OT-12

ENERGY PREDICTOR | Micro-level and short-term weather prediction system

ULPGC Universidad de Las Palmas de Gran Canaria | Fundación Parque Científico Tecnológico
OTRI Oficina de Transferencia de Resultados de Investigación

TYPE OF R+D RESULT

- New technology
- New product
- New service
- New knowledge or skill

COMMERCIAL MATURITY LEVEL

- Model or conceptual idea
- Proof of concept (design)
- Validated in a controlled environment
- **Validated in a real environment**
- Successfully implanted

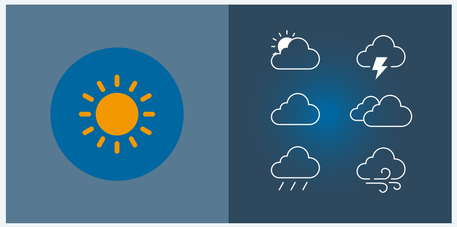
PROTECTION LEVEL

- Non- applicable
- Patent
- **Software**
- Know - how
- Utility model

Description of the solution. Problem solved

One of the biggest problems found in weather prediction systems and models is the difficulty to determine, in a reasonably short time, weather events that may happen in a specific location, especially when it comes to adverse weather.

Currently, weather prediction systems are based on different sources of data: radar, rays, satellite, weather stations, as well as numerical models, which allow to estimate the occurrence of these phenomena in "macro" environments; that is, a specific geographical area and in a relatively short period of time. In addition to this, according to the AEMET, (the Spanish State Meteorological Agency) there are solutions that allow to obtain experimental quantitative forecasts of areas that are surrounding a location within the next 6 hours. Such solutions are based on deterministic models and different tools and applications.



ENERGY PREDICTOR is a system based on a software that allows building a model for weather forecasting at microscopic level in a short term, that means, within only few hours in advance, up to a minimum of five minutes beforehand, characterising the climate variability and minimising the risk of existing error between the forecast and the real measurement.

This system also enables to forecast the amount of energy that is going to be generated in any solar panel or wind turbine within the next hour, allowing the improvement of the efficiency and reliability in energy generation processes.

Fields of commercial application

- **Industrial sector**: manufacturers of solar and wind installations as well as, energy management systems providers.
- **Energy sector**: companies in charge of both generating and distributing energy, especially renewable energy.
- **Tourism sector**: companies that organise events and outdoors activities.
- **Public sector**: emergency services.

Market opportunity

This solution has a direct and immediate application on current energy systems, especially, on distribution and generation systems, since it provides a greater accuracy, reliability and quicker weather forecast in a particular location. This way, improvement of the energy efficiency during the energy generation processes is achieved, particularly in those related to solar and/or wind energy.

Indeed, when weather forecast is improved in an area where a wind turbine is installed, valuable information in real time is collected. This allows to make decisions about the wind turbine, such as turning it off when it is exposed to dangerous wind conditions and integrity and security of the installation may be affected.

In addition to all the above mentioned, here are other transversal applications of this solution:

- Tourism sector may benefit from this system since it provides weather conditions predictions with greater certainty in some geographical areas. For example, it can be used for organising events or outdoor activities, or for planning their offer according to the environment conditions of each moment.
- Since this system provides weather condition data in specific geographical areas, emergency services may benefit from it since it can help them to report adverse climatic phenomena more precisely, reducing thus false alarms and organising emergency services in advance at the affected areas.

Finally, another indirect applicability of this system is related to energy saving, since this system provides precise, real-time information about the exact moment in which the renewable sources will offer the biggest amount of energy. This helps final users to better manage their energy consumption in case they own renewable energy generation systems.

Competitive advantage

This system uses the already installed infrastructure and can be applied to any brand and model of solar panel or wind turbine.

It enables predictions in specific areas where weather stations are available and they provide data to the predictive model.

AUTHOR
Carlos Manuel Travieso González

CONTACT
Oficina Transferencia de Resultados de Investigación (OTRI)
arivero@fpct.ulpgc.es
928 45 99 56 / 43
https://otri.ulpgc.es/

AEMET: Nowcast

inNoMac EMPRESAS INNOVADORAS | MAC 2014-2020 Cooperación Territorial | Interreg Fondo Europeo de Desarrollo Regional | PROYECTO CONFINANCIADO POR LA UNIÓN EUROPEA Competitividad de las empresas | spegc Sociedad de Promoción Económica de Gran Canaria