

Permanent Magnet Materials and Circuits

Table 2.1: Continued

System	Configuration of poles	Permeance
6		<p>Between lateral surfaces inclined by an angle Θ</p> $G = \mu_o \frac{l_M}{\Theta} \int_{R_1}^{R_2} \frac{dx}{x} = \mu_o \frac{l_M}{\Theta} \ln \frac{R_2}{R_1}$
7		<p>Between rectangulars lying on the same surface</p> $G = \mu_o \frac{1}{2\pi} \ln [2m^2 - 1 + 2m\sqrt{m^2 - 1}] l_M$ <p>or $G = \mu_o \frac{1}{\pi} \ln \left(1 + \frac{2w_M}{g} \right) l_M = \mu_o \frac{1}{\pi} \ln \left(\frac{m}{m-1} \right) l_M$</p> <p>where $m = \frac{g+2w_M}{g}$</p>
8		<p>Between two rectangulars of different area lying in the same plane</p> $G = \mu_o \frac{1}{\pi} \ln \left[\frac{\Delta^2 - (\epsilon+x)^2}{\Delta(g-x)} - \frac{\epsilon+x}{\Delta} \right] l_M$ <p>where $\epsilon = \frac{w_2 - w_1}{2}$, $2\Delta = w_1 + w_2 + 2g$</p> $x = \frac{1}{2\epsilon} [\Delta^2 - g^2 - \epsilon^2 - \sqrt{\Delta^2 - g^2 - \epsilon^2 - 4\epsilon^2 g^2}]$
9		<p>Single cylindrical airgap of a salient-pole electrical machine</p> $G = \mu_o \frac{l_M \Theta}{\ln(1+g/h_M)}$ <p>when $g/h_M \leq 0.02$ then the formula reduces to</p> $G = \mu_o \frac{l_M h_M \Theta}{g}$