

Auto re-closing

It is well realized that the transient faults which are most frequent in occurrence do no permanent damage to the system as they are transitory in nature. These faults disappear if the line is disconnected from the system momentarily in order to allow the arc to extinguish. After the arc path has become sufficiently deionized, the line can be reclosed to restore normal service.

The type of fault could be a flashover across an insulator. Reclosing could also achieve the same thing with semi-permanent faults but with a delayed action, *e.g., a small tree branch falling on the line*, in which case the cause of the fault would not be removed by the immediate tripping of the circuit breaker but could be burnt away during a time delayed trip and thus the line reclosed to restore normal service.

Now should the fault be permanent, reclosing is of no use, as the fault still remains on reclosing and the fault has to be attended personally. It simply means that if the fault does not disappear after the first trip and closure, double or triple-shot reclosing is used in some cases before pulling the line out of service.

Experience shows that nearly 80% of the faults are cleared after the first trip, 10% stay in for the second reclosure which is made after a time delay, 3% require the third reclosure and about 7% are permanent faults which are not cleared and result in lockout of the reclosing relay. When a line is fed from both ends, the breakers at the two ends trip simultaneously on occurrence of the fault, the generators at the two ends of the line drift apart in phase,

the breakers must be reclosed before the generators drift too far apart for synchronism to be maintained, such a reclosure increases the stability limit considerably. In present day power systems, automatic reclosing finds wide application. It therefore follows that to effect fault clearance and subsequent reclosure, it is often necessary to operate sequentially several items of switchgear.

The auto-reclosing can be broadly classified in two categories:

- (a) Medium voltage auto-reclose where continuity of supply is the principal aim.*
- (b) High voltage auto-reclose where the main considerations are of stability and synchronizing.*

# Medium Voltage Auto-Reclose

The obvious advantages are continuous supply except for short duration when tripping and reclosure operations are being performed, this renders the substation unattended. The success of rapid reclosure to a large extent depends on the speed of operation of the protections.



# High Voltage Auto-Reclose

In the high voltage circuits where the fault levels associated are extremely high, it is essential that the system dead time be kept to a few cycles so that the generators do not drift apart. High speed protection such as pilot wire carrier or distance must be used to obtain operating times of one or two cycles. It is therefore desired that the reclosure be of the single shot type.