

621.313.8

*This article heat calculation of electromagnetic engines of the closed type with natural cooling.*  
**Keywords::** *electromagnetic engines, heat calculation, closed type, natural cooling.*

$$\theta = \frac{\sum P}{\alpha S}, \quad (1)$$

$$\sum P = \dots; \alpha = \dots, \quad B = \dots^\circ C; S = \dots^2.$$

$$\alpha = \alpha_1 + \alpha_2, \quad (2)$$

$$\alpha = \dots, \quad B = \dots^\circ C.$$

$$\alpha = \frac{\varepsilon C}{\theta} \left[ \left( \frac{T_1}{1000} \right)^4 - \left( \frac{T_2}{1000} \right)^4 \right], \quad (3)$$

$$C_0 = \dots, \quad 5,77 = \dots; T_1, T_2 = \dots^\circ K; \varepsilon = \dots, \quad \varepsilon = 0,82 \div 0,92.$$

$$N_u = C(G_r P_r)^{0,226}, \quad (4)$$

$$C = 0,94; \quad C = 0,7834$$

$$N_u = \frac{\alpha d}{\lambda}; \quad G_r = \frac{\beta g d^3 \theta}{\nu^2}; \quad P_R = \frac{\alpha}{\nu},$$

$$\alpha = \dots; \quad \beta = \dots, \quad 1/0$$

$$\beta = \frac{1}{273 + T}; \quad \nu = \dots^\circ C$$

$$g = \dots; \quad d = \dots, \quad (4)$$

$$\left. \begin{aligned} 10^5 \leq G_r P_r \leq 10^9; \\ 1,1 \leq l/d \leq 2,0 \end{aligned} \right\}, \quad (5)$$

$$l = \dots, \quad d = \dots, \quad \alpha = \dots$$

$$q = \frac{\sum P}{S}, \quad / \quad ^2.$$

$$\theta = f(q) \quad (1), (2), (3)$$

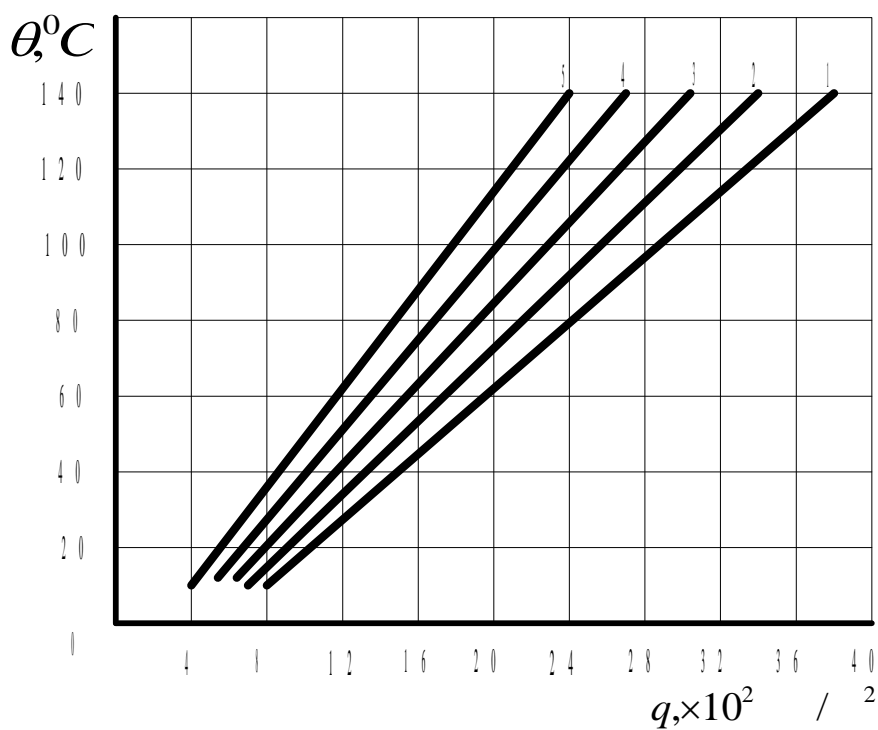
$$d, \quad T = const, \quad \theta = const, \quad d$$

$$\alpha$$

$$\frac{\alpha_{\max} - \alpha_{msn}}{\alpha_{\min}} \cdot 100\% \leq 6 \div 8\%. \quad (6)$$

$$\theta = f(q). \quad d,$$

$$\alpha = \frac{\alpha^{\max} + \alpha^{\min}}{2}. \quad (7)$$



$$1. \quad \theta = f(q) \quad t = 35^0 \quad : 1 - d = 50 \div 70$$

$$; 2 - d = 70 \div 100 \quad ; 3 - d = 100 \div 150 \quad ; 4 - d = 150 \div 220 \quad ; 5 - d = 220 \div 400$$

$$\theta = f(q)$$

$$3 \div 4\%,$$

$$\theta = f(q), \quad ( \quad . \quad . 1).$$

1.

			( )			$\theta, ^\circ\text{C}$
	$d$ ,	$l / d$	$t$ , <sup>0</sup>	$q$ , / <sup>2</sup>	$\theta$ , <sup>0</sup> C	$\theta = f(q)$
1	400	1/4	32,0	1100	82,0	80,0
2	300	1/4	28	460	39,0	38,5
3	185	1/8	28	380	32,5	34,0
4	140	1/7	23	750	45,5	47,6
5	50	1/8	25	1140	75,5	82,5

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