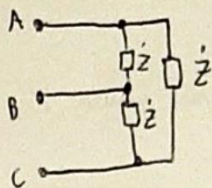


4.12

Fuente: $V_L = 100 \text{ V}$

Carga: equilibrada, (Δ), $Z = 20 \angle 45^\circ$

$I_{ps} = ?$, $I_L = ?$, Diagrama, $W = ?$, $P_{3\phi} = ?$



$$\hat{I}_{AB} = \frac{\hat{V}_{AB}}{\hat{Z}} = \frac{100 \angle 0^\circ}{20 \angle 45^\circ} = 5 \angle -45^\circ \text{ A}, \quad \hat{I}_{BC} = 5 \angle -165^\circ \text{ A}, \quad \hat{I}_{CA} = 5 \angle 75^\circ \text{ A}$$

carga equilibrada e simétrica, logo:

$$\hat{I}_A = \hat{I}_{AB} \sqrt{3} \angle -30^\circ = 5\sqrt{3} \angle -75^\circ \text{ A}, \quad \hat{I}_B = 5\sqrt{3} \angle 165^\circ \text{ A}, \quad \hat{I}_C = 5\sqrt{3} \angle 45^\circ \text{ A}$$

$$P_1 = V_L I_L \cos(\theta + 30^\circ) = 100 \times 5\sqrt{3} \cos(45^\circ + 30^\circ) = 224.14 \text{ W}$$

$$P_3 = V_L I_L \cos(\theta - 30^\circ) = 100 \times 5\sqrt{3} \cos(45^\circ - 30^\circ) = 836.52 \text{ W}$$

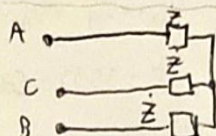
$$P = 1060.66 \text{ W}$$

4.13

Carga: $Z = 5 \angle -70^\circ$, (Y),

Fuente: $V_L = 150 \text{ V}$, ACB

$I_L = ?$, Diagrama, W , $W_2 = ?$, $P = ?$



$$\hat{V}_{AB} = 150 \angle 30^\circ \text{ V}$$

$$\hat{V}_{BC} = 150 \angle 150^\circ \text{ V}$$

$$\hat{V}_{CA} = 150 \angle -90^\circ \text{ V}$$

$$\hat{V}_{Am} = 86.6 \angle 0^\circ \text{ V}$$

$$\hat{V}_{Bm} = 86.6 \angle 120^\circ \text{ V}$$

$$\hat{V}_{Cm} = 86.6 \angle -120^\circ \text{ V}$$

$$\hat{I}_A = \frac{\hat{V}_{Am}}{\hat{Z}_A} = \frac{86.6 \angle 0^\circ}{5 \angle -70^\circ} = 17.32 \angle 70^\circ \text{ A}, \quad \hat{I}_B = 17.32 \angle -170^\circ \text{ A}, \quad \hat{I}_C = 17.32 \angle -50^\circ \text{ A}$$

$$P_1 = V_L I_L \cos(\theta + 30^\circ) = 150 \times 17.32 \times \cos(-70^\circ + 30^\circ) = 1990.18 \text{ W}$$

$$P_3 = 150 \times 17.32 \cos(-70^\circ - 30^\circ) = -451.14 \text{ W}$$

$$P_T = 1539.04 \text{ W}$$

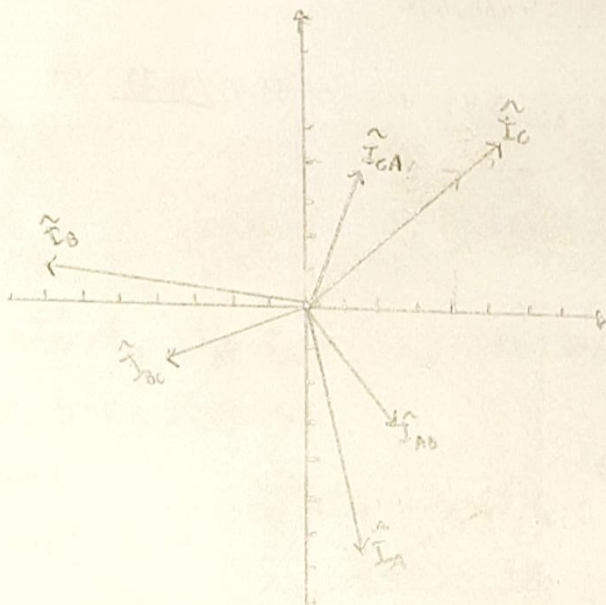


Diagrama 4.12

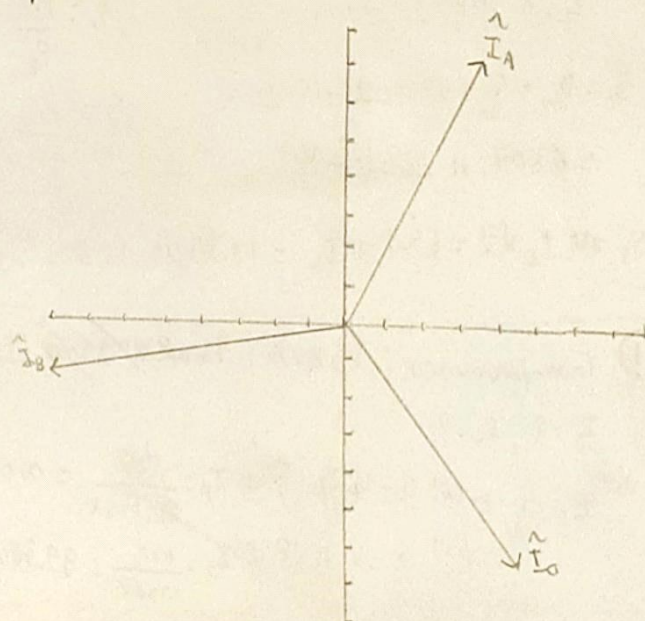


Diagrama 4.13