Study Committee B2/C3

Overhead Lines

10719_2022

Environmental impact mitigation for new 110 kV OHL in natural protected area

Goffinet/Blanpain/Roslane

Elia Engineering

Motivation

- Switching a line corridor from 1 x 70 kV to 2 x 110 kV = the East Loop 2 upgrade project with sections in natural highly protected environment
- Development of new **types of access tracks** to reduce the impact of heavy poles transport and construction machinery on the ground biodiversity
- Compact concrete poles to limit visual impact

Method /Approach

- Investigation on different alternative from standard access tracks to cope with technical requirements of Elia and environmental requirements of authorities
- Limit irreversible damage to ground biodiversity

Objects of investigation

- Creating an access road for heavy poles without any excavation works => STABILITY (13 t/ truck axles) !
- Greatly reducing the impact on the specific ground that could recover after removal of the metaling => BIODIVERSITY

Experimental setup & test results

- 2,9 km of special access tracks ;
- > 10.000 m³ of local stones
- 4-5 m usable width of the track with 2 thicknesses
- Duration of the tracks : 18-24 months

Discussion

- Optimization of metaling thickness based on different light on-side measurements (PANDA) and 2D modelisations ; 20 % reduction of total weight
- Use of local stones with correct granulometry
- Follow-up of the settlements during the different construction phases of the project
- Check the ground quality after track removal

Conclusion

- Access track was optimized by study, local measurements and modelisation
- Design was accepted by environmental authorities
- Elia has a new alternative access design for high protected ground areas and very wet areas

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continued

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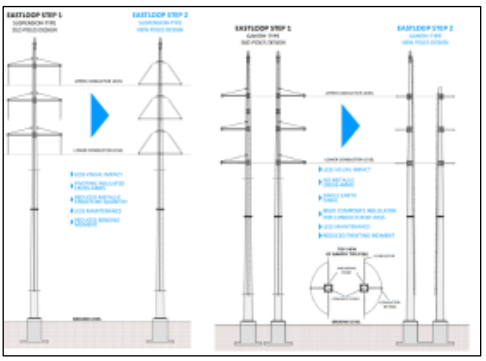
- **Compact concrete poles** to limit visual impact

Method/Approach

- Use insulated cross-arms to optimize the dimensioning of the concrete poles and remove cross arms on gantry-type poles
- Limit visual impact and maintenance interventions



Experimental setup & test results

- 78 compact 110 kV poles being put on the same location of dismantled 70 kV lattice towers
- Have been used also in hilly terrains leading to the necessity of adding some weights on deep locations

Discussion

- Can be used as a reliable alternative to conventional concrete poles in not too hilly areas
- Minimal maintenance required
- Hopefully long service life (60-70 years)

Objects of investigation

- Increase the public acceptance to this project
- Optimize the concrete pole weight
- Enhanced durability of the solution

Conclusion

- Application of insulated cross-arms 110 kV on double circuit concrete poles has been a success based on the good records with use of 380 kV insulated cross-arms on lattice towers
- The lessons learnt are useful for the next project that will benefit from some improvements or adaptations