TRIFASICO

Exercício 6

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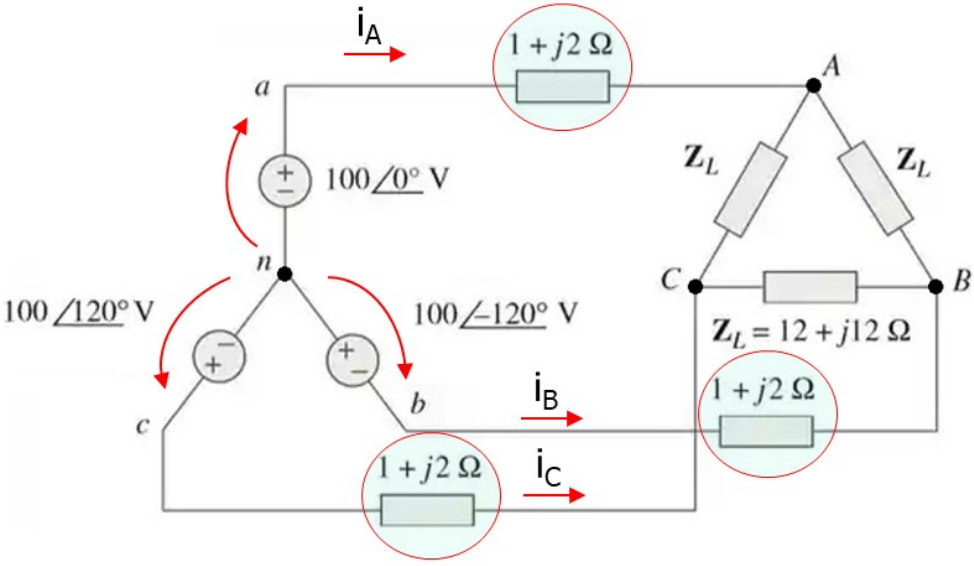
Dado o gerador em Estrela

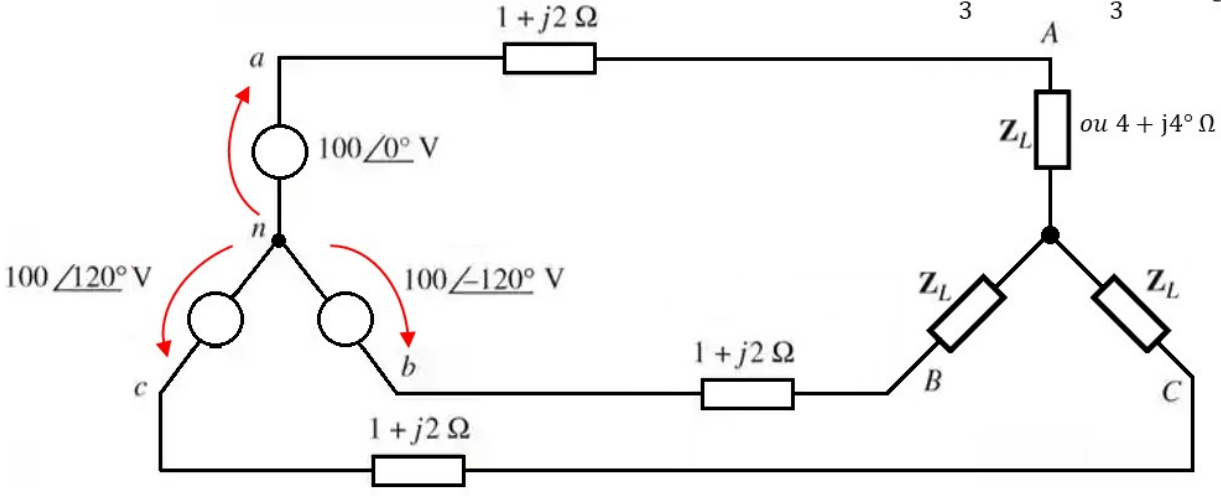


Determine as correntes de linha e a potência trifásica

Modificando

$$\frac{12 + j12}{3} = \frac{16{,}97\angle 45°}{3} = 5{,}6667\angle 45° \ \Omega$$

Convertendo para estrela



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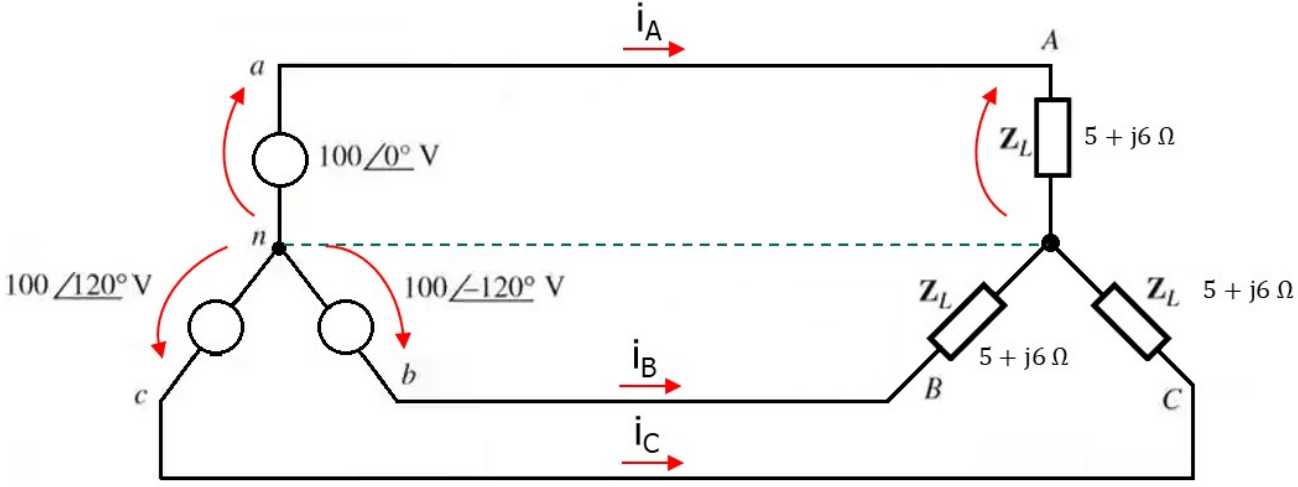

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$$V_{an} = Z_L \times i_A$$

$$i_A = \frac{V_{an}}{Z_L} = \frac{100\angle 0°}{5 + j6} = \frac{100\angle 0°}{7.81\angle 50.1944°} = 12.804\angle -50.1944°\ A$$

$$i_B = \frac{V_{bn}}{Z_L} = \frac{100\angle -120°}{5 + j6} = \frac{100\angle -120°}{7.81\angle 50.1944°} = 12.804\angle -170.1944°\ A$$

$$i_C = \frac{V_{cn}}{Z_L} = \frac{100\angle 120°}{5 + j6} = \frac{100\angle 120°}{7.81\angle 50.1944°} = 12.804\angle 69.8056°\ A$$

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Cálculo de φ

$$\varphi_A = \sphericalangle V_{an}\ e\ \sphericalangle i_A = 0°\ e\ -50.1944° = \boxed{50.1944°}$$

$$\varphi_B = \sphericalangle V_{bn}\ e\ \sphericalangle i_B = -120°\ e\ -170.1944° = \boxed{50.1944°}$$

$$\varphi_C = \sphericalangle V_{cn}\ e\ \sphericalangle i_C = 120°\ e\ 69.8056° = \boxed{50.1944°}$$

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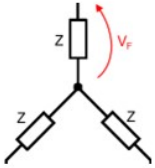

$P_\Phi = \sqrt{3} \times V_L \times I_L \times \cos(\varphi)$

$Q_\Phi = \sqrt{3} \times V_L \times I_L \times \text{Sen}(\varphi)$

$S_\Phi = \sqrt{3} \times V_L \times I_L$

$P_\Phi = \sqrt{3} \times 100 \times \sqrt{3} \times I_L \times \cos(\varphi)$

$P_\Phi = 300 \times 12.804 \times 0.6402$

$P_\Phi = 2459.1362\ W$

$Q_\Phi = 300 \times 12.804 \times 0.7602$

$Q_\Phi = 2920.08\ VAR$

$S_\Phi = 300 \times 12.804$

$S_\Phi = 3840.2\ VA$

$P_{3\Phi} = 3 \times P_{3\Phi} = 7.4\ KW$

$Q_{3\Phi} = 3 \times Q_\Phi = 8.76\ KVAR$

$S_{3\Phi} = 3 \times S_\Phi = 11.5\ KVA$

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Referências

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- **ME SALVA** - 2026 - Potência em Sistemas Trifásicos - https://www.youtube.com/watch?v=1GpWb1A5PIk&t=224s acesso em 09/05/2026

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