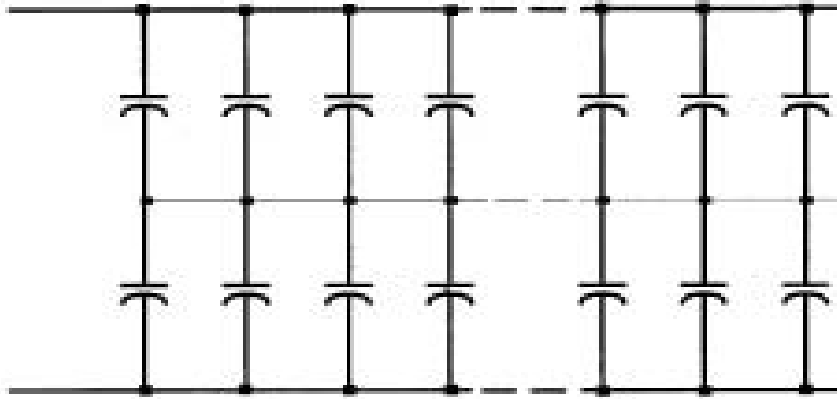


## Capacitor Bank Layout

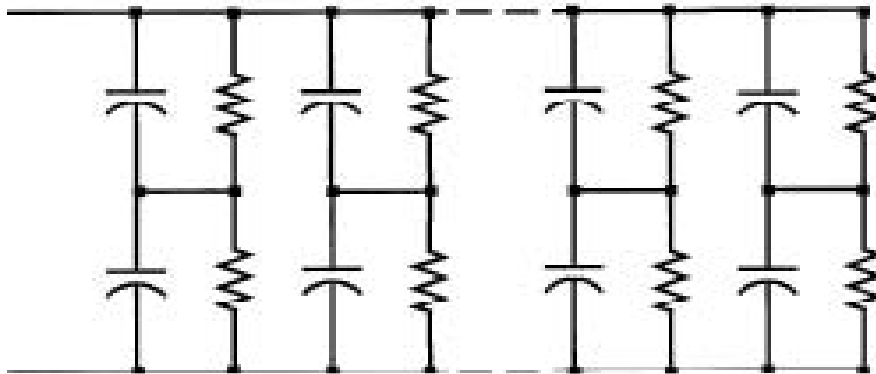
### 1) Connection of middle point



**Advantages:** As the number of capacitors in parallel increases the total capacitance, the upper bundle tends to equal the capacitance of the lower bundle. This stabilizes the voltage balance during possible transients. Moreover, the leakage current at the upper connection tends to equal the leakage current at the lower connection. Consequently the voltage balance is improved during steady-state conditions. Finally only two balancing resistors need to be considered, as the upper and lower connection are so well matched, that no more balancing resistors are needed.

**Disadvantages:** If one capacitor fails (for example by getting low ohmic), the remaining half of the bank has to bear the full bus voltage. Consequently the remaining capacitors will fail totally and by this destroy the function of the total device. This one capacitor failure can cause failure of the entire bank.

### 2) Non-combined middle point with single balance resistors



**Advantages:** If one capacitor fails, the capacitor in series will fail too, but remaining capacitors in the bank are unaffected. If balancing resistors are not used, high leakage current of one capacitor affects only a single pair of capacitors. For safety reason of the application this version is recommended.

**Disadvantages:** With balancing resistors the construction is more complex; many resistors are needed, which increases the costs. There are additional power losses due to more current paths.