

## **Purpose of Meeting:**

- Discuss common issues on Capacitive Current Switching shared by circuit breakers, reclosers, switches, etc.
- Determine if appropriate common clauses on Capacitive Current Switching can be created for standard C37.100.1

**Kirk Smith**                      **Substitute Chair for meeting on 15 October 2007**  
**Neil McCord**                    **Chair**

### **1. Attendance**

26 people attended the meeting.

### **2. Presentation on Basics of Capacitor Switching**

Kirk Smith presented a review of the Basics of Capacitor Switching.

See attached pdf file.

### **3. Discussion of Limiting the Peak Inrush Current**

One recommendation that was presented in Kirk Smith's talk was to limit the peak inrush current to 6 kA or less to achieve low or very low probability of re-strikes. This is particularly applicable to vacuum circuit breakers.

The use of inductors to limit the peak inrush current is one popular technique.

- At medium voltages up to 38 kV or so, inductors are frequently used in about 85% of cases reported from 13 to 38 kV as pointed out in the CIGRE study on capacitor switching - Bonfanti - Shunt Capacitor Bank Switching Stresses & Tests Part 2 - ELECTRA-183 - 1999

References on capacitor switching.

- Solver - Capacitor switching - State of Art - Electra 155 - Aug 1994
- Bonfanti - Shunt Capacitor Bank Switching Stresses & Tests Part 1 - ELECTRA-182 - 1999
- Bonfanti - Shunt Capacitor Bank Switching Stresses & Tests Part 2 - ELECTRA-183 - 1999

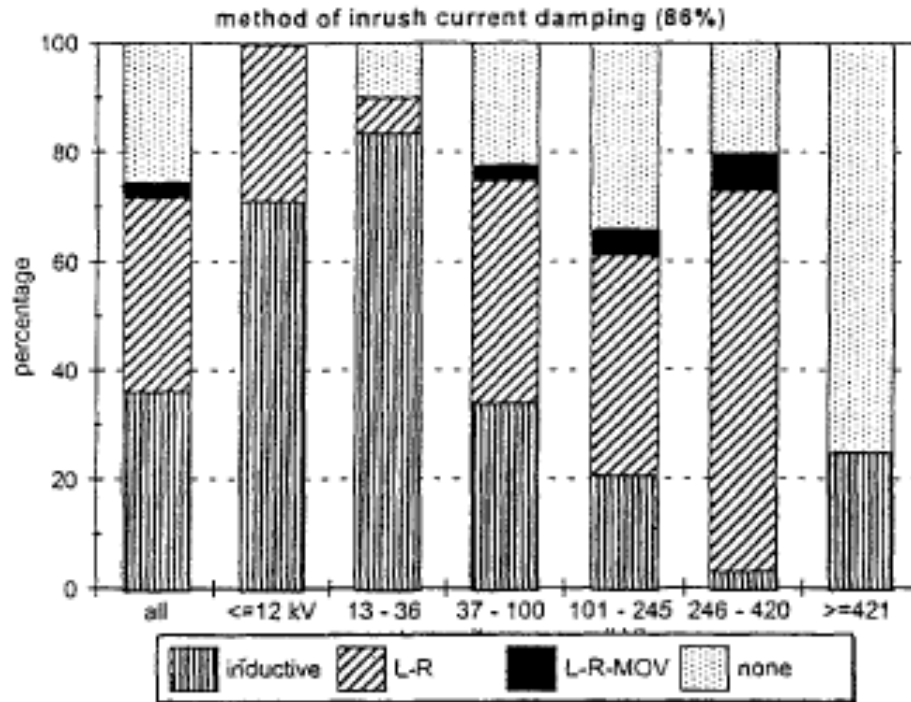


Figure 10. Méthodes d'amortissement en rapport avec la tension des réseaux.  
 Figure 10. Control Methods vs. System Voltage.

At higher voltages over 100 kV or so, inductors are less popular and can introduce other problems. For example, Jeff Nelson recalled a case at 161 kV where a fault occurred between the inductor and the bank and the subsequent TRV from the inductor was too much for the breaker to handle and the breaker exploded.

Costs were another issue discussed.

- At medium voltages - costs are small
- At higher voltages - costs are relatively much higher

Another comment concerning prestrike arcing is an acceleration of the contact erosion rate. Anne Bosma observed that for high voltage SF6 breakers, the prestrike arcing significantly reduces contact life since the arcing in on the make-break surfaces of the contacts instead of the arcing tips.

No proposals have yet been prepared for possible common clauses.