

5. DZ

1. $C = 37 \text{ km/h} = 10,27 \text{ m/s}$

$T = 23^\circ\text{C}$

$p = 1014 \text{ hPa}$

$d = 24 \text{ m}$

$\eta = 0,43\%$

$P = ?$

$$A = \frac{d^2}{4} \pi$$

$$C_p = C_h \cdot C_T = \frac{1014 \cdot 10^2}{1013 \cdot 10^3} \cdot \frac{288,1}{296,15} = 0,974$$

$$P \cdot \eta \cdot c_p \cdot 0,5 \cdot \rho \cdot A \cdot v^3 = 125,74 \text{ kW}$$

2. $A = ?$

$$W = P_m \cdot \eta \cdot 8760 = 2,565 \cdot 10^{12} \text{ Wh}$$

$$W = A \cdot w_B \cdot \eta \Rightarrow A = \frac{W}{w_B \cdot \eta}$$

$$A = 11868703 \text{ m}^2$$

3. $P_m = 1,9 \text{ MW}$

$W = 1800 \text{ MWh}$

$\eta = 0,15$

$A_{AK} = 9008 \text{ m}^2$

$\eta_g = 13\%$

$A_{GR} = 1,5 A_{AK}$

$G_v = ?$

$$G_v = P_{m,R} / \eta_{g,m} (1 - \eta_g) / A_{AK} = 1,62 \text{ kW/m}^2$$

$$4. \quad A = \frac{890 \text{ kWh}}{\frac{1 \text{ kWh}}{\text{m}^2} \cdot 0,19} = 4684,21 \text{ m}^2$$

$$W = A \cdot w \cdot \eta = 4684,21 \text{ m}^2 \cdot 1512 \frac{\text{kWh}}{\text{m}^2} \cdot 1,12 \cdot 0,19$$

$$W = 1507161,6 \text{ kWh}$$

$$\eta = \frac{W}{P_m \cdot T} = 0,193$$

$$5. \quad W = A \cdot w \cdot \eta = \frac{P_m}{P_s \cdot \eta} \cdot H_G \cdot 1,15 \cdot \eta$$

$$W = 1,369 \text{ GWh}$$

$$6. m = \frac{W}{P_m \cdot T} \Rightarrow P_m = \frac{W}{m \cdot T}, T = 8760 \text{ h}, f = 1,337$$

$$W_{\text{USHERENO}} = f \cdot 0,85 \cdot W_{\text{engd}} = 1,337 \cdot 0,85 \cdot 1377 = 1564,89 \text{ kWh/m}^2$$

$$W_{\text{el}} = \eta_s \cdot \eta_t \cdot W_{\text{USHERENO}} = 275,89 \text{ kWh/m}^2$$

$$W_{\text{el,uk}} = W_{\text{el}} \cdot A_z = W_{\text{el}} \cdot \frac{P_m}{P_{\text{el}}} = W_{\text{el}} \cdot \frac{P_m}{P_s \cdot \eta_s \cdot \eta_t} = 1,92 \cdot 10^{11}$$

$$P_B = \frac{W_{\text{el,uk}}}{0,88 \cdot 8760} = 24,96 \text{ MW}$$

$$7. a = \frac{A_{\text{uk}}}{W_{\text{ood}}} = \frac{24,96 \text{ MW}}{907 \text{ MW}}$$

$$A_{\text{AK}} = \frac{P_m}{120 \text{ W/m}^2 \cdot \eta} = \frac{987 \cdot 10^3}{1 \cdot 10^3 \text{ m}^2 \cdot 0,06} = 16450 \text{ m}^2$$

$$A_{\text{uk}} = 2,99 \cdot A_{\text{AK}} = 49185,5 \text{ m}^2, W_{\text{uk}} = 987 \cdot 1569 \cdot 1,17 = 1811865,51$$

$$a = \frac{A_{\text{uk}}}{W_{\text{ood}}} = \frac{A_{\text{uk}}}{P_m \cdot f \cdot H} = 27,146 \text{ m}^2 / \text{MWh}$$

$$8. P_{7,8} = \eta \cdot 0,5 \cdot \rho \cdot A \cdot v^3 = 646104,9184 \text{ W}$$

$$W = 8760 (P_{7,8} \cdot 0,28 + P_m \cdot 0,191)$$

$$= 3,93 \text{ GWh}$$

$$m = \frac{W}{P \cdot T} = 0,320$$

$$9. m = \frac{W_{uk}}{P_{TE} \cdot T} \Rightarrow W_{uk} = 0,86 \cdot 421 \cdot 10^6 \cdot 8760 = 3,17 \cdot 10^{12} \text{ Wh}$$

$$W_{VA} = m \cdot P_{VE} \cdot T = 0,43 \cdot 464 \cdot 0,9 \cdot 10^6 \cdot 8760 = 1,573 \cdot 10^{12}$$

$$\Delta W = 1596 \text{ GWh}$$

$$10. P = 0,5 \cdot A \cdot c_{po} \cdot \rho \cdot v^3$$

$$v = 0,854 v_{\text{проектиро}} = 7,0882 \text{ m/s}$$

$$A = 2687,74$$

$$A = \frac{D^2 \pi}{4} \Rightarrow D = \sqrt{\frac{4A}{\pi}} = 58,49 \text{ m}$$

$$11. P_6 = P_m \cdot \eta_6$$

$$d = \sqrt{\frac{8 \cdot P_6}{\pi c_{po} \cdot \rho \cdot v^3}} = 76,79 \text{ m}$$

$$12. A = 2855,78 \text{ m}^2$$

$$P_m = 1083 \text{ kW}$$

$$W = 8760 \cdot P_m \sum_{i=1}^7 \eta_i \cdot t_i = 8760 \cdot P_m (0,25 \cdot 0,144 + 0,64 \cdot 0,216 + 0,96 \cdot 0,159 + 0,086 + 0,054 + 0,024 + 0,012)$$

$$W = 4789 \text{ MWh}$$