

## SC C6, "Distribution Systems and Dispersed Generation"

### Activity Report

#### Highlights

The present activity of SC C6 is driven by the guidelines stated in the Strategic Plan prepared by the SC in 2002-2003 indicating the road to achieve the objectives and to accomplish the scope assigned by the TC. A suitable operative plan indicates the actions to be undertaken.

The already existing WG, integrated in 2002 within the SC have already completed their working program and the relevant results were published; WG and TF started jointly with the SC creation are now concluding their job. New actions to be undertaken are now under study

#### Status of SC reference model implementation

The activity of the SC is carried out by WGs and TFs. In total 5 WGs are now active (see details hereunder); one of them consists of two TFs that perform the real job. Three WGs (included the one with internal TF) are concluding their activity (just eliminating anomaly with the recent guidelines stated by the Central Office about the identification of working forces.

A Strategic Advisory Group is also active; the creation of a Tutorial Advisory Group is now finalised and should be active since 2007.

All the WGs and TFs shall complete their work in two – three years, starting from the kick-off meeting. The organisation of the SC is in line with the reference model stated by the TC.

#### Main technical directions currently being pursued by the SC

Technical and economic impact of DG on the power system as well as requirements, rules and practices for the integration for their integration in the distribution networks are the main topics now considered

Rural electrification and DSM, that are part of the SC Scope are also the objective of two dedicated WGs, even though the WG on rural electrification is now in stand-by due to organisational problems.

The Strategic Advisory Group action, the 2005 SC meeting and the Colloquium jointly organised were aimed to identify new subjects for further actions. The results of these efforts indicates:

- confirmation of the interest towards the subject of rural electrification,
- need to study the aspects related to the connection and the integration of dispersed generators,
- need to study the application of the DG concept as a part of the medium long - term evolution of distribution system, i.e. development of active distribution network able to contribute to the improvement of the overall performances of electric power systems, further development of automation with the extended use of ICT, integration of DSM and DG.

Moreover the SC debated the request of the TC to revise the scope to accomplish the decision of the TC in Dubai: *".... any new work on "renewables" should be first studied by C6 who should provide some basic information Subsequently the work should whenever appropriate be transferred to other SC for further consideration in line with their own scope."* The SC formulate a new version

of its own scope and communicated it to SC B4, C1 and C2; comments were received from C1 and included in the new version. A final decision have to be taken in the Interlaken meeting. For the time being the WG started in 2004 to study the effect of a high share of wind turbines in electric power systems is actively working.

## SC working groups and task forces

List of working forces now active.

Type	Number	Title	Name of Convenor	Created	Disbanded
WG	C6.03	Operating dispersed generation with ICT (Information & Communication Technology)	S. Odagiri (JP)	2003	2004
WG	C6.04	Connection and protection practices for dispersed generation (1)	N. Hatziargyriou (GR)	2003	2006
TF	C6.04.01	Connection criteria at the distribution network for distributed generation	N. Hatziargyriou (GR)	2003	2005
TF	C6.04.02	Computational tools and techniques for analysis, design and validation of distributed generation systems	K. Strunz (US)	2003	2005
WG	C6.05	Technical and economic impact of DG on transmission and generation systems (2)	G. Strbac (UK)	2003	2005
WG	C6.07	Rural electrification (3)	J. Bouckaert (BE)	2003	2006
WG	C6.08	Integration of a large share of fluctuating power	H. Weber (D)	2004	2006
WG	C6.09	Demand side response	A. Baitch (AUS)	2004	2007
AG	C6.01	Strategic advisory group	A. Invernizzi (IT)	2002	Permanent

- (1) The work in the WG is actually performed by the two internal TFs. The first one has already completed its activity fully achieving the objectives; the results will be ready for publication by end of June. The second one will present the final results during the next SC meeting in Paris
- (2) The WG is concluding the work. The final results shall be presented during the next SC meeting in Paris
- (3) In 2005 the Convenor decided to resign and the activities of the WG are presently interrupted. During the 2005 meeting the SC remarked and confirmed the interest of the subject (the conclusions of the Colloquium jointly organised with the SC meeting were in line with this remark); the decision was taken to charge a small group to revise the Term of Reference, to identify one new Convenor, to re-organise the membership. A new proposal should be presented at the next TC meeting

In agreement with the aforesaid technical directions two new WG and one Advisory Group are proposed.

WG	C6.10	Technical and commercial standardisation of DER/microgrids components	J. M. Oyarzabal (E)	2006	2009
WG	C6.11	Development and operation of active distribution networks	C. D'adamo (I)	2006	2009
AG	C6.12	Tutorial advisory group	T. Gaunt (ZA)	2006	Permanent

## Joint working groups and task forces

The SC is not now involved in joint WGs and TFs.

## SC publications

- *ELECTRA*, February 2004 “Distribution Systems and Dispersed Generation: a New Focus for CIGRE”, by the Advisory Strategic Group
- *ELECTRA*, August 2004 “Development of Dispersed Generation and Consequences for Power Systems”, summary of the final report of WG C6.01
- *ELECTRA*, April 2005, “*Connection of Generators and other Customers - rules and practices*”, summary of the Technical Brochure of WG C6.02
- Technical Brochure, Ref 271, 2005, “*Connection of Generators and other Customers - rules and practices*”, final report of WG C6.02
- Athens Symposium, April 2005, “*Connection of Generators and other Customers*”, paper on behalf of WG C6.02

The plan for 2006 publications is as follows.

- *ELECTRA* report on SC C6 2005 Colloquium, “Electrification and dispersed generation”, by April 2005
- *ELECTRA* report on conclusions of WG C6.03, “Operating dispersed generation with ICT”, by April 2005
- Technical brochure and summary for *ELECTRA* on results of TF C6.04.01, “Connection criteria at the distribution network for dispersed generation” by June 2006

## SC website

The SC website was rebuilt using the tools provided by the Central Office and in agreement with the general guidelines stated by the General Secretary. The SC website is currently updated by the SC Secretary.

## SC Strategic Plan and Action Plan

The Strategic Plan prepared in 2003 is under revision by the Strategic Advisory Group (AG C6.01); the draft should be available by the end of March and then circulated for comment to all the SC members. The relevant Action Plan shall be modified accordingly.

## SC meetings

The SC received informal invitations to meet in 2007 from Spain, Finland and it was formally invited by the Malaysian National Committee. It was decided to accept the proposal to meet in Malaysia in Spring 2007; the organisation of a Colloquium (may be in connection with the 2<sup>nd</sup> Asia Pacific Conference & Exhibition ) is planned.

## SC participation to Regional Meetings and Symposia

In 2005 the SC supported the organisation of the Symposium on “Power systems with Dispersed Generation: Technologies, Impacts on Development, Operation and performances” organised in

Greece on April. On Oct. 2005 the SC organised a Colloquium on “Electrification and dispersed generation” jointly with the 5<sup>th</sup> Southern African Regional Conference.

In 2007 the SC shall be involved in the above said event to be organised in Malaysia.

## **Relations with other organisation**

Relations with EURELECTRIC, CIRED and IEA are well established through the action of the Chairman and of some members who are also active in the two associations; a link is also assured with IEEE Committees and WGs active on topics of interest of the SC by the action of the USA member.

The Chairman was also invited to chair/coordinate some round tables during the 2005 CIRED Conference.