

# THE CRUCEY PHOTOVOLTAIC POWER PLANT

REGENERATION OF MILITARY WASTELAND

PRESS KIT - September 2012



# REGENERATION OF MILITARY WASTELAND: **THE CRUCEY PHOTOVOLTAIC POWER PLANT**

Site history	p. 2
Power plant profile	p. 3
A landmark achievement	p. 4-5
A clean operation	p. 6
Solar photovoltaic plant	p. 7
Presentation of EDF Energies Nouvelles	p. 8

## PRESS CONTACT

---

Clotilde Nicolas  
33-1 40 90 48 02  
clotilde.nicolas@edf-en.com  
www.edf-energies-nouvelles.com



## SITE HISTORY

The 60 MWp Crucey solar photovoltaic power plant was built by EDF Energies Nouvelles and is located in the communes of Maillebois, Crucey-Villages and Louvilliers les Perches. The 244.5-hectare site at the **southern end of the former air base** was acquired by the Eure-et-Loir departmental council.



### ➤ A new lease of life for the former NATO air base



From the end of the Second World War until 1967, NATO operated several air bases in France. These were closed down or handed back to the French army in 1966 following Général de Gaulle's decision to withdraw France from NATO's military command.

The 450-hectare former US air base at Crucey, which lay deserted from the late 1960s, has since been used as a training location for various French ministry of defence bodies.



The project to build a photovoltaic power plant on the site perfectly fitted with the Eure-et-Loir departmental authorities' goal of **regenerating the military wasteland** by giving it a new lease as a renewable energy facility.

# POWER PLANT PROFILE

## ► Key figures

<b>60 MWp</b>	The Crucey solar power plant has an installed capacity of 60 MWp.
<b>28,000 inhabitants</b>	The power plant's production is equivalent to the power consumption of over 28,000 inhabitants (including heating).
<b>28 years</b>	Service life.
<b>741,150 panels</b>	Number of solar photovoltaic panels installed at the power plant.
<b>130 hectares</b>	The panels cover a surface area of around 130 hectares. The land occupied by the power plant accounts for a total of 244.5 hectares.

## ► Technology

The solar photovoltaic panels installed at the Crucey power plant were manufactured by First Solar.

They were designed using the **next-generation thin-film technology**, which represents an alternative to conventional silicon-based modules.



## ► Project participants

### - Eure-et-Loir departmental council:

Project sponsor, owner of the land.

### - EDF Energies Nouvelles:

Overall operator of the photovoltaic power plant (design, financing, supervision of construction, operations & maintenance).

### - First Solar:

Supply of thin-film photovoltaic panels.

### - ICABE:

Project manager - construction of the photovoltaic power plant.

### - Antea Group:

Project manager - asbestos removal, demolition, pollution abatement.

### - Expert Elec Ingénierie:

Project manager - grid connection.

### - Local companies:

Maisière, Société Chartraine d'Électricité, France Europe Sécurité, Jean Fréon Elagage, SPIE Ouest-Centre, Creacom.

## A LANDMARK ACHIEVEMENT



### Protection of the environment and pollution abatement

The design of the solar power plant is based on several **technical, environmental and pollution abatement studies**.

The environmental impact study helped to assess the issues arising from protection of the fauna and flora at the site.

The power plant's footprint has been adjusted to protect unspoilt spaces in **five environmentally sensitive areas**.

The regeneration of the land began, even before construction of the power plant, with **pollution abatement works**, which will continue until 2014.



**Asbestos removal** and demolition of over **80 buildings**.

Dismantling and pollution abatement covering around **40 hydrocarbon tanks** and a **4km pipeline**.



2,500 tonnes of asbestos-containing waste,  
2,000m<sup>3</sup> in liquids, and  
600 tonnes of polluted soil  
was cleared and taken to an  
approved facility for treatment.



## A LANDMARK ACHIEVEMENT

Preparation of the land prior to assembly of the structures and panels.



Labour-intensive work

To meet the deadlines, the work is being carried out simultaneously: panels are fitted in one section, while the support structures are erected in another.

Up to **300 people** are on-site to complete the project in less than **1 year**.



Assembly of the **structures...**



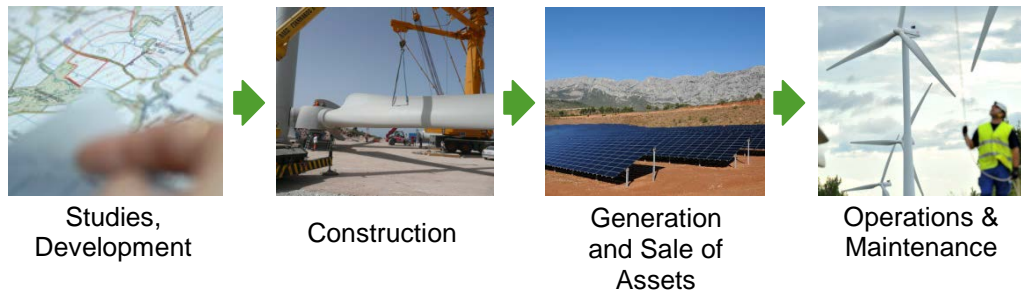
**...then of the solar panels.**



## A CLEAN OPERATION

The Crucey photovoltaic power plant will be operated by EDF Energies Nouvelles for an initial period of 28 years.

### ► Expertise spanning the entire value chain



EDF EN develops, finances, builds and operates power plants generating electricity from renewable sources. This presence right across the value chain gives it **control over the quality** of its facilities and allows it to provide its partners **with a commitment over the long term**.

### ► Eco-friendly site management

An environmentally friendly site management plan has been drawn up. In particular, it provides for **differentiated space management** of the plant cover (late mowing) and a **ban on use of any fertilizers or chemical pesticide** to allow the natural species living there to develop freely.

In addition, **environmental monitoring** of fauna and flora will be carried out on a regular basis throughout the power plant's service life, together with controls on the water table.

### ► Living side-by-side with military and farming activities

Military and agricultural activities take place alongside the generation of renewable electricity.

EDF Energies Nouvelles has undertaken to **ensure that the existing flock of sheep can remain on the site**. To this end, a new 1,760m<sup>2</sup> farm building is to be built for the farmer, with access to a standards-compliant water well maintained by EDF Energies Nouvelles throughout the power plant's service life.

In addition, the facility has been geared to meet the requirements of the **military training operations**, which continue on the northern part of the site.

### ► A reversible installation

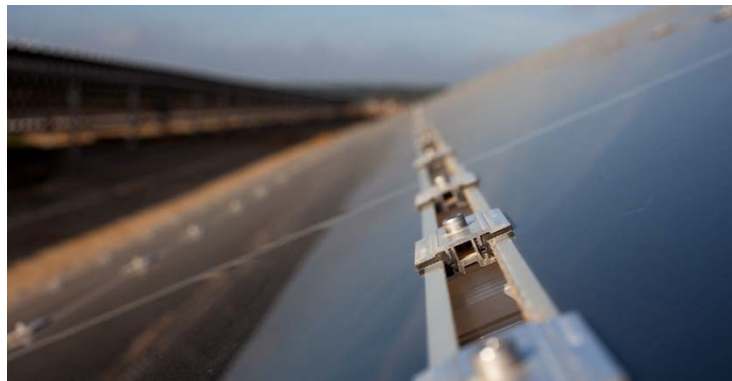
Lastly, at the end of its service life, the power plant can be dismantled in its entirety by EDF Energies Nouvelles, and use of the decontaminated and rehabilitated land will revert to the local authorities.

# SOLAR PHOTOVOLTAIC

## ► Concept of solar photovoltaic electricity

Photovoltaic energy is generated by converting waves of light into electric current. At the heart of the concept of solar-generated electricity lies a **semiconductor** that is able to free up **electrons**.

**Photovoltaic modules** comprise two layers of semiconductors, one with a positive, the other with a negative charge. When the **photons** from solar radiation reach the semiconductor, they free up some of the electrons from its structure: the electrical field present between its positive and negative layers captures the free electrons, creating a direct **electric current**. The larger the flow of light, the stronger the electric current generated.

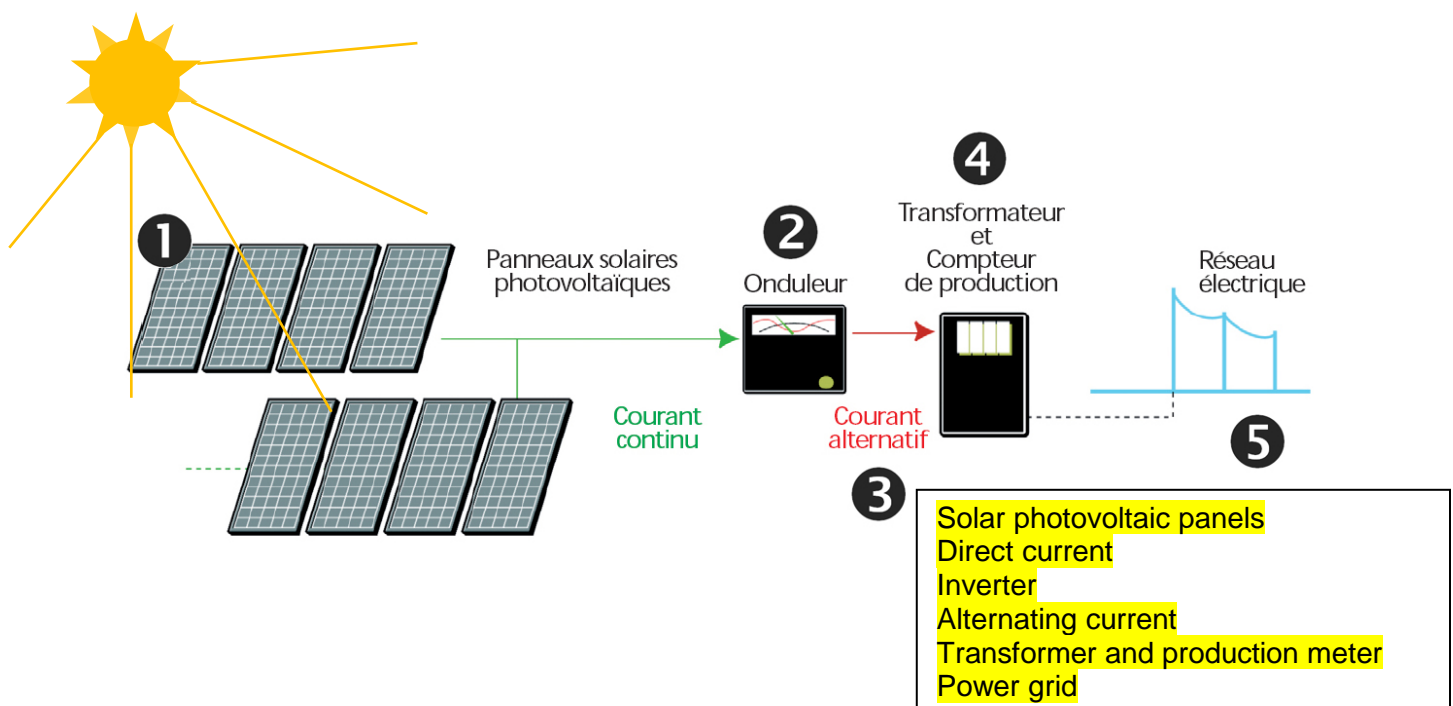


## ► Operation of a ground-based solar photovoltaic power plant

❶ The **sun's radiation** on the photovoltaic modules is **converted into a direct electric current**, which flows to an inverter❷.

The inverter converts this electricity into an alternating current❸ compatible with the electricity grid.

❹ A transformer increases the voltage before the electricity is **added to the public grid via a cable**❺.





# PRESENTATION OF EDF ENERGIES NOUVELLES

EDF Energies Nouvelles, a subsidiary of the EDF group, is an **international leader in the generation of green electricity**. The company develops, finances, builds, operates and maintains power plants generating renewable electricity.

A major force in **wind energy**, its original business, which currently accounts for some 85% of its installed capacity and is its principal engine of expansion, EDF Energies Nouvelles has become a leading player in **solar photovoltaic energy** since 2008. As a specialist in renewable energies, EDF Energies Nouvelles is also active in other **segments**, such as offshore wind energy, marine energies and biogas.

EDF Energies Nouvelles operates in 14 countries in **Europe** and **North America** and recently expanded into three promising new markets—Israel, Morocco and South Africa.



## KEY FIGURES

(at 31 December 2011)

**2,200 employees**

**17 countries**

**Revenues**

**€1,351 million**

**EBITDA**

**€560 million**

## GLOBAL CAPACITY

(at 30 June 2012)

**4,206 MW** gross  
in service

**2,449 MW** gross  
under construction

## ► A major player in renewable energies in France

### FIGURES FOR FRANCE

(at 30 June 2012)

**489 employees**

**676 MW** gross

commissioned

**105 MW** gross

under construction

EDF Energies Nouvelles, a pioneer of renewable energies, has very strong positions in France. Around 15% of the Group's revenues derive from France.

In addition to its head office at La Défense, EDF EN is present in France via:

- **5 regional offices:** Aix-en-Provence (PACA), Béziers (Languedoc-Roussillon), Balma (Midi-Pyrénées), Marseille (Bouches-du-Rhône) and Nantes (Loire-Atlantique);
- **1 Operations & Maintenance centre** at Colombiers (Languedoc-Roussillon) covering the whole of Europe, backed up by **several regional maintenance centres** located close to the largest facilities (including one in the Eure-et-Loir department).

The most successful projects are the fruit of **close cooperation with all the key players in the local community**. A genuine partnership is built between the local areas and EDF Energies Nouvelles. the creation of a photovoltaic power plant is part of the local **development and infrastructure improvement** policies pursued by officials and municipal authorities.

In addition to the Crucey photovoltaic power plant, EDF EN has operated the Chemin d'Ablis wind farm since 2008 and the Canton de Bonneval wind farm since 2009 **in the Eure-et-Loir department**.