SOLAR-TRAIN is an innovative project focused on durability and life time assessment of photovoltaic modules. As part of the H2020 Marie Sklodowska-Curie Actions (MSCA) Innovative Training Networks (ITN) SOLAR-TRAIN invites applications for 14 Marie Sklodowska Curie fellowships starting in March 2017. The successful candidates will join the project as early stage researchers (ESRs) for three years with the possibility to write a PhD thesis.

At EDF (Electricité de France), almost 2000 collaborators (research engineers & technicians) contribute to the Research and Development effort. They help EDF in preparing current and upcoming challenges, through innovation, R&D studies, software and services. The department EnerBAT (over 100 collaborators) focuses on energy efficiency issues. The Photovoltaic Systems group (a dozen people) works on the photovoltaic field as a whole, ranging from electrical systems to output prediction and from module characterization to ageing studies. These subjects are driven by the needs of our subsidiary EDF Energies Nouvelles who is building and operating wind and solar power plants in more than 20 countries.

As of **March 1st** the following Marie Sklodowska Curie fellowship will be starting:

Hybrid Model for PV Power Plant Service Life

Project description

A first part of the PhD thesis consists of looking into large datasets coming from monitored sites, in order to obtain empirical degradation rates and signatures of failure mechanisms. A second part consists of looking into available failure mode information in order to create representative physical models. The goal of the PhD study is then to **combine both the empirical-statistical approach with the physical understanding**. This will lead to a stochastic hybrid model for PV module and system lifetime performance evaluation (and its uncertainty) addressing as many industrial goals as possible, such as PV module procurement strategy, operations & maintenance strategy.

The candidate will therefore create initial empirical models, and update them with physical sub models describing physical failure mechanisms and acceleration factors obtained elsewhere, e.g. from other ESR's from the solar train consortium in order to reflect PV module material behavior, climatic stresses and all other relevant parameters.

Your profile

- ✓ Compliance with the mobility rules laid out in the MSCA ITN guidelines: At the time of recruitment, candidates **must not have legally resided or have had their main activity** in France for more than 12 months in the last 3 years
- ✓ Willingness to move countries for ESR placement and temporary secondments (DE, UK, AT…)
- ✓ MSc in **Mathematics, Statistics, Data Science**, Big Data
- ✓ At ease with Machine Learning, stochastic modelling, use of software like R, Python
- ✓ Strong taste for physical description of real world mechanisms
- ✓ Fluent written skills in English is mandatory, French is an advantage
- ✓ Knowledge about photovoltaic devices is not required but could be an advantage
- ✓ Based in France, at EDF Lab Les Renardières, **near Fontainebleau / Paris** & Academic Lab

Application

Please apply till **11 December 2016** according to the instructions on project website www.solar-train.eu