

Power Factor Correction Calculator

Estimates required correction kVAR and apparent-current reduction from kW, current power factor, target power factor, voltage, and phase.

Generated October 10, 2026

<https://www.elecatrix.com/power-quality-transformers/power-factor-correction-calculator/>

Inputs

Input	Value	Unit
Real power	120	kW
Current power factor	0.8	PF
Target power factor	0.95	PF
System voltage	480	V
Phase	Balanced three-phase	

Results

Result	Value	Unit
Current reactive power	90	kVAR
Target reactive power	39.4421	kVAR
Required correction	50.5579	kVAR
Current apparent power	150	kVA
Target apparent power	126.3158	kVA
Line current reduction	28.4877	A

Calculation details

Detail	Value	Unit
Calculation basis	Correction kVAR uses the power triangle at the entered real power and power factors. Current reduction is based on the apparent-power difference.	
Correction boundary	Screening estimate only; no capacitor bank, harmonic filter, resonance, switching, utility approval, equipment rating, or code-compliance result is made.	

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Formulas

$$Q_{\text{current}} = P \tan(\arccos(\text{PF}_{\text{current}}))$$

$$Q_{\text{target}} = P \tan(\arccos(\text{PF}_{\text{target}}))$$

$$Q_{\text{correction}} = Q_{\text{current}} - Q_{\text{target}}$$

$$\Delta I = \frac{S_{\text{current}} - S_{\text{target}}}{V} \times 1000 \text{ k_phi V}$$

Warnings and limitations

This power-factor correction estimate is planning arithmetic. It does not size a capacitor bank, filter harmonics, check resonance, choose switching equipment, satisfy utility rules, or verify equipment ratings.