



Subject: STUCK BREAKER CONDITION

A circuit breaker is called stuck when the breaker does not open either electrically or manually. This condition can happen in any type of breaker or breakers of any voltage level. How to deal with this condition we discuss below. Pick up any manual of circuit breaker, they do not deal with this condition nor offer a solution when asked for. Earlier in MV, HV bulk oil circuit breakers, or the Air blast circuit breakers, the contacts used to get welded leading to stuck breaker condition. With the advent of SF6 circuit breakers, contacts getting welded are rare or absent.

We had a testing chief by name Mr P Kasturi, his standard question on SF6 circuit breaker is listed below. No one during his service gave the right answer. I wish to present the question in form of Q&A for better understanding.

Q. You have a 132KV SF6 circuit breaker of rating 1250Amp, 40KA, what is the gas pressure? A. 6.25 bars at 25deg C.

Q. What happens when the gas pressure drops to 5.5 bars ? A. As per manual Alarm goes for low gas pressure.

Q. What happens when the gas pressure drops to 5 bars? A. The breaker trips.

Q. What happens when the trip coil is burnt and the gas pressure falls to 5 bars? A. Blank, some smart guy tells him that we manually trip the breaker.

Q. What happens when the gas pressure is low, trip coil is burnt, manual trip mechanism is jammed, how do you open the breaker? A. Clean bowled.

Q. OK, the gas pressure has fallen rapidly to atmosphere, trip coil is burnt, but mechanical tripping is available, can you open the circuit breaker? A. After much thought once again a over smart guy answers YES.

Q. If YES, then why do we require 6.25 gas pressure? A. Knocked out.

It is true that when the gas pressure falls to atmosphere, we can open the breaker when it is carrying a normal rated current. But still the breaker is treated as stuck breaker, because it cannot clear a fault in the absence of 6.25 bar gas pressure.

To deal the case of stuck breaker condition, it is essential that bus outage is taken and the defective breaker is isolated from the circuit by opening isolators in the MV and HV circuits. For LV circuits the breaker is racked out in closed condition after taking a bus shut down.

Prepared by;

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