CIGRE Study Committee C4

PROPOSAL FOR THE CREATION OF A NEW JOINT WORKING GROUP (1)

JWG* N° C4.31/CIRED	**Name of Convenor : David Thomas (UK)** **E-mail address: Dave.Thomas@nottingham.ac.uk**
Technical Issues # (2):2,5,8,10	**Strategic Directions # (3):1,2,4**
The WG applies to distribution networks (4): Yes	
Title of the Group: EMC between communication circuits and power systems	

Scope, deliverables and proposed time schedule of the Group :

Background :

Most of the subjects covered by this Working Group are of common interest for distribution systems and transmissions systems and it is good to have a common understanding. The mechanisms causing interference from power systems on communication systems, low voltage systems and metallic structures are the same for both transmission systems and distribution systems, although parameters and conditions may differ. This Working Group will work cooperatively with the Standardization Sector of the International Telecommunication Union (ITU-T) regarding EMC with communication systems, especially telecommunication systems.

One major objective of the Joint working group is to support ITU-T in the maintenance of the ITU K series Recommendations and Directives for telecommunication systems regarding interference (including damage, danger, disturbance) resulting from an induced voltage caused by high voltage and medium voltage power lines under steady state and fault conditions. In principle this is a continuous work. However, ITU-T has working periods of four years and the scope for the proposed new Joint Working Group covers the scope for the next working period 2012-2016. As ITU-T has a rolling working system, work is already ongoing on some of the activities mentioned below.

Scope : Methods of analysis and mitigation of the influence of HV power systems on telecommunication circuits, radio communication, low voltage systems and metallic structures

1. The updating of the recommendations and guides to be consistent with, and supportive of, the ITU-T publications.
   - Rec. K.hvps1 – Method for identifying the transfer potential of EPR from HV and/or MV to the earthing system or neutral of LV network. - Sept. 2012
   - Rec. K.hvps2 – Method for identifying the effective earth current and earthing resistance of sub-stations with special view of MV/LV transformer station in urban area. - Sept. 2013
   - K.int – Interference to telecommunication transmission systems other than POTS - Sept. 2015
   - K.68 – Maintenance of Recommendation K68 aiming at the more complete coverage of the existing installations (previously K.57) - Sept. 2015
   - Dir. Vol. V – Evaluation of current harmonics in power lines - 2015
   - Dir. Vol. V – Interference to telecommunication systems by the emergence of harmonics flowing on power systems - Sept. 2015

2. Development of a guide for assessment of current harmonics in MV and LV power systems that may induce EM interference. Electric power definitions, measurement techniques, summation of random harmonic currents, the induction effects, the distinction between balanced and unbalanced type harmonics

Deliverables : Report to be published in Electra or technical brochure with summary in Electra: Guide for assessment of current harmonics in MV and LV power systems. Electric power definitions, measurement techniques, summation of random harmonic currents, the induction effects, the distinction between balanced and unbalanced type harmonics

Time Schedule : start : January 2012 **Final report** : 2016

Comments from Chairmen of SCs concerned :

Approval by CIGRE Technical Committee Chairman :
Date : 23/10/2012

Approval by CIRED Technical Committee Chairman :

Date :

(1) Joint Working Group (JWG) - (2) See attached table 1 – (3) See attached table 2
(4) Delete as appropriate

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