

# SC B1 Approach for testing various options of EHV DC Transmission cable systems

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**cigre**

For power system expertise



TGEG'19 - Versailles (France) - June 27th 2019

# DC cable Standards

No existing IEC Standards on DC cable systems

CIGRE Recommendations are the reference for all international tenders

# 2015 State of the art

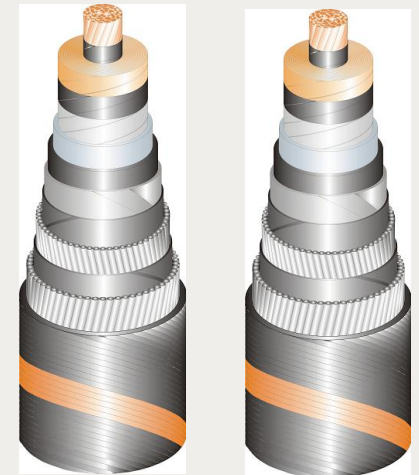
- Based on Tutorial delivered in Lund (SE) during CIGRE Symposium

## Available CIGRE recommendations

- Mass Impregnated: 600 kV
- XLPE: 500 kV
- HPTE: 500 kV (High Performance Thermoplastic Elastomer)

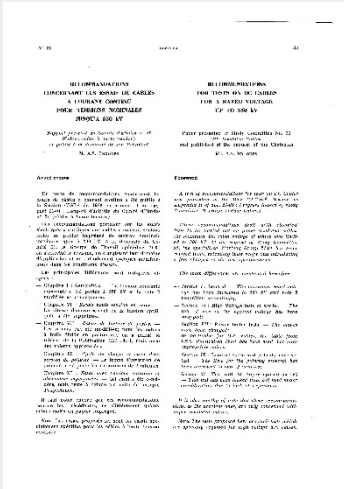


Extruded



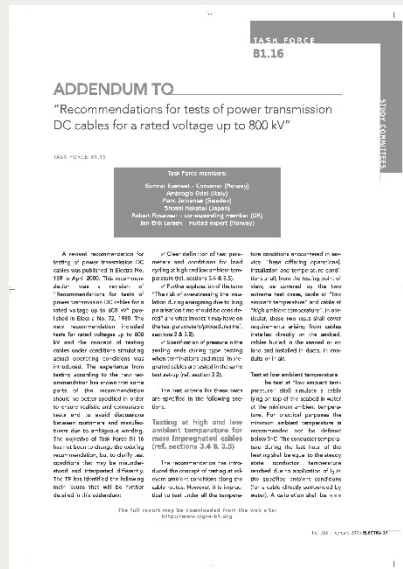
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# Lapped cables – existing recommendations

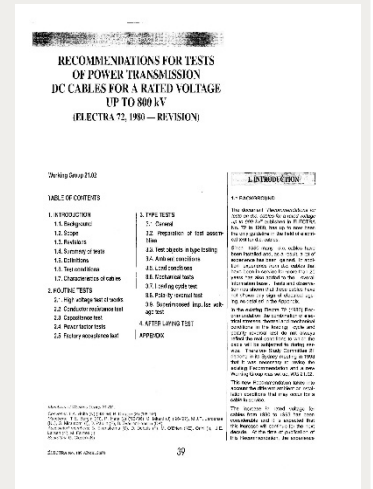


## Electra 32 (1974) Test for 550 kV DC lapped cables

## Electra 189 test for 800 kV DC lapped cables (2000)

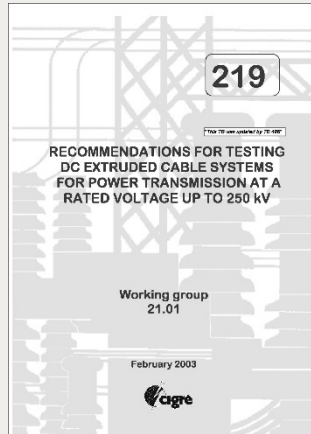


## Electra 218 (2005) test for 800 kV DC lapped cables. Addendum to Electra 189

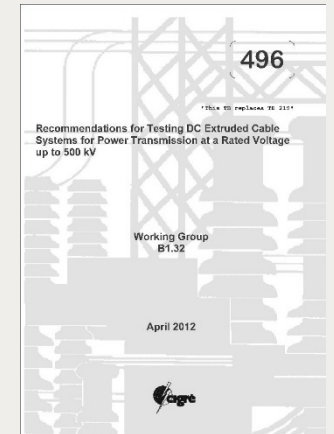


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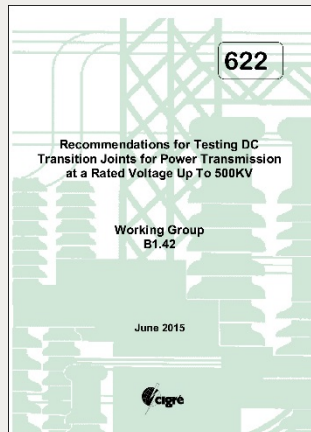
# Extruded cables – existing recommendations



TB 219: Testing DC extruded cable systems for power transmission up to 250 kV (2003)



TB 496: Testing DC extruded cables for power transmission up to 500 kV (2012)



TB 622 (2015): Recommendations for Testing DC Transition Joints for Power Transmission at a Rated Voltage up to 500 kV



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## New B1 WGs

- Two new WGs launched in 2018 to revise existing documents – Publication expected in 2021
- **WG B1.62** Recommendations for testing DC **Extruded cable systems** for power transmission at a rated voltage up to and including **800 kV**
- **WG B1.66** Recommendations for testing DC **Lapped Cable Systems** for power transmission at rated voltages up to and including **800kV**
  - VSC included
- WG ToRs approved with the support of all SCs

The future documents will replace the existing ones

## B1 WG progress

- Questions which are addressed by the WGs
  - Need for long term test for new technologies?
  - Routine test voltage durations
  - Temperature profile during tests

## Other WG involved

- JWG B4/B1/C4.73 Surge and Extended Overvoltage Testing of HVDC Cable Systems



## DC submarine cables

- Electra 171 (1997): Recommendations for mechanical tests on submarine cables
- TB 219 (2003): Testing DC Extruded Cable Systems for Power Transmission up to 250 kV
- TB 623 (2015): Recommendations for mechanical Testing of Submarine Cables