## *Initiatives…*

### Launch of Darwin : Engie's connected « Big Data » piloting tool, dedicated to the optimization of the management of its renewable assets.

**Launched at the beginning of 2017, Darwin is the code name of one of Engie's major innovations. After having endowed itself in 2010 with a Renewable Energy Management Centre, located in Châlons-en-Champagne, to supervise its land-based stock of wind and solar energy farms, Engie has developed in addition a digital tool for data piloting and management, connected up to all its renewable energy production stations all over the globe. Its purpose? Optimize production performances and develop the predictive maintenance of its installations. Today, thanks to this tool, the Renewable Energy Management Centre is permanently connected up to the data of 109 wind farms and 17 solar power stations.**

The Darwin digital platform collects, analyses and interprets in real time the data from the group's various production facilities thanks to sensors installed on the connected installations - rotational speed of the turbine blades, temperature of the panels, the production of energy - and also external data such as the market prices and the weather forecasts. Hosted on the cloud, this data enables an improvement in performances and the predicting of maintenance tasks and is consequently a decision-aid tool for the operators. For example: Darwin detects a malfunction on a wind farm and diagnoses that a serious breakdown could occur within 30 days. The operator of the farm is then alerted and can order repairs to be done before the failure occurs and results in a complete shutdown of production. At the same time, Darwin gives forecasts of light winds for the coming 7 days and low electricity prices in 4 days' time. The operator can then decide on the date of the maintenance works while at the same time limiting the effect on profitability. It is therefore a tool for the operators, the analysts and the managers.

It has also very recently become an information tool for companies, local residents and local authorities. Engie has in fact developed a set of tools in order to make this "big data" accessible to the greatest number: a website, a mobile phone application and even a chatbot.

To date, ENGIE's solar, wind and hydroelectric facilities in France, Belgium, Italy, Germany, Poland, the Netherlands and Romania are connected up to Darwin. The connecting up of all the Group's wind and solar energy farms throughout the world as well as the gradual build-up of the functionalities are planned for 2017 and 2018.

For more information, go to the ENGIE website: http://www.engie.com or have a look at the dedicated video presentation : http://videocenter.engie.com/video.php?ref=FIL00018532

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