ABB HV FUSES WITH TEMPERATURE CONTROL UNIT

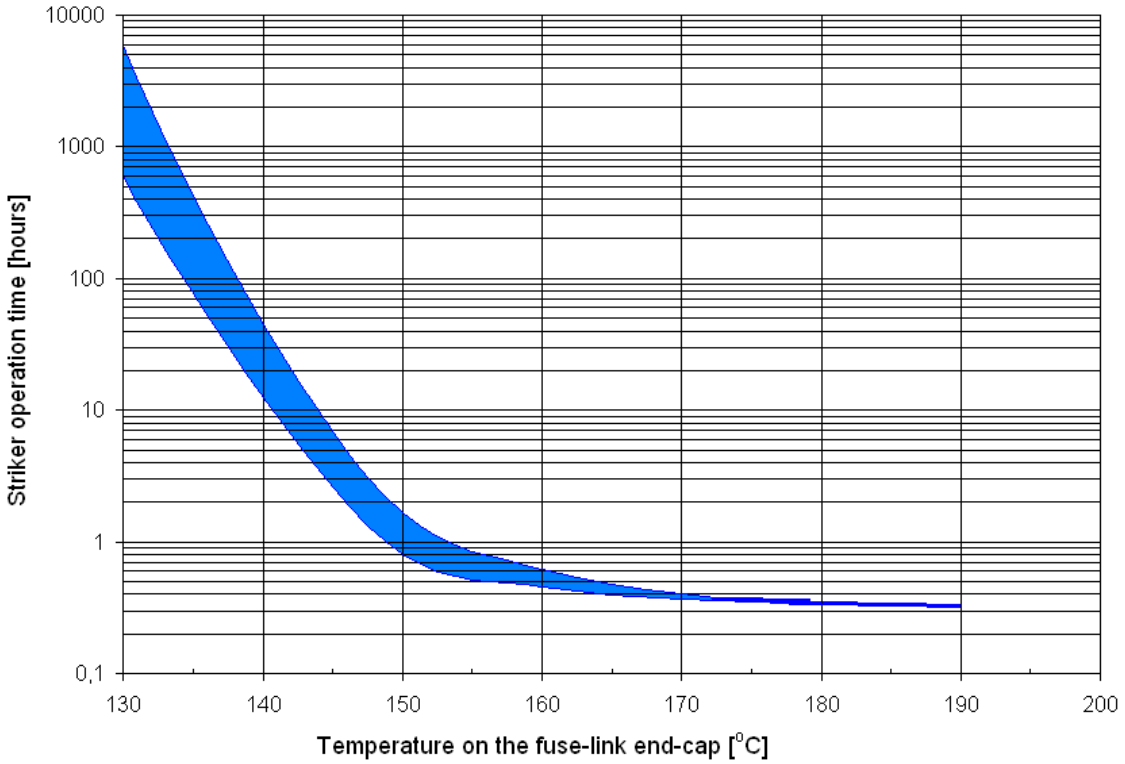
The Temperature Control Unit (TCU) is a tripping device which is integrated with the striker of high-voltage (HV) fuses. It is activated when the allowable temperature in the switchgear is exceeded. When the temperature is too high the TCU activates the striker by releasing the switch disconnector, which in turn opens the electric circuit and avoids further temperature increases.

TCU parameters:

a) Operation for approximately one hour at 150 °C on the fuse end-cap

b) Withstanding temperatures up to 125 °C on the fuse end-cap

c) I ≤ 1.1xIn - no operation



With reference to the diagram above, the higher the temperature, the faster the striker operation. The high temperatures inside the switchgear interior may be caused by external conditions or by a high current passing through the fuse-link. Other possible reasons include:

• Reduced heat transfer inside the switchgear

• Over-heating of degraded conducting contacts

• Long-term fuse overloads

• Improper selection of the fuse rating

• Local melting of fuse elements caused by transformer inrush currents, starting currents of motors etc.

Safety is significantly increased when fuses are equipped with a TCU. This is especially true in devices where fuses are located inside closed fuse holders, as is the case in SF6 switchgear. However, in gas insulated switchgear fuse canisters or in the narrow panels of air switchgear the risk of overheating is high because cooling is limited. High temperatures in switchgears cause degradation and oxidation of the metal contacts, degradation of switchgear equipment or enclosures, and insulator ageing.

Unfavorable effects, i.e. temperature rise inside the switchgear, leads to internal short-circuit and further temperature increases.

Fuse links equipped with a TCU are compatible with standard fuse links. Striker force and striker energy, as well as dimensions and all fuse ratings, are in accordance with CEF, CEF-S, CEF-VT and CMF type fuses manufactured to date and with IEC Standards. To differentiate fuses with a TCU from standard fuses, additional catalogue numbers have been generated and special markings on the fuse body are provided.

Markings on the striker label and rating plate of a fuse with TCU: