

Reactive Power Calculator

Review reactive-power change from real power and power-factor inputs. This is a screening calculation, not capacitor-bank or harmonic-filter selection.

Generated October 10, 2026

<https://www.elecatrix.com/power-energy-cost/reactive-power-calculator/>

Inputs

Input	Value	Unit
Real power	120	kW
Current power factor	0.8	PF
Target power factor	0.95	PF

Results

Result	Value	Unit
Current reactive power	90	KVAR
Target reactive power	39.4421	KVAR
Reactive power reduction	50.5579	KVAR
Current apparent power	150	kVA
Target apparent power	126.3158	kVA
Current phase angle	36.8699	deg
Target phase angle	18.1949	deg

Calculation details

Detail	Value	Unit
Calculation basis	Reactive power is real power multiplied by $\tan(\arccos(\text{power factor}))$. The reduction is the difference between current and target reactive power.	
Correction boundary	Screening estimate only; no capacitor bank size, harmonic filter, switching equipment, resonance, utility approval, equipment rating, or code-compliance result is made by this calculator.	

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Formulas

$$Q_{\text{current}} = P \times \tan(\cos^{-1}(\text{current power factor}))$$

$$Q_{\text{target}} = P \times \tan(\cos^{-1}(\text{target power factor}))$$

$$\text{Reactive power reduction} = Q_{\text{current}} - Q_{\text{target}}$$

Warnings and limitations

This is a reactive-power screening estimate. It does not size capacitor banks, evaluate harmonics, check resonance, choose switching equipment, confirm utility approval, or verify equipment ratings.