6. Inductor Properties

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Contents

1 Abstract

For convenience we have put together some equations we have collected and consider useful.

2 ...

$$\mathcal{F} = NI \tag{1}$$
$$\mathcal{F} = Hl \tag{2}$$
$$\mathcal{F} = \mathcal{R}\Phi \tag{3}$$
$$B = \mu H \tag{4}$$
$$B = \frac{\mu \mathcal{F}}{l} \tag{5}$$
$$\Phi = AB \tag{6}$$
$$\Lambda = \Phi N \tag{7}$$
$$\Lambda = LI \tag{8}$$
$$\tag{9}$$

$$L = A_L N^2 \tag{10}$$
$$A_L = \frac{\mu A}{l} = \frac{1}{\mathcal{R}} \tag{11}$$
$$\tag{12}$$

$$R = A_R N^2 \tag{13}$$
$$A_R = 8\frac{\rho}{\varrho}\frac{r}{d\,l} \tag{14}$$
$$\tag{15}$$

$$\tau_L = \frac{L}{R} = \frac{A_L N^2}{A_R N^2} = \frac{A_L}{A_R} \tag{16}$$
$$\tag{17}$$

$$E = \frac{LI^2}{2} \tag{18}$$
$$E = \frac{\Phi^2}{2A_L} \tag{19}$$
$$E = \frac{\mathcal{R}\Phi^2}{2} \tag{20}$$
$$E = \frac{A_L N^2 I^2}{2} \tag{21}$$
$$E = \frac{A_L R I^2}{2A_R} \tag{22}$$
$$E = \frac{A_L P}{2A_R} \tag{23}$$
$$E = \frac{\tau_L P}{2} \tag{24}$$
$$\frac{E}{P} = \frac{\tau_L}{2} \tag{25}$$
$$\tag{26}$$

$$F = \frac{B^2 A}{2\mu_0} \tag{27}$$

$$F = \frac{\mu^2}{2\,\mu_0\,g^2}\,N^2\,I^2\,A \tag{28}$$

$$A_F = \frac{\mu^2 A}{2\,\mu_0\,g^2} \tag{29}$$

$$F = A_F\,N^2\,I^2 \tag{30}$$

$$F = A_F\,\frac{P}{A_R} \tag{31}$$

$$\frac{F}{P} = \frac{A_F}{A_R} \tag{32}$$

$$\tag{33}$$

$$F = \frac{B^2 A}{2\mu_0} \tag{34}$$

$$F = \frac{\Phi^2}{2\mu A} \tag{35}$$

$$\tag{36}$$

$$\Phi^2 = 2\mu A F \tag{37}$$

$$\Phi^2 = 2A_L E \tag{38}$$

$$2\mu A F = 2A_L E \tag{39}$$

$$\frac{F}{E} = \frac{A_L}{\mu A} \tag{40}$$

$$\frac{F}{E} = \frac{1}{l} \tag{41}$$

$$Fl = E \tag{42}$$

$$\tag{43}$$

3 Conclusion

[TODO]

A In Plain English

[TODO]

B På Ren Svenska

[TODO]

C This Paper

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Figure 1: 1B79p75vQw4Rb1GQdmGYpDapFwEytFJDqw