Paper ID 963 Session 2022

SC B2 / Overhead lines

PS1 / Challenges & new solutions in design and construction of new OHL

Question 1.10
Report:
World longest span with ACSR Conductor – Design challenges

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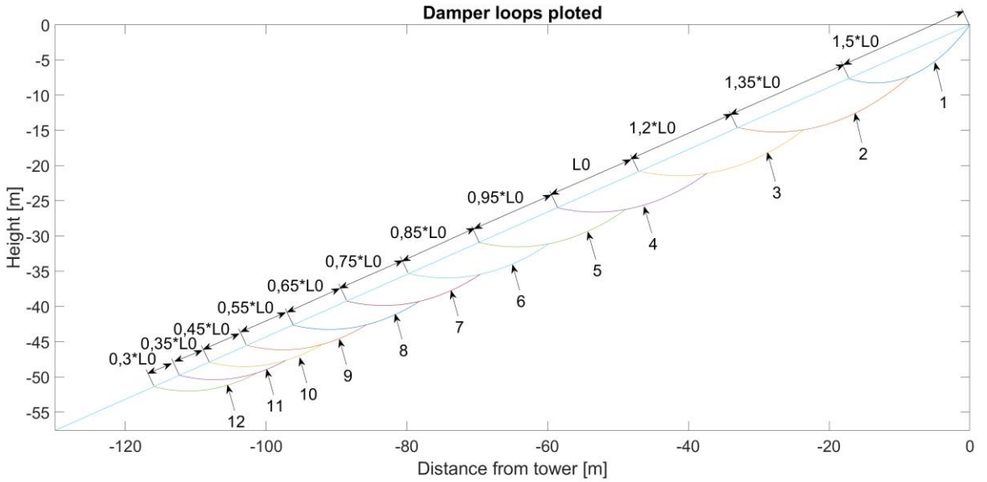
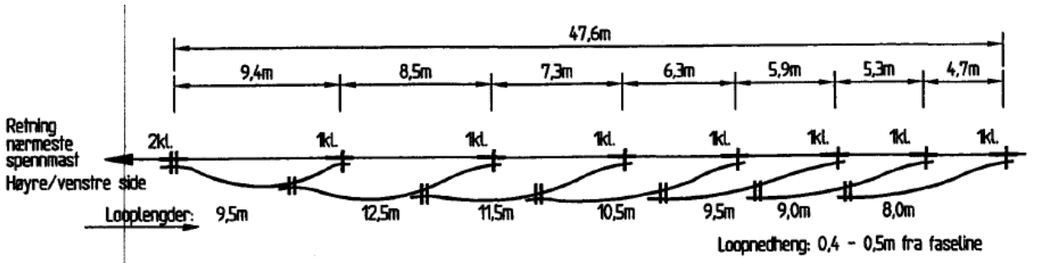
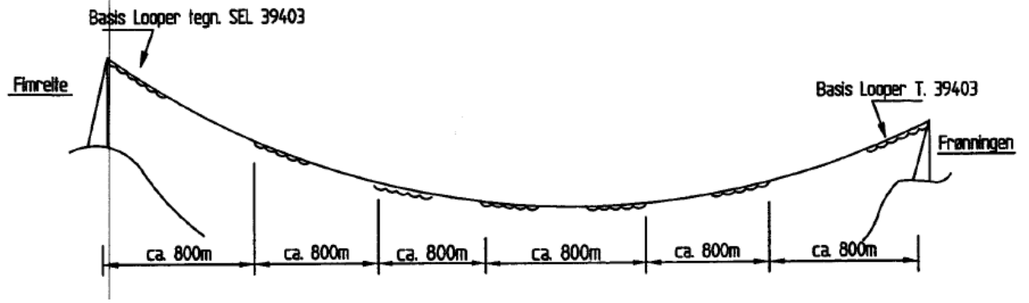
Bretelle damping

- Statnett has more than 50 years of experience with long crossings, 30 fjord crossings longer that 2 km
- Eight out of 10 longest spans in the world are in Statnett's grid
- Empirical rules are used for Bretelle damping. Damping on the existing Aurland-Sogndal crossing (from 1974) was last time updated in 2001.
- Vibration damping of such long spans is challenging, it was difficult to measure vibrations
- Bretelle dampers are used for end-span damping, and Stockbridge dampers for in-span damping lately







Experience with Bretelle damping of long crossings

- Used for a long time, for long crossings in combination with in-span Stockbridge dampers (last 15 years)
- Most exposed crossing conductors had a lifetime of typically 25-30 years
  - Shortest 17 years, existing Sognefjorden 4,7 km span
  - Several spans has a lifetime of 40 or more years
- Bretelle damper loops do not fatigue and fall of if the span is underdamped, in contrast to Stockbridge dampers
- If damage occurs, it is often visible, but damping still present
- Relatively large additional weight is added near towers is beneficial
- Loops are more complicated to install that Stockbridge