Paris Session 2022

Experience and challenges from zero crossing damped overvoltage test on 525kV cable to TB852

SC B1 Insulated Cables - PS2 - Q5

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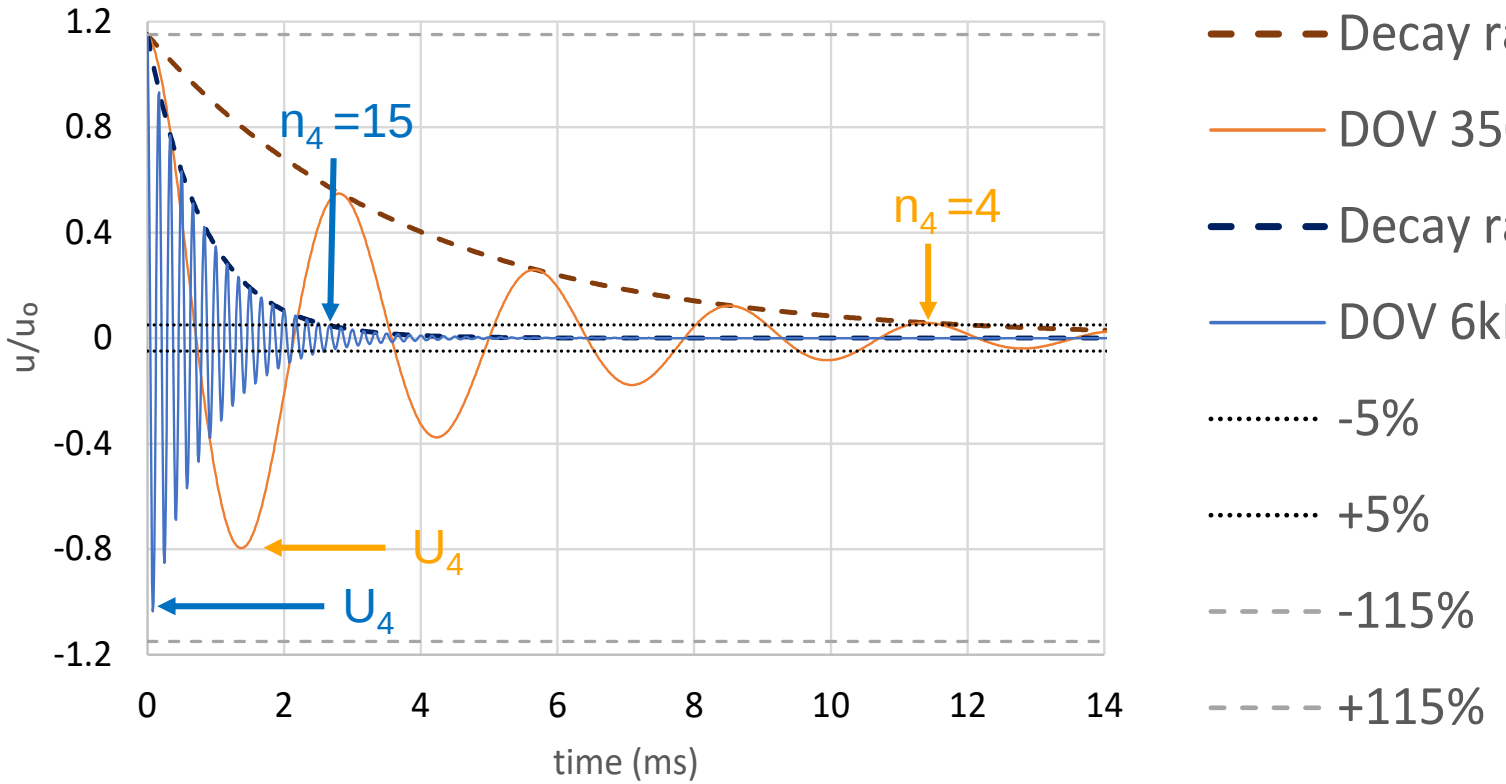
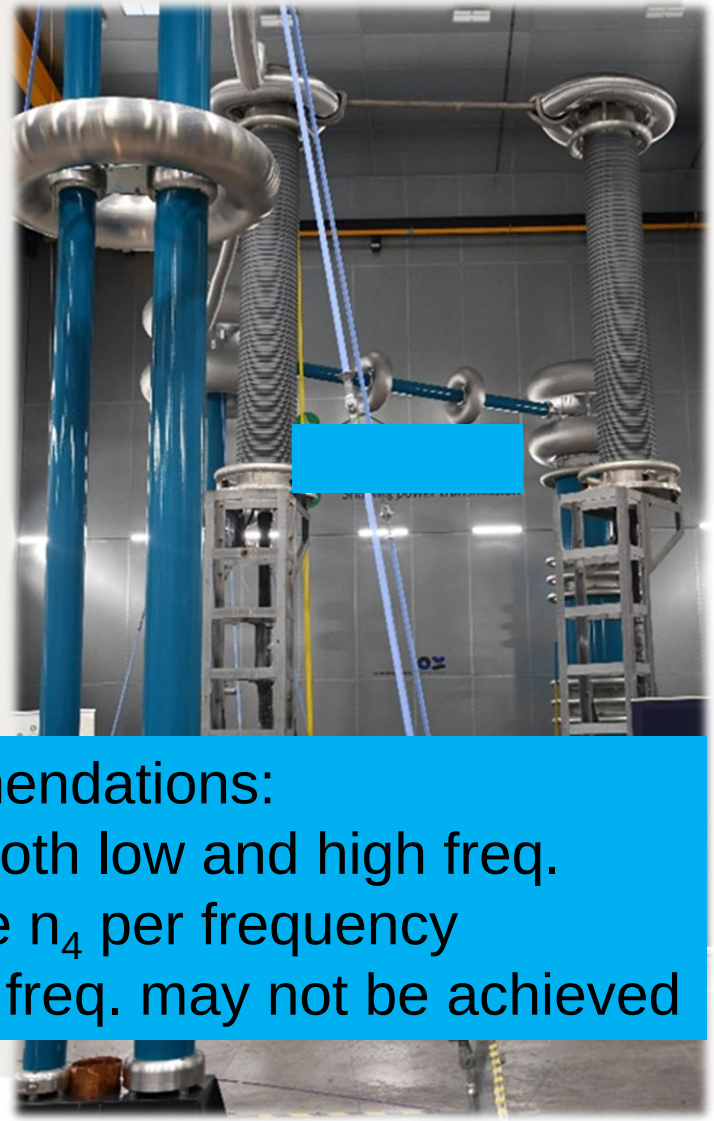
Experience w. zero crossing damped overvoltage test on 525kV cable system

- Complete 525kV cable system incl. 2 joints & 2 terminations
  - Pre-conditioning loadcycles
  - ~5.7kHz (act. 5.56kHz) with n_4 = 15 (neg. & pos.)
  - ~350Hz (act. 362Hz) with n_4 = 4 (neg. & pos.)





Recommendations:
- Test both low and high freq.
- Define n_4 per frequency
- Exact freq. may not be achieved

Challenge no. 1 – Measure correctly

Offset caused by universal divider

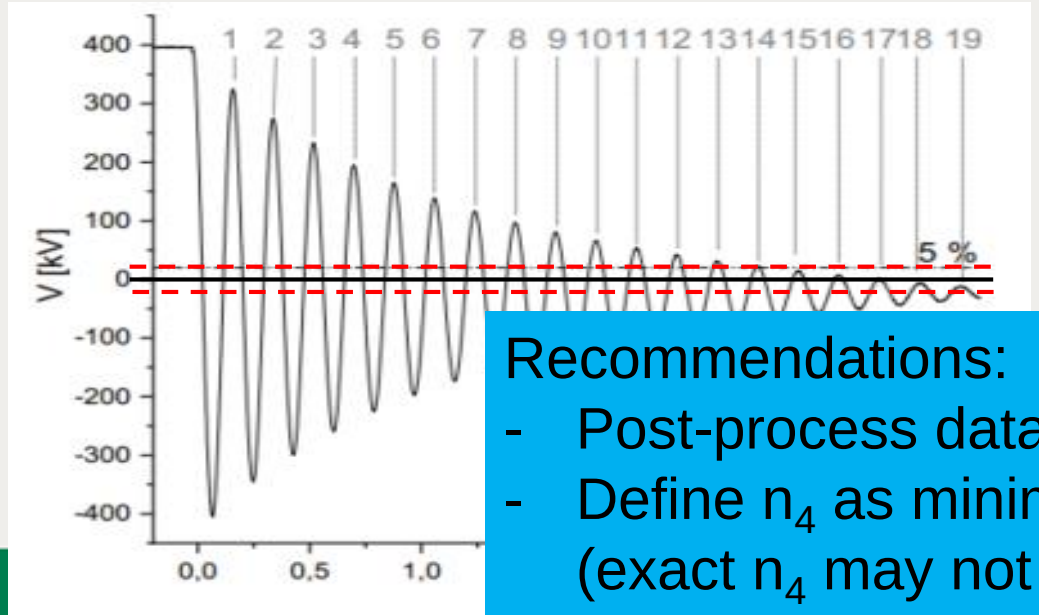
- Offset varies and is frequency dependent

➔ All curves to be post-processed individually

- 5.6kHz: ➔ correction 5.9kV – 8.5kV (~1.4%)
- 360Hz ➔ correction 0.7kV – 1.7kV (~0.3%)

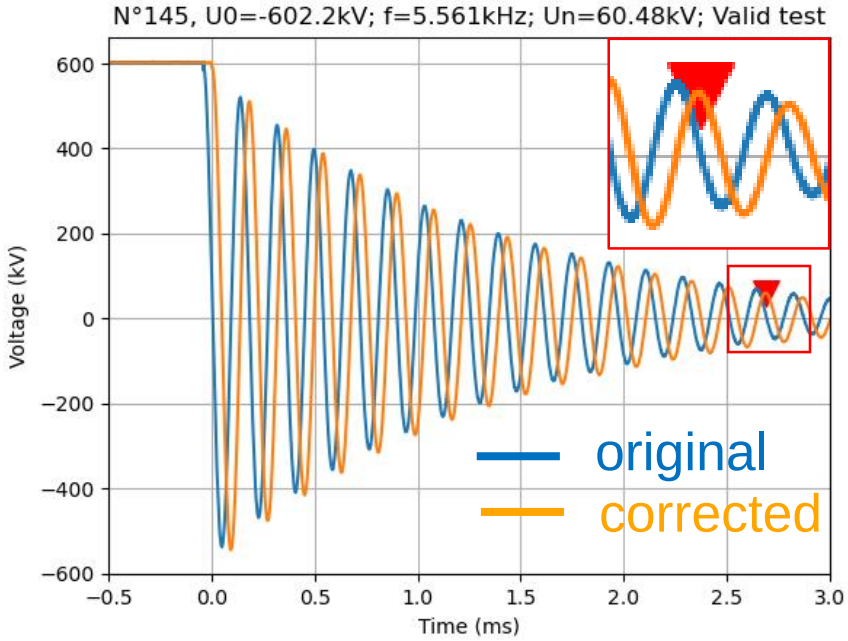
➔ Relative to 5% limit for n_4, 1.4% offset is critical

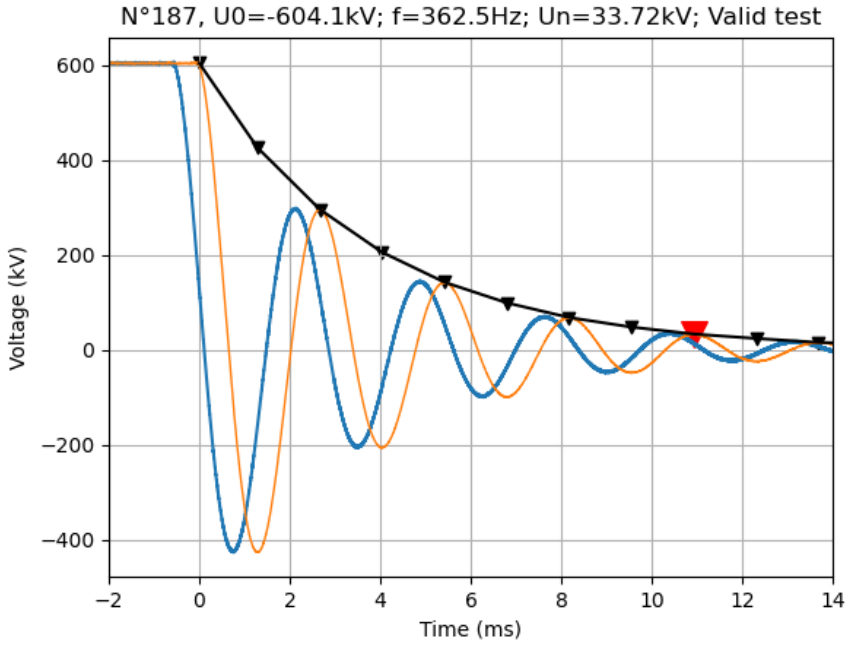
➔ Risk of non-valid pulses



Recommendations:

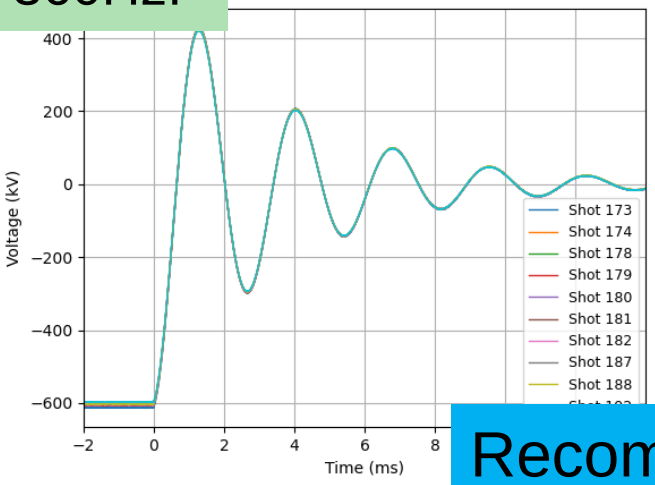
- Post-process data for validation
- Define n_4 as minimum in protocol (exact n_4 may not be achieved)

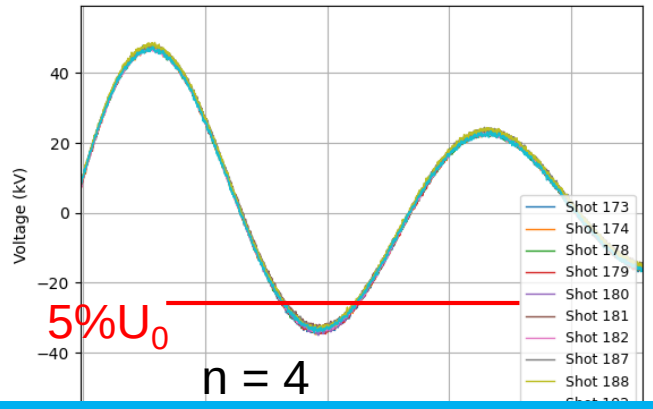




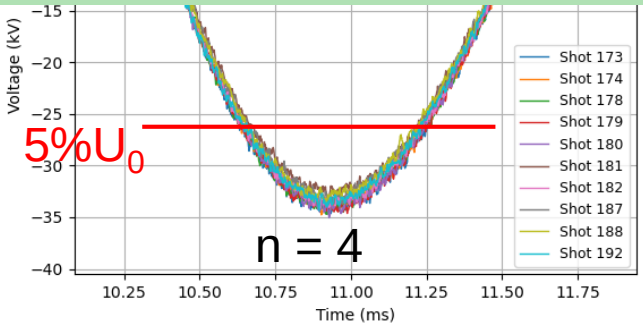
Challenge no. 2 – Spread in attenuation – defining n_4

360Hz:



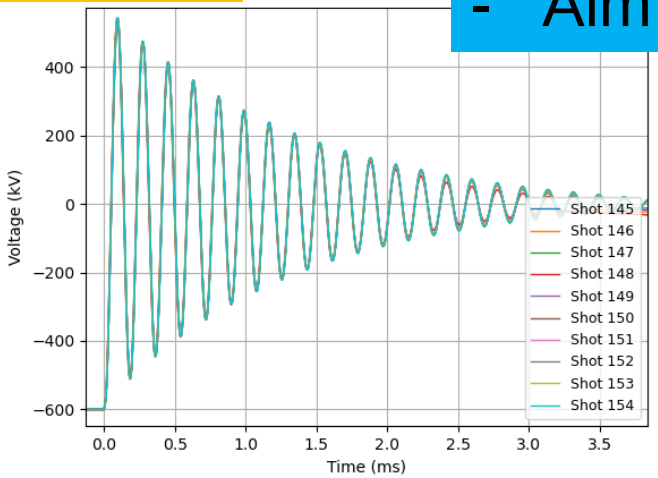


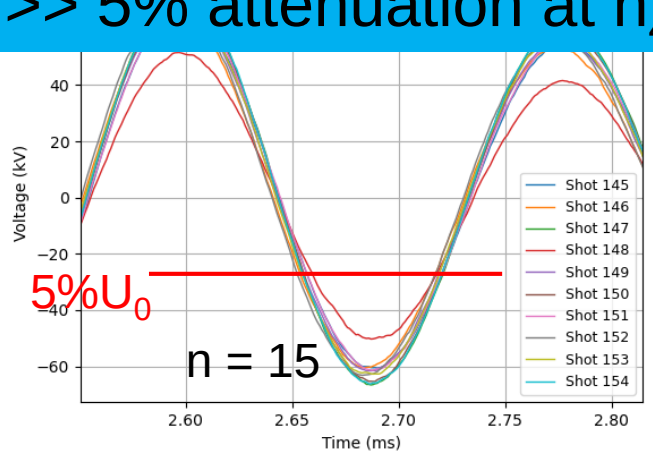
Little variability in attenuation
- Spread U4 ~5%
- Spread U5 ~9%



Recommendations:
- Define n_4 as minimum
- Aim for >> 5% attenuation at n_4

5.6kHz :





High variability in attenuation
- Spread U15 ~25%
- Spread U16 ~26%
- n_4 between 17 and 19