



## 2013 Activity Report

### Study Committee C6

#### 1. Highlights

- 3 WG successfully provided final report:
  - WG C6.19 "Planning and optimization methods for active distribution systems"
  - WG C6.20 "Integration of electric vehicles in electric power systems"
  - WG C6.24 "Capacity of Distribution Feeders for Hosting DER"
- 2 new JWG also in cooperation with CIRED launched:
  - JWG C6.25/B5/CIRED "Control and Automation Systems for Electricity Distribution Networks of the Future"
  - JWG B5/C6.26/CIRED "Protection of Distribution System with Distributed Energy Resources"
- 2 new ToR provided on storage and on hybrid systems for offgrid power supply
- C6 Colloquium in Yokohama, Japan in October 2013

#### 2. Working Group changes since the last TC meeting :

##### a. New WG

WG	Title of the Working Group	Date of approval	Convenor
JWG C4.C6.29	Power quality and PVs	2013	C6 liaison member: Stavros Papathanassiou (GR)
JWG C4/C6.35/ CIRED	Modelling and dynamic performance of inverter based generation in power system transmission and distribution studies	2013	C6 liaison member: Martin Braun (Germany)

ToR for approval

C6.28	Hybrid systems for offgrid power supply	2014	
C6.30	Battery electric storage systems	2014	

##### b. WG Disbanded

One WG was disbanded after it successfully provided its final brochure:

WG C6.24 "Capacity of Distribution Feeders for Hosting DER"

It was further decided to disband 2 WGs as soon as they provide their final brochure and material for tutorials:

WG C6.19 "Planning and optimization methods for active distribution systems"

WG C6.20 "Integration of electric vehicles in electric power systems"



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c. Total number of active, WGs, JWGs: 7

WG	Title of the Working Group	Date of approval	Convenor
C6.19	Planning and optimization methods for active distribution systems	2010	F. Pilo (I)
C6.20	Integration of electric vehicles in electric power systems	2010	J. Lopez (PT)
C6.21	Smart Metering	2010	E. Navarro (E)
C6.22	Microgrids Evolution Roadmap	2010	Chris Marnay (US)
JWG C6-25/ CIRED	Control and Automation Systems for Electricity Distribution Networks of the Future	2012	G. Mauri (IT)
JWG C6-26/ CIRED	Protection of Distribution System with DER	2012	B. Bak-Jensen (DK)
C6.27	Asset management for distribution networks with high penetration of distributed energy resources	2012	B. Buchholz (DE)
JWG C4.C6.29	Power quality and PVs	2013	C6 liaison member: Stavros Papathanassiou (GR)
JWG C4/C6.35/ CIRED	Modelling and dynamic performance of inverter based generation in power system transmission and distribution studies	2013	C6 liaison member still to be nominated

d. Allocation of WG to the 4 TC Strategic Directions and the 10 Technical Issues of the Network of the Future (only one SD and TI per WG)

WG	Title of the Working Group	Strategic Directions	Technical Issue
C6.21	Smart Metering	1, 2	2
C6.22	Microgrids Evolution Roadmap	1, 2	5
C6.27	Asset management for distribution networks with high penetration of distributed energy resources	1, 2	1, 5, 7
C6.28	Hybrid systems for offgrid power supply	1, 3	3, 4, 7
C6.30	Battery electric storage systems	1	4

\* Strategic Directions: indicate the main strategic direction, or the two main directions if needed

- 1 : The future power system
- 2 : Best use of the existing power system
- 3 : Environment and sustainability
- 4 : Communication with the public and with political decision makers



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\* Technical issues:

- 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.

### 3. Publications

#### a. Publications since the last TC meeting (April 2013)

Working Group	Title	Kind of publication	Date
WG C6.24	Capacity of Distribution Feeders for Hosting DER	Technical brochure and summary for ELECTRA on results	xxx

#### b. Publication plan for the coming year

WG C6.19	Planning and optimization methods for active distribution systems	Technical brochure and summary for ELECTRA on results	05/14
WG C6.20	Integration of electric vehicles in electric power systems	Technical brochure and summary for ELECTRA on results	08/14
WG C6.21	Smart Metering – state of the art, regulation, standards and future requirements	Technical brochure and summary for ELECTRA on results	12/14
WG C6.22	Microgrids Evolution Roadmap	Technical brochure and summary for ELECTRA on results	12/14
WG C6.27	Capacity of Distribution Feeders for Hosting DER	Technical brochure and summary for ELECTRA on results	06/13

### 4. Tutorials and workshops in 2013

Colloquium Yokohama October 2013



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### 5. **Strategic Plan and Action Plan** : status (to be reviewed, updated, re-written or still valid)

A strategic plan for the period 2007-2016 and an action plan for the period 2010-2011 (last update December 2010) are available; both are still valid. Future strategy has been discussed during SC C6 meeting in August in Paris 2012. A new strategy will be decided in August in Paris 2014.

### 6. **Planned SC meetings** (in 2015 and next)

The 2014 SC meeting will take place in conjunction with the CIGRE Session in Paris.

For 2015 SC C6 meeting will be held in Vienna, Austria, in conjunction with a CIGRE colloquium.

### 7. **Participation to Regional Meetings, colloquia and symposia** :

- a. In 2013 (passed)
  - i. CIGRE/CIREN Conference in Lisbon, April 2013
  - ii. Yokohama (Japan) – CIGRE C6 Colloquium - October 2013
- b. In 2014 and beyond (scheduled)  
nothing scheduled so far

### 8. **Liaisons and Relations with other organisations**

SC C6 chairman Nikos Hatziargyriou is strongly involved in European smart grids technology platform and European research activities. Close connections to CIREN and IEEE exist due to activities of SC C6 members.

### 9. **Specific actions for the recruitment of young experts, Place of Women in the SC**

#### **Young experts:**

- young experts being involved in WGs

#### **Women:**

- women are C6 and WG member
- female C6 secretary
- female C6 chairmanship from 2014 on

### 10. **SC website : on-line contents and date of last update**

SC website is regularly updated, last update on January 2014

### 11. **Miscellaneous**