



Cigre Studienkomitee B2 „Freileitungen“- 2010

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APG



Das SC B2 Freileitungen“ befaßt sich mit den Hauptthemen des Leitungsbaues:

- Planung
- Elektrische und mechanische Aspekte
- Komponenten (Fundamente, Tragwerke, Erd- und Leiterseile, Isolatoren., Klemmen)
- Tests
- Errichtung
- Betrieb
- Instandhaltung
- Trassenmanagement
- Erneuerung
- Leistungserhöhung, Erhöhung der Lebensdauer

SC B2 besteht derzeit aus 26 Arbeitsgruppen und JWG

auch: verlorenes Wissen erneuern

Working Groups - Task Forces		
Ref	Title	Dates (Creation - Disbanding)
WG B2.21	Arc protection and diagnosis for composite string insulators	2007 - 2010
WGB2.22	Mechanical security of overhead lines : design loading cases and strategies for effective anti-cascading supports	2008 - 2011
WGB2.23	Geotechnical and structural design of the foundations	2008 - 2011
WGB2.24	Supports under Static and Dynamic Loads	2010-2012
WGB2.25	revision of IEC testing of Self Damping and conductor fatigue characteristics (new IEC Spec.), for high temperature Fittings (IEC 61284), for tests on spacers (IEC 61854) and on dampers (IEC 61897)	2007 - 2010
JWG B2./B3.27	Live line maintenance	2008 - 2011
WGB2.28	Meteorological data for assessing climatic loads . Update of IEC TR 61774	2010-2012
WGB2.31	Aeolian Vibration of single conductors	2007 - 2010
WGB2.32	performance of aged fittings : - Testing, acceptance criteria & recommendations for HV & UHV Lines.	2007 - 2010
WGB2.33	Guidelines for cable cart/trolley (cycling) safety on old conductors (earthwires) equipped with aircraft warning markers (and other fittings).	2007 - 2010

Working Groups - Task Forces		
WGB2.34	<u>Impact of Line Configurations on electric and magnetic fields, radio interference and audible noise for 800 and 1100 kV OHL</u>	2008 - 2010
WGB2.36	<u>Direct real time monitoring systems</u>	2008 - 2010
WGB2.38	<u>High Surge Impedance Load solutions for increased natural capacity of OHL</u>	2008 - 2010
WGB2.39	<u>Design guidelines implemented for High Intensity Wind</u>	2008 - 2011
WGB2.40	<u>Calculations of the electrical distances between live parts and obstacles for OHL : revision of IEC standard (IEC61865 □IEC60826 □EN50341)</u>	2008 - 2010
WGB2.41	<u>conversion of existing AC lines to DC operation</u>	2010-2013
WGB2.42	<u>Operation of Conventional Conductor Systems above 100°C</u>	2010-2012
WGB2.43	<u>Thermal Rating Calculations for Overhead Lines with high temperatures and real-time weather & load data</u>	2010-2012
WGB2.44	<u>Coatings for protecting overhead power network equipment in winter conditions</u>	2010-2014
WGB2.45	<u>Bushfire characteristics</u>	2010-2013
WGB2.46	<u>Wind induced motion on bundle conductors (excluding ice galloping)</u>	2011-2014
WGB2.47	Remedial actions for <u>aged fittings and repair of conductors</u>	2011-2014
WGB2.48	Experience with the <u>mechanical performance of new conductor types</u>	2011-2014



Working Groups - Task Forces			
WGB2.49	<u>Safe design tension for conductors fitted with elastomer cushioned suspension units</u>		2011-2014
WGB2.50	<u>Safe handling of fittings and conductors</u>		2011-2014
JWG_C3/B2/B1.13	<u>Environmental issues of high voltage transmission lines for rural and urban areas</u>		2011-2013



Vorzugsthemen 2010

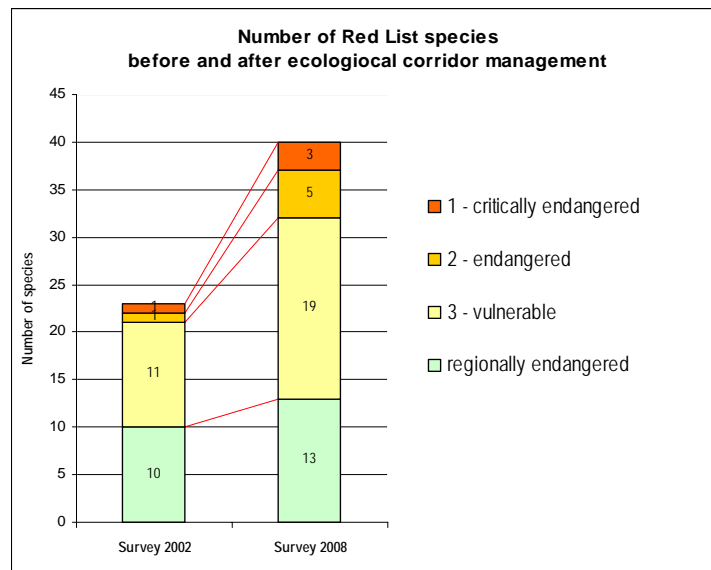
- **PS 1 – Umweltaspekte von neuen und bestehenden Freileitungen**
 - Reduzierung des optischen Eindrucks, Integration in die Landschaft, neues Mastdesign, Störgeräusche, elektrische und magnetische Felder
 - Reduzierung der Umwelteinflüsse
 - Recycling

- **PS 2 – Leistungserhöhung bestehender Freileitungen durch den Übergang von Drehstrom auf Gleichstrom oder durch die Erhöhung der Betriebsspannung**
 - AC auf DC
 - Adaptioen für höhere Spannungsebenen
 - Einsatz von Überspannungsableitern

- **PS 3 – Abschätzung der elektrischen und mechanischen Verfügbarkeit von Freileitungen**
 - Abschätzung der Restlebensdauer
 - Alterung von Komponenten und Einfluß auf Verfügbarkeit
 - Klimabedingungen, Klimawandel
 - Erhöhung der Verfügbarkeit z.B. durch den Einbau von Anti-Kaskadenmasten

Overhead line in a protected floodplain woodland – “Extended Ecology” as basis for OHL planning and maintenance¹

A. Hagen, F. Lenglachner, S. Aberle, H. Minichberger, H. Lugschitz

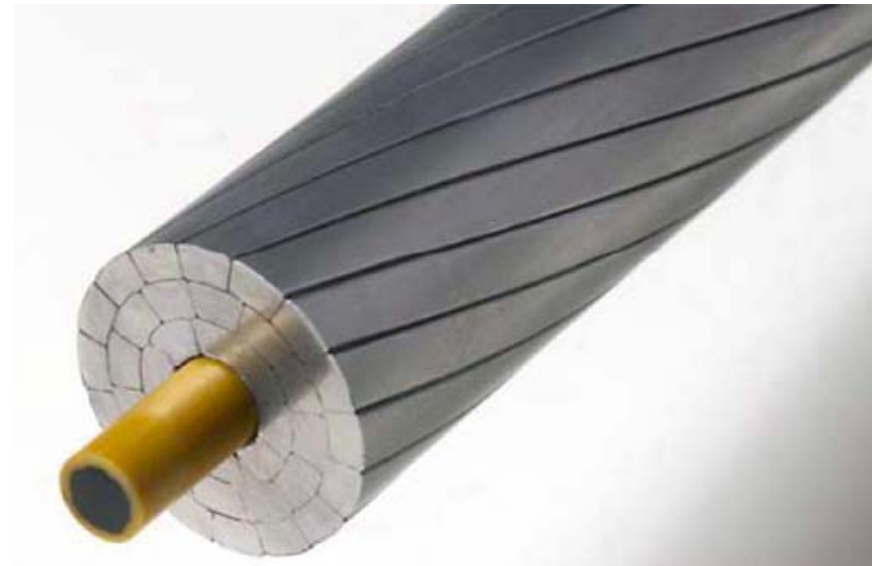
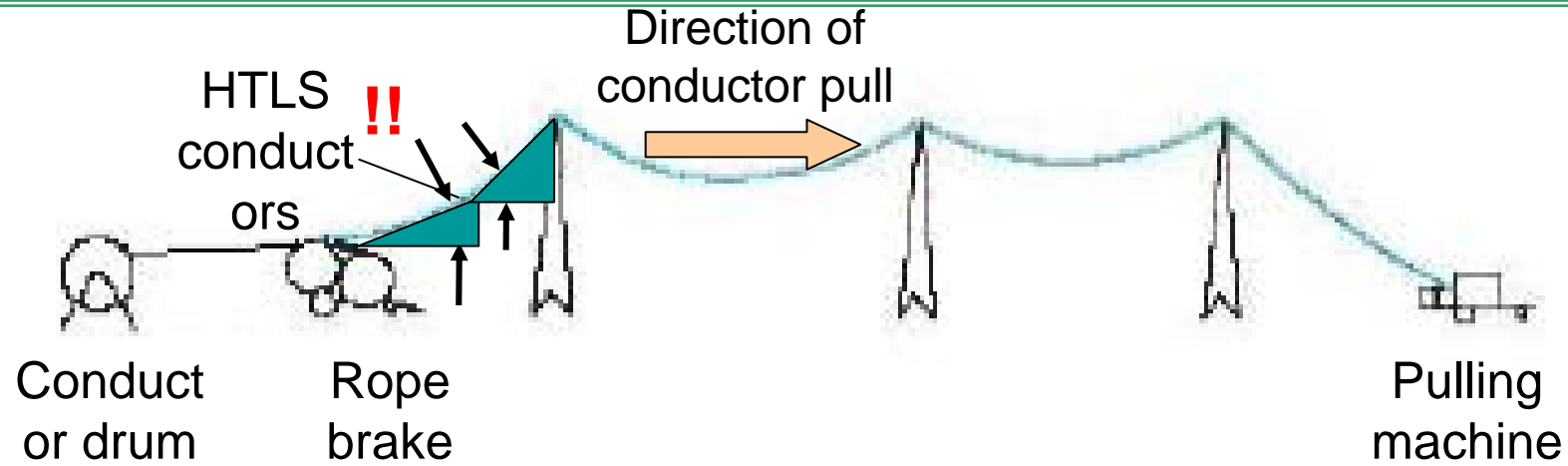


TRANSMISSION LINES – ECOLOGICAL TECHNIQUES IN BRAZIL



Figure 7 – Line in Operation with the Conductors Above The Forest

Neue Techniken: Hochtemperaturleiter mit nichtmetallischen Elementen





Mounting of fittings for ACCC conductor type (1) Connection of composite core



Transmission lines of 69, 138 and 230 kV in **densely populated** areas:

- Concrete placed on the **sidewalks**
- Special measures for the **earthing conditions**
- **Narrow right-of-way** (row)
- **EMF and RIV** must be kept below given limits, achieved by the phase arrangement and by an additional “earth wire” below the lowest conductor



69 kV



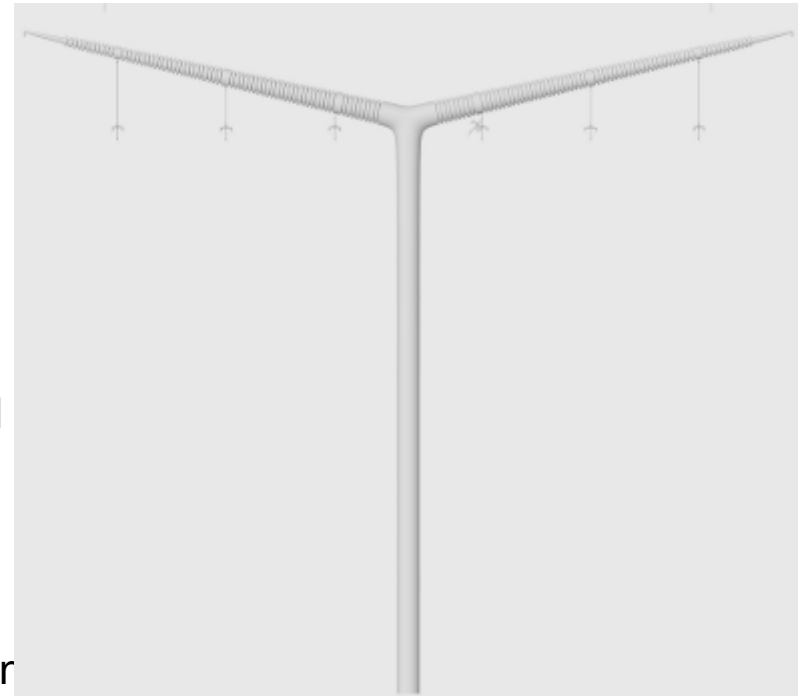
138 kV



230 kV

The "Fibre Tower" in Denmark

- Intended for short sections of 400 kV overhead lines
 - ◆ Beautification of selected overhead line sections
 - ◆ Under development
- Composite material based towers:
 - ◆ Rough estimate is approx. 3 x conventional lattice tower price
- Composite material based conductors:
 - ◆ Approx. 2.5-10 times the price of conventional ACSR conductor of the same cross section
 - ◆ reduction of losses must be considered

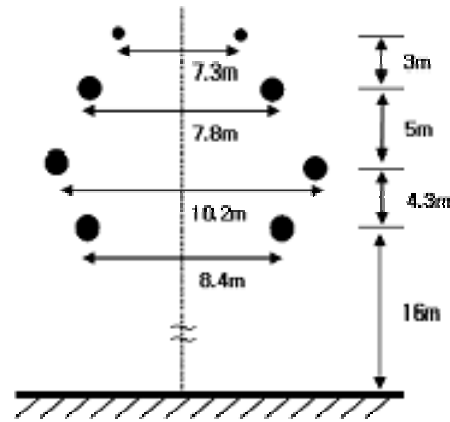


Example 2: 420 kV - Dubai (since 2008)

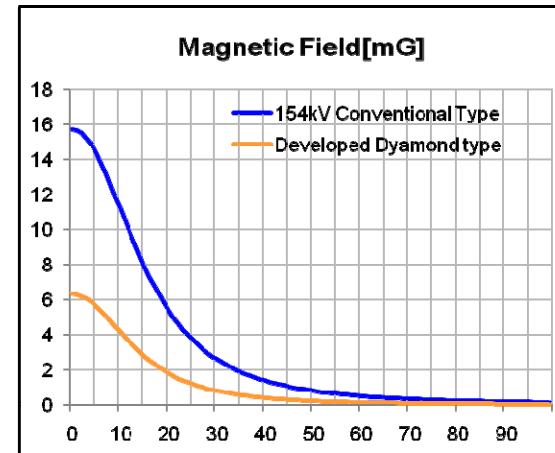
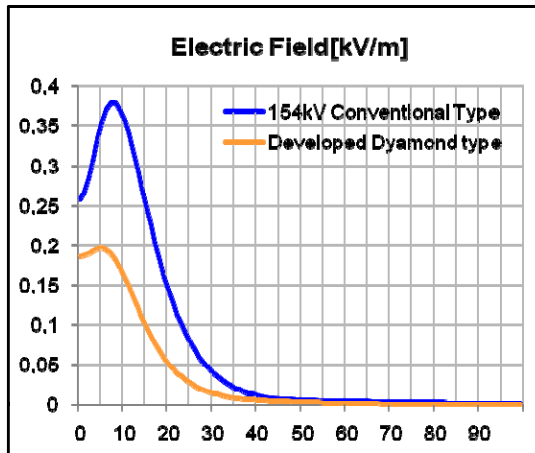
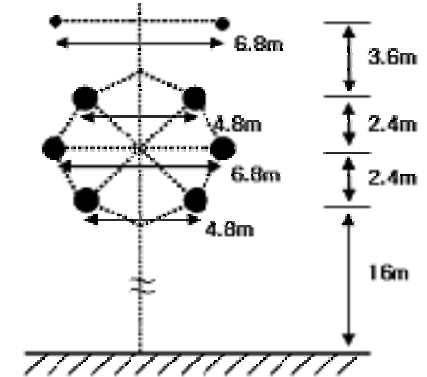


- Four AAAC conductors are used:
- 28.6 mm diameter each
 - Horizontal and vertical distance of 450 mm
 - optimized Phase Arrangement

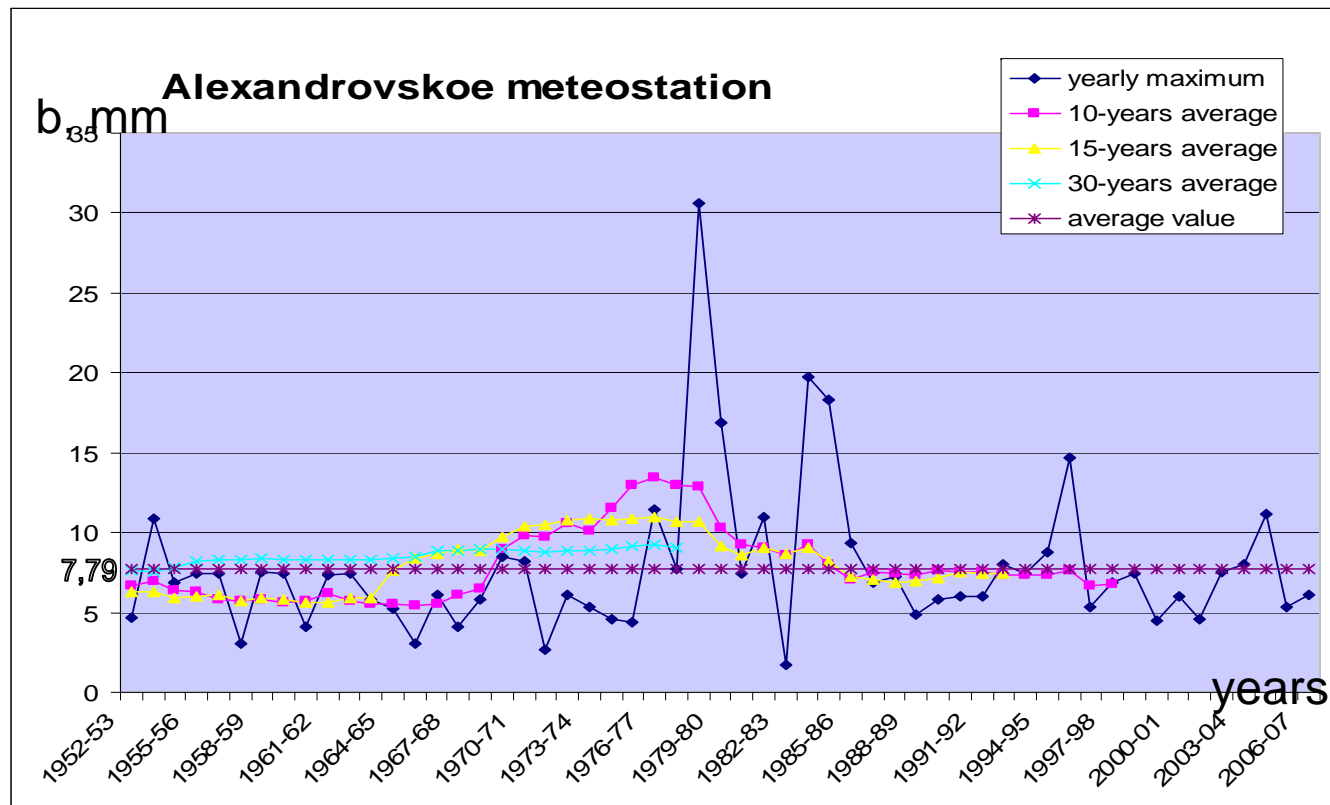
Conventional Type



Developed Type (Diamond Figure)



- Rußland: Auswertung von 1254 Eismeßstationen, bis 1951
- (hier: Eisdicke)





Roboter „Line Scout“, Kanada



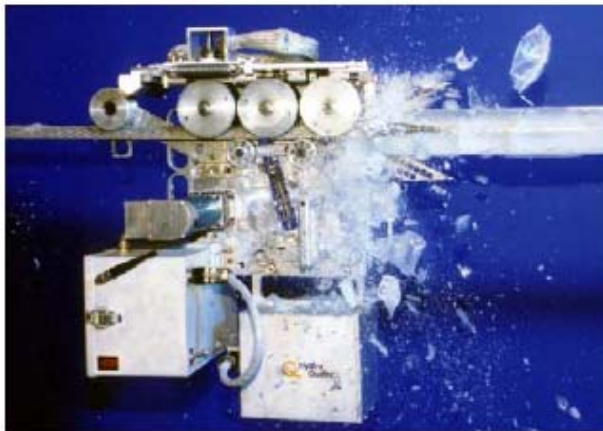


Figure 7.4: Prototype of the ROV de-icer (Leblond and Côté, 2004)

SC Berichterstattung
18. Jänner 2011



NON DESTRUCTIVE testing devices for ACSR

- Eddy Current testing head on the left
- Magnetic head on the right

Bild: Shkaptsov

765-kV Freileitung Sinansung- Sinseosan

Die Leitungserhaltung erfolgt z.T. unter Spannung und auch vom Hubschrauber aus



송전철탑 전자계 안심해도 좋습니다

송변전설비 전자계에 대해 30년간 국제적으로 지속적 연구가 있었으나, 현재까지 유해성이 밝혀진 바 없습니다.
한전은 세계보건기구 (WHO)의 국제기준치보다 훨씬 낮은 수준(15%이하)으로 운영하고 있으므로 전자계 노출, 걱정하지 마세요.



세계보건기구(WHO) 연구결과 발표 (07. 6. 18)

WHO는 전자기장에 대한 연구가 진행되면서 전자기장이 인체에 미치는 영향에 대해 우려를 표하며, 전자기장 노출을 줄이기 위해 권고사항을 제시하고 있다. 그러나, 전자기장 노출이 인체에 미치는 영향에 대한 연구는 아직 진행 중이다. 한전은 WHO의 국제기준치보다 훨씬 낮은 수준(15%이하)으로 운영하고 있으므로 전자계 노출, 걱정하지 마세요.

Global Top 5 Utility for Green Energy

