e) como se trata de uma carga puramente Resistiva $R = 500\ \Omega$ $Z = 500\ \Omega \angle 0$

$$A = \frac{\sqrt{2}\,120}{500} = 0,339411 \quad ; \quad \pi = 2\pi$$

$$I_{0av} = 3 \times \frac{1}{\pi} \times \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} A \cdot \sin(\theta)\, d\theta$$

$$= 0,28069$$

$$I_{0rms} = \sqrt{3 \times \frac{1}{\pi} \times \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} (A \cdot \sin(\theta))^2\, d\theta}$$

$$= 0,28533$$

Numa das fases

$$I_{1av} = \frac{1}{\pi} \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} A \cdot \sin(\theta)\, d\theta$$

$$= \frac{I_{0AV}}{3} = 0,09356$$

$$I_{1rms} = \sqrt{\frac{1}{\pi} \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} (A \cdot \sin(\theta))^2\, d\theta}$$

$$= 0,164739$$

f)

$$S_1 = U_{1rms} \times I_{1rms}$$

$$= \sqrt{\frac{1}{\pi} \times \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} (\sqrt{2} \cdot 120 \sin(\theta))^2\, d\theta} \times 0,164739$$

$$= 82,3698$$

$$= 120 \times 0,164739 = 19,768\ [VA]$$

$$P_1 = \frac{1}{\pi} \int_0^T V_1(\theta) \cdot I_1(\theta)\, dt = \frac{1}{\pi} \int_{\frac{\pi}{6}}^{\frac{5\pi}{6}} \sqrt{2} \cdot 120 \cdot \sin(\theta) \times \frac{\sqrt{2}\,120}{500} \sin(\theta)$$

$$= 13,5695$$

$$PF = \frac{P_1}{S_1} \approx 0,686437$$