

# Non-damage high-voltage Intelligent On-off Switched Capacitor Array

## 高压电容器组无损智能投切装置



### Device and Operating Principle

This device adopts the high-voltage large-power thyristors as the switch device to meet different voltage levels by thyristors in series or/and parallel form. By controlling the switch of thyristors, it can avoid the sudden change of terminal voltage of capacitor when the capacitor occurs conduction moment, and the capacitor array can be switched on safely; it is naturally turned off with zero current when turning off the capacitor, and the capacitor array can be switched off safely.

### Performance

- No inrush current, no operating over-voltage when capacitor array is switched on.
- No reignition over-voltage when capacitor array is switched off.
- The capacitor array can be on-off switched frequently, the residue voltage of capacitor array has no effect on operating.
- On some occasions , an alternative is to work with vacuum contactor in parallel-circuit, During the transient processes, the thyristor works , and the vacuum contactor works during the steady-state. In this way, the heat loss of thyristor is avoided.
- The capacitor array can work in single-phase (individually); The capacitor array must be connected in star-form when works in tri-phase (three-phase).
- Several devices can be connected to form a network, to adjust reactive power(factor) automatically and dynamically.

### Applications

- 6kV、10kV、35kV tri-phase, Y-connected capacitor: such as in electric network power substation, chemical plant , metallurgical industry, steel rolling mill and mining , in which the reactive power(factor) must be controlled .
- 27.5kV single-phase, single Y-connected capacitor: such as in the traction substation in the electrified railway system in which the reactive power(factor) must be adjusted automatically and dynamically.

**Note:** The voltage level can be adjusted based on customers' requirement.

### 装置简介

高压电容器无损智能投切装置采用高电压、大功率晶闸管做为开关器件，通过对晶闸管的串并联来满足不同电压等级的要求。通过对晶闸管的开关控制，使电容器导通瞬间电容器端电压不发生突变，安全投入所需电容器组；切除电容器时电流过零自然关断，电容器组安全退出。

### 性能特点

- 投入电容器组时无涌流、无操作过电压。
- 切除电容器组时无重燃过电压。
- 可以频繁对电容器组进行投/切操作，电容器残压对操作无影响。
- 在一些场合可以选择和真空接触器并联使用，暂态过程由晶闸管完成。稳态时由真空接触器工作，避免晶闸管的热损耗。
- 电容器可单相投切；三相投切的电容器需结成星型。
- 可多台装置组网，动态自动调整无功功率。

### 应用场所

- 6kV、10kV、35kV 三相电容器星形接线方式的场所：如电网变电站、化工、冶金、轧钢、矿山等对无功调整有需求的行业。
- 27.5kV 单相电容器组单星接线方式的场所：如需要自动动态调整无功功率的电气化铁路牵引变电站。

注：电压等级可由用户要求定制