

Medium

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In an industrial power system, regarding Power Factor Improvement: 1. APFC (Automatic Power Factor Correction) panels use capacitors to provide lagging VARs. 2. Improving

A

1 and 3 only

B

2 and 3 only

Correct

C

1 and 2 only

D

1, 2 and 3

Correct Answer: B

Full Detailed Explanation

Correct Answer: B - 2 and 3 only Quick Concept Explanation Automatic power-factor-correction panels switch capacitor steps to offset lagging inductive reactive demand. Excessive capacitance can produce a leading power factor and, in harmonic environments, resonance or overvoltage concerns. Key relation: $Q_c = P(\tan \phi - \tan \phi_c)$. Exam focus: Capacitors supply leading reactive power. Common trap: Calling capacitor VARs ''lagging' reverses the sign convention. Statement-wise Verification Statement 1 - Incorrect. APFC (Automatic Power Factor Correction) panels use capacitors to provide lagging VARs. Capacitors supply leading reactive power to offset lagging inductive VAR demand Statement 2 - Correct. Improving the power factor reduces the kVA demand and line losses. Excessive capacitance can produce a leading power factor and, in harmonic environments, resonance or overvoltage concerns. Statement 3 - Correct. Over-correction (leading power factor) can lead to resonance and overvoltage issues. Excessive capacitance can produce a leading power factor and, in harmonic environments, resonance or overvoltage concerns. Core Concept Automatic power-factor-correction panels switch capacitor steps to offset lagging inductive reactive demand. Capacitors provide leading VARs, reducing kVA demand and current. Excessive capacitance can produce a leading power factor and