

CIGRE-UK Joint Liaison Meeting
30 November 2009
AREVA T&D



CIGRE Study Committee C4 System Technical Performance

Zia Emin
SC C4 UK Regular Member
National Grid Electricity Transmission
Electricity Network Investment
System Technical Performance

nationalgrid

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What is SC C4?



The Mission of SC C4 is :

- ◆ To facilitate and promote the progress of engineering and the international exchange of information and knowledge in the field of System Technical Performance.
- ◆ To add value to this information and knowledge by means of synthesizing state-of-the-art practices and developing recommendations.

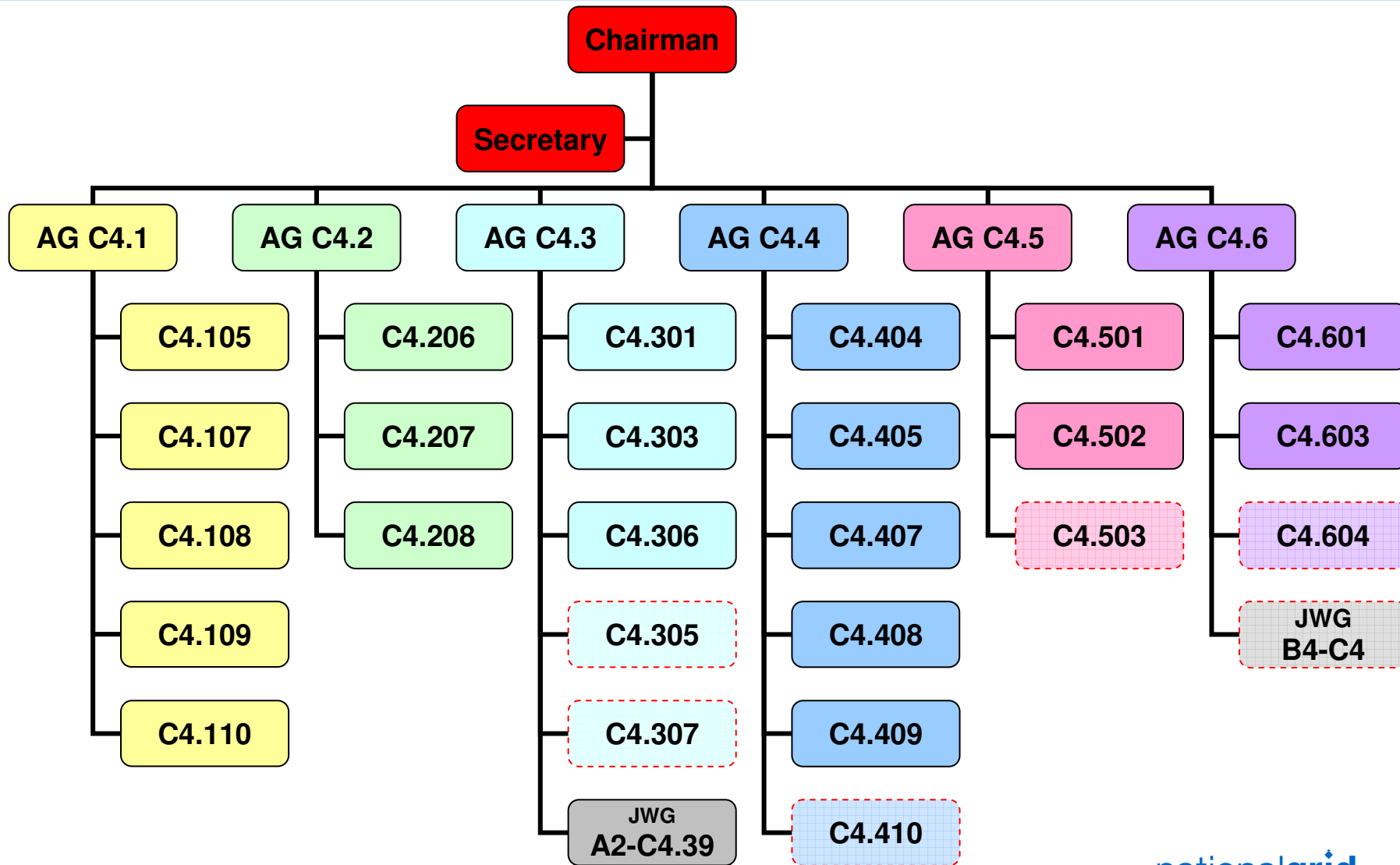
Scope of SC C4



SC C4 is responsible for methods and tools for analysis related to power systems in:

- ◆ **Power Quality**
- ◆ **Electromagnetic Compatibility (EMC)**
- ◆ **Insulation Co-ordination**
- ◆ **Lightning**
- ◆ **“Transversal” subjects**
- ◆ **Power System Security Assessment**

Organisation of SC C4



AG C4.1 Power Quality (R Koch)

C4.105
Benchmarking of PQ Performance in
Transmission Systems (M McGranaghan)

C4.107
Economic Framework for Voltage Quality
(J L Gutierrez Iglesias)

C4.108
Review of Flicker Objectives
of HV, MV & LV Systems (M Halpin)

C4.109
Emission Assessment Techniques
(E DeJaeger)

C4.110
Voltage Dip Immunity of Equipment
Used in Installations (M Bollen)

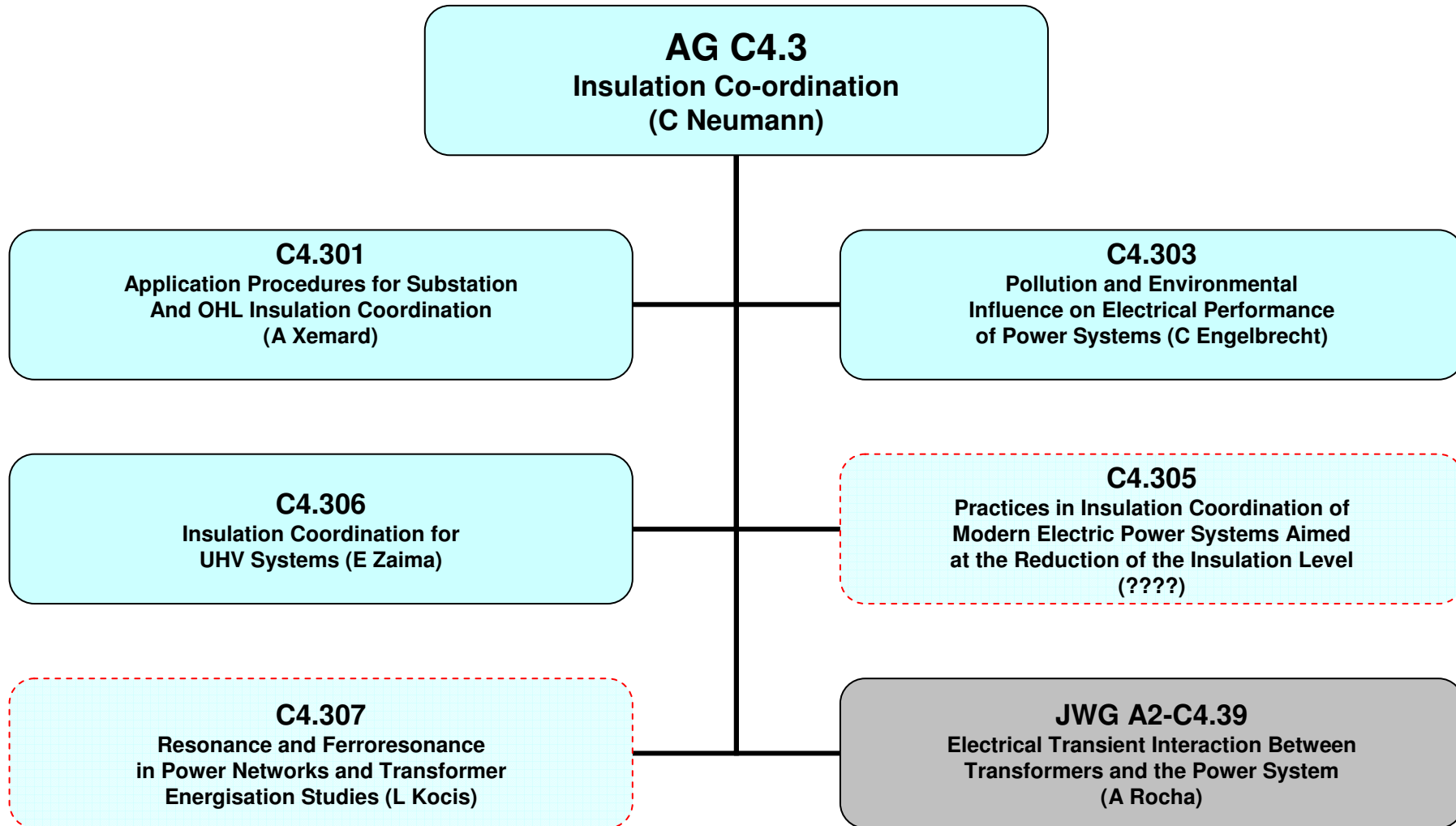
AG C4.2
EMC (J Hoeffelman)

C4.206
Protection of the HV power
network control electronics against
intentional EMI (W Radasky)

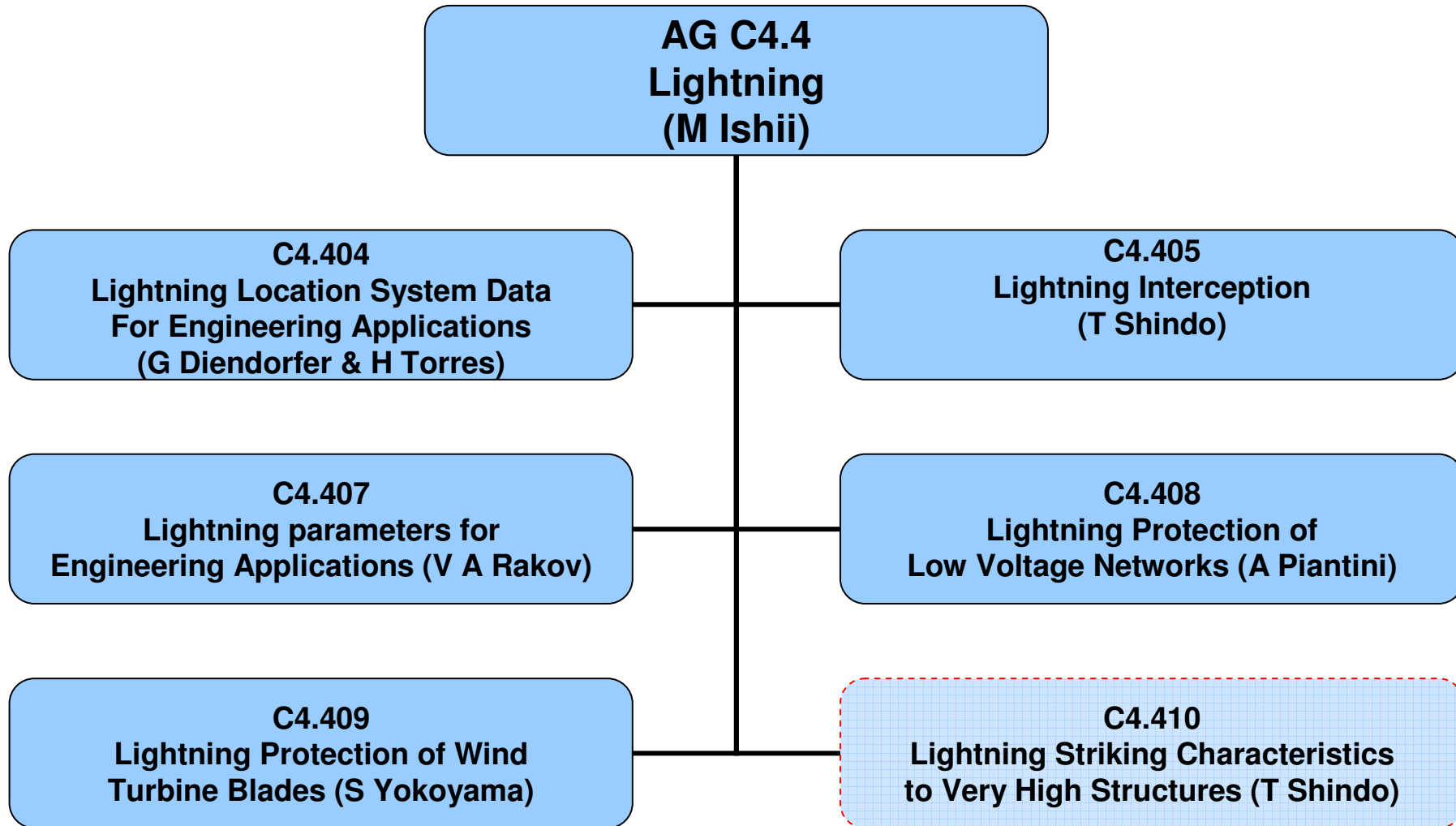
C4.207
EMC of Communication Circuits,
LV Systems and Metallic Structures in
the Vicinity of Power Systems (D Thomas)

C4.208
EMC Requirements and Solutions
for HV Substations and Generating
Stations (WH Siew)

Advisory Group C4.3



Advisory Group C4.4



Advisory Group C4.5



AG C4.5
Organisation and Liaison with TGs.
Co-ordination among AGs
(M Teresa Correia de Barros)

C4.501
Numerical Electromagnetic Analysis and
Its Application to Surge Phenomena
(A Ametani)

C4.502
Power System Technical
Performance Issues Related to the
Application of Long AC Cables
(W Wiechowski & L van der Sluis)

C4.503
Numerical Techniques for the Computation
of Power Systems from Steady-State
to Switching Transients (J Mahseredjian)

Advisory Group C4.6



AG C4.6
**Power System Dynamic
Performance Models
and Analysis (K Uhlen)**

C4.601
**Power System Security Assessment
(P Pourbeik)**

C4.603
**Analytical Techniques and Tools
for Power Balancing Assessments
(K Uhlen)**

C4.604
**Modelling and Aggregation
of Loads in Flexible
Power Networks (J Milanovic)**

JWG B4/C4
**Influence of Embedded HVDC
Transmission on System Security
and AC Network Performance (????)**

Status of Newly Proposed WGs



Type	Number	Title	Circulated TOR among AGs et al.	Received Comments	Submitted for Approval to TC	Approved
WG	C4.305	Practices in Insulation Coordination of Modern Electric Power Systems Aimed at the Reduction of the Insulation Level	Yes	Yes	Yes	
WG	C4.307	Resonance and Ferroresonance in Power Networks and Transformer Energization Studies	Yes	Yes	Yes	
WG	C4.604	Modelling and aggregation of loads in flexible power networks	Yes	Yes		
JWG	C4/B4	Influence of Embedded HVDC Transmission on System Security and AC Network Performance	Yes	Yes	Yes	
WG	C4.410	Lightning Striking Characteristics to Very High Structures	Yes			
WG	C4.503	Numerical techniques for the computation of power systems, from steady-state to switching transients				

2009 Annual Meeting



CIGRE SC C4 Meeting & Colloquium in Kushiro, Japan, June 7-13, 2009

Colloquium on Harmonizing Environment, Power Quality and Power Systems

Organized by CIGRE Study Committee C4 & Japanese National Committee of CIGRE in cooperation with the IEE of Japan

Preferential Subjects for Paris 2010



PS1 : EMC/EMF and PQ for future networks - compatibility requirements, assessment techniques/tools, and technical performance improvement programmes.

- Management of PQ in networks with a high penetration of renewables, disturbing loads, and loads sensitive to PQ phenomena - technical and economical issues
- ELF magnetic field mitigation techniques for HV power systems
- Protection of the HV power network control electronics against intentional/unintentional Electromagnetic Interference
- Influence of power network on other installations

PS2 : Advances in insulation coordination and lightning knowledge for improved performance of modern electric power systems

- UHV AC systems
- Lightning attachment to OH lines and to tall structures
- Grounding systems performance

PS3 : Techniques and tools for power balancing assessments and risk-based security assessment

- Modelling methods and tools for analyzing power balancing issues
- Risk based approaches.