

CIGRE Study Committee B2 Overhead Lines



2014 Target Group Survey Feedback

February 16, 2016

Dear CIGRE Supporter.

Thank you for participating in the 2014 CIGRE Study Committee B2 “Overhead Lines” Target Group Survey. The main goal of the survey was to approach various Target Groups involved in overhead power lines in order to gather a list of their present concerns and challenges. We were successful in receiving input from 184 survey responders. Thank you for your participation.

This letter is to advise you of recent developments within Study Committee B2 which are aimed at addressing the needs of the Overhead Lines community, including the concerns and challenges identified in the 2014 Survey responses.

The 2014 Survey identified a large number of topics of concern and/or interest, which can be grouped as follows:

1. Operation and Maintenance:
 - a) Condition Assessment and Estimating Remaining Asset Life
 - b) Online monitoring sensors
 - c) Replacement of wood poles
 - d) Maximizing use of existing ROW's while minimizing outages of existing lines
 - e) Methods and tools for diagnostic and maintenance
 - f) Extending transmission line life
 - g) Risk management of OHL's
 - h) Plan for total renewal.

2. Design:
 - a) Increase Capacity and Reliability of the Existing Lines
 - b) New Materials for Use with Overhead Lines
 - c) Methods to Optimize Design
 - d) DC line design
 - e) Congestion management
 - f) Thermal limits
 - g) Capacity increase and reduction of active and reactive losses
 - h) Dynamic loads in design
 - i) Lines without concrete foundations
 - j) Risk assessment of structure foundations

- k) Light structure designs to reduce difficulties with site access and to reduce installation cost
- l) Design of tall structures
- m) Long Spans
- n) 3D design of OHL's
- o) Product specification, design and testing
- p) Reasons why different designs are used in different locations
- q) Design criteria for rime ice
- r) Shortage of line designers
- s) Finding qualified and experienced design staff.

3. Construction:

- a) Foundations For Difficult Soil Conditions
- b) Earthing of overhead lines
- c) Bank stability for pole footings
- d) Assembly and erection of structures
- e) Work safety
- f) Live work
- g) Linesmen training
- h) Cost of construction
- i) New construction techniques.

4. Weather and Environment:

- a) Public Acceptance Of Overhead Lines
- b) Overhead Lines vs. Underground Cables
- c) Access and environmental constraints
- d) Environmental impacts
- e) Regulatory approvals
- f) Weather impacts
- g) Climate change and atmospheric hazards.

The following is a list of the existing SC B2 publications from the last 10 years that may provide you with solutions to some of your concerns/challenges identified in the 2014 Survey responses:

Publication	Concern/Challenge Number Identified by 2014 Survey Responders
TB 274 "Consultation models for overhead line projects." (2005)	4a, 4e
TB 281 "Design and Installation of micropiles and ground anchors for OHL support foundations" (2005)	2b
TB 289 "Reliability Based Design Methods for Overhead Lines	2c

Publication	Concern/Challenge Number Identified by 2014 Survey Responders
Advantages, Applications and Comparisons” (2006)	
TB 291 “Guidelines for Meteorological Icing Models, Statistical Methods and Topographical Effects” (2006)	4f
TB 294 “How overhead lines are redesigned for uprating/upgrading - Analysis of the replies to the questionnaire” (2006)	1h, 2a, 2f, 2g
TB 308 “Foundation Installation – An Overview” (2006)	3a, 3c, 3e, 3i
TB 344 “Big Storm Events - What we have learned” (2008)	2c, 4f, 4g
TB 350 “How Overhead Lines (OHL) Respond to Localized High Intensity Winds - Basic Understanding” (2008)	2c, 4f, 4g
TB 353 “Guidelines for increased Utilization of existing Overhead Transmission Lines” (2008)	2a, 2e, 2g
TB 363 “Reliability Based Calibration of Foundation Strength Factor Using Full-Scale Test Data – A Guide for Design Engineers” (2008)	1a, 2c, 2j
TB 384 “Comparison of General Industry Practices for Lattice Tower Design and Detailing” (2009)	2c
TB 385 “Management of Risks due to Load-Flow Increases in Transmission OHL” (2009)	1g, 2a
TB 387 “Influence of the hyper-static modeling on the behaviour of transmission line lattice structures” (2009)	2c
TB 395 “Investigation on the Structural Interaction between Transmission Line Towers and Foundations” (2009)	2c
TB 396 “Large Overhead Lines (OVHL) Crossings” (2009)	2m
TB 399 “Improvement on the Tower Testing Methodology” (2009)	2o
TB 410 “Local Wind Speed-Up on Overhead Lines for Specific Terrain Features” (2010)	2c, 4f
TB 416/416A “Innovative Solutions for Overhead Line Supports” (2010)	2b, 2k, 2p, 4a
TB 428 “The Effect of Fabrication and Erection Tolerances on the Strength of Lattice Steel “(2010)	2c
TB 454 “Assessment of in-service Composite Insulators by using	1a, 1e

Publication	Concern/Challenge Number Identified by 2014 Survey Responders
Diagnostic Tools” (2013)	
TB 471 “Working Safely while Supported on Aged Overhead Conductors” (2011)	3e, 3f
TB 477 “Evaluation of aged fittings” (2011)	1a, 1e
TB 481 “Guide for the Assessment of Composite Insulators in the Laboratory after their Removal from Service” (2011)	1a, 1e
TB 485 “Overhead Line Design Guidelines for Mitigation of Severe Wind Storm Damage” (2012)	2c, 4f, 4g
TB 515 “Mechanical Security of Overhead Lines Containing Cascading Failures and Mitigating Their Effects” (2012)	2a, 2c
TB 516 “Geotechnical Aspects of OHL Routing – An Overview” (2012)	2j, 4c, 4d
TB 545 “Assessment of in-service Composite Insulators by using Diagnostic Tools” (2013)	1a, 1e
TB 561 “Live Work – A Management Perspective” (2013)	3e, 3f, 3g, 3i
TB 598 “Guidelines for the management of risk associated with severe climatic events and climate change on overhead lines” (2014)	1g, 4d, 4f, 4g
TB 638 “Guide to overall line design” (2015)	2c
TB 643 “Guide to the operation of conventional conductor systems above 100°C” (2015)	1g, 2f ,2g
TB 645 “Meteorological data for assessing climatic loads on overhead lines” (2015)	4f
TB xxx? “Management guidelines for outsourcing OHTL technical expertise”	2r, 2s

In addition, SC B2 continues to develop new technical publications. The following is a list of the existing active Working Groups within Study Committee B2:

Working Group	Concern/Challenge Number Identified by 2014 Survey Responders
WG B2-23 “Dynamic Loading on Foundations”	2c, 2h
WG B2.24 “Qualification of HV and UHV Overhead Line Supports Under Static and Dynamic Loads	2c, 2h
WG B2.40 “Calculations of the electrical distances between live parts and obstacles for OHL: Preparatory studies for revision of IEC standard (IEC61865 –IEC60826 –EN50341)”	1g, 2c
WG B2.52 “The use of robotic in assessment and maintenance of OHL”	1a, 1b ,1e
WG B2.53 “Management guidelines for outsourcing OHTL technical expertise”	2r, 2s
WG B2.55 “Conductors for the uprating of existing overhead lines”	2a, 2b, 2e
WG B2.56 Ground potential rise at overhead AC transmission line structures during faults	3b, 3e
WG B2.57 Survey of operational composite insulator experience and application guide for composite insulators	1g, 2o
WG B2.58 “Vibration Modeling of HTLS conductors – Self damping characterization”	2b, 2c
WG B2.59 “Dynamic Line Rating Forecasts up to Two Days Ahead”	1b, 2f, 2g
WG B2.60 “Affordable Overhead transmission lines for Sub-Saharan Countries”	3h
WG B2.61 “Transmission Line Structures with Fibre Reinforced Polymer (FRP) Composites”	2b
WG B2.62 “Design of Compact HVdc Lines”	2d, 2e, 2g, 2k
WG B2.63 “Compact AC Transmission Lines”	2e, 2g, 2k
WG B2.64 “Inspection and testing of equipment and training for live-line work on overhead lines”	3e, 3f, 3g
WG B2.65 “Detection, Prevention and Repair of Sub-surface Corrosion in	1a, 1e, 1f, 1g, 2j

Working Group	Concern/Challenge Number Identified by 2014 Survey Responders
Overhead Line Structures”	

Furthermore, here is a list of the proposed new Working Groups within Study Committee B2, that are being considered:

Working Group	Concern/Challenge Number Identified by 2014 Survey Responders
“Best Practice in Analysis and Detailing and to Prevent Premature Tower Test Failures”	2c
“A need for overhead power lines (OHL’s) and their advantages”	4a, 4b, 4c, 4d. 4e
“Safe Handling and Installation Guide for HTLS Conductors”	3e, 3i
“Assessment and testing of wood and alternative material type poles”	1a, 1c, 1e, 1g, 2b
“Guide for Determining the Health Index of Overhead Transmission Lines”	1a, 1f, 1g
“Risk assessment of OHL components design and modification of OHL’s to minimize risk of fire”	1a, 1f, 1g, 2c

As evidenced in the three tables above, SC B2 is actively working on multiple topics to help the general Overhead Lines community deal with our diverse challenges. The 2014 Survey results were certainly taken very seriously and they have resulted in the creation of a number of new Working Groups, with even more proposed.

We will continue to seek our Target Groups input in the future.

Once again, we thank you for your participation in the 2014 Survey.

Best Regards,



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 Study Committee B2