The SPADI project

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In this work we present, in the context of dynamic line rating operation, a general overview of the SPADI (www.spadiproject.es) project, leaded by the Spanish electricity company Viesgo and developed in cooperation with the University of Cantabria, Tecnalia R&I, CIC Consulting Informático and Lumiker. This project is founded by the Spanish Government in the framework of the Spanish Ministry of Economics and Competitiveness RETOS COLABORACIÓN program.

The main objectives of the SPADI project (Predictive System for Dynamic Management of Overhead and Underground Power Lines) are:
- Analyze the feasibility of driving underground cables under dynamic rating
- Research electrical and thermic models for underground cables
- Research and deploy weather forecasting methodologies to estimate ampacity in the short term
- Implement new sensors to validate models and monitor cable health
-Design and develop an information system to display all the different variables in order to ease the operation and decision making.

One of the main goals of this project is to be able to optimize the distribution grid to absorb the variable production of renewable energy sources without having to stop those plants or to oversize the network.

The transmission capacity of power lines is commonly determined by limitations on the conductor's temperature, characterized by its ampacity. Dynamic Thermal Rating (DTR) operation requires, among others considerations, measures and forecast of such ampacity. From the perspective of operational meteorology, the key question is to provide accurate inputs for this purpose. That is, different meteorological variables in different spatial-temporal resolution for different temporal horizon applied to different points of the grid (see for more details, in this session, the paper "Numerical and statistical short term weather forecast in the context of SPADI project")