

STATCOM Sidebar!

Topic Change

STATCOM and voltage control...

- Process for STATCOM procurement:

*(source: Functional Performance requirements for GFM
STATCOM – 2025 IEEE PES GM)*

1. Identify Grid Issue

- Where is the problem? (substation / corridor)
- What symptoms appear? (undervoltage, oscillations)



2. Quantify Gap

- By how much, and for how long, does the system violate the limits?
- Credible scenarios (peak, min-load, high-RES)



3. Define Objective

- Target voltage range (e.g., 0.95 – 1.05 p.u.)
- Recovery time (e.g., ≤ 250 ms)
- Secondary goals (harmonics, inertia)

Extra Functional STATCOM Requirements:

You decide... do you need:

1. Active harmonic cancellation
2. Redundancy/Automatic failover
3. Power Oscillation damping
4. Degraded Modes
5. Negative Sequence Cancellation
6. Slow reactive power control
(dynamic reserve)
7. Stability supervision and gain adjustment
8. Automatic gain setting based on fault level
9. Coordination between multiple STATCOMs
10. Manual VAR control
11. Flicker control
12. Black start / energization support
(special ride-through)
13. Grid-forming control

(source: Functional Performance requirements for GFM STATCOM – 2025 IEEE PES GM)

Operational points for STATCOM rating

Hello !

(source: Functional Performance requirements for GFM STATCOM – 2025 IEEE PES GM)

C: cont. Cap. (HV)
Limited by
transformer
(Thermal)

A: Capacitive
design point

E or E':
min. Cont. (MV)
Limited by Aux.

F: min. Cap.
short time. (MV)
Limited by Aux.

