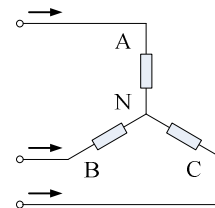


# A Brief Talk on Power Measurement of Variable Frequency Electrical Machine

Electrical Machine

[1]

Aron



$$i_A(t) \quad i_B(t) \quad i_C(t)$$

$$i_A(t) \quad i_B(t) \quad i_C(t)$$

(1),(2)

2

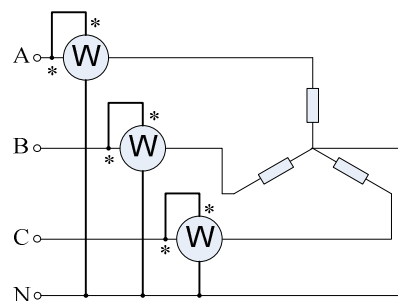
1

[2,3,4] 1 Y

$$p(t) = u_{AN}(t) i_A(t) + u_{BN}(t) i_B(t) + u_{CN}(t) i_C(t) \quad (1)$$

$$= u_{AN} i_A \cos \phi_A + u_{BN} i_B \cos \phi_B + u_{CN} i_C \cos \phi_C$$

$$= P_A + P_B + P_C \quad (2)$$



2

Y

Y

N

$$+ + = \quad (3)$$

$$= - , = - \quad (4)$$

(3),(4) 1

$$p(t) = u_{AB}(t) i_A(t) + u_{CB}(t) i_C(t) \quad ( )$$

$$= U_{AB} I_A \cos \phi_1 + U_{CB} I_C \cos \phi_2 = P_1 + P_2$$

$$i_{AS} \quad i_{BS} \quad i_{CS}$$

$$i_A \quad i_B \quad i_C$$

$$i_A = i_{AS} + i_{A1}$$

$$i_B = i_{BS} + i_{B1}$$

$$i_C = i_{CS} + i_{C1}$$

(#)

(%)

$$= \quad + \quad +$$

$$+ \quad + \quad + \quad )$$

%

$$P = (u_A i_{AS} + u_B i_{BS} + u_C i_{CS}) \quad \text{((}$$

$$\text{))}$$

\$ BS CS

P

)

$$= ( (u_A i_{AS} + u_B i_{BS} + u_C i_{CS}) + (u_{A^*} i_{A1} + u_{B^*} i_{B1} + u_{C^*} i_{C1}) ) \quad \text{((}$$

$$= ( (u_A i_A + u_B i_B + u_C i_C) - (u_A i_{A1} + u_B i_{B1} + u_C i_{C1}) ) \quad \text{((}$$

$$+ ( (u_{A^*} i_{A1} + u_{B^*} i_{B1} + u_{C^*} i_{C1}) + (u_{N^*} i_{A1} + u_{N^*} i_{B1} + u_{N^*} i_{C1}) ) \quad \text{((}$$

$$= (u_A i_A + u_B i_B + u_C i_C) \quad \text{((}$$

$$+ u_{N^*} (i_{A1} + i_{B1} + i_{C1}) \quad \text{((}$$

(+)

+

$$E_{P3} = - \frac{u_{N^*}}{s} (i_{A1} + i_{B1} + i_{C1}) \quad \text{((}$$

(11)

$$N^* = \$ \quad \text{((}$$

2.

B

$$P_{2B} = (u_A i_A + u_B i_B + u_C i_C) \quad \text{((}$$

$$= (u_A i_A - u_B i_A + u_C i_C - u_B i_C) \quad \text{((}$$

$$= (u_A i_A + u_B i_B + u_C i_C) \quad \text{((}$$

$$- u_B (i_A + i_B + i_C) \quad \text{((}$$

$$= (u_A i_A + u_B i_B + u_C i_C) \quad \text{((}$$

$$+ u_{N^*} (i_A + i_B + i_C) \quad \text{((}$$

$$- u_B (i_A + i_B + i_C) \quad \text{((}$$

$$= - u_B (i_A + i_B + i_C) \quad \text{((}$$

(12)

$$E_P = - \frac{u_{B^*}}{s} (i_A + i_B + i_C) \quad \text{((}$$

(13)

$$i_{AS} + i_{BS} + i_{CS} = \$$$

$$i_A + i_B + i_C = i_{A1} + i_{B1} + i_{C1}$$

$$E_P = - \frac{u_{B^*}}{s} (i_{A1} + i_{B1} + i_{C1}) \quad \text{((}$$

(14)

$$P_{2A} = - \frac{u_{A^*}}{s} (i_{A1} + i_{B1} + i_{C1}) \quad \text{((}$$

(1)

(1#)

$$= - \quad + \quad +$$

2.2

$$N^* < A^*, \quad N^* < B^*, \quad N^* < C^*$$

$$P_3 = (u_A i_A + u_B i_B + u_C i_C) \quad \text{((}$$

(1\$)

3

$$= P - \frac{u_{N^*}}{s} (i_{A1} + i_{B1} + i_{C1}) \quad \text{((}$$

A B C



[1] \*Bk' 22#%\$/2\$\$(\$

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[2], ( ) [M], )

,2\$\$#.

[3] , , , [1],

( ), 2\$\$ ,(\$2) ,

[4] , , [1],

( ), 2\$\$2,(\$4) ,