Safety

FRAKO Medium Voltage Capacitors are manufactured in two different versions: either for use with external fuses or already fitted with internal fuses.

External Fuses

Fig. 2 illustrates the internal arrangement in a capacitor. If it is overloaded, or another fault occurs, it is particularly important to prevent the capacitor casing rupturing. We therefore recommend the use of current-limiting HV HRC fuses to IEC 60549. As heavy transient currents and high voltages can occur when capacitors are switched in and out, the fuse rating should be at least twice the value of the capacitor current rating, and the voltage rating of the HV HRC fuse should be one level higher than the network nominal voltage (e. g. for a 12 kV network voltage use a fuse with a 24 kV voltage rating). IEC 60549 must be complied with.

Internal fuses

Fig. 3 illustrates the internal configuration and the operating principle. Each capacitor element has its own internal fuse, which can isolate the element if it breaks down. The overloaded or damaged element is thus disconnected from the network. This means that the capacitor loses some of its capacitance, but is still able to operate safely. Switching out individual elements in this way has the consequence, however, that the voltage across the other elements generally rises. If many individual elements are disconnected, the voltage acting on the remaining elements can become too high. The capacitor must then be taken out of service and repaired. **FRAKO** internal fuses comply with the requirements of IEC 60871-4.

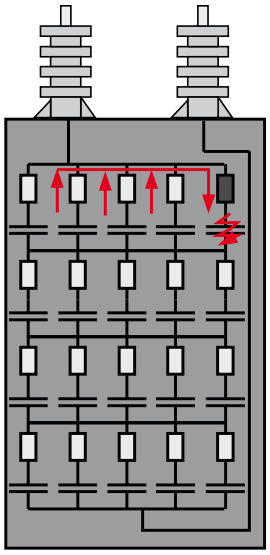

Fig. 3:
Operating principle of the internal fuses