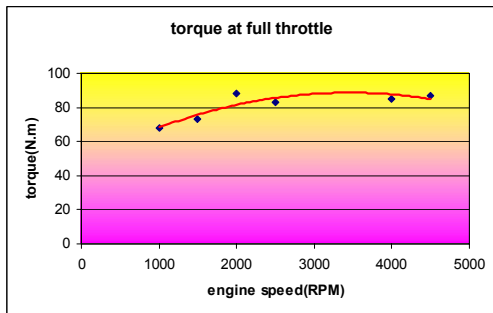
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$$SFC = \frac{mf}{P_b} \text{ (gr /kw . hr) } [3]$$

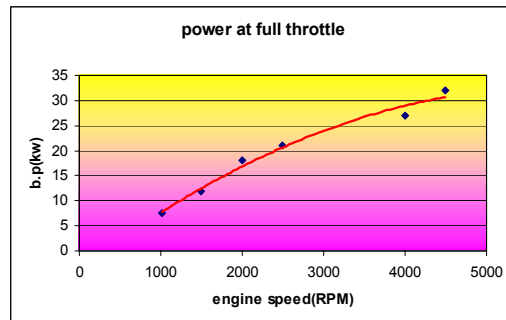
SFC (7-5)

2800 SFC

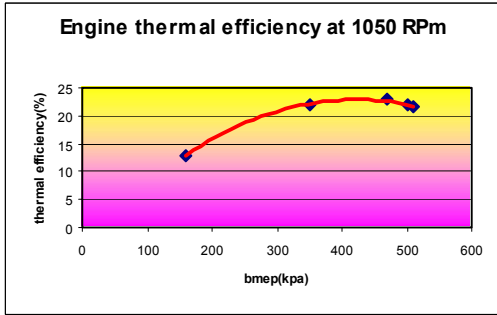
RPM



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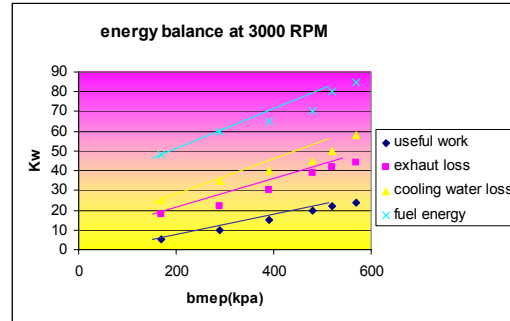


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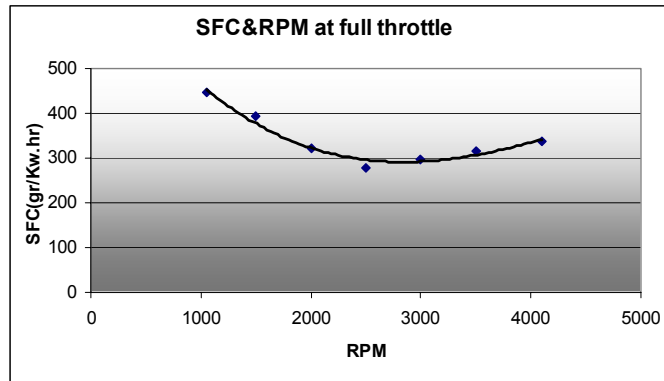
1050 RPM

-(-)



3000 RPM

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-(-)

2kw

			:
			:
		87.35 mm:	
	CD-150	:	
		:	
=0.2982	[9]	=0.7183	
=1		=0.4672	
		:	-
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