STATCOM

→ Reactive compensation with response as fast as sub cycle

PCC (Point of common coupling)
Applications for STATCOM

1. Local reactive power compensation for dynamic, lagging PF loads

STATCOM

Regulate IVI

Control Iqref (or Ibeta ref) to regulate IVI

Fixed, mech switched

Variable load

(Arc furnace, rolling mill, or a load sensitive to grid voltage changes)
2. Transmission midpoints compensation

Diagram showing a transmission system with midpoints and various loads indicated.
A supply inductive VARs

supply capacitive VARs

P = 0

Q variable
3. Load balancing

- Unbalanced loads

Balanced 30 → unbalanced

Inject current

\[ I_a = I_b = 0 \]
\[ I_c = I \]
4. Harmonic Filter

- Current regulated PWM

harmonic current producing loads are more common
- Current regulated PWM is also a possible solution during faults on the AC system.

- Current regulated PWM limits currents magnitudes
  - leading PF
  - balanced 3Ø