**Study Committee No : SC A3**

**Group No: A3.26** **Name of Convener: Anne Bosma**

**Title:**

# Influence of shunt capacitor banks on circuit breaker fault interruption duties

**Terms of reference**

**Background:**

**Shunt capacitor banks continue to be applied worldwide in substations in ever increasing numbers. Each bank is typically switched with its own circuit breaker and incorporates either active (controlled switching) or passive (series reactors) means to limit the effects of inrush current and associated voltage transients. From the perspective of line circuit breakers during fault interruption, the banks represent a large source side capacitance and also a source of outrush currents, both of which may negatively influence the fault interrupting time. For the shunt capacitor bank switching circuit breaker, if the bank incorporates series inrush current limiting reactors, then the circuit breaker will be exposed to significant fast transient recovery voltages (TRVs) for faults between the reactor and the bank.**

**These circuit breaker application aspects are insufficiently addressed in the standards and are the subject of queries frequently raised by users.**

**Scope:**

**The scope of the proposed working group is to investigate the influence of both earthed and unearthed shunt capacitor banks on line breaker fault interruption and the effect of series reactors on fault interruption with capacitor switching circuit breakers as follows:**

1. **Influence of shunt capacitor banks on line circuit breaker TRVs and potential effect on fault interrupting times.**
2. **Influence of outrush currents on line circuit breakers during fault interruption sequences.**
3. **Influence of bank configuration, component topology and fault type on fault interruption by both line and capacitor bank breakers.**
4. **Circuit breakers of the different types and their applicable characteristics will be considered.**
5. **Potential remedies that may be applied by users to mitigate or avoid the above influences.**
6. **Recommendations (as applicable) as to how the applications need to be addressed in the standards.**

**Deliverables and time schedule:**

**Guidance to manufacturers and users alike on dealing with the issue of shunt capacitor bank influences on circuit breakers and recommendations for standardization to IEC SC17A/MT36 where applicable.**

**Time schedule:**

**Start 2008 and publish technical brochure no later than 2012. Interim papers, publications and tutorial material as appropriate.**

**Other SCs concerned by the work: B3**

**Approval by TC Chairman : Klaus Fröhlich** **Date : 11/12/2008**