Young CIGRE-Matchmaking
Safety first!

For your and our safety we would like to ask your attention for the following security-precautions:

In the event of a evacuation:

- Follow indicated escape route.
- Only use stairs, no ellevator.
- Go to directly to the gathering place.
- Follow possible directions of associated first aid entities.
Doel van de dag

- Introductie Matchmaking principe
- Presentatie koppels
- Website Young CIGRE Motivatie
- Excursie – DNV GL with Frank Janssen
- Buffet
### Agenda

**Young CIGRE-themadag "Matchmaking"**

**Locatie:** DNV GL Arnhem, H21 Lounge, Utrechtseweg 310 6800 ET Arnhem

<table>
<thead>
<tr>
<th>20 november 2014</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 tot 13:00</td>
<td>Ontvangst</td>
</tr>
</tbody>
</table>
| 13:00 tot 13:20 | Introductie dagprogramma  
Jerom de Haan en Sander Franke (bestuursleden Young CIGRE) |
| 13:30 tot 13:45 | Studiecomitévoorzitter C2  
Susana Almeida de Graaff (TenneT TSO) |
| 13:50 tot 14:05 | Young CIGRE-lid  
Jerom de Haan (TU/e) |
| 14:10 tot 14:25 | Introductie Young CIGRE-Matchmaking-webpagina |
| 14:25 tot 14:40 | Studiecomitévoorzitter C4  
Jeroen van Waes (Movares) |
| 14:45 tot 15:00 | Young CIGRE-lid  
Konstantinos Velitsikakis (DNV GL) |
| 15:00 tot 15:20 | Pauze         |
| 15:20 tot 15:35 | Young CIGRE-lid  
Nadina Baghina (Joult) |
| 15:40 tot 15:55 | Studiecomitévoorzitter B5  
Johan Morren (Enexis) |
| 16:00 tot 16:05 | Afsluiting    |
| 16:05 tot 17:00 | Excursie Hoogspanningslaboratorium DNV GL |
| 17:00 tot 18:00 | Buffet       |
Studiecomité C2
Susana de Graaf (TenneT TSO)
Marcel van Ravenhorst (TenneT TSO)
Young CIGRE-Matchmaking

SC C2 System Operations
Susana de Graaff
Studiecomitévoorzitter

Who am I?

How long have I been working for CIGRE?

Why is CIGRE worth it?
SC C2 Activities

- Real-time system operation and control

WG C2.13 - Voltage and VAR support in System Operation (Thales Papazoglou)

CIGRE Brochure 504_ Voltage and VAr Support in System Operations was published in August 2012

WG C2.16 - Challenges in the control centre (EMS) due to distributed Generation and Renewables (Michael Power)

Paper presented at the CIGRE Lisbon Symposium, April 2013
WG will present a paper at CIGRE Session Paris 2014
Technical Brochure is expected in late 2014 (work almost finalised)
Dutch member: Roy Besselink, TenneT
SC C2 Activities

- System operational planning and performance

WG C2.21 - Lessons learnt from recent Emergencies and Blackout Incidents (Ben Li)

The WG developed a Technical Brochure; target to be publish TB by the end of 2013 (along with an Electra Paper). Group will stay active to maintain a blackouts database.

Dutch member: Susana de Graaff

WG C2.23 - System Restoration Procedure and Practices (Ben Li)

Work has been initiated in October 2013 and it is the continuation of WG C2.21

TB expected for Summer of 2015

Dutch member: Susana de Graaff

WG C2.22 - Application of resilience engineering to safety management principles in Control Centres (Convenor - Teresa Carolin)

Work in progress
SC C2 Activities

• Control centre infrastructure and human resources for system operations

WG C2.33 - Control centre operator Requirements, Selection, Training (N. Cukalevski)

CIGRE Technical Brochure 524_Control Centre Requirements and Operator Training published in February 2013. Group continues as C2.35.

WG C2.34 - Capabilities and requirements of a control centre in the 21st century - Functional and Human resources view (Udo Spanel)

Work close to be finalised with an ELECTRA paper.

WG C2.35 - Operations Performance, Training Goals and Operator (N. Cukalevski)

Group recently formed. It plans to publish an Electra article in 2016. Dutch member: Marcel van Ravenhorst
SC C2 Activities

- Joint-WGs

JWG C2/C5.05 - Development and Changes in the Business of System Operators (Ole Gjerde)

Technical Brochure and an Electra Article on "Interaction between principles of transfer capacity calculation and market activity for enhanced system utilization" published in April 2013.


Dutch member: Danny Klaar
An MoU between CIGRE and IEEE was signed. Furthermore the aim is to increase cooperation with ENTSO-E, NERC and similar associations in the future.

The C2 Electra Paper “CIGRE’s activities in the field of Large Disturbances” (Electra N°263, August 2012)

SC C2 presented the paper Paper “Transition of the Electricity System” in Paris Session 2014

CIGRE Position Paper on the Transition of the Electricity System from conventional generation to a dispersed and/or RES system (ELECTRA August 2014)


“ACROSS BORDERS - HVDC SYSTEMS AND MARKET INTEGRATION”
Leading Study Committee SC C2
Supporting Study Committees: B4, C1, C4 & C5
PS 1: Grid operation solutions to changes in generation mix including distributed and renewable generating resources

- Monitoring, operation and control of frequency and voltage
- Control of stability including excitation system, power stabilizers, governors and converters (due to decreased system inertia)
- Managing integration of HVDC into the interconnected power grid

PS 2: Managing system disturbances and system restoration

- Essential load and critical generator consideration
- Disturbance management and restoration strategies, including cross border approach
- TSOs/DSOs/Grid User Cooperation requirements
System Operation Challenges

- Integration of Renewables
- Integration of DC technology
- Operators Knowledge Level
- Active Distribution Networks
- Difficulties in building lines / Increasing Capacity
- Internationalization TSO cooperation
- Wide Area Control and Supervision
- Changes in load behaviour
- Emerging Transmission/Distribution Interaction
Trends

- Dynamic Assessment
- Flexible Control
- Coordination

- WAMS and PMUS
- Flexible Power Reserves
- European Awareness System

- WACS & SPS
- Efficiency solutions e.g. IGCC
- Risk Assessment Methodologies

- FACTS
- Synchronous Condensers
- Stronger link btw investment and Operations
Technical Directions

1. Wide area Control and supervision: Integration of regional and national grids into large Control areas and organisation at Continental, Regional and Local level.

2. Impact on system operation from dispersed generation, storage and changes in electrical loads behaviour.

3. Increase ability to control two way flows and information from generation to consumption, taking into account intermittent energy sources (i.e. wind energy).

4. Adapt Control Centres processes and organisation to large implementation of new technology and automated processes.

Backup slides
System Operation Challenges

- Lower inertia operating point
- More volatility in production
- Lack of conventional generation
- Lack of reserves and control
- Long distance power transmission

Integration of Renewables

Integration of DC technology

- HVDC links integrated in the meshed system
  - Capacity determination
  - Reliability levels & N-1
  - Development of new control possibilities
  - Restoration plans
  - Market Integration
  - New operational philosophies
System Operation Challenges

- Understanding of dynamic phenomena
- Performing more and more analysis closer to real-time
- Diverse technologies

- Embedded generation that becomes negative load for the TSO
- Opportunities to participate in the power system control – Demand side response
- Information sharing between DNOs and TSOs
System Operation Challenges

- No new OHL corridors
- Alternative solutions as PSTs (to distribute the flows) or HVDCs (higher transmission capacity – long distances)
- Congestion Management solutions
- Investment choices directly influence how the system is operated

Internationalization
- TSO cooperation
- Integral international network development towards (ENTSO-E)
- Integrated and coordinated system operation
System Operation Challenges

- Share PMU data for WAMS
- Dynamic information into the operational timeframes
- Develop control strategies and automatic actions
- Increased Coordination

Wide Area Control and Supervision

Storage

- Integration of storage in the power system (also transmission system level)
- Beyond Hydro-pump storage solutions
Studiecomité C2
Susana de Graaf (TenneT TSO)
Marcel van Ravenhorst (TenneT TSO)
Cigre working group
C2.35

Operations Performance, Training Goals and Operator Performance Measurement

25-11-2014
Marcel van Ravenhorst
Safety first!

For your and our safety we would like to ask your attention for the following security-precautions:

In the event of a evacuation:

- Follow indicated escape route.
- Only use stairs, no ellevator.
- Go to directly to the gathering place.
- Follow possible directions of associated first aid entities.
Marcel van Ravenhorst

- Trainingscoördinator System Operations;
- LinkedIn;
- Workinggroup C2.35 - Operations Performance, Training Goals and Operator Performance Measurement
Wat biedt Cigre mij?

- Contacten met Nederlandse Cigre leden;
- Internationale contacten;
- Kennis en ervaring van andere TSO’s;

Wat biedt ik Cigre?

- Simulation training;
- Onderwijskundig;
- Competenties;
- Kennis van Inter-TSO simulatietrainingen;
Actuele onderwerpen

- Bescherm- en Hersteltrainingen;
- E-learning;
- Informal Learning;
- Corporate goals;
- Operations goals;
- KPIs;
- Training goals;
- System Operator in the future;
- Evaluation of training;
TenneT is Europe's first cross-border grid operator for electricity. With approximately 21,000 kilometres of (extra) high-voltage lines and 36 million end-users in the Netherlands and Germany, we rank among the top five grid operators in Europe. Our focus is to develop a North-west European energy market and to integrate renewable energy. Taking power further.

www.tennet.eu
Young CIGRE-lid
Jerom de Haan (TU Eindhoven)
Young CIGRE-Matchmaking

Cross-border Balancing in Europe

Jerom de Haan
j.e.s.d.haan@tue.nl
Frequency Quality

Ensuring frequency quality within constraints of the European interconnected transmission system.
Constraints of research

Adequate modeling
Computation of margin

Deterministically or Probabilistically

ATC

FB
Young CIGRE

Networking for knowledge as well as for discussions

Be connected with third parties

Share experiences, also with other young professionals
Young CIGRE-Matchmaking

Cross-border Balancing

Jerom de Haan
j.e.s.d.haan@tue.nl
Introductie Young CIGRE-Matchmaking-website
Studiecomité C4
Jeroen van Waes (Movares)
Anton Ishchenko (Phase to Phase)
Young CIGRE-Matchmaking

C4: System Technical Performance

Jeroen van Waes
Movares
C4 maakt het functioneren van (een combinatie) van systemen mogelijk door passende (risico-)modellen, rekentools, meetmethodieken en maatregelen.
Studiecomitévoorzitter C4

- Very Fast Transients
- Fast Transients
- Slow Transients
- SSR / Control Interactions / SSTI
- Transient Stability
- Small Signal Stability
- Frequency Control / Regulation
- Long Term Dynamics
- Unit Dispatch etc.

Time in Seconds:
- $10^{-3}$ (1 ms)
- $10^{-4}$
- $10^{-5}$
- $10^{-4}$
- 0.001
- 0.01
- 0.1
- 1
- 10
- 100
- 1000
- $10^4$
- $10^5$

1 cycle
1 minute
1 hour
1 day
Studiecomitévoorzitter C4

POWER QUALITY

EEN GEZAMENLIJKE INSPANNING!

YC - Matchmaking
Studiecomitévoorzitter C4

Geflikker in de laagspanning

Danny Geldmeijer
18 november 2014
Studiecomitévoorzitter C4

Fig. 2: Illustrations of (a) the structure of wind turbine and its internal cables, (b) induced model of wind turbine structure subjected to the lightning strike.

EMC

Isolatie coördinatie

Tools/analysetechnieken
Studiecomitévoorzitter C4

Leden C4

Pierre Beeckman (Philips)
Maarten Berende (Enexis, secr.)
Sjef Cobben (Alliander, TU/e)
Chris Engelbrecht (Engelbrecht Consulting)
Frans van Erp (TenneT)
Paul Hesen (DNV GL)
Gerben Hoogendorp (TU Delft)
Anton Ishchenko (PhasetoPhase)
Peter van Oirsouw (Kemperheide)
Frans Provoost (Liandon)
Gert Rietveld (VSL)
Erwin Smulders (Movares)
Imre Tannemaat (TenneT)
Jeroen van Waes (Movares, vz.)
### C4: 15xNL in WG

<table>
<thead>
<tr>
<th>Title</th>
<th>NL deelnemer</th>
</tr>
</thead>
<tbody>
<tr>
<td>WG_C4.111</td>
<td>Review of LV and MV Compatibility Levels for Voltage Fluctuation</td>
</tr>
<tr>
<td>WG_C4.112</td>
<td>Power Quality monitoring in flexible power networks</td>
</tr>
<tr>
<td>WG_C4.206</td>
<td>Protection of the high voltage power network control electronics against intentional electromagnetic interference (IEMI)</td>
</tr>
<tr>
<td>WG_C4.305</td>
<td>Practices in Insulation Coordinating Modern Electric Power Systems Aimed at the Reduction of the Insulation Level</td>
</tr>
<tr>
<td>WG_C4.410</td>
<td>Lightning striking characteristics to very high structures</td>
</tr>
<tr>
<td>WG_C4.503</td>
<td>Numerical techniques for the computation of power systems, from steady-state to switching transients</td>
</tr>
<tr>
<td>WG_C4.603</td>
<td>Analytical Techniques and Tools for Power Balancing Assessments</td>
</tr>
<tr>
<td>WG_C4.605</td>
<td>Modelling and aggregation of loads in flexible power networks</td>
</tr>
<tr>
<td>WG_C4.23</td>
<td>Guide to procedures for estimating the lightning performance of Transmission lines</td>
</tr>
<tr>
<td>WG_C4.24</td>
<td>Power Quality and EMC Issues associated with future electricity networks</td>
</tr>
<tr>
<td>WG_C4.25</td>
<td>Issues related to ELF Electromagnetic Field exposure and transient contact currents</td>
</tr>
<tr>
<td>WG_C4.26</td>
<td>Evaluation of Lightning Shielding Analysis Methods for EHV and UHV DC and AC Transmission lines</td>
</tr>
<tr>
<td>WG_C4.27</td>
<td>Benchmarking of power quality performance in Transmission systems</td>
</tr>
<tr>
<td>WG_C4.28</td>
<td>Extrapolation of measured values of power frequency magnetic fields in the vicinity of power links</td>
</tr>
<tr>
<td>WG_C4/C6.29</td>
<td>Power-quality aspects of solar power</td>
</tr>
<tr>
<td>WG_C4.30</td>
<td>EMC in Wind Generation Systems</td>
</tr>
<tr>
<td>WG_C4.33/CIRED</td>
<td>EMC between Communication Circuits and Power Systems</td>
</tr>
<tr>
<td>WG_C4.32</td>
<td>Understanding of the Geomagnetic Storm Environment for High Voltage Power Grids</td>
</tr>
<tr>
<td>WG_C4.33</td>
<td>Impact of Soil-Parameter Frequency Dependence on the Response of Grounding Electrodes and on the Lightning Performance of Electrical Systems</td>
</tr>
<tr>
<td>WG_C4.34</td>
<td>Application of PMUs for monitoring power system technical performance and providing wide-area control and protection</td>
</tr>
<tr>
<td>JWG C4/C6.35/CIRED</td>
<td>Modelling and dynamic performance of inverter based generation in Power System Transmission and Distribution Studies</td>
</tr>
<tr>
<td>JWG C4.36</td>
<td>Parameters for Engineering Consequence for Wind Turbines</td>
</tr>
<tr>
<td>JWG C4/B4.38</td>
<td>Network Modelling for Harmonic Studies</td>
</tr>
<tr>
<td>JWG A2/C4.52</td>
<td>High-frequency transformer models for non-standard waveforms</td>
</tr>
<tr>
<td>JWG A3/B5/C4.37</td>
<td>System conditions for and probability of Out-of-Phase</td>
</tr>
</tbody>
</table>
Studiecomitévoorzitter

Mogelijkheden Young Cigre leden

- Welke mogelijkheden bestaan er voor Young CIGRE-leden binnen uw studiecomité?
- Wat zoekt u in een profiel van Young CIGRE-kandidaten?
Studiecomité C4
Jeroen van Waes (Movares)
Anton Ishchenko (Phase to Phase)
Young CIGRE-Matchmaking

CIGRE werkgroep C4.503:
“Numerical techniques for the computation of power systems, from steady-state to switching transients”

Anton Ishchenko
a.a.ishchenko@phasetophase.nl
Over mijzelf

• 2003: afstudeerde in Krasnodar, Rusland
• 2008: promoveerde bij TU/e, “Dynamics and Stability of Distribution Networks with DG”
• vanaf oktober 2009: werkzaam bij Phase to Phase, ontwikkeling en verbetering van Vision/Gaia
• expertise in: transienten, loadflow, kortsluitstroom berekeningen, numerieke algoritmen
CIGRE WG C4.503 – Numerical techniques for power systems, from steady state to switching transients

WG Composition:
- Jean Mahseredjian (Convener), Polytechnique, Montreal
- Secretary
  - Bhupesh Gajera, ABB, UK
- Total of 28 members
  - 16 countries: Australia, Brazil, Canada, Denmark, France, Ireland, Japan, Mexico, Netherlands, Portugal, Spain, South Korea, Sweden, Switzerland, UK, US

WG Timeline:
- Start Date: May 2011
- Expected Date for Submitting Final Report to SC Chairman: May 2015
Numerical Techniques

- Steady-State
- State Estimation
- Transient

- RMS
- EMT
Numerical techniques

- Steady-state: loadflow, optimal powerflow, network optimizations (optimal placement of devices for compensation of reactive power)
- State estimation
- Transient, RMS: transient stability
- Transient, EMT: short-circuits, transient overvoltages, switching transients, etc.
Ontwikkelingen

- Nadruk ligt op EMT
- Veel werk i.v.m. ontwikkeling van test cases
- Validatie met verschillende rekenpakketten
- Gebruik van EMT-berekening voor validatie van uitkomsten van transiente stabiliteitsanalyse (RMS-berekening)
Ervaringen (inhoudelijk)

- Het onderwerp is een beetje te breed
- De rol van de voorzitter is van extreem belang
- Voortgang is trager dan verwacht
Ervaringen (in het algemeen)

- Goede persoonlijke contacten met beroemde professoren/mensen uit industrie
- Internationale ploeg
- Breed overzicht (wat er in de wereld gebeurt)
CIGRE congres, Parijs, 2014

- Vergadering van de werkgroep
- Discussion meetings, poster sessions en technical exhibition
- Hot topics C4: geomagnetische storingen, HVDC en converter-connected generation, systemen met lange AC kabels (transiente overspanningen, harmonische resonanties, etc.)
- Hollandse avond
Bedankt voor uw aandacht!
Zijn er nog vragen?

Anton Ishchenko
a.a.ishchenko@phasetophase.nl
Young CIGRE-lid
Konstantinos Velitsikakis (DNV GL)
Young CIGRE-Matchmaking

Konstantinos Velitsikakis
konstantinos.velitsikakis@dnvgl.com
Content

- Personal information
- Daily business/projects
- CIGRE - Matchmaking
Personal Information

- 27, Thessaloniki, Greece

- 2010, 5-year diploma in “Electrical Engineering & Computer Science”, Aristotle University of Thessaloniki

- 2013, Master in “Electrical Power Engineering”, Delft University of Technology

- 2012, TenneT (Offshore Dpt. & Asset Strategy Dpt.)

- January 2014, DNV GL, Power Links Dpt., EMC Group
Daily Business/Projects (1)

- Lightning performance of HV Transmission OHL (AC & DC)
- Insulation co-ordination in HV systems
- Transient studies (switching, TRV, resonances)
- Design review of HV Transmission OHL
- Insertion of long HVAC underground cables in the transmission systems (onshore/offshore)

- New lower resonance frequencies are introduced due to the pure capacitive behaviour of the cables

- Potential Temporary Overvoltages (TOVs) may arise

- Scope of work: Frequency scans + Time domain simulations
CIGRE Matchmaking

- Interest in working groups C4 (23/26/309) and B1.47
- Meet people around the field
- Gain more specialized knowledge by joining a working group
Young CIGRE-Matchmaking

Thank you for your attention!

Konstantinos Velitsikakis
konstantinos.velitsikakis@dnvgl.com
## Young CIGRE-themadag "Matchmaking"

### Locatie: DNV GL Arnhem, H21 Lounge, Utrechtseweg 310 6800 ET Arnhem

<table>
<thead>
<tr>
<th>20 november 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 tot 13:00</td>
</tr>
</tbody>
</table>
| 13:00 tot 13:20  | Introductie dagprogramma  
Jerom de Haan en Sander Franke (bestuursleden Young CIGRE) |
| 13:30 tot 13:45  | Studiecomitévoorzitter C2  
Susana Almeida de Graaff (TenneT TSO) |
| 13:50 tot 14:05  | Young CIGRE-lid  
Jerom de Haan (TU/e) |
| 14:10 tot 14:25  | Introductie Young CIGRE-Matchmaking-webpagina |
| 14:25 tot 14:40  | Studiecomitévoorzitter C4  
Jeroen van Waes (Movares) |
| 14:45 tot 15:00  | Young CIGRE-lid  
Konstantinos Velitsikakis (DNV GL) |
| 15:00 tot 15:20  | Pauze |
| 15:20 tot 15:35  | Young CIGRE-lid  
Nadina Baghina (Joulz) |
| 15:40 tot 15:55  | Studiecomitévoorzitter B5  
Johan Morren (Enexis) |
| 16:00 tot 16:05  | Afsluiting |
| 16:05 tot 17:00  | Excursie Hoogspanningslaboratorium DNV GL |
| 17:00 tot 18:00  | Buffet |
Young CIGRE-lid
Nadina Baghina (Joulz)
Young CIGRE-Matchmaking

The Electrical Energy Network and Decentralized Energy Production

Nadina G. Baghina
nadina.baghina@joulz.nl
Introduction

Nationality: **Romanian**
Studies:

- 2007 – 2010 **Jacobs University Bremen, Germany**
  *Electrical Engineering and Computer Science*
- 2010 – 2012 **Technical University Eindhoven, The Netherlands**
  *Sustainable Energy Technology (Spec. in Electrical Energy Systems)*
- 2012 – present **Joulz (Joulz Projects, Eneco Holding), The Netherlands**
  *Consultant (MV, HV electricity network)*

Free time: sporting, reading, travelling
About Joulz (Projects)

- Joulz Projects, GreenTec and CityTec – part of Eneco Holding (SP – part of Stedin)
- Clients: Stedin, TenneT, Total, ProRail, Microsoft, and other companies from the industry
- Activities in the MV and HV:
  - Design of the electricity network
  - Substations and electrical connections
  - Substation automation
  - Communication infrastructure
  - Maintenance
My Activities at Joulz

- Innovation for Joulz Projects
- Projects in all Stedin regions: replacing and adjusting safety relays
  - Generation
  - Settings – Manufacturer
  - Functionality and design of the electricity network
  - Right order of performing the works
Motivation for CIGRE

- **Knowledge sharing**
  - Impact and integration of sustainable energy
  - Behavior of the new electricity network
  - Controlling the electricity infrastructure
  - Regulation of the energy market and integration with the neighboring countries

- **Networking and internationality** → The ‘fun’ element
Young CIGRE-Matchmaking

The Electrical Energy Network and Decentralized Energy Production

Nadina G. Baghina
nadina.baghina@joulz.nl
Studiecomité B5
Johan Morren (Enexis)
Cigré B5
Protection and Automation

Johan Morren
Scope B5

Study committee B5 topics:

- System Protection
- Substation Control and Automation
- Remote Control Systems and Equipment
- Metering Systems and Equipment

Covering the following aspects:

- Principles
- Design
- Applications
- Coordination
- Performance
- Asset management
Leden NSC B5

- Jacques van Ammers – Alstom
- Frank Baldinger – Locamation
- Theo Borst – DNV GL
- Frans Comos – Enexis
- Paul Jansen – Tennet
- Rene de Jongh – Joulz
- Godfried Kockelkorn – ABB
- Frank Koers – Tennet
- Jan Langedijk – Siemens
- Martin Michiels – Alstom
- Johan Morren – Enexis
- Evita Parabirsing – Tennet
- Marian Popov – TU Delft
- Tamiru Shire – Stedin
- Frans Volberda – Alliander
Activiteiten

• 2011 / 2012: Stroomtransformatoren
  • ~ 120 deelnemers

• 2013: In Control?!
  • ~ 130 deelnemers

• 2014: Beveiliging over Ethernet (met D2)
  • ~ 80 deelnemers

• 2015: Toekomstscenario’s beveiliging
Actuele onderwerpen

- IEC 61850 nog steeds hoog op de agenda, met veel aandacht voor
  - Verdergaande standaardisatie
  - Uniforme engineeringstools
  - Toepassing proces-bus (IEC 61850-9-2)
  - Nauwkeurigheid tijdsynchronisatie
  - Toepassing IEC61850 op andere vlakken

- Cyber-security
Actuele onderwerpen

- Toenemend belang en impact van communicatie

- Toenemende aandacht voor beheersaspecten:
  - Complexiteit / behoud kennis
  - Standaardisatie / vereenvoudiging
  - Uniforme datamodellen
  - Vervangings- en onderhoudsstrategieën
Mogelijkheden Young Cigré

- Nationaal Studie Comité
- Organisatie themadagen en workshops
- (Internationale) werkgroepen
- Papers
Recente en nieuwe werkgroepen

- **2013**
  - Testing strategy for PAC functions in a full digital substation based on IEC 61850
  - Analysis and comparison of Fault locator system for different applications
  - Protection and Automation Issues during System Restoration/Black Start / Protection and automation of islanded systems

- **2014**
  - Optimization of the design of PACS
  - Application of Travelling Wave Technology for Protection and Automation
  - Subsynchronous Resonance (SSR) Detection and Mitigation
Preferential subjects

• **2015**
  - User experience and current practice for cyber-security applications
  - Sub-Synchronous Resonance (SSR) in existing and future networks – Detection and appropriate measures
  - Management & Organisational Change in Response to New Protection & Automation Technologies

• **2016**
  - User experience of PACS design and maintenance
    - Protection and Control Life time Asset Management Strategy
    - Optimization of future PACS
  - Coordination of generator and grid protection
Profiel

- Actief op gebied van secundaire techniek
- Duidelijke visie op de toekomst van het vakgebied
- Tegen gevestigde orde in durven gaan
- Geïnteresseerd in het delen en vergaren van (nieuwe) kennis
Vragen
Afsluiting

Young CIGRE-themadag "Matchmaking"

Locatie: DNV GL Arnhem, H21 Lounge, Utrechtseweg 310 6800 ET Arnhem

20 november 2014

<table>
<thead>
<tr>
<th>Tijd</th>
<th>Programma</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30 tot 13:00</td>
<td>Ontvangst</td>
</tr>
<tr>
<td>13:00 tot 13:20</td>
<td>Introductie dagprogramma</td>
</tr>
<tr>
<td></td>
<td>Jerom de Haan en Sander Franke (bestuursleden Young CIGRE)</td>
</tr>
<tr>
<td>13:30 tot 13:45</td>
<td>Studiecomitévoorzitter C2</td>
</tr>
<tr>
<td></td>
<td>Susana Almeida de Graaff (TenneT TSO)</td>
</tr>
<tr>
<td>13:50 tot 14:05</td>
<td>Young CIGRE-lid</td>
</tr>
<tr>
<td></td>
<td>Jerom de Haan (TU/e)</td>
</tr>
<tr>
<td>14:10 tot 14:25</td>
<td>Introductie Young CIGRE-Matchmaking-webpagina</td>
</tr>
<tr>
<td>14:25 tot 14:40</td>
<td>Studiecomitévoorzitter C4</td>
</tr>
<tr>
<td></td>
<td>Jeroen van Waes (Movares)</td>
</tr>
<tr>
<td>14:45 tot 15:00</td>
<td>Young CIGRE-lid</td>
</tr>
<tr>
<td></td>
<td>Konstantinos Velitsikakis (DNV GL)</td>
</tr>
<tr>
<td>15:00 tot 15:20</td>
<td>Pauze</td>
</tr>
<tr>
<td>15:20 tot 15:35</td>
<td>Young CIGRE-lid</td>
</tr>
<tr>
<td></td>
<td>Nadina Baghina (Joult)</td>
</tr>
<tr>
<td>15:40 tot 15:55</td>
<td>Studiecomitévoorzitter B5</td>
</tr>
<tr>
<td></td>
<td>Johan Morren (Enexis)</td>
</tr>
<tr>
<td>16:00 tot 16:05</td>
<td>Afsluiting</td>
</tr>
<tr>
<td>16:05 tot 17:00</td>
<td>Excursie Hoogspanningslaboratorium DNV GL</td>
</tr>
<tr>
<td>17:00 tot 18:00</td>
<td>Buffet</td>
</tr>
</tbody>
</table>