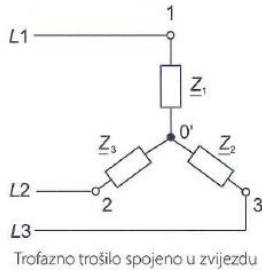


TROFAZNI SUSTAV – SNAGA

- Simetrično opterećenje elemenata / trošila** $\vec{U}_{F1} = \vec{U}_{F2} = \vec{U}_{F3}$, $\vec{I}_{F1} = \vec{I}_{F2} = \vec{I}_{F3}$

Trošilo spojeno u zvijezda spoj

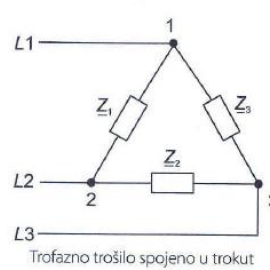


$$P_F = U_F I_F \cos \varphi$$

$$Q_F = U_F I_F \sin \varphi$$

$$S_F = \sqrt{P_F^2 + Q_F^2}$$

Trošilo spojeno u trokut spoj



$$P_F = U_F I_F \cos \varphi$$

$$Q_F = U_F I_F \sin \varphi$$

$$S_F = \sqrt{P_F^2 + Q_F^2}$$

Ukupna snaga: $P = 3U_F I_F \cos \varphi = 3P_F$

$$Q_F = 3U_F I_F \sin \varphi = 3Q_F$$

$$S = \sqrt{P^2 + Q^2}$$

zvijezda spoj: $I_F = I_L$, $U_F = \frac{U_L}{\sqrt{3}}$

trokut spoj: $U_F = U_L$, $I_F = \frac{I_L}{\sqrt{3}}$

$$P = \sqrt{3} U_L I_L \cos \varphi = \sqrt{3} UI \cos \varphi \text{ (W)}$$

$$P = \sqrt{3} U_L I_L \cos \varphi = \sqrt{3} UI \cos \varphi \text{ (W)}$$

$$Q = \sqrt{3} U_L I_L \sin \varphi = \sqrt{3} UI \sin \varphi \text{ (VAr)}$$

$$Q = \sqrt{3} U_L I_L \sin \varphi = \sqrt{3} UI \sin \varphi \text{ (VAr)}$$

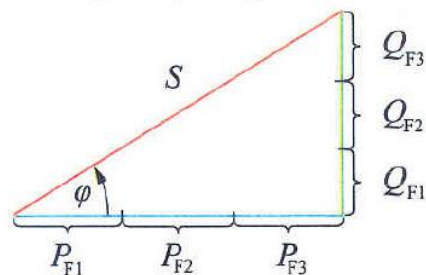
$$S = \sqrt{P^2 + Q^2} \text{ (VA)}$$

$$S = \sqrt{P^2 + Q^2} \text{ (VA)}$$

Djelatna, jalova i prividna snaga na simetričnom trofaznom elementu / trošilu, bez obzira na spoj trošila, računa se na jednak način:

$$P_{F1} = P_{F2} = P_{F3} = P_F$$

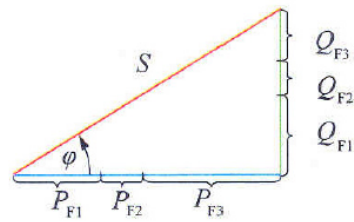
$$Q_{F1} = Q_{F2} = Q_{F3} = Q_F$$



Trokut snage simetričnog trošila

- **Nesimetrično opterećenje elemenata / trošila** $\bar{U}_{F1} \neq \bar{U}_{F2} \neq \bar{U}_{F3}$, $\bar{I}_{F1} \neq \bar{I}_{F2} \neq \bar{I}_{F3}$

Snaga trofaznog elementa / trošila



Trokut snage nesimetričnog trošila

$$P = P_{F1} + P_{F2} + P_{F3}$$

$$Q = Q_{F1} + Q_{F2} + Q_{F3}$$

$$S = \sqrt{P^2 + Q^2}$$

Djelatne snage nesimetričnog trofaznog elementa / trošila

$$P_{F1} = U_{F1} I_{F1} \cos \varphi_{F1}$$

$$P_{F2} = U_{F2} I_{F2} \cos \varphi_{F2}$$

$$P_{F3} = U_{F3} I_{F3} \cos \varphi_{F3}$$

Jalove snage nesimetričnog trofaznog elementa / trošila

$$Q_{F1} = U_{F1} I_{F1} \sin \varphi_{F1}$$

$$Q_{F2} = U_{F2} I_{F2} \sin \varphi_{F2}$$

$$Q_{F3} = U_{F3} I_{F3} \sin \varphi_{F3}$$

Prividna snaga nesimetričnog trofaznog elementa / trošila

$$S = \sqrt{P^2 + Q^2}$$

Ukupni faktor snage nesimetričnog trofaznog elementa / trošila $\cos \varphi = \frac{P}{S}$