



## CIGRE WORKING GROUPS LISTS

### STUDY COMMITTEES

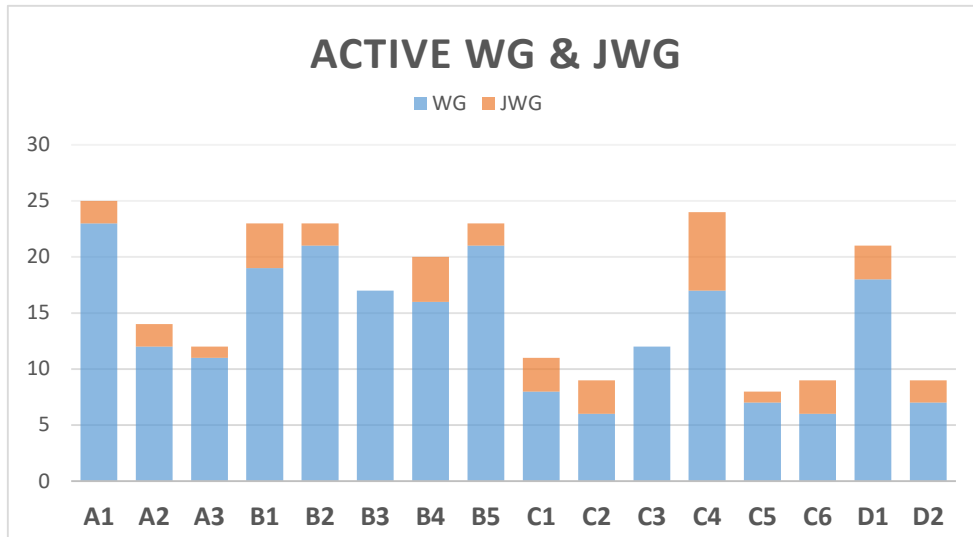
- A1 ROTATING ELECTRICAL MACHINES**
- A2 POWER TRANSFORMERS AND REACTORS**
- A3 TRANSMISSION & DISTRIBUTION EQUIPMENT**
- B1 INSULATED CABLES**
- B2 OVERHEAD LINES**
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- B4 DC SYSTEMS AND POWER ELECTRONICS**
- B5 PROTECTION AND AUTOMATION**
- C1 POWER SYSTEM DEVELOPMENT AND ECONOMICS**
- C2 POWER SYSTEM OPERATION AND CONTROL**
- C3 POWER SYSTEM ENVIRONMENTAL PERFORMANCE**
- C4 POWER SYSTEM TECHNICAL PERFORMANCE**
- C5 ELECTRICITY MARKETS AND REGULATION**
- C6 ACTIVE DISTRIBUTION SYSTEMS AND DISTRIBUTED ENERGY RESOURCES**
- D1 MATERIALS AND EMERGING TEST TECHNIQUES**
- D2 INFORMATION SYSTEMS AND TELECOMMUNICATION**

**Last update : 5 March 2020**

# Statistics of CIGRE Working Groups

260 active Working Groups (WG or JWG)

Last update : 5 March 2020

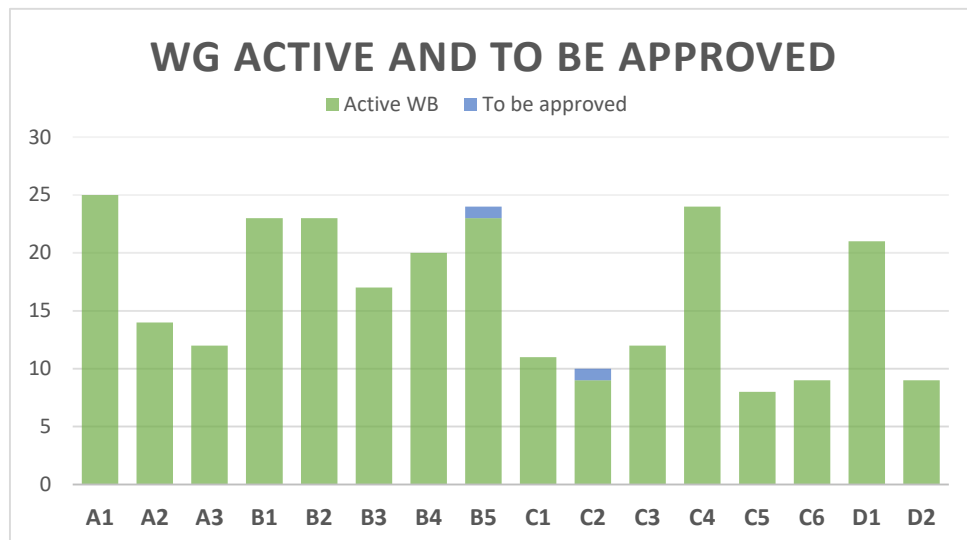


This document presents the updated lists of active Working Groups (WG) in each of the 16 Study Committees (SC).

Each Study Committee list gives:

- The type (Working Group of Joint Working Group)
- The title of the WG
- The name and country of the WG Convener
- The date of approval of the WG by the Technical Committee Chairman.

The detailed Terms of Reference (TOR) of the WG can be downloaded from the links provided on the page following each Study Committee list page.



# CIGRE WORKING GROUPS LISTS

## SC A1 ROTATING ELECTRICAL MACHINES

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	A1-67	State of the Art in methods, experience and limits in end winding corona testing for Hydro Generators	Hèlio de_Paiva_Amorin_Junior (BR)	12/07/2019
2	WG	A1-68	Evaluating Quality Performance of Electric Motor Manufacturing and Repair Facilities	Kondra Nagesh (IN)	12/07/2019
3	JWG	A1/C4-66	Guide on the Assessment, Specification and Design of Synchronous Condensers for Power Systems with Predominance of Low or Zero Inertia Generators	Dhananjay Chaturvedi (IN)	31/01/2019
4	WG	A1-64	Guide for Evaluating the Repair/Replacement of Standard Efficiency Motors	Erlí FIGUEIREDO (BR)	21/07/2018
5	WG	A1-65	Guide to optimal management of coal generation in presence of significant inverter based resources	Louis Jestin (FR)	24/07/2018
6	WG	A1-62	Thrust Bearings for Hydropower - A Survey of Known Problems and Root Causes	Fritz Neumayer (AT)	18/04/2018
7	WG	A1-63	Turbo Generator Stator Winding Bushings and Lead Connections – Field Experience, Failures and Design Improvements	Juergen_R. Weidner (DE)	23/04/2018
8	WG	A1-61	Survey of Partial Discharge Monitoring in Large Motors	André Tomaz de Carvalho (BR)	26/05/2017
9	WG	A1-60	Guide on economic evaluation for refurbishment or replacement decisions on hydro generators	Mark Bruintjies (ZA)	26/06/2017
10	WG	A1-59	Survey on Industry Practices and Effects associated with the Cutting Out of Stator Coils in Hydrogenerators	Charles Millet (CA)	09/02/2017
11	WG	A1-58	Selection of Copper Versus Aluminium Rotors for Induction Motors	Fredemar Runcos (BR)	29/06/2016
12	WG	A1-57	The Visual Inspection of Stator Windings and Cores of Large Turbo Generators	Fred CLAASSENS (ZA)	29/04/2016
13	WG	A1-56	Survey on Lap and Wave Windings and their Consequences on Maintenance and Performance	Richard PERERS (SE)	12/01/2016
14	WG	A1-55	Survey on Split Core Stators	Sun YUTIAN (CN)	12/01/2015
15	WG	A1-54	Impact of Flexible Operation on Large Motors	John DOYLE (IE)	27/09/2015
16	WG	A1-53	Guide on Design Requirements of Motors for Variable Speed Drive Application	A.K. GUPTA (IN)	04/06/2015
17	JWG	A1/C4-52	Wind generators and frequency-active power control of power systems	Nicholas MILLER (US)	15/04/2015
18	WG	A1-51	Monitoring, Reliability & Availability of Wind Generators	D. McMillan (GB)	06/02/2015
19	WG	A1-49	Magnetic core dimensioning limits in Hydro-Generators	Johnny Rocha (BR)	21/11/2014
20	WG	A1-48	Guidance on the Requirements for High Speed Balancing / Overspeed Testing of Turbine Generator Rotors Following Maintenance or Repair	Ben Adams (GB)	03/11/2014
21	WG	A1-45	Guide for Determining the Health Index of Large Electric Motors	Phumlani Khumalo (ZA)	15/07/2014
22	WG	A1-44	Guideline on Testing of Turbo and Hydrogenerators	Dave Tarrant (ZA)	20/12/2013
23	WG	A1-43	State of the art of rotor temperature measurement	Ante Elez (HR)	21/11/2013
24	WG	A1-42	Influence of Key Requirements to Optimise the Value of Hydrogenerators	Eduardo Guerra (AR)	15/08/2013
25	WG	A1-33	Guide for the Proper Storage and Cleanliness of turbogenerators and their Components	Kevin Mayor (CH)	14/10/2011
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# CIGRE WORKING GROUPS LISTS

## SC A1 ROTATING ELECTRICAL MACHINES

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1 WG	A1-67	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A1_67_State%20of%20the%20Art%20in%20methods%2C%20experience%20and%20limits%20in%20end%20winding%20corona%20testing%20for%20hydro%20generators.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A1_67_State%20of%20the%20Art%20in%20methods%2C%20experience%20and%20limits%20in%20end%20winding%20corona%20testing%20for%20hydro%20generators.pdf</a>
2 WG	A1-68	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A1_68_Evaluating%20Quality%20Performance%20of%20Electric%20Motor%20Manufacturing%20and%20Repair%20Facilities.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A1_68_Evaluating%20Quality%20Performance%20of%20Electric%20Motor%20Manufacturing%20and%20Repair%20Facilities.pdf</a>
3 JWG	A1/C4-66	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20A1_C4_66_Guide%20on%20the%20Assessment%2C%20Specification%20and%20Design%20of%20Synchronous%20Condensers%20for%20Power%20Systems%20with%20Predominance%20of%20Low%20or%20Ze.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20A1_C4_66_Guide%20on%20the%20Assessment%2C%20Specification%20and%20Design%20of%20Synchronous%20Condensers%20for%20Power%20Systems%20with%20Predominance%20of%20Low%20or%20Ze.pdf</a>
4 WG	A1-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A1_64_Guide%20for%20Evaluating%20the%20Repair-Replacement%20of%20Standard%20Efficiency%20Motors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A1_64_Guide%20for%20Evaluating%20the%20Repair-Replacement%20of%20Standard%20Efficiency%20Motors.pdf</a>
5 WG	A1-65	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A1_65_Guide%20to%20Optimal%20Management%20of%20Coal%20Generation%20in%20presence%20of%20significant%20inverter%20based%20resources.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A1_65_Guide%20to%20Optimal%20Management%20of%20Coal%20Generation%20in%20presence%20of%20significant%20inverter%20based%20resources.pdf</a>
6 WG	A1-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_62_Thrust_Bearings_for_Hydropower_A_Survey_of_Known_Problems_and_Root_Causes.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_62_Thrust_Bearings_for_Hydropower_A_Survey_of_Known_Problems_and_Root_Causes.pdf</a>
7 WG	A1-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_63_Turbo_Generator_Stator_Winding_Bushings_and_Lead_Connections_Field_Experience_Failures_and_Design_Improvements.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_63_Turbo_Generator_Stator_Winding_Bushings_and_Lead_Connections_Field_Experience_Failures_and_Design_Improvements.pdf</a>
8 WG	A1-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_61_Survey_of_Partial_Discharge_Monitoring_in_Large_Motors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_61_Survey_of_Partial_Discharge_Monitoring_in_Large_Motors.pdf</a>
9 WG	A1-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_60_Guide_on_economic_evaluation_for_refurbishment_or_replacement_decisions_on_hydro_generators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_60_Guide_on_economic_evaluation_for_refurbishment_or_replacement_decisions_on_hydro_generators.pdf</a>
10 WG	A1-59	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_59_Survey_on_Industry_Practices_and_Effects_associated_with_the_Cutting_Out_of_Stator_Coils_in_Hydrogenerators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_59_Survey_on_Industry_Practices_and_Effects_associated_with_the_Cutting_Out_of_Stator_Coils_in_Hydrogenerators.pdf</a>
11 WG	A1-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_58_Selection_of_Copper_Versus_Aluminium_Rotors_for_Induction_Motors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_58_Selection_of_Copper_Versus_Aluminium_Rotors_for_Induction_Motors.pdf</a>
12 WG	A1-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_57_The_Visual_Inspection_of_Stator_Windings_and_Cores_of_Large_Turbo_Generators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_57_The_Visual_Inspection_of_Stator_Windings_and_Cores_of_Large_Turbo_Generators.pdf</a>
13 WG	A1-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_56_Survey_on_Lap_and_Wave_Windings_and_their_Consequences_on_Maintenance_and_Performance.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_56_Survey_on_Lap_and_Wave_Windings_and_their_Consequences_on_Maintenance_and_Performance.pdf</a>
14 WG	A1-55	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_55_Survey_on_Split_Core_Stators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_55_Survey_on_Split_Core_Stators.pdf</a>
15 WG	A1-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_54_Impact_of_Flexible_Operation_on_Large_Motors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_54_Impact_of_Flexible_Operation_on_Large_Motors.pdf</a>
16 WG	A1-53	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_53_Guide_on_Design_Requirements_of_Motors_for_Variable_Speed_Drive_Application.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_53_Guide_on_Design_Requirements_of_Motors_for_Variable_Speed_Drive_Application.pdf</a>
17 JWG	A1/C4-52	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A1_C4_52_Wind_generators_and_frequency_active_power_control_of_power_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A1_C4_52_Wind_generators_and_frequency_active_power_control_of_power_systems.pdf</a>
18 WG	A1-51	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_51_Monitoring_Reliability_and_Availability_of_Wind_Generators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_51_Monitoring_Reliability_and_Availability_of_Wind_Generators.pdf</a>
19 WG	A1-49	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_49_Magnetic_core_dimensioning_limits_in_Hydro_Generators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_49_Magnetic_core_dimensioning_limits_in_Hydro_Generators.pdf</a>
20 WG	A1-48	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_48_Guidance_on_the_Requirements_for_High_Speed_Balancing_Overspeed_Testing_of_Turbine_Generator_Rotors_Following_Maintenance_or_Repair.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_48_Guidance_on_the_Requirements_for_High_Speed_Balancing_Overspeed_Testing_of_Turbine_Generator_Rotors_Following_Maintenance_or_Repair.pdf</a>
21 WG	A1-45	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_45_Guide_for_Determining_the_Health_Index_of_Large_Electric_Motors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_45_Guide_for_Determining_the_Health_Index_of_Large_Electric_Motors.pdf</a>
22 WG	A1-44	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_44_Guideline_on_Testing_of_Turbo_and_Hydrogenerators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_44_Guideline_on_Testing_of_Turbo_and_Hydrogenerators.pdf</a>
23 WG	A1-43	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_43_State_of_the_art_of_rotor_temperature_measurement.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_43_State_of_the_art_of_rotor_temperature_measurement.pdf</a>
24 WG	A1-42	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_42_Influence_of_Key_Requirements_to_Optimise_the_Value_of_Hydrogenerators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_42_Influence_of_Key_Requirements_to_Optimise_the_Value_of_Hydrogenerators.pdf</a>
25 WG	A1-33	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_33_Guide_for_the_Proper_Storage_and_Cleanliness_of_Turbogenerators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A1_33_Guide_for_the_Proper_Storage_and_Cleanliness_of_Turbogenerators.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC      A2      POWER TRANSFORMERS AND REACTORS

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	A2-64	Condition of cellulose insulation in oil immersed transformers after factory acceptance test	Claes Bengtsson (SE)	25/07/2019
2	WG	A2-63	Transformer impulse testing	Ebrahim Rahimpour (DE)	06/12/2018
3	WG	A2-62	Analysis of AC Transformer Reliability	Stefan Tenbohlen (DE)	12/11/2018
4	WG	A2-61	On-load tap-changer best practices	Axel Kraemer (DE)	05/11/2018
5	WG	A2-60	Dynamic Thermal Behaviour of Power Transformers	Tim Gradnik (SI)	05/11/2018
6	WG	A2-58	Installation and Pre-Commissioning of Transformers and Shunt Reactors	Ross Willoughby (AU)	06/02/2017
7	WG	A2-59	On-Site Assembly, On-Site Rebuild, and On-Site High Voltage Testing of Power Transformers	Yukiyasu SHIRASAKA (JP)	06/02/2017
8	WG	A2-57	Effects of DC Bias on power transformers	Dejan SUSA (NO)	29/04/2016
9	WG	A2-56	Power transformer efficiency	Zarko JANIC (DE)	08/03/2016
10	WG	A2-55	Life Extension of oil filled Transformers and Shunt Reactors	Pascal MUELLER (CH)	08/03/2016
11	WG	A2-54	Power transformer audible sound requirements	Christoph Ploetner (DE)	09/10/2015
12	WG	A2-53	Objective interpretation methodology for the mechanical condition assessment of transformer windings using FRA	Patrick Picher (CA)	09/10/2015
13	JWG	A2/C4-52	High-frequency transformer models for non-standard waveforms	Bjørn Gustavsen (NO)	26/02/2014
14	JWG	A2/D1-51	Improvement to Partial Discharge Measurements for Factory and Site Acceptance Tests of Power Transformers	Sebastian Coenen (DE)	26/02/2014
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# CIGRE WORKING GROUPS LISTS

## SC      A2      POWER TRANSFORMERS AND REACTORS

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	WG A2-64	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A2_64_Condition%20of%20cellulose%20insulation%20in%20oil%20immersed%20transformers%20after%20factory%20acceptance%20test.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A2_64_Condition%20of%20cellulose%20insulation%20in%20oil%20immersed%20transformers%20after%20factory%20acceptance%20test.pdf</a>
2	WG A2-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_63_Transformer%20impulse%20testing.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_63_Transformer%20impulse%20testing.pdf</a>
3	WG A2-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_62_Analysis%20of%20AC%20Transformer%20Reliability.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_62_Analysis%20of%20AC%20Transformer%20Reliability.pdf</a>
4	WG A2-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_61_On-load%20tap-changer%20best%20practices.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_61_On-load%20tap-changer%20best%20practices.pdf</a>
5	WG A2-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_60_Dynamic%20Thermal%20Behaviour%20of%20Power%20Transformers.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20A2_60_Dynamic%20Thermal%20Behaviour%20of%20Power%20Transformers.pdf</a>
6	WG A2-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_58_Installation_and_Pre_Commissioning_of_Transformers_and_Shunt_Reactors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_58_Installation_and_Pre_Commissioning_of_Transformers_and_Shunt_Reactors.pdf</a>
7	WG A2-59	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_59_On_Site_Assembly_On_Site_Rebuild_and_On_Site_High_Voltage_Testing_of_Power_Transformers.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_59_On_Site_Assembly_On_Site_Rebuild_and_On_Site_High_Voltage_Testing_of_Power_Transformers.pdf</a>
8	WG A2-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_57_Effects_of_DC_Bias_on_power_transformers.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_57_Effects_of_DC_Bias_on_power_transformers.pdf</a>
9	WG A2-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_56_Power_Transformer_Efficiency.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_56_Power_Transformer_Efficiency.pdf</a>
10	WG A2-55	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_55_Life_Extension_of_oil_filled_Transformers_and_Shunt_Reactors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_55_Life_Extension_of_oil_filled_Transformers_and_Shunt_Reactors.pdf</a>
11	WG A2-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_54_Power_transformer_audible_sound_requirements.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_54_Power_transformer_audible_sound_requirements.pdf</a>
12	WG A2-53	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_53_Objective_interpretation_methodology_for_the_mechanical_condition_assessment_of_transformer_windings_using_FRA.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A2_53_Objective_interpretation_methodology_for_the_mechanical_condition_assessment_of_transformer_windings_using_FRA.pdf</a>
13	JWG A2/C4-52	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A2_C4_52_High_frequency_transformer_models_for_non_standard_waveforms.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A2_C4_52_High_frequency_transformer_models_for_non_standard_waveforms.pdf</a>
14	JWG A2/D1-51	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A2_D1_51_Improvement_to_PD_measurements_for_Factory_and_Site_Acceptance_Test.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_A2_D1_51_Improvement_to_PD_measurements_for_Factory_and_Site_Acceptance_Test.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC      A3      TRANSMISSION & DISTRIBUTION EQUIPMENT

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	A3-45	Methods for identification of frequency response characteristic of voltage measurementsystems	Erik Sperling (CH)	05/11/2019
2	WG	A3-46	Generator Circuit-Breakers: review of application requirements, practices, in-service experience and future trends	Pavel Novak (DE)	30/10/2019
3	JWG	A3/A2/A1/B1-44	Limitations in Operation of High Voltage Equipment Resulting of Frequent temporary overvoltage's	Bartosz Rusek (DE)	26/08/2019
4	WG	A3-43/CIREd	Tools for lifecycle management of T&D switchgear based on data from condition monitoring systems	Nicola Gariboldi (CH)	13/11/2018
5	WG	A3-42	Failure analysis and risk mitigation for recent incidents of AIS instrument transformers	Helvio Azevedo-Martins (BR)	19/03/2018
6	WG	A3-41	Interrupting and switching performance with SF6 free switching equipment	René Smeets (NL)	01/03/2018
7	WG	A3-40	Technical requirements and field experiences with MV DC switching equipment	Christian Heinrich (DE)	01/03/2018
8	WG	A3-39	Application and field experience with Metal Oxide Surge Arresters	Robert Le_Roux (IE)	06/02/2017
9	WG	A3-38	Shunt Capacitor Switching in distribution and transmission systems : Verification by tests and performance in service	Edgar DULLINI (DE)	29/04/2016
10	WG	A3-36	Application and Benchmark of Multi Physic Simulations and Engineering Tools for Temperature Rise Calculation	Martin Kriegel (CH)	09/05/2014
11	WG	A3-31	Accuracy, Calibration & Interfacing of Instrument Transformers with Digital Outputs	Farnoosh Rahmatian (CA)	25/07/2011
12	WG	A3-30	Impact of overstressing of substation equipment	Antonio Carvalho (BR)	19/08/2010

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# CIGRE WORKING GROUPS LISTS

## SC      A3      TRANSMISSION & DISTRIBUTION EQUIPMENT

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	WG A3-45	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A3_45_Methods%20for%20identification%20of%20frequency%20response%20characteristic%20of%20voltage%20measurement%20systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A3_45_Methods%20for%20identification%20of%20frequency%20response%20characteristic%20of%20voltage%20measurement%20systems.pdf</a>
2	WG A3-46	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A3_46_Generator%20Circuit-Breakers%20-%20review%20of%20application%20requirements%20practices%20in-service%20experience%20and%20future%20trends.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20A3_46_Generator%20Circuit-Breakers%20-%20review%20of%20application%20requirements%20practices%20in-service%20experience%20and%20future%20trends.pdf</a>
3	JWG A3/A2/A1/B1-44	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20A3_A2_A1_B1_44_Limitations%20in%20operation%20of%20High%20Voltage%20Equipment%20Resulting%20of%20Frequent%20Temporary%20Overvoltages.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20A3_A2_A1_B1_44_Limitations%20in%20operation%20of%20High%20Voltage%20Equipment%20Resulting%20of%20Frequent%20Temporary%20Overvoltages.pdf</a>
4	WG A3-43/CIRED	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20A3_43_Tools%20for%20lifecycle%20management%20of%20T%26D%20switchgear%20based%20on%20data%20from%20condition%20monitoring%20systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20A3_43_Tools%20for%20lifecycle%20management%20of%20T%26D%20switchgear%20based%20on%20data%20from%20condition%20monitoring%20systems.pdf</a>
5	WG A3-42	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_42_Failure_analysis_of_recent_AIS_instrument_transformer_incidents.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_42_Failure_analysis_of_recent_AIS_instrument_transformer_incidents.pdf</a>
6	WG A3-41	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_41_Interrupting_and_switching_performance_with_SF6_free_switching_equipment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_41_Interrupting_and_switching_performance_with_SF6_free_switching_equipment.pdf</a>
7	WG A3-40	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_40_Technical_requirements_and_field_experiences_with_MV_DC_switching_equipment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_40_Technical_requirements_and_field_experiences_with_MV_DC_switching_equipment.pdf</a>
8	WG A3-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_39_Application_and_field_experience_with_Metal_Oxide_Surge_Arresters.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_39_Application_and_field_experience_with_Metal_Oxide_Surge_Arresters.pdf</a>
9	WG A3-38	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_38_Shunt_Capacitor_Switching_in_distribution_and_transmission_systems_Verif_by_tests_and_perf_in_service.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_38_Shunt_Capacitor_Switching_in_distribution_and_transmission_systems_Verif_by_tests_and_perf_in_service.pdf</a>
10	WG A3-36	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_36_Application_and_Benchmark_of_MultiPhysic_Simulations_and_Engineering_Tools_for_Temperature_Rise_Calculation.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_36_Application_and_Benchmark_of_MultiPhysic_Simulations_and_Engineering_Tools_for_Temperature_Rise_Calculation.pdf</a>
11	WG A3-31	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_31_Accuracy_Calibration_and_Interfacing_of_Instrument_Transformers_with_Digital.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_31_Accuracy_Calibration_and_Interfacing_of_Instrument_Transformers_with_Digital.pdf</a>
12	WG A3-30	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_30_Impact_of_overstressing_of_substation_equipment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_A3_30_Impact_of_overstressing_of_substation_equipment.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC B1 INSULATED CABLES

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	B1-73	Recommendations for the use and testing of Fibre Optic Cables used in Land Cable Systems	Alexandra Burgos (ES)	19/11/2019
2	JWG	B1/B3-74	Recommendations for a performance guideline of Polymer Insulated busbars	Jianbin Fan (CN)	19/11/2019
3	JWG	B1/B3/D1-79	Recommendations for dielectric testing of HVDC gas insulated system cable sealing ends	Cornelis Plet (NL)	18/11/2019
4	JWG	B1/D1-75	Interaction between cable and accessory materials in HVAC and HVDC applications	Anders Gustafsson (SE)	05/11/2019
5	WG	B1-72	Cable rating verification – application in complex situations	Frank de_Wild (NL)	05/04/2019
6	WG	B1-70	Recommendations for the use and the testing of optical fibres in submarine cable systems	Roman Svoma (GB)	14/03/2019
7	WG	B1-65	Installation of submarine cables	Søren Krüger-Olsen (DK)	29/12/2018
8	WG	B1-68	Condition evaluation and lifetime strategy of HV cable systems	Jacco Smit (NL)	25/01/2019
9	WG	B1-67	Loading Patterns on Windfarm Array and Export Cables	Volker Werle (DE)	19/12/2018
10	WG	B1-71	Guidelines for Safety Risk Management in Cable Systems	Julio Lopes (BR)	18/12/2018
11	JWG	B1/C4-69	Recommendations for the insulation coordination on AC cable systems	Thinus du_Plessis (ZA)	25/11/2018
12	WG	B1-66	Recommendations for Testing DC Lapped Cable Systems for Power Transmission at a Rated Voltage up to and including 800 kV	Gunnar Evenset (NO)	01/03/2018
13	WG	B1-62	Recommendations for Testing DC Extruded Cable Systems for Power Transmission at a Rated Voltage up to and including 800 kV	Stefano-Franchi Bononi (IT)	23/02/2018
14	WG	B1-64	Evaluation of Losses in Armoured Three Core Power Cables	Ronny Stølan (NO)	11/02/2018
15	WG	B1-63	Recommendations for mechanical testing of submarine cables for dynamic applications	Emmanuelle LAURE (FR)	17/01/2018
16	WG	B1-61	Installation of HV Cable Systems	Sergio Chinosi (IT)	19/03/2017
17	WG	B1-60	Maintenance of HV Cable Systems	Bart Mampaey (BE)	09/02/2017
18	WG	B1-58	Condition Assessment and Diagnostic Methods to support Asset Management of MV Cable Networks	Slawomir Noske (PL)	06/02/2017
19	WG	B1-56	Cable rating verification	Frank de Wild (NL)	12/01/2016
20	WG	B1-57	Update of service experience of HV underground and submarine cable systems	Søren Mikkelsen (DK)	12/01/2016
21	WG	B1-54	Behaviour of cable systems under large disturbances (earthquake, storm, flood, fire, landslide, climate change)	Harry ORTON (CA)	12/11/2015
22	WG	B1-44	Guidelines for safe work on cable systems under induced voltages or currents	Caroline Bradley (GB)	03/04/2013
23	WG	B1-38	After laying tests on AC and DC cable systems with new technologies	Mark Fenger (CA)	20/08/2012
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# CIGRE WORKING GROUPS LISTS

## SC B1 INSULATED CABLES

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1 WG	B1-73	
2 JWG	B1/B3-74	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_B3_74_Recommendations%20for%20a%20performance%20guideline%20of%20Polymer%20Insulated%20Busbars.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_B3_74_Recommendations%20for%20a%20performance%20guideline%20of%20Polymer%20Insulated%20Busbars.pdf</a>
3 JWG	B1/B3/D1-79	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_B3_D1_79_Recommendations%20for%20dielectric%20testing%20of%20HVDC%20gas%20insulated%20system%20cable%20sealing%20ends.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_B3_D1_79_Recommendations%20for%20dielectric%20testing%20of%20HVDC%20gas%20insulated%20system%20cable%20sealing%20ends.pdf</a>
4 JWG	B1/D1-75	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_D1_75_Interaction%20between%20cable%20and%20accessory%20materials%20in%20HVAC%20and%20HVDC%20applications.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B1_D1_75_Interaction%20between%20cable%20and%20accessory%20materials%20in%20HVAC%20and%20HVDC%20applications.pdf</a>
5 WG	B1-72	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_72_Cable%20rating%20verification%20E2%80%93%20application%20in%20complex%20situations.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_72_Cable%20rating%20verification%20E2%80%93%20application%20in%20complex%20situations.pdf</a>
6 WG	B1-70	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_70_Recommendations%20for%20the%20use%20and%20the%20testing%20of%20optical%20fibres%20in%20submarine%20cable%20systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_70_Recommendations%20for%20the%20use%20and%20the%20testing%20of%20optical%20fibres%20in%20submarine%20cable%20systems.pdf</a>
7 WG	B1-65	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR%20WG%20B1_65_Installation%20of%20submarine%20cables.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR%20WG%20B1_65_Installation%20of%20submarine%20cables.pdf</a>
8 WG	B1-68	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_68_Condition%20evaluation%20and%20lifetime%20strategy%20of%20HV%20cable%20systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B1_68_Condition%20evaluation%20and%20lifetime%20strategy%20of%20HV%20cable%20systems.pdf</a>
9 WG	B1-67	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B1_67&gt;Loading%20Patterns%20on%20Windfarm%20Array%20and%20Export%20Cables.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B1_67&gt;Loading%20Patterns%20on%20Windfarm%20Array%20and%20Export%20Cables.pdf</a>
10 WG	B1-71	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C1_C6_42_Planning%20tools%20and%20methods%20for%20systems%20facing%20high%20levels%20of%20distributed%20energy%20resources.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C1_C6_42_Planning%20tools%20and%20methods%20for%20systems%20facing%20high%20levels%20of%20distributed%20energy%20resources.pdf</a>
11 JWG	B1/C4-69	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20B1_C4_69_Recommendations%20for%20the%20insulation%20coordination%20on%20AC%20cable%20systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20B1_C4_69_Recommendations%20for%20the%20insulation%20coordination%20on%20AC%20cable%20systems.pdf</a>
12 WG	B1-66	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_66_Recommendations_for_testing_DC_Lapped_Cable_Systems_for_power_transmission_at Rated Voltages up to 800kV.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_66_Recommendations_for_testing_DC_Lapped_Cable_Systems_for_power_transmission_at Rated Voltages up to 800kV.pdf</a>
13 WG	B1-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_62_Recommendations_for_testing_DC_extruded_cable_systems_at_a Rated Voltage up to 800 kV.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_62_Recommendations_for_testing_DC_extruded_cable_systems_at_a Rated Voltage up to 800 kV.pdf</a>
14 WG	B1-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_64_Evaluation_of_Losses_in_Armoured_Three_Core_Power_Cables.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_64_Evaluation_of_Losses_in_Armoured_Three_Core_Power_Cables.pdf</a>
15 WG	B1-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_63_Recommendations_for_mechanical_testing_of_submarine_cables_for_dynamic_applications.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_63_Recommendations_for_mechanical_testing_of_submarine_cables_for_dynamic_applications.pdf</a>
16 WG	B1-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_61_Installation_of_HV_Cable_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_61_Installation_of_HV_Cable_Systems.pdf</a>
17 WG	B1-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_60_Maintenance_of_HV_Cable_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_60_Maintenance_of_HV_Cable_Systems.pdf</a>
18 WG	B1-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_58_Condition_Assessment_and_Diagnostic_Methods_to_support_Asset_Management_of_MV_Cable_Networks.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_58_Condition_Assessment_and_Diagnostic_Methods_to_support_Asset_Management_of_MV_Cable_Networks.pdf</a>
19 WG	B1-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_56_Cable_rating_verification.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_56_Cable_rating_verification.pdf</a>
20 WG	B1-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_57_Update_of_service_experience_of_HV_underground_and_submarine_cable_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_57_Update_of_service_experience_of_HV_underground_and_submarine_cable_systems.pdf</a>
21 WG	B1-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_54_Behaviour_of_cable_systems_under_large_disturbances.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_54_Behaviour_of_cable_systems_under_large_disturbances.pdf</a>
22 WG	B1-44	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_44_Guidelines_for_safe_work_on_cable_systems_under_induced_voltages_or_currents.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_44_Guidelines_for_safe_work_on_cable_systems_under_induced_voltages_or_currents.pdf</a>
23 WG	B1-38	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_38_After_laying_tests_on_AC_and_DC_cable_systems_with_new_technologies.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B1_38_After_laying_tests_on_AC_and_DC_cable_systems_with_new_technologies.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC B2 OVERHEAD LINES

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	JWG	B2/C4-76	Lightning & Grounding Considerations for Overhead Line Rebuilding and Refurbishing Projects, AC and DC	William A. Chisholm (CA)	19/08/2019
2	JWG	B2/D2-72	Condition Monitoring and Remote Sensing of Overhead Lines	Ying Chen (CN)	03/04/2019
3	WG	B2-75	Application guide for insulated and un-insulated conductors used on medium and low voltage overhead lines	Bruce McLaren (ZA)	14/03/2019
4	WG	B2-74	Use of unmanned aerial vehicles (UAVs) for assistance with inspection of overhead power lines	Nishal MAHATHO (ZA)	07/03/2019
5	WG	B2-73	Guide for Prevention of Vegetation Fires Caused by Overhead Line Systems	Peter Dulhunty (AU)	28/01/2019
6	WG	B2-71	Recommendations for Interphase Spacers of Overhead Lines	Jean-Philippe Paradis (CA)	28/12/2018
7	WG	B2-70	Aircraft Warning Markers and bird flight diverters for Overhead Lines – Experience and recommendations	Naji Sahlani (US)	27/02/2018
8	WG	B2-69	Coatings for Power Network Equipment	Masoud FARZANEH (CA)	14/11/2017
9	WG	B2-68	Sustainability of OHL conductors and fittings – Conductor condition assessment and life extension	Cécile Rozé (FR)	02/08/2017
10	WG	B2-67	Assessment and Testing of Wood and Alternative Material Type Poles	Nathan Spencer (AU)	24/04/2017
11	WG	B2-66	Safe handling and installation guide for high temperature low sag(HTLS) conductors	Vivek Chari (IN)	07/10/2016
12	WG	B2-64	Inspection and Testing of Equipment and Training for Live-Line Work on Overhead Lines	Balint NEMETH (HU)	27/09/2015
13	WG	B2-65	Detection, Prevention and Repair of Sub-surface Corrosion in Overhead Line Supports, Anchors and Foundations	Pierre MARAIS (ZA)	27/09/2015
14	WG	B2-62	Design of Compact HVDC Overhead Lines	Javier Iglesias (ES)	24/04/2015
15	WG	B2-63	Compact AC Transmission Lines	Rob Stephen (ZA)	23/04/2015
16	WG	B2-61	Transmission Line Structures with Fiber Reinforced Polymer (FRP) Composites	Árni-Björn Jónasson (IS)	29/03/2015
17	WG	B2-60	Affordable Overhead Transmission Lines for Sub-Saharan Countries	Hugo VALENTE (PT)	04/03/2015
18	WG	B2-59	Forecasting Dynamic Line Ratings	Dale Douglass (US)	30/06/2014
19	WG	B2-58	Vibration Modeling of High Temperature Low Sag conductors – Self damping characterization	Giorgio Diana (IT)	12/05/2014
20	WG	B2-57	Survey of operational Composite Insulator Experience and Application Guide for Composite Insulators	Frank Schmuck (CH)	14/04/2014
21	WG	B2-50	Safe handling of fittings and conductors	Peter Dulhunty (AU)	15/12/2010
22	WG	B2-40	Preparatory studies for revision of IEC standard calculations of the electrical distances between live parts and obstacles for OHL	Robert Lake (NZ)	15/02/2008
23	WG	B2-24	Qualification of HV and UHV OHL supports under static and dynamic loads	Asim Haldar (CA)	30/03/2010
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# CIGRE WORKING GROUPS LISTS

## SC B2 OVERHEAD LINES

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	JWG B2/C4-76	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B2_C4_76_Lightning%20%26%20Grounding%20Considerations%20for%20Overhead%20Line%20Rebuilding%20and%20Refurbishing%20Projects%2C%20AC%20and%20DC.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B2_C4_76_Lightning%20%26%20Grounding%20Considerations%20for%20Overhead%20Line%20Rebuilding%20and%20Refurbishing%20Projects%2C%20AC%20and%20DC.pdf</a>
2	JWG B2/D2-72	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B2_D2_72%20_Condition%20Monitoring%20and%20Remote%20Sensing%20of%20Overhead%20Lines.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B2_D2_72%20_Condition%20Monitoring%20and%20Remote%20Sensing%20of%20Overhead%20Lines.pdf</a>
3	WG B2-75	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_75_Application%20guide%20for%20insulated%20and%20un-insulated%20conductors%20used%20on%20medium%20and%20low%20voltage%20overhead%20lines.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_75_Application%20guide%20for%20insulated%20and%20un-insulated%20conductors%20used%20on%20medium%20and%20low%20voltage%20overhead%20lines.pdf</a>
4	WG B2-74	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_74_Use%20of%20unmanned%20aerial%20vehicles%20(UAVs)%20for%20assistance%20with%20inspection%20of%20overhead%20power%20lines.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_74_Use%20of%20unmanned%20aerial%20vehicles%20(UAVs)%20for%20assistance%20with%20inspection%20of%20overhead%20power%20lines.pdf</a>
5	WG B2-73	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_73_Guide%20for%20Prevention%20of%20Vegetation%20Fires%20Caused%20by%20Overhead%20Line%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B2_73_Guide%20for%20Prevention%20of%20Vegetation%20Fires%20Caused%20by%20Overhead%20Line%20Systems.pdf</a>
6	WG B2-71	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_71_Recommendations%20for%20Interphase%20Spacers%20of%20Overhead%20Lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_71_Recommendations%20for%20Interphase%20Spacers%20of%20Overhead%20Lines.pdf</a>
7	WG B2-70	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_70_Aircraft%20warning%20markers%20and%20bird%20flight%20diverters%20for%20Overhead%20Lines%20%E2%80%93%20Experience%20and%20recommendations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_70_Aircraft%20warning%20markers%20and%20bird%20flight%20diverters%20for%20Overhead%20Lines%20%E2%80%93%20Experience%20and%20recommendations.pdf</a>
8	WG B2-69	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_69_Coatings_for_Power_Network_Equipment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_69_Coatings_for_Power_Network_Equipment.pdf</a>
9	WG B2-68	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_68_Sustainability_of_OHL_conductors_and_fittings_Conductor_condition_assessment_and_life_extension.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_68_Sustainability_of_OHL_conductors_and_fittings_Conductor_condition_assessment_and_life_extension.pdf</a>
10	WG B2-67	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_67_Assessment%20and%20Testing%20of%20Wood%20and%20Alternative%20Material%20Type%20Poles.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B2_67_Assessment%20and%20Testing%20of%20Wood%20and%20Alternative%20Material%20Type%20Poles.pdf</a>
11	WG B2-66	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_66_Safe_handling_and_installation_guide_for_high_temperature_low_sag HTLS_conductors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_66_Safe_handling_and_installation_guide_for_high_temperature_low_sag HTLS_conductors.pdf</a>
12	WG B2-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_64_Inspection_and_Testing_of_Equipment_and_Training_for_Live_Line_Work_on_Overhead_Lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_64_Inspection_and_Testing_of_Equipment_and_Training_for_Live_Line_Work_on_Overhead_Lines.pdf</a>
13	WG B2-65	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_65_Detection_Prevention_and_Repair_of_Sub_surface_Corrosion_in_Overhead_Line_Supports_Anchors_and_Foundations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_65_Detection_Prevention_and_Repair_of_Sub_surface_Corrosion_in_Overhead_Line_Supports_Anchors_and_Foundations.pdf</a>
14	WG B2-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_62_Design_of_Compact_HVDC_Overhead_Lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_62_Design_of_Compact_HVDC_Overhead_Lines.pdf</a>
15	WG B2-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_63_Compact_AC_Transmission_Lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_63_Compact_AC_Transmission_Lines.pdf</a>
16	WG B2-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_61_Transmission_Line_Structures_with_Fiber_Reinforced_Polymer_FRP_Composites.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_61_Transmission_Line_Structures_with_Fiber_Reinforced_Polymer_FRP_Composites.pdf</a>
17	WG B2-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_60_Affordable_Overhead_Transmission_Lines_for_Sub_Saharan_Countries.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_60_Affordable_Overhead_Transmission_Lines_for_Sub_Saharan_Countries.pdf</a>
18	WG B2-59	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_59_Forecasting_Dynamic_Line_Ratings.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_59_Forecasting_Dynamic_Line_Ratings.pdf</a>
19	WG B2-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_58_Vibration_Modeling_of_High_Temperature_Low_Sag_conductors_Self_damping_characterization.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_58_Vibration_Modeling_of_High_Temperature_Low_Sag_conductors_Self_damping_characterization.pdf</a>
20	WG B2-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_57_Survey_of_operational_Composite_Insulator_Experience_and_Application_Guide_for_Composite_Insulators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_57_Survey_of_operational_Composite_Insulator_Experience_and_Application_Guide_for_Composite_Insulators.pdf</a>
21	WG B2-50	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_50_Safe_handling_of_fittings_and_conductors.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_50_Safe_handling_of_fittings_and_conductors.pdf</a>
22	WG B2-40	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_40_Preparatory_studies_for_revision_of_IEC_standard.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_40_Preparatory_studies_for_revision_of_IEC_standard.pdf</a>
23	WG B2-24	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_24_Qualification_of_HV_and_UHV_OHL_supports_under_static_and_dynamic_loads.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B2_24_Qualification_of_HV_and_UHV_OHL_supports_under_static_and_dynamic_loads.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC B3 SUBSTATIONS AND ELECTRICAL INSTALLATIONS

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	B3-58	Knowledge Transfer of Substation Engineering and Experiences	John Nixon (GB)	10/01/2020
2	WG	B3-57	Impact on Engineering and Lifetime Management of Outdoor HV GIS	Toshiyuki Saida (JP)	28/12/2018
3	WG	B3-56	Application of 3D Technologies in Substation Engineering Works	Philip König (ZA)	21/08/2018
4	WG	B3-55	Design guidelines for substations connecting battery energy storage solutions (BESS)	Suriya Prungkhwunmuang (TH)	21/08/2018
5	WG	B3-54	Earthing System Testing Methods - historic approaches, recent developments and recommended approaches	Stephen Palmer (AU)	21/07/2018
6	WG	B3-52	Neutral Grounding Method Selection and Fault Handling for Substations in the Distribution Grid	Jinzhong Li (CN)	21/08/2018
7	WG	B3-53	Guidelines for Fire Risk Management in Substations	Shinki Noguchi (JP)	30/07/2018
8	WG	B3-51	Service continuity guide for the maintenance, repair and extension of HV GIS	Mark KUSCHEL (DE)	09/04/2018
9	WG	B3-50	Concepts for on-site HV testing of GIS after installation, extension, retrofit or repair	Mark REUTER (DE)	17/11/2017
10	WG	B3-49	Review of substation busbar component reliability	Milan Radosavljevic (SE)	25/05/2017
11	WG	B3-48	Asset health indices for equipment in existing Substations	Jan Bednarik (IE)	01/12/2016
12	WG	B3-47	Application of Robotics in Substations	Jianbin FAN (CN)	01/11/2016
13	WG	B3-46	Guidelines for Safe Work Methods in Existing Substations	Mark McVey (US)	04/09/2016
14	WG	B3-45	Application of non-SF6 gases or mixtures in medium voltage and high voltage gas-insulated switchgear	Piet KNOL (NL)	30/06/2016
15	WG	B3-44	Substation servicing and supervision using mobile devices and smart sensing	Nicolaie Fantana (DE)	17/03/2015
16	WG	B3-41	Mobile Substations Incorporating HV GIS – Design Aspects	Paul Fletcher (GB)	11/08/2014
17	WG	B3-39	Impact of NCIT applications on HV Gas Insulated Switchgear	Karsten Pohlink (CH)	24/04/2014
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# CIGRE WORKING GROUPS LISTS

## SC B3 SUBSTATIONS AND ELECTRICAL INSTALLATIONS

Last update : 5 March 2020

	Type	Number	Links to the Terms of Reference
1	WG	B3-58	
2	WG	B3-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_57_Impact%20on%20Engineering%20and%20Lifetime%20Management%20of%20Outdoor%20HV%20GIS.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_57_Impact%20on%20Engineering%20and%20Lifetime%20Management%20of%20Outdoor%20HV%20GIS.pdf</a>
3	WG	B3-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_56_Application%20of%203D%20Technologies%20in%20Substation%20Engineering%20Works.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_56_Application%20of%203D%20Technologies%20in%20Substation%20Engineering%20Works.pdf</a>
4	WG	B3-55	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_55_Design%20guidelines%20for%20substations%20connecting%20battery%20energy%20storage%20solutions%20(BESS).pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_55_Design%20guidelines%20for%20substations%20connecting%20battery%20energy%20storage%20solutions%20(BESS).pdf</a>
5	WG	B3-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_54_Earthing%20System%20Testing%20Methods%20-%20historic%20approaches%20C3%20recent%20developments%20and%20recommended%20approaches.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_54_Earthing%20System%20Testing%20Methods%20-%20historic%20approaches%20C3%20recent%20developments%20and%20recommended%20approaches.pdf</a>
6	WG	B3-52	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_52_Neutral%20Grounding%20Method%20Selection%20and%20Fault%20Handling%20for%20Substations%20in%20the%20Distribution%20Grid.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_52_Neutral%20Grounding%20Method%20Selection%20and%20Fault%20Handling%20for%20Substations%20in%20the%20Distribution%20Grid.pdf</a>
7	WG	B3-53	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_53_Guidelines%20for%20Fire%20Risk%20Management%20in%20Substations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B3_53_Guidelines%20for%20Fire%20Risk%20Management%20in%20Substations.pdf</a>
8	WG	B3-51	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_51_Service_continuity_guide_for_the_maintenance_repair_and_extension_of_HV_GIS.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_51_Service_continuity_guide_for_the_maintenance_repair_and_extension_of_HV_GIS.pdf</a>
9	WG	B3-50	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_50_Concepts_for_on_site_HV_testing_of_GIS_after_installation_extension_retrofit_or_repair.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_50_Concepts_for_on_site_HV_testing_of_GIS_after_installation_extension_retrofit_or_repair.pdf</a>
10	WG	B3-49	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_49_Review_of_substation_busbar_component_reliability.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_49_Review_of_substation_busbar_component_reliability.pdf</a>
11	WG	B3-48	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_48_Asset_health_indices_for_equipment_in_existing_Substations_Rev1.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_48_Asset_health_indices_for_equipment_in_existing_Substations_Rev1.pdf</a>
12	WG	B3-47	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_47_Application_of_Robotics_in_Substations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_47_Application_of_Robotics_in_Substations.pdf</a>
13	WG	B3-46	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_46_Guidelines_for_Safe_Work_Methods_in_Substations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_46_Guidelines_for_Safe_Work_Methods_in_Substations.pdf</a>
14	WG	B3-45	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_45_Application_of_non_SF6_gases_or_gas_mixtures_in_MV_and_HV_gas_insulated_switchgear.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_45_Application_of_non_SF6_gases_or_gas_mixtures_in_MV_and_HV_gas_insulated_switchgear.pdf</a>
15	WG	B3-44	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_44_Substation_servicing_and_supervision_using_mobile_devices_and_smart_sensing.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_44_Substation_servicing_and_supervision_using_mobile_devices_and_smart_sensing.pdf</a>
16	WG	B3-41	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WB_B3_41_Mobile_Substations_Incorporating_HV_GIS_Design_Aspects.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WB_B3_41_Mobile_Substations_Incorporating_HV_GIS_Design_Aspects.pdf</a>
17	WG	B3-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_39_Impact_of_NCIT_applications_on_HV_Gas_Insulated_Switchgear.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B3_39_Impact_of_NCIT_applications_on_HV_Gas_Insulated_Switchgear.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC B4 DC SYSTEMS AND POWER ELECTRONICS

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	JWG	B4/A3-86	Fault Current Limiting Technologies for DC Grids	Zhiyuan He (CN)	08/02/2020
2	WG	B4-85	Interoperability in HVDC systems based on partially open-source software	Staffan Norrga (SE)	14/12/2019
3	WG	B4-84	Feasibility study and application of electric energy storage systems embedded in HVDC systems	Hani Saad (FR)	11/12/2019
4	WG	B4-83	Flexible AC Transmission Systems (FACTS) controllers' commissioning, compliance testing and model validation tests	Babak Badrzadeh (AU)	01/12/2019
5	JWG	B4-82	Guidelines for Use of Real-Code in EMT Models for HVDC, FACTS and Inverter based generators in Power Systems Analysis	Garth Irwin (CA)	28/02/2019
6	WG	B4-81	Interaction between nearby VSC-HVDC converters, FACTS devices, HV power electronic devices and conventional AC equipment	Kamran Sharifabari (NO)	07/02/2019
7	JWG	B4/A3-80	HVDC Circuit Breakers - Technical Requirements, Stresses and Testing Methods to investigate the interaction with the system	Junzheng Cao (CN)	23/11/2018
8	WG	B4-79	Hybrid LCC/VSC HVDC Systems	Hong Rao (CN)	26/07/2018
9	WG	B4-78	Cyber Asset Management for HVDC/FACTS Systems	Kerry WALKER (CA)	20/11/2017
10	WG	B4-76	DC-DC converters in HVDC Grids and for connections to HVDC systems	Dragan Jovicic (GB)	29/11/2016
11	WG	B4-75	Feasibility Study for assessment of lab losses measurement of VSC valves	Christian Rathke (DE)	01/11/2016
12	WG	B4-74	Guide to Develop Real-Time Simulation Models (RTSM) for HVDC Operational Studies	Qi Guo (CN)	07/10/2016
13	WG	B4-72	DC grid benchmark models for system studies	Ting AN (CN)	12/11/2015
14	JWG	B4/B1/C4-73	Surge and extended overvoltage testing of HVDC Cable Systems	Markus SALTZER (SE)	08/12/2015
15	WG	B4-71	Application guide for the insulation coordination of Voltage Source Converter HVDC (VSC HVDC) stations	Mojtaba Mohaddes (CA)	10/02/2015
16	WG	B4-70	Guide for Electromagnetic Transient Studies involving VSC converters	Sébastien Denetière (FR)	16/10/2014
17	WG	B4-69	Minimizing loss of transmitted power by VSC during overhead line fault	Dennis WOODFORD (CA)	30/09/2014
18	WG	B4-68	Revision of Technical Brochure 92 – DC Harmonics and Filtering	Nigel SHORE (GB)	21/07/2014
19	WG	B4-66	Implications for harmonics and filtering of the staggered installation of HVDC converter stations in proximate locations	Fernando CATTAN (BR)	21/07/2014
20	WG	B4-64	Impact on AC System Characteristics on the Performance of HVDC schemes	Carl BARKER (GB)	25/02/2013

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# CIGRE WORKING GROUPS LISTS

## SC      B4      DC SYSTEMS AND POWER ELECTRONICS

Last update : 5 March 2020

	Type	Number	Links to the Terms of Reference
1	JWG	B4/A3-86	
2	WG	B4-85	
3	WG	B4-84	
4	WG	B4-83	
5	JWG	B4-82	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B4_82_IEEE_Guidelines%20for%20Use%20of%20Real-Code%20in%20EMT%20Models%20for%20HVDC%2C%20FACTS%20and%20Inverter%20based%20generators%20in%20Power%20Systems%20Analysis.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20B4_82_IEEE_Guidelines%20for%20Use%20of%20Real-Code%20in%20EMT%20Models%20for%20HVDC%2C%20FACTS%20and%20Inverter%20based%20generators%20in%20Power%20Systems%20Analysis.pdf</a>
6	WG	B4-81	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B4_81_Interaction%20between%20nearby%20VSC-HVDC%20converters%2C%20FACTS%20devices%2C%20HV%20power%20electronic%20devices%20and%20conventional%20AC%20equipment.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20B4_81_Interaction%20between%20nearby%20VSC-HVDC%20converters%2C%20FACTS%20devices%2C%20HV%20power%20electronic%20devices%20and%20conventional%20AC%20equipment.pdf</a>
7	JWG	B4/A3-80	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20B4_A3_80_HVDC%20Circuit%20Breakers%20-%20Technical%20Requirements%2C%20Stresses%20and%20Testing%20Methods%20to%20investigate%20the%20interaction%20with%20the%20system.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20B4_A3_80_HVDC%20Circuit%20Breakers%20-%20Technical%20Requirements%2C%20Stresses%20and%20Testing%20Methods%20to%20investigate%20the%20interaction%20with%20the%20system.pdf</a>
8	WG	B4-79	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B4_79_Hybrid%20LCC-VSC%20HVDC%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B4_79_Hybrid%20LCC-VSC%20HVDC%20Systems.pdf</a>
9	WG	B4-78	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_78_Cyber_Asset_Management_for_HVDC_FACTS_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_78_Cyber_Asset_Management_for_HVDC_FACTS_Systems.pdf</a>
10	WG	B4-76	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_76_DC_DC_converters_in_HVDC_Grids_and_for_connections_to_HVDC_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_76_DC_DC_converters_in_HVDC_Grids_and_for_connections_to_HVDC_systems.pdf</a>
11	WG	B4-75	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_75_Feasibility_Study_for_assessment_of_lab_losses_measurement_of_VSC_valves.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_75_Feasibility_Study_for_assessment_of_lab_losses_measurement_of_VSC_valves.pdf</a>
12	WG	B4-74	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_74_Guide_to_Develop_Real_Time_Simulation_Models_RTSM_for_HVDC_Operational_Studies.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_74_Guide_to_Develop_Real_Time_Simulation_Models_RTSM_for_HVDC_Operational_Studies.pdf</a>
13	WG	B4-72	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_72_DC_grid_benchmark_models_for_system_studies.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_72_DC_grid_benchmark_models_for_system_studies.pdf</a>
14	JWG	B4/B1/C4-73	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B4_B1_C4_73_Surge_and_extended_overvoltage_testing_of_HVDC_Cable_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B4_B1_C4_73_Surge_and_extended_overvoltage_testing_of_HVDC_Cable_Systems.pdf</a>
15	WG	B4-71	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_71_Application_guide_for_the_insulation_coordination_of_Voltage_Source_Converter_HVDC_VSC_HVDC_stations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_71_Application_guide_for_the_insulation_coordination_of_Voltage_Source_Converter_HVDC_VSC_HVDC_stations.pdf</a>
16	WG	B4-70	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_70_Guide_for_EMT_studies_with_VSC.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_70_Guide_for_EMT_studies_with_VSC.pdf</a>
17	WG	B4-69	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_69_Minimizing_loss_of_transmitted_power_by_VSC_during_overhead_line_fault.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_69_Minimizing_loss_of_transmitted_power_by_VSC_during_overhead_line_fault.pdf</a>
18	WG	B4-68	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_68_DC_harmonics_and_Filters.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_68_DC_harmonics_and_Filters.pdf</a>
19	WG	B4-66	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_66_Harmonics_and_filtering_for_HVDC_in_staggered_installations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_66_Harmonics_and_filtering_for_HVDC_in_staggered_installations.pdf</a>
20	WG	B4-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_64_Impact_of_AC_System_Characteristics_on_the_Performance.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B4_64_Impact_of_AC_System_Characteristics_on_the_Performance.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC B5 PROTECTION AND AUTOMATION

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	B5-71	Protection, Automation and Control Systems Communication Requirements for Inter-Substation and Wide Area Applications	Cedric Moors (BE)	16/01/2020
2	WG	B5-69	Experience gained and Recommendations for Implementation of Process Bus in Protection, Automation and Control Systems	Alex Apostolov (US)	19/12/2018
3	WG	B5-70	Reliability of Protection Automation and Control System (PACS) of power systems – Evaluation Methods and Comparison of Architectures	Alexander Voloshin (RU)	18/12/2018
4	WG	B5-68	Optimisation of the IEC 61850 Protection, Automation and Control Systems (PACS) engineering process and tools	Camille Bloch (FR)	05/11/2018
5	JWG	B5/D2-67	Time in Communication Networks, Protection and Control Applications –Time Sources and Distribution Methods	Yubo Yuan (CN)	14/04/2018
6	WG	B5-65	Enhancing Protection System Performance by Optimising the Response of Inverter-Based Sources	Dr. Farfilho (BR)	14/04/2018
7	WG	B5-66	Cyber Security requirements for PACS and the Resilience of PAC Architectures	Dennis Holstein (US)	20/11/2017
8	WG	B5-64	Methods for Specification of Functional Requirements of Protection, Automation, and Control	Iony Patriota de Siqueira (BR)	17/01/2017
9	WG	B5-63	Protection, Automation and Control System Asset Management	Massimo Petrini (IT)	17/01/2017
10	WG	B5-62	Life Cycle Testing of Synchrophasor Based Systems used for Protection, Monitoring and Control	Mladen Kezunovic (US)	17/01/2017
11	JWG	B5/C4-61	Impact of Low Inertia Network on Protection and Control	Ray Zhang (GB)	17/01/2017
12	WG	B5-60	Protection, Automation and Control Architectures with Functionality Independent of Hardware	Alexander Voloshin (RU)	17/01/2017
13	WG	B5-59	Requirements for Near-Process Intelligent Electronic Devices	Xu LEI (CN)	12/01/2016
14	WG	B5-58	Faster protection and network automation systems: implications and requirements	Andrei PODSHIVALIN (RU)	12/01/2016
15	WG	B5-57	New challenges for frequency protection	Vladimir Terzija (GB)	12/01/2016
16	WG	B5-55	Application of Travelling Wave Technology for Protection and Automation	Peter Crossley (GB)	08/01/2015
17	WG	B5-56	Optimization of Protection Automation and Control Systems	Klaus-Peter Brand (CH)	08/01/2015
18	WG	B5-54	Protection and Automation Issues of Islanded Systems during System Restoration/Black Start	Nirmal Nair (NZ)	09/12/2013
19	WG	B5-52	Analysis and comparison of fault location systems in Substation Automation Systems	Sepehr Sefidpour (SE)	19/11/2013
20	WG	B5-51	Requirements and Use of Remotely Accessed Information for SAS Maintenance and Operation	Li Li (CN)	11/11/2012
21	WG	B5-50	IEC 61850 Based Substation Automation Systems – Users Expectations and Stakeholders Interactions	Grégory Huon (BE)	11/11/2012
22	WG	B5-48	Protection for developing network with limited fault current capability of generation	Bin Su (CN)	04/03/2012
23	WG	B5-47	Network Protection Performance Audits	Peter Watson (GB)	24/01/2012
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# CIGRE WORKING GROUPS LISTS

## SC B5 PROTECTION AND AUTOMATION

Last update : 5 March 2020

	Type	Number	Links to the Terms of Reference
1	WG	B5-71	
2	WG	B5-69	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_69_Experience%20gained%20and%20Recommendations%20for%20Implementation%20of%20Process%20Bus%20in%20Protection%2C%20Automation%20and%20Control%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_69_Experience%20gained%20and%20Recommendations%20for%20Implementation%20of%20Process%20Bus%20in%20Protection%2C%20Automation%20and%20Control%20Systems.pdf</a>
3	WG	B5-70	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_70_Reliability%20of%20Protection%20Automation%20and%20Control%20System%20of%20power%20systems%20%E2%80%93%20Evaluation%20Methods%20and%20Comparison%20of%20Architect(1).pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_70_Reliability%20of%20Protection%20Automation%20and%20Control%20System%20of%20power%20systems%20%E2%80%93%20Evaluation%20Methods%20and%20Comparison%20of%20Architect(1).pdf</a>
4	WG	B5-68	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_68_Optimisation%20of%20the%20IEC%2061850%20Protection%2C%20Automation%20and%20Control%20Systems%20(PACS)%20Engineering%20process%20and%20tools.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5_68_Optimisation%20of%20the%20IEC%2061850%20Protection%2C%20Automation%20and%20Control%20Systems%20(PACS)%20Engineering%20process%20and%20tools.pdf</a>
5	JWG	B5/D2-67	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B5_D2_67_Time_in_Communication_Networks_Protection_and_Control_Applications.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B5_D2_67_Time_in_Communication_Networks_Protection_and_Control_Applications.pdf</a>
6	WG	B5-65	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_65_Enhancing_Protection_System_Performance_by_Optimising_the_Response.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_65_Enhancing_Protection_System_Performance_by_Optimising_the_Response.pdf</a>
7	WG	B5-66	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_66_Cyber_Security_requirements_for_PACS_and_the_Resilience_of_PAC_Architectures.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_66_Cyber_Security_requirements_for_PACS_and_the_Resilience_of_PAC_Architectures.pdf</a>
8	WG	B5-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_64_Methods_for_Specification_of_Functional_Requirements_of_Protection_Automation_and_Control.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_64_Methods_for_Specification_of_Functional_Requirements_of_Protection_Automation_and_Control.pdf</a>
9	WG	B5-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_63_Protection_Automation_and_Control_System_Asset_Management.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_63_Protection_Automation_and_Control_System_Asset_Management.pdf</a>
10	WG	B5-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_62_Life_Cycle_Testing_of_Synchrophasor_Based_Systems_used_for_Protection_Monitoring_and_Control.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_62_Life_Cycle_Testing_of_Synchrophasor_Based_Systems_used_for_Protection_Monitoring_and_Control.pdf</a>
11	JWG	B5/C4-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B5_C4_61_Impact_of_Low_Inertia_Network_on_Protection_and_Control.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_B5_C4_61_Impact_of_Low_Inertia_Network_on_Protection_and_Control.pdf</a>
12	WG	B5-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_60_Protection_Automation_and_Control_Architectures_with_Functionality_Independent_of_Hardware.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_60_Protection_Automation_and_Control_Architectures_with_Functionality_Independent_of_Hardware.pdf</a>
13	WG	B5-59	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_59_Requirements_for_Near_Process_Intelligent_Electronic_Devices.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_59_Requirements_for_Near_Process_Intelligent_Electronic_Devices.pdf</a>
14	WG	B5-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_58_Faster_protection_and_network_automation_systems_implications_and_requirements.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_58_Faster_protection_and_network_automation_systems_implications_and_requirements.pdf</a>
15	WG	B5-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_57_New_challenges_for_frequency_protection.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_57_New_challenges_for_frequency_protection.pdf</a>
16	WG	B5-55	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_55_Application_of_Travelling_Wave_Technology_for_Protection_and_Automation.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_55_Application_of_Travelling_Wave_Technology_for_Protection_and_Automation.pdf</a>
17	WG	B5-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_56_Optimization_of_Protection_Automation_and_Control_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_56_Optimization_of_Protection_Automation_and_Control_Systems.pdf</a>
18	WG	B5-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_54_Protection_and_Automation_Issues_of_Islanded_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_54_Protection_and_Automation_Issues_of_Islanded_Systems.pdf</a>
19	WG	B5-52	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_52_Analysis_and_comparison_of_fault_location_systems_in_Substation.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_52_Analysis_and_comparison_of_fault_location_systems_in_Substation.pdf</a>
20	WG	B5-51	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_51_Requirements_and_Use_of_Remotely_Accessed_Information_for_SAS.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_51_Requirements_and_Use_of_Remotely_Accessed_Information_for_SAS.pdf</a>
21	WG	B5-50	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_50_IEC_61850_Based_Substation_Automation_Systems_Users.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_50_IEC_61850_Based_Substation_Automation_Systems_Users.pdf</a>
22	WG	B5-48	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_48_Protection_for_developing_network_with_limited_fault_current_capability_of_generation.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_B5_48_Protection_for_developing_network_with_limited_fault_current_capability_of_generation.pdf</a>
23	WG	B5-47	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5-47%20Network%20Protection%20Performance%20Audits.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20B5-47%20Network%20Protection%20Performance%20Audits.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC C1 POWER SYSTEM DEVELOPMENT AND ECONOMICS

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	C1-44	Global interconnected and sustainable electricity system: Effects of storage, demand response and trading rules	Gérald Sanchis (FR)	26/08/2019
2	WG	C1-43	Requirements for Asset Analytics data platforms and tools in electric power systems	Yury Tsimberg (CA)	20/04/2019
3	JWG	C1/C6-42	Planning tools and methods for systems facing high levels of distributed energy resources	Charlotte Higgins (GB)	19/12/2018
4	WG	C1-41	Closing the gap in understanding between stakeholders and electrical energy specialists	Phil Southwell (AU)	28/10/2018
5	JWG	C1/C6-37/CIRE	Optimal transmission and distribution investment decisions under increasing energy scenario uncertainty	Juan_Carlos ARANEDA (CL)	02/08/2017
6	WG	C1-38	Valuation as a comprehensive approach to asset management in view of emerging developments	Ancell Graeme (NZ)	24/04/2017
7	WG	C1-39	Optimal power system planning under growing uncertainty	Chongqing Kang (CN)	19/03/2017
8	WG	C1-40	Planning Coordination between System Operators, Transmitters and Distributors: Frameworks, Methods, and Allocation of Costs and Benefits	Christopher Reali (CA)	19/03/2017
9	JWG	C1/C4-36	Review of Large City & Metropolitan Area power system development trends taking into account new generation, grid and information technologies	Valdson Simoes (BR)	06/02/2017
10	WG	C1-33	Interface & Allocation Issues in multi-party and/or cross-jurisdiction power infrastructures projects	Antonio ILICETO (IT)	23/04/2015
11	WG	C1-23	Transmission investment decision points and trees	Ronald Marais (ZA)	03/06/2009
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# CIGRE WORKING GROUPS LISTS

**SC C1 POWER SYSTEM DEVELOPMENT AND ECONOMICS**

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1 WG	C1-44	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C1_44_Global%20interconnected%20and%20sustainable%20electricity%20system%20-%20Effects%20of%20storage%2C%20demand%20response%20and%20trading%20rules.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C1_44_Global%20interconnected%20and%20sustainable%20electricity%20system%20-%20Effects%20of%20storage%2C%20demand%20response%20and%20trading%20rules.pdf</a>
2 WG	C1-43	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C1_43_Requirements%20for%20Asset%20Analytics%20data%20platforms%20and%20tools%20in%20electric%20power%20systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C1_43_Requirements%20for%20Asset%20Analytics%20data%20platforms%20and%20tools%20in%20electric%20power%20systems.pdf</a>
3 JWG	C1/C6-42	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C1_C6_42_Planning%20tools%20and%20methods%20for%20systems%20facing%20high%20levels%20of%20distributed%20energy%20resources.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C1_C6_42_Planning%20tools%20and%20methods%20for%20systems%20facing%20high%20levels%20of%20distributed%20energy%20resources.pdf</a>
4 WG	C1-41	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C1_41_Closing%20the%20gap%20in%20understanding%20between%20stakeholders%20and%20electrical%20energy%20specialists.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C1_41_Closing%20the%20gap%20in%20understanding%20between%20stakeholders%20and%20electrical%20energy%20specialists.pdf</a>
5 JWG	C1/C6-37/CIREDD	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C1_C6_37_CIREDD_Optimal_transmission_and_distribution_investment_decisions_under_increasing_energy_scenario_uncertainty.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C1_C6_37_CIREDD_Optimal_transmission_and_distribution_investment_decisions_under_increasing_energy_scenario_uncertainty.pdf</a>
6 WG	C1-38	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_38_Valuation_as_a_comprehensive_approach_to_asset_management_in_view_of_emerging_developments.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_38_Valuation_as_a_comprehensive_approach_to_asset_management_in_view_of_emerging_developments.pdf</a>
7 WG	C1-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_39_Optimal_power_system_planning_under_growing_uncertainty.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_39_Optimal_power_system_planning_under_growing_uncertainty.pdf</a>
8 WG	C1-40	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_40_Planning_Coordination_between_Syst_Op_TandD_Frameworks_Methods_and_Allocation_of_Costs_and_Benefits.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_40_Planning_Coordination_between_Syst_Op_TandD_Frameworks_Methods_and_Allocation_of_Costs_and_Benefits.pdf</a>
9 JWG	C1/C4-36	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C1_C4_36_Review_of_Large_City_and_Metropolitan_Area_power_system_development_trends_taking_into_account_new_generation_grid_and_inform.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C1_C4_36_Review_of_Large_City_and_Metropolitan_Area_power_system_development_trends_taking_into_account_new_generation_grid_and_inform.pdf</a>
10 WG	C1-33	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_33_Interface_%26_Allocation_Issues_in_multi_party_andor_cross_jurisdiction_power_infrastructures_projects.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_33_Interface_%26_Allocation_Issues_in_multi_party_andor_cross_jurisdiction_power_infrastructures_projects.pdf</a>
11 WG	C1-23	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_23_Transmission_investment_decision_points_and_trees.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C1_23_Transmission_investment_decision_points_and_trees.pdf</a>
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# CIGRE WORKING GROUPS LISTS

**SC C2 POWER SYSTEM OPERATION AND CONTROL**

**Last update : 5 March 2020**

	Type	Number	Title	Name of convener	Date of approval
1	WG	C2-26	Power system restoration accounting for a rapidly changing power system and generation mix	Babak Badrzadeh (AU)	14/03/2019
2	JWG	C2/C4-41	Impact of high penetration of inverter-based generation on system inertia of networks	Mpeli Rampokanyo (ZA)	07/07/2018
3	WG	C2-40	TSO-DSO Co-Operation – Control Centre Tools Requirements	Michael Power (IE)	01/06/2018
4	WG	C2-25	Operating Strategies and Preparedness for System Operational Resilience	Jens Jacobs (DE)	06/06/2018
5	WG	C2-39	Operator Training at Different Control Levels and for Different Participants/Actors in the New Environment	Jayne Darriba-Macedo (BR)	19/03/2018
6	WG	C2-24	System Operations impact of Fire and Weather Risk for Transmission and Distribution Systems	Frank CRISCI (AU)	20/11/2017
7	JWG	C2/B4-38	Capabilities and requirements definition for Power Electronics based technology for secure and efficient system operation	Jan van_Putten (NL)	09/02/2017
8	WG	C2-17	Wide Area Monitoring Systems – Support for Control Room Applications	Walter Sattinger (CH)	07/10/2016
9	JWG	C2/C4-37	Recommendations for Systematic Framework Design of Power System Stability Control	Yongjie Fang (CN)	09/10/2015
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# CIGRE WORKING GROUPS LISTS

**SC      C2      POWER SYSTEM OPERATION AND CONTROL**

**Last update : 5 March 2020**

Type	Number	Links to the Terms of Reference
1	WG C2-26	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C2_26_Power%20system%20restoration%20accounting%20for%20a%20rapidly%20changing%20power%20system%20and%20generation%20mix.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C2_26_Power%20system%20restoration%20accounting%20for%20a%20rapidly%20changing%20power%20system%20and%20generation%20mix.pdf</a>
2	JWG C2/C4-41	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C2_C4_41_Impact%20of%20high%20penetration%20of%20inverter-based%20generation%20on%20system%20inertia%20of%20networks.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C2_C4_41_Impact%20of%20high%20penetration%20of%20inverter-based%20generation%20on%20system%20inertia%20of%20networks.pdf</a>
3	WG C2-40	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_40_TSO_DSO_Co_Operation_Control_Centre_Tools_Requirements.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_40_TSO_DSO_Co_Operation_Control_Centre_Tools_Requirements.pdf</a>
4	WG C2-25	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_25_Operating_Strategies_and_Preparedness_for_System_Operational_Resilience.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_25_Operating_Strategies_and_Preparedness_for_System_Operational_Resilience.pdf</a>
5	WG C2-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_39_Operator_Training_in_Electricity_Grids_at_Different_Control_Levels_and_for_Different_Participants_Actors_in_the_New_Environment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_39_Operator_Training_in_Electricity_Grids_at_Different_Control_Levels_and_for_Different_Participants_Actors_in_the_New_Environment.pdf</a>
6	WG C2-24	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_24_Mitigating_the_risk_of_fire_starts_and_the_consequences_of_fires_near_overhead_lines_for_System_Operations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_24_Mitigating_the_risk_of_fire_starts_and_the_consequences_of_fires_near_overhead_lines_for_System_Operations.pdf</a>
7	JWG C2/B4-38	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C2_B4_38_Capabilities_and_requirements_definition_for_Power_Electronics_based_technology_for_secure_and_efficient_system_operation_an.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C2_B4_38_Capabilities_and_requirements_definition_for_Power_Electronics_based_technology_for_secure_and_efficient_system_operation_an.pdf</a>
8	WG C2-17	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_17_Wide_Area_Monitoring_Systems_Support_for_Control_Room_Applications.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C2_17_Wide_Area_Monitoring_Systems_Support_for_Control_Room_Applications.pdf</a>
9	JWG C2/C4-37	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C2_C4_37_Recommendations_for_Systematic_Framework_Design_of_Power_System_Stability_Control.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C2_C4_37_Recommendations_for_Systematic_Framework_Design_of_Power_System_Stability_Control.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC C3 POWER SYSTEM ENVIRONMENTAL PERFORMANCE

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	C3-22	Vegetation management in substations	Johan Mortier (BE)	23/12/2019
2	WG	C3-23	Eco-design methods for TSOs/DSOs under environmental transition	Guillaume Busato (FR)	25/09/2019
3	WG	C3-21	Including stakeholders in the decision-making processes for grid development	Susana Batel (PT)	18/03/2019
4	WG	C3-20	Sustainable development goals in the electric power sector	Christian Capello (CH)	30/07/2018
5	WG	C3-19	Responsible management of the Electric and Magnetic Field Issue	James Hart (AU)	11/02/2018
6	WG	C3-18	Eco-friendly approaches in Transmission and Distribution	Anne-Sophie Desaleux (FR)	16/08/2017
7	WG	C3-17	Interactions between Wildlife and Emerging Renewable Energy Sources and Submarine Cables	Katherine Palmquist (US)	12/05/2017
8	WG	C3-16	Interactions between Electrical Infrastructure and Wildlife	Cecile Saint-Simon (FR)	01/06/2016
9	WG	C3-15	Best environmental and socio-economic practices for improving public acceptance of high voltage substations	Marijke Wassens (NL)	12/12/2015
10	WG	C3-14	Impact of Environmental liability on transmission and distribution activities	Vincent Du Four (BE)	24/04/2014
11	WG	C3-12	Methodologies for Greenhouse gas inventory and reporting for T&D utilities	Mercedes Vasquez (ES)	01/09/2010
12	WG	C3-9	Sustainable corridor management	Aleš Kregar (SI)	20/03/2018

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# CIGRE WORKING GROUPS LISTS

**SC C3 POWER SYSTEM ENVIRONMENTAL PERFORMANCE**

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	WG C3-22	
2	WG C3-23	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C3_23_Eco-design%20methods%20for%20TSOs-DSOs%20under%20Environmental%20transition.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C3_23_Eco-design%20methods%20for%20TSOs-DSOs%20under%20Environmental%20transition.pdf</a>
3	WG C3-21	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C3_21_Including%20stakeholders%20in%20the%20decision-making%20processes%20for%20grid.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C3_21_Including%20stakeholders%20in%20the%20decision-making%20processes%20for%20grid.pdf</a>
4	WG C3-20	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C3_20_Sustainable%20Development%20Goals%20in%20the%20Electric%20Power%20Sector.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C3_20_Sustainable%20Development%20Goals%20in%20the%20Electric%20Power%20Sector.pdf</a>
5	WG C3-19	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_19_Responsible_management_of_the_Electric_and_Magnetic_Field_Issue.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_19_Responsible_management_of_the_Electric_and_Magnetic_Field_Issue.pdf</a>
6	WG C3-18	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_18_Eco_friendly_approaches_in_Transmission_and_Distribution.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_18_Eco_friendly_approaches_in_Transmission_and_Distribution.pdf</a>
7	WG C3-17	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_17_Interactions_between_Wildlife_and_Emerging_Renewable_Energy_Sources_and_associated_Insulated_Cables.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_17_Interactions_between_Wildlife_and_Emerging_Renewable_Energy_Sources_and_associated_Insulated_Cables.pdf</a>
8	WG C3-16	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_16_Interactions_between_Electrical_Infrastructure_and_Wildlife.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_16_Interactions_between_Electrical_Infrastructure_and_Wildlife.pdf</a>
9	WG C3-15	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_15_Best_environmental_and_socio_economic_practices_for_improving_public_acceptance_of_high_voltage_substations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_15_Best_environmental_and_socio_economic_practices_for_improving_public_acceptance_of_high_voltage_substations.pdf</a>
10	WG C3-14	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_14_Impact_of_Environmental_liability_on_transmission_and_distribution_activities.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_14_Impact_of_Environmental_liability_on_transmission_and_distribution_activities.pdf</a>
11	WG C3-12	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_12_Methodologies_for_Greenhouse_gas_inventory_and_reporting_for_TandD_utilities.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_12_Methodologies_for_Greenhouse_gas_inventory_and_reporting_for_TandD_utilities.pdf</a>
12	WG C3-9	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_09_Sustainable_corridor_management.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C3_09_Sustainable_corridor_management.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC C4 POWER SYSTEM TECHNICAL PERFORMANCE

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	WG	C4-59	Real-time Lightning Protection of the Electricity Supply Systems of the Future	Chong Tong (CN)	18/10/2019
2	JWG	C4/C2-58	Evaluation of Voltage Stability Assessment Methodologies in Transmission Systems	Udaya Annakkage (CA)	13/06/2019
3	WG	C4-57	Guidelines for the Estimation of Overhead Distribution Line Lightning Performance and its Application to Lightning Protection Design	Koji Michishita (JP)	13/06/2019
4	WG	C4-56	Electromagnetic transient simulation models for large-scale system impact studies in power systems having a high penetration of inverter-connected generation	Babak Badrzadeh (AU)	17/04/2019
5	WG	C4-55	EMC related very-fast transients in gas-insulated substations - EMC interferences, measured characteristics, modelling and simulations	Akihiro AMETANI (JP)	22/01/2018
6	JWG	C4/A3-53	Application Effects of Low-Residual-Voltage Surge Arresters in Suppressing Overvoltages in UHV AC Systems	Jinliang He (CN)	12/12/2018
7	WG	C4-54	Protection of high voltage power network control electronics from the High-altitude Electromagnetic pulse (HEMP)	William Radasky (US)	16/11/2018
8	JWG	C4/B4-52	Guidelines for Sub-synchronous Oscillation Studies in Power Electronics Dominated Power Systems	Chandana Karawita (CA)	14/11/2018
9	WG	C4-51	Connection of Railway Traction Systems to Power Networks	Davor Vujatovic (GB)	27/09/2018
10	WG	C4-50	Evaluation of Transient Performance of Grounding Systems in Substations and Its Impact on Primary and Secondary Systems	Bo Zhang (CN)	01/03/2018
11	WG	C4-49	Multi-frequency stability of converter-based modern power systems	Lukasz Kocewiak (DK)	01/03/2018
12	WG	C4-47	Power System Resilience	Malcolm van-Harte (ZA)	11/10/2017
13	WG	C4-48	Overvoltage Withstand Characteristics of Power System Equipment 35-1200 kV	Ivan Dudurych (IE)	18/09/2017
14	WG	C4-46	Evaluation of Temporary Overvoltages in Power Systems due to Low Order Harmonic Resonances	Filipe Faria_da_Silva (DK)	18/09/2017
15	WG	C4-45	Measuring techniques and characteristics of fast and very fast transient overvoltages in substations and converter stations	Shjun XIE (CN)	06/02/2017
16	WG	C4-44	EMC for Large Photovoltaic Systems	Ener Salinas (SE)	29/11/2016
17	WG	C4-43	Lightning problems and lightning risk management for nuclear power plants	Takatoshi Shindo (JP)	17/02/2016
18	JWG	C4-42/CIREd	Continuous assessment of low-order harmonic emissions from customer installations	Igor PAPIĆ (SI)	10/02/2015
19	JWG	C4/B5-41	Challenges with series compensation application in power systems when overcompensating lines	Liisa HAARLA (FI)	08/01/2015
20	WG	C4-39	Effectiveness of line surge arresters for lightning protection of overhead transmission lines	Kenji Tsuge (JP)	10/12/2014
21	JWG	C4-40/CIREd	Revisions to IEC Technical Reports 61000-3-6, 61000-3-7, 61000-3-13, and 61000-3-14	Mark HALPIN (US)	21/11/2014
22	WG	C4-36	Winter Lightning – Parameters and Engineering Consequences for Wind Turbines	Masaru Ishii (JP)	09/02/2014
23	JWG	C4-31/CIREd	EMC between communication circuits and power systems	David Thomas (GB)	23/10/2012
24	WG	C4-23	Guide to procedures for estimating the lightning performance of transmission lines	Christiaan Engelbrecht (NL)	13/06/2012

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# CIGRE WORKING GROUPS LISTS

## SC C4 POWER SYSTEM TECHNICAL PERFORMANCE

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1 WG	C4-59	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_59_Real-time%20Lightning%20Protection%20of%20the%20Electricity%20Supply%20Systems%20of%20the%20Future.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_59_Real-time%20Lightning%20Protection%20of%20the%20Electricity%20Supply%20Systems%20of%20the%20Future.pdf</a>
2 JWG	C4/C2-58	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20C4_C2_58_IEEE%20_Evaluation%20of%20Voltage%20Stability%20Assessment%20Methodologies%20in%20Transmission%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-JWG%20C4_C2_58_IEEE%20_Evaluation%20of%20Voltage%20Stability%20Assessment%20Methodologies%20in%20Transmission%20Systems.pdf</a>
3 WG	C4-57	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_57_Guidelines%20for%20the%20Estimation%20of%20Overhead%20Distribution%20Line%20Lightning%20Performance%20and%20its%20Application%20to%20Lightning%20Protection%20De.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_57_Guidelines%20for%20the%20Estimation%20of%20Overhead%20Distribution%20Line%20Lightning%20Performance%20and%20its%20Application%20to%20Lightning%20Protection%20De.pdf</a>
4 WG	C4-56	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_56_Electromagnetic%20transient%20simulation%20models%20for%20large-scale-system%20impact%20studies%20in%20power%20systems%20having%20a%20high%20penetration.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_56_Electromagnetic%20transient%20simulation%20models%20for%20large-scale-system%20impact%20studies%20in%20power%20systems%20having%20a%20high%20penetration.pdf</a>
5 WG	C4-55	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_55_EMC%20related%20very-fast%20transients%20in%20gas-insulated%20substations%20E2%80%94EMC%20interferences%20C%20measured%20characteristics%20C%20modelling%20and%20simulat.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C4_55_EMC%20related%20very-fast%20transients%20in%20gas-insulated%20substations%20E2%80%94EMC%20interferences%20C%20measured%20characteristics%20C%20modelling%20and%20simulat.pdf</a>
6 JWG	C4/A3-53	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_A3_53_Application%20Effects%20of%20Low-Residual-Voltage%20Surge%20Arresters%20in%20Suppressing%20Overvoltages%20in%20UHV%20AC%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_A3_53_Application%20Effects%20of%20Low-Residual-Voltage%20Surge%20Arresters%20in%20Suppressing%20Overvoltages%20in%20UHV%20AC%20Systems.pdf</a>
7 WG	C4-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C4_54_Protection%20of%20high%20voltage%20power%20network%20control%20electronics%20from%20the%20high-altitude%20Electromagnetic%20pulse%20(HEMP).pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C4_54_Protection%20of%20high%20voltage%20power%20network%20control%20electronics%20from%20the%20high-altitude%20Electromagnetic%20pulse%20(HEMP).pdf</a>
8 JWG	C4/B4-52	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_B4_52_Guidelines%20for%20Sub-synchronous%20Oscillation%20Studies%20in%20Power%20Electronics%20Dominated%20Power%20Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_B4_52_Guidelines%20for%20Sub-synchronous%20Oscillation%20Studies%20in%20Power%20Electronics%20Dominated%20Power%20Systems.pdf</a>
9 WG	C4-51	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C4_51_Connection%20of%20Railway%20Traction%20Systems%20to%20Power%20Networks.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C4_51_Connection%20of%20Railway%20Traction%20Systems%20to%20Power%20Networks.pdf</a>
10 WG	C4-50	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_50_Evaluation_of_Transient_Performance_of_Grounding_Systems_in_Substations_and_Its_Impact_on_Primary_and_Secondary_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_50_Evaluation_of_Transient_Performance_of_Grounding_Systems_in_Substations_and_Its_Impact_on_Primary_and_Secondary_Systems.pdf</a>
11 WG	C4-49	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_49_Multi-frequency_stability_of_converter_based_modern_power_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_49_Multi-frequency_stability_of_converter_based_modern_power_systems.pdf</a>
12 WG	C4-47	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_47_Power_System_Resilience_PSR_WG.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_47_Power_System_Resilience_PSR_WG.pdf</a>
13 WG	C4-48	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_48_Overvoltage_Withstand_Characteristics_of_Power_System_Equipment_35_1200kV.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_48_Overvoltage_Withstand_Characteristics_of_Power_System_Equipment_35_1200kV.pdf</a>
14 WG	C4-46	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_46_Evaluation_of_Temporary_Overvoltages_in_Power_Systems_due_to_Low_Order_Harmonic_Resonances.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_46_Evaluation_of_Temporary_Overvoltages_in_Power_Systems_due_to_Low_Order_Harmonic_Resonances.pdf</a>
15 WG	C4-45	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_45_Measuring_techniques_and_characteristics_of_fast_and_very_fast_transient_overvoltages_in_substations_and_converter_stations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_45_Measuring_techniques_and_characteristics_of_fast_and_very_fast_transient_overvoltages_in_substations_and_converter_stations.pdf</a>
16 WG	C4-44	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_44_EMC_for_Large_PhotoVoltaic_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_44_EMC_for_Large_PhotoVoltaic_Systems.pdf</a>
17 WG	C4-43	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_43_Lightning_problems_and_lightning_risk_management_for_nuclear_power_plants.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_43_Lightning_problems_and_lightning_risk_management_for_nuclear_power_plants.pdf</a>
18 JWG	C4-42/CIRED	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_42_CIRED_Continuous_assessment_of_low_order_harmonic_emissions_from_customer_installations.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_42_CIRED_Continuous_assessment_of_low_order_harmonic_emissions_from_customer_installations.pdf</a>
19 JWG	C4/B5-41	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_B5_41_Challenges%20with%20series%20compensation%20application%20in%20power%20systems%20when%20overcompensating%20lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C4_B5_41_Challenges%20with%20series%20compensation%20application%20in%20power%20systems%20when%20overcompensating%20lines.pdf</a>
20 WG	C4-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_39_Effectiveness_of_line_surge_arresters_for_lightning_protection_of_transmission_OHL.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_39_Effectiveness_of_line_surge_arresters_for_lightning_protection_of_transmission_OHL.pdf</a>
21 JWG	C4-40/CIRED	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_40_CIRED_Revisions_to_IEC_Technical_Reports_61000_3_X.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_40_CIRED_Revisions_to_IEC_Technical_Reports_61000_3_X.pdf</a>
22 WG	C4-36	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_36_Winter_Lightning_Parameters_and_Engineering_Consequences_for_Wind_Turbines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_36_Winter_Lightning_Parameters_and_Engineering_Consequences_for_Wind_Turbines.pdf</a>
23 JWG	C4-31/CIRED	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_31_EMC_between_communication_circuits_and_power_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_C4_31_EMC_between_communication_circuits_and_power_systems.pdf</a>
24 WG	C4-23	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_23_Guide_to_procedures_for_estimating_the_lightning_performance_of_transmission_lines.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C4_23_Guide_to_procedures_for_estimating_the_lightning_performance_of_transmission_lines.pdf</a>
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# CIGRE WORKING GROUPS LISTS

**SC C5 ELECTRICITY MARKETS AND REGULATION**

**Last update : 5 March 2020**

	Type	Number	Title	Name of convener	Date of approval
1	WG	C5-32	Carbon Pricing in Wholesale Electricity Markets	Anthony Giacconi (US)	23/06/2019
2	WG	C5-31	Wholesale and Retail Electricity Cost Impact of Flexible Demand Response	Angela Chuang (US)	02/04/2019
3	JWG	C5/C6-29	New Electricity Markets, Local Energy Communities	Alain Taccoen (FR)	12/12/2018
4	WG	C5-30	The Role of Block Chain Technologies in Power Markets	David Bowker (AU)	12/12/2018
5	WG	C5-28	Energy Price Formation in Wholesale Electricity Markets	Adam Keeth (US)	16/10/2018
6	WG	C5-27	Market Design for Short-Term Flexibility	Gerard Doorman (NO)	18/09/2017
7	WG	C5-26	Auction Markets and Other Procurement Mechanisms for Demand Response Services	Kankar Bhattacharya (CA)	11/08/2017
8	WG	C5-24	Exploring the Market-based value of Smart Grid developments	Elizabeth LaRose (US)	01/12/2016
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# CIGRE WORKING GROUPS LISTS

**SC C5 ELECTRICITY MARKETS AND REGULATION**

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	WG C5-32	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C5_32_Carbon%20Pricing%20in%20Wholesale%20Electricity%20Markets.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C5_32_Carbon%20Pricing%20in%20Wholesale%20Electricity%20Markets.pdf</a>
2	WG C5-31	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C5_31_%20Wholesale%20and%20Retail%20Electricity%20Cost%20Impact%20of%20Flexible%20Demand%20Response.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C5_31_%20Wholesale%20and%20Retail%20Electricity%20Cost%20Impact%20of%20Flexible%20Demand%20Response.pdf</a>
3	JWG C5/C6-29	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C5_C6_29_%20New%20Electricity%20Markets%20Local%20Energy%20Communities.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C5_C6_29_%20New%20Electricity%20Markets%20Local%20Energy%20Communities.pdf</a>
4	WG C5-30	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C5_30_The%20Role%20of%20Block%20Chain%20Technologies%20in%20Power%20Markets.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C5_30_The%20Role%20of%20Block%20Chain%20Technologies%20in%20Power%20Markets.pdf</a>
5	WG C5-28	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C5_28_Energy%20Price%20Formation%20in%20Wholesale%20Electricity%20Markets.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C5_28_Energy%20Price%20Formation%20in%20Wholesale%20Electricity%20Markets.pdf</a>
6	WG C5-27	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_27_Market_Design_for_Short_Term_Flexibility.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_27_Market_Design_for_Short_Term_Flexibility.pdf</a>
7	WG C5-26	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_26_Auction_Markets_and_Other_Procurement_Mechanisms_for_Demand_Response_Services.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_26_Auction_Markets_and_Other_Procurement_Mechanisms_for_Demand_Response_Services.pdf</a>
8	WG C5-24	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_24_Exploring_the_Market_based_value_of_Smart_Grid_developments.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C5_24_Exploring_the_Market_based_value_of_Smart_Grid_developments.pdf</a>
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# CIGRE WORKING GROUPS LISTS

**SC C6 ACTIVE DISTRIBUTION SYSTEMS AND DISTRIBUTED ENERGY RESOURCES Last update : 5 March 2020**

	Type	Number	Title	Name of convener	Date of approval
1	WG	C6-40	Electric Vehicles as Distributed Energy Resource (DER) systems	Joao Peças_Lopes (PT)	05/06/2019
2	WG	C6-36	Distributed Energy Resource Models for Impact Assessment	Jason Taylor (US)	05/06/2019
3	WG	C6-39	Distribution customer empowerment	Jan von_Appen (DE)	13/07/2018
4	WG	C6-38	Rural electrification	Kurt Dedekind (ZA)	13/07/2018
5	JWG	C6/B4-37	Medium Voltage DC distribution systems	James Yu (GB)	14/07/2018
6	WG	C6-35	DER aggregation platforms for the provision of flexibility services	Alexandre Oudalov (CH)	07/07/2018
7	JWG	C6/C2-34	Flexibility provision from distributed energy resources	Pierluigi Mancarella (AU)	26/07/2018
8	JWG	C6/C1-33	Multi-energy system interactions in distribution grids	Birgitte Bak-Jensen (DK)	30/07/2018
9	WG	C6-28	Hybrid Systems for off-grid power supply	Ravi Seethapathy (CA)	17/06/2014
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# CIGRE WORKING GROUPS LISTS

**SC C6 ACTIVE DISTRIBUTION SYSTEMS AND DISTRIBUTED ENERGY RESOURCES Last update : 5 March 2020**

Type	Number	Links to the Terms of Reference
1 WG	C6-40	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C6_40_Electric%20Vehicles%20as%20Distributed%20Energy%20Resource%20(DER)%20systems.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C6_40_Electric%20Vehicles%20as%20Distributed%20Energy%20Resource%20(DER)%20systems.pdf</a>
2 WG	C6-36	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C6_36_Distributed%20Energy%20Resource%20Models%20for%20Impact%20Assessment.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20C6_36_Distributed%20Energy%20Resource%20Models%20for%20Impact%20Assessment.pdf</a>
3 WG	C6-39	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_39_Distribution%20customer%20empowerment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_39_Distribution%20customer%20empowerment.pdf</a>
4 WG	C6-38	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_38_Rural%20Electrification.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_38_Rural%20Electrification.pdf</a>
5 JWG	C6/B4-37	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_B4_37_Medium%20Voltage%20DC%20distribution%20systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_B4_37_Medium%20Voltage%20DC%20distribution%20systems.pdf</a>
6 WG	C6-35	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_35_Distributed%20energy%20resources%20aggregation%20platforms%20for%20the%20provision%20of%20flexibility%20services.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-WG%20C6_35_Distributed%20energy%20resources%20aggregation%20platforms%20for%20the%20provision%20of%20flexibility%20services.pdf</a>
7 JWG	C6/C2-34	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_C2_34_Flexibility%20provision%20from%20distributed%20energy%20resources.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_C2_34_Flexibility%20provision%20from%20distributed%20energy%20resources.pdf</a>
8 JWG	C6/C1-33	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_C1_33_Multi-energy%20system%20interactions%20in%20distribution%20grids.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20C6_C1_33_Multi-energy%20system%20interactions%20in%20distribution%20grids.pdf</a>
9 WG	C6-28	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C6_28_Hybrid_Systems_for_off_grid_power_supply.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_C6_28_Hybrid_Systems_for_off_grid_power_supply.pdf</a>
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# CIGRE WORKING GROUPS LISTS

## SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

Last update : 5 March 2020

	Type	Number	Title	Name of convener	Date of approval
1	JWG	D1/B1-75	Strategies and tools for corrosion prevention for cable systems	Joe Tusek (AU)	30/01/2020
2	WG	D1-74	Partial discharge measurement on insulation systems stressed from HV power electronics	Andrea Cavallini (IT)	28/01/2019
3	WG	D1-73	Nanostructured dielectrics: Multi-functionality at the service of the electric power industry	Michel Frechette (CA)	13/12/2017
4	WG	D1-69	Guidelines for test techniques of High Temperature Superconducting (HTS) systems	Richard Taylor (AU)	09/02/2017
5	WG	D1-68	Natural and synthetic esters – Evaluation of the performance under fire and the impact on environment	Massimo Pompili (IT)	17/01/2017
6	WG	D1-70	Functional Properties of modern insulating liquids	Ivanka Atanasova-Höhlein (DE)	05/12/2016
7	WG	D1-66	Requirements for partial discharge monitoring systems for gas insulated systems	Wojciech Koltunowicz (AT)	18/08/2016
8	WG	D1-67	Dielectric performance of new non-SF6 gases and gas mixtures for gas-insulated systems	Christian FRANCK (CH)	18/08/2016
9	WG	D1-64	Electrical insulation systems at cryogenic temperatures	Naoki HAYAKAWA (JP)	08/12/2015
10	WG	D1-65	Mechanical properties of insulating materials and insulated conductors for oil insulated power transformers	Lars SCHMIDT (DE)	08/12/2015
11	WG	D1-63	Partial discharge detection under DC voltage stress	Ronald PLATH (DE)	15/04/2015
12	WG	D1-62	Surface Degradation of Polymeric Insulating Materials for Outdoor Applications	Bernd Komanschek (DE)	03/10/2014
13	WG	D1-61	Optical corona detection and measurement	Nishal Mahatho (ZA)	26/09/2014
14	WG	D1-60	Traceable measurement techniques for very fast transients	Yi Li (AU)	26/09/2014
15	WG	D1-59	Methods for dielectric characterisation of polymeric insulating materials for outdoor applications	Jens Seifert (DE)	30/01/2014
16	WG	D1-58	Evaluation of dynamic hydrophobicity of polymeric insulating materials under AC and DC voltage stress	Stefan KORNHUBER (DE)	08/01/2014
17	JWG	D1/B3-57	Dielectric Testing of gas-insulated HVDC Systems	Claus Neumann (DE)	20/12/2013
18	WG	D1-56	Field grading in electrical insulation systems	Volker Hinrichsen (DE)	17/03/2013
19	WG	D1-54	Basic principles and practical methods to measure the AC and DC resistance of conductors of power cables and overhead lines	Boris Dardel (CH)	21/01/2013
20	WG	D1-50	Atmospheric and altitude correction factors for air gaps and clean insulators	Johannes Rickmann (US)	15/04/2012
21	JWG	D1/B1-49	Harmonised test for the measurement of residual inflammable gases in insulating materials by gas chromatography	John-Peter Mattmann (CH)	12/04/2012
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# CIGRE WORKING GROUPS LISTS

## SC D1 MATERIALS AND EMERGING TEST TECHNIQUES

Last update : 5 March 2020

	Type	Number	Links to the Terms of Reference
1	JWG	D1/B1-75	
2	WG	D1-74	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D1_74%20_PD%20measurement%20on%20insulation%20systems%20stressed%20from%20HV%20power%20electronics.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D1_74%20_PD%20measurement%20on%20insulation%20systems%20stressed%20from%20HV%20power%20electronics.pdf</a>
3	WG	D1-73	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_73_Nanostructured_dielectrics_Multi_functionality_at_the_service_of_the_electric_power_industry.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_73_Nanostructured_dielectrics_Multi_functionality_at_the_service_of_the_electric_power_industry.pdf</a>
4	WG	D1-69	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_69_Guidelines_for_test_techniques_of_High_Temperature_Superconducting_HTS_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_69_Guidelines_for_test_techniques_of_High_Temperature_Superconducting_HTS_systems.pdf</a>
5	WG	D1-68	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_68_Natural_and_synthetic_esters_Evaluation_of_the_performance_under_fire_and_the_impact_on_environment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_68_Natural_and_synthetic_esters_Evaluation_of_the_performance_under_fire_and_the_impact_on_environment.pdf</a>
6	WG	D1-70	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_70_Functional_properties_of_modern_insulating_liquids_for_transformers_and_similar_electrical_equipment.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_70_Functional_properties_of_modern_insulating_liquids_for_transformers_and_similar_electrical_equipment.pdf</a>
7	WG	D1-66	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_66_Requirements_for_PDM_for_gas_insulated_systems_approved.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_66_Requirements_for_PDM_for_gas_insulated_systems_approved.pdf</a>
8	WG	D1-67	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_67_Dielectric_performance_of_non_SF6_gases_for_gas_insulated_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_67_Dielectric_performance_of_non_SF6_gases_for_gas_insulated_systems.pdf</a>
9	WG	D1-64	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_64_Electrical_insulation_systems_at_cryogenic_temperatures.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_64_Electrical_insulation_systems_at_cryogenic_temperatures.pdf</a>
10	WG	D1-65	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_65_Mechanical_properties_of_insulating_materials_and_insulated_conductors_for_oil_insulated_power_transformers.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_65_Mechanical_properties_of_insulating_materials_and_insulated_conductors_for_oil_insulated_power_transformers.pdf</a>
11	WG	D1-63	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_63_Partial_discharge_detection_under_DC_stress.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_63_Partial_discharge_detection_under_DC_stress.pdf</a>
12	WG	D1-62	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_62_Surface_degradation_of_polymeric_insulating_materials.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_62_Surface_degradation_of_polymeric_insulating_materials.pdf</a>
13	WG	D1-61	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_61_Corona_Detection_and_Measurement.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_61_Corona_Detection_and_Measurement.pdf</a>
14	WG	D1-60	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_60_Traceable_measurement_techniques_for_very_fast_transients.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_60_Traceable_measurement_techniques_for_very_fast_transients.pdf</a>
15	WG	D1-59	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_59_Methods_for_dielectric_characterisation_of_polymeric_insulating_materials_for_outdoor_applications.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_59_Methods_for_dielectric_characterisation_of_polymeric_insulating_materials_for_outdoor_applications.pdf</a>
16	WG	D1-58	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_58_Evaluation_of_dynamic_hydrophobicity_under_AC_and_DC_Approved.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_58_Evaluation_of_dynamic_hydrophobicity_under_AC_and_DC_Approved.pdf</a>
17	JWG	D1/B3-57	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D1_B3_57_Dielectric_Testing_of_gas_insulated_HVDC_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D1_B3_57_Dielectric_Testing_of_gas_insulated_HVDC_Systems.pdf</a>
18	WG	D1-56	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_56_Field_grading_in_electrical_insulation_systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_56_Field_grading_in_electrical_insulation_systems.pdf</a>
19	WG	D1-54	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_54_Basic_principles_and_practical_methods_to_measure_the_AC_and_DC.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_54_Basic_principles_and_practical_methods_to_measure_the_AC_and_DC.pdf</a>
20	WG	D1-50	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_50_Atmospheric_and_altitude_correction_factors_for_air_gaps_and_clean_insulators.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D1_50_Atmospheric_and_altitude_correction_factors_for_air_gaps_and_clean_insulators.pdf</a>
21	JWG	D1/B1-49	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D1_B1_49_Harmonised_test_for_the_measurement_of_residual_inflammable_gases.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D1_B1_49_Harmonised_test_for_the_measurement_of_residual_inflammable_gases.pdf</a>
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# CIGRE WORKING GROUPS LISTS

**SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION**

**Last update : 5 March 2020**

Type	Number	Title	Name of convener	Date of approval
1 WG	D2-51	Implementation of Security Operations Centers (SOC) in Electric Power Industry as Part of Situational Awareness System	Vladimir Karantaev (RU)	19/11/2019
2 WG	D2-50	Electric power utilities' cybersecurity for contingency operations	Dennis Holstein (US)	18/11/2019
3 WG	D2-49	Augmented reality / Virtual reality to support Operation and Maintenance In Electric Power Utilities	Siamak Hossein_Khalaj (IR)	18/06/2019
4 JWG	D2/C2-48	Enhanced Information and Data Exchange to Enable Future Transmission and Distribution Interoperability	Gareth Taylor (GB)	21/08/2018
5 JWG	D2/C6-47	Advanced Consumer-Side Energy-Resource Management Systems	Alexey Nebera (RU)	01/06/2017
6 WG	D2-46	Cybersecurity future threats and impact on Electric Power Utilities organizations and operations	Dennis Holstein (US)	23/02/2018
7 WG	D2-45	Impact of governance regulations and constraints on EPU sensitive data distribution and location of data storage	Herwig Klima (AT)	13/12/2017
8 WG	D2-44	Usage of Public or Private Wireless Communication Infrastructures for Monitoring and Maintenance of Grid Assets and Facilities	Paddy Mulvey (IE)	20/03/2017
9 WG	D2-43	Enabling software defined networking for EPU telecom applications	Victor Tan (AU)	13/12/2016
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# CIGRE WORKING GROUPS LISTS

**SC D2 INFORMATION SYSTEMS AND TELECOMMUNICATION**

Last update : 5 March 2020

Type	Number	Links to the Terms of Reference
1	WG D2-51	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_51_Implementation%20of%20Security%20Operations%20Centers%20(SOC)%20in%20Electric%20Power%20Industry%20as%20Part%20of%20Situational%20Awareness%20System.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_51_Implementation%20of%20Security%20Operations%20Centers%20(SOC)%20in%20Electric%20Power%20Industry%20as%20Part%20of%20Situational%20Awareness%20System.pdf</a>
2	WG D2-50	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_50_Electric%20power%20utilities%E2%80%99%20cybersecurity%20for%20contingency%20operations.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_50_Electric%20power%20utilities%E2%80%99%20cybersecurity%20for%20contingency%20operations.pdf</a>
3	WG D2-49	<a href="https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_49_Augmented%20reality%20-%20Virtual%20reality%20to%20support%20operation%20and%20Maintenance%20In%20Electric%20Power%20Utilities.pdf">https://www.cigre.org/userfiles/files/News/2019/TOR-WG%20D2_49_Augmented%20reality%20-%20Virtual%20reality%20to%20support%20operation%20and%20Maintenance%20In%20Electric%20Power%20Utilities.pdf</a>
4	JWG D2/C2-48	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20D2_C2_48_Enhanced%20Information%20and%20Data%20Exchange%20to%20Enable%20Future%20Transmission%20and%20Distribution%20Interoperability.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR-JWG%20D2_C2_48_Enhanced%20Information%20and%20Data%20Exchange%20to%20Enable%20Future%20Transmission%20and%20Distribution%20Interoperability.pdf</a>
5	JWG D2/C6-47	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D2_C6_47_Advanced_Consumer_Side_Energy_Resource_Management_Systems.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_JWG_D2_C6_47_Advanced_Consumer_Side_Energy_Resource_Management_Systems.pdf</a>
6	WG D2-46	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_46_Cybersecurity_future_threats_and_impact_on_Electric_Power_Utility.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_46_Cybersecurity_future_threats_and_impact_on_Electric_Power_Utility.pdf</a>
7	WG D2-45	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_45_Impact_of_governance_regulations_and_constraints_on_EPU_sensitive_data_distribution_and_location_of_data_storage.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_45_Impact_of_governance_regulations_and_constraints_on_EPU_sensitive_data_distribution_and_location_of_data_storage.pdf</a>
8	WG D2-44	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_44_Usage_of_Public_or_Private_Wireless_Communication_Infrastructures_for_Monitoring_and_Maintenance_of_Grid_Assets_and_Facilities.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_44_Usage_of_Public_or_Private_Wireless_Communication_Infrastructures_for_Monitoring_and_Maintenance_of_Grid_Assets_and_Facilities.pdf</a>
9	WG D2-43	<a href="https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_43_Enabling_software_defined_networking_for_Electric_Power_Utilities_telecom_applications.pdf">https://www.cigre.org/userfiles/files/News/2018/TOR_WG_D2_43_Enabling_software_defined_networking_for_Electric_Power_Utilities_telecom_applications.pdf</a>
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