

PV hybrid systems improvement of Saül village in French Guyana

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The Saül village in French Guyana (French overseas department in South America) gathers roughly one hundred inhabitants, it is located in the Amazonian forest. It is practically accessible only by air, it lived formerly of the gold exploitation, it develops today a tourism activity.

It was formerly fed in electricity by a power generating unit of 24 kVA which functioned 4 hours per day. Being supplied by plane, the spare parts and the fuel costs were very expensive; and the commune could not plan to increase the operating time of the group in order to increase the power.

In 1998, 10 dwellings isolated from the centre of the village were electrified thanks to autonomous solar systems. 35 other dwellings were equipped with an individual photovoltaic generator (solar panels: 600 Wp, batteries: 24V 770 Ah, inverter: 1200 W) and connected to the local grid supplied with the genset of the commune (78 kVA) which functions 4 hours every two days. The individual systems were installed in local small house called "carbets".



Following the success of the experiment, in 2000, 25 new dwellings were equipped integrating a certain number of improvements:

- Systematic installation of reversible inverter on each dwelling
- Increasing of the PV field power (from 600 to 1200 WC)
- Availability of energy according to the sharing of the electric resources. The installation includes 3 distinct circuits:
 - for the priority appliances (freezer, lighting) supplied with the inverter
 - for the non priority appliances (refrigerator, audio-visual, ...) supplied with the inverter and stopped if the tension of the batteries is too weak
 - for the apparatuses of important power (washing machines) supplied with the power generating unit when this one is under operation

The users were trained so that they use energy rationally and that they feel responsible for their generator, two municipal agents were trained to advise the users.

The electrification of Saül changed the life of the inhabitants, bringing comfort (lighting, cold, audio-visual, installation of a telephone and television relay) which will also enable them to ensure their own development, in particular through the tourism activity.