DAIKIN
Air Conditioning

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$P = 200\ MWe$

$\eta = 0.44$

$m = 0.5$

$H = 36\ \frac{MJ}{m^3}$ ← !

$m\ (CO_2)$ godišnje = ?

$W_{dobiti} = P \cdot m \cdot t_{god} = P \cdot 365 \cdot 24 \cdot 3600\ s$

$We = 200\ MW \cdot 365 \cdot 24 \cdot 3600 \cdot 0.5$

$We = 3153600000\ \frac{MWs}{J}$

$Wt = \frac{We}{\eta} = \frac{31536\,00000\ MJ}{0.44} = 71672727\,27,27\ MJ$

$m \cdot H < E_t \Rightarrow V_{plina} = \frac{E_t}{H} = \frac{7167272727,27\ MJ}{36\ \frac{MJ}{m^3}}$

↑ Volumen goriva

$V_{plina} = 199090909.091\ m^3$

$\overset{12}{C}H_4 + 2\overset{2\cdot16}{O_2} \rightarrow \overset{12}{C}O_2 + 2\overset{2\cdot1}{H_2}\overset{16}{O}$

1 kmol CH_4 + 2 kmol O_2 → 1 kmol CO_2 + 2 kmol H_2O

TREBA ZAPAMTITI ⇒

⇒ 1 kmol plina ima isti volumen pri konst. tlaku i temp. ∀

$n_{CH_4} = n_{CO_2}$

$V_{CH_4} = V_{CO_2}$

$n = \frac{V}{V_n}$

$n = \frac{m}{M}$

$\frac{V}{V_n} = \frac{m}{M} \Rightarrow V = \frac{m}{M} \cdot V_n$

$V(CH_4) = V(CO_2)$

$\frac{m_{(CH_4)}}{M(CH_4)} \cdot \cancel{V_n} = \frac{m_{(CO_2)}}{M(CO_2)} \cdot \cancel{V_n}$

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$$m_{(CO_2)} = \frac{M(CO_2)}{M(CH_4)} \cdot m(CH_4) = \frac{44\ \frac{kg}{kmol}}{16\ \frac{kg}{kmol}} \cdot 14220792\ kg$$

(12 + 2·16 ; 12 + 4·1)

$$n_{CH_4} = \frac{V_{(CH_4)}}{V_n} = \frac{19909090909.091\ m^3}{22.4\ \frac{m^3}{kmol}} = 8887987\ kmol$$

$$V_n = 22.4\ \frac{dm^3}{mol} = 22.4 \cdot \frac{0.1^3}{0.001}\ \left[\frac{m^3}{kmol}\right] = 22.4\ \frac{m^3}{kmol}$$

$$m_{(CH_4)} = n \cdot M_{(CH_4)} = 8887987\ kmol \cdot 16\ \frac{kg}{kmol}$$

$M_{(CH_4)} = 12 + 4 \cdot 1 = 16\ \frac{kg}{kmol}$

$$m_{(CH_4)} = 14220792\ kg$$

$$\rightarrow\ m_{(CO_2)} = 39107\,1428\ kg = \underline{\underline{391071\ t}}$$