



- 應考慮系統諧波含量，電容器應選用額定電壓較高之規格。
Consider harmonics in power system, the specification of capacitor should use higher rating voltage.
- 如為自動功率因數調整盤時，因投切次數頻繁及湧入電流影響，每段電容器組應串聯電抗器使用，並提高電容器額定電壓等級。
In case of automatic power factor regulation bank, due to frequently switch in and out as well as the effect of inrush current, the capacitors should properly be equipped series reactors and use higher rating voltage specification.
- 電容器串聯電抗器時應注意電容器壓升問題：
串聯6%電抗器時($X_L/X_C=6\%$)，電容器壓升6.38%。
串聯8%電抗器時，電容器壓升8.7%。
串聯13%電抗器時，電容器壓升14.94%
電容器壓升率 = $[(1 / (1 - X_L/X_C)) - 1] \times 100\%$
Consider voltage rise problem when capacitors connected with series reactors.
For 6% series reactor ($X_L/X_C=6\%$), capacitor voltage rise 6.38%
For 8% series reactor, capacitor voltage rise 8.7%
For 13% series reactor, capacitor voltage rise 14.94%
Capacitor voltage rise rate = $[(1 / (1 - X_L/X_C)) - 1] \times 100\%$
- 電容器額定電壓提高後容量 (kVAR) 變化計算係數
Calculation coefficient for capacity (kVAR) variation after increasing rated voltage of capacitor.

電容器提升後額定電壓(V2) Increased capacitor rating voltage (kV)	系統電壓 (V1) System Voltage (kV)					
	3.3	4.16	10	11.4	20	22.8
3.45	1.093	—	—	—	—	—
3.80	1.326	—	—	—	—	—
4.16	1.589	—	—	—	—	—
4.60	1.943	1.223	—	—	—	—
5.00	—	1.445	—	—	—	—
11.00	—	—	1.210	—	—	—
11.95	—	—	1.428	1.099	—	—
12.8	—	—	1.638	1.261	—	—
13.8	—	—	1.904	1.465	—	—
14.7	—	—	—	1.663	—	—
15.0	—	—	—	1.731	—	—
22.0	—	—	—	—	1.210	—
23.9	—	—	—	—	1.428	1.099
25.4	—	—	—	—	1.613	1.241
27.5	—	—	—	—	1.891	1.455

■ [範例]

設系統電壓20kV需求電容器容量為200kVAR，因考慮諧波或串聯電抗器造成電容器壓昇，提升電容器額定電壓為25.4kV時，則所需容量變為 200×1.613 (由上表查得)=322.6kVAR

■ [公式]

$$\text{提升後容量值} = \text{原容量值} \times \left[\frac{\text{提升後額定電壓}}{\text{原額定電壓}} \right]^2$$

V1: 系統電壓 / System voltage

V2: 提升後額定電壓 / Increased rating voltage

Q1: 原容量值 / Original capacity(kVAR)

Q2: 提升後容量值 / Capacity after increased rating voltage

■ [Example]

Assumed a system voltage 20kV and it required capacitor 200kVAR. If the capacitor rated voltage was increased to 25.4kV due to the consideration of voltage rising from harmonics or capacitor connected with series reactor, the required capacity will become 200×1.613 (obtained from above table) =322.6kVAR

■ [Formula]

$$Q_2 = Q_1 \times \left(\frac{V_2}{V_1} \right)^2$$