

CIGRE Study Committee B3

PROPOSAL FOR THE CREATION OF A NEW WORKING GROUP


WG N° B3.37	Name of Convenor : Didier FULCHIRON E-mail address: didier.fulchiron@schneider-electric.com	
Technical Issues # (2): 6		Strategic Directions # (3): 2
The WG applies to distribution networks (4): Yes		
Title of the Group: Internal arc effects in medium voltage switchgear (1-52kV) - mitigation techniques		
Scope, deliverables and proposed time schedule of the Group :		
Background:		
<p>Several switchgear assemblies in the market place incorporate internal arc fault limiting devices. These devices generally operate by short-circuiting and hence diverting the fault arc using very fast detection and a fast making switch, generally to earth. The international MV switchgear standard IEC 62271-200 (valid for air-insulated and gas-insulated assemblies) acknowledges such devices as supplementary protective measures, but with little information. This standard also states that in general, arc limiting devices are out of its scope. They are not described or specified and no guidance is given for the related name plating of the switchgear. The IEC sub-committee SC17C requested CIGRÉ to carry out a technical review to give recommendations to support an extension of the current standard to cover such a function and to provide assessment of the same.</p>		
Scope:		
<ol style="list-style-type: none"> 1) Review of methods for arc effect mitigation under internal arc fault conditions of medium voltage switchgear assemblies. 2) Mapping of existing technical solutions related to arc effects mitigation: parameters for detection, means for actuation, power supply issues, etc. 3) Review the status of current Standards and existing specifications. 4) Consideration of the benefits and consequences resulting from arc effect mitigation including: limitation of pressure rise in switchgear and switch-rooms (digital simulations are already used for such purpose), limitation of fire risk and other damages, possible reduction of outage duration, transients on the network, etc. 5) Analysis of the possible methods for verification of performance, assessment and the definition of general requirements for standardized type and routine testing. 6) Guidance for the user on relevant selection parameters: personnel safety, downtime, maintainability, environmental impact, investment costs, life time, immunity to EMI etc. 		
Deliverables:		
A Technical Brochure and a publication in Electra.		
Time Schedule: start: July 2013		Final report: 2017
Comments from Chairman of TC: The possibility of overlap with the scope of SCA3 has been discussed and agreed between the Chairmen of SCA3 & SCB3. The WG is requested to be mindful of this potential borderline issue, particularly if issues associated with testing & specification of specific devices are addressed.		
Approval by Technical Committee Chairman :		
Date : 26/07/2013		

Table 1: Technical Issues of the TC project “Network of the Future” (cf. Electra 256 June 2011)

1	Active Distribution Networks resulting in bidirectional flows within distribution level and to the upstream network.
2	The application of advanced metering and resulting massive need for exchange of information.
3	The growth in the application of HVDC and power electronics at all voltage levels and its impact on power quality, system control, and system security, and standardisation.
4	The need for the development and massive installation of energy storage systems, and the impact this can have on the power system development and operation.
5	New concepts for system operation and control to take account of active customer interactions and different generation types.
6	New concepts for protection to respond to the developing grid and different characteristics of generation.
7	New concepts in planning to take into account increasing environmental constraints, and new technology solutions for active and reactive power flow control.
8	New tools for system technical performance assessment, because of new Customer, Generator and Network characteristics.
9	Increase of right of way capacity and use of overhead, underground and subsea infrastructure, and its consequence on the technical performance and reliability of the network.
10	An increasing need for keeping Stakeholders aware of the technical and commercial consequences and keeping them engaged during the development of the network of the future.

Table 2: Strategic directions of the TC (cf. Electra 249 April 2010)

1	The electrical power system of the future
2	Making the best use of the existing system
3	Focus on the environment and sustainability
4	Preparation of material readable for non technical audience