

Prototype of an off-the-grid 9 KW Solar Plant in a rural University in Haiti

A description of the planning and working process

Location: Université de Fondwa

founded by the Association of Peasants of Fondwa (APF)
in the village of Tom Gateau on La Route de l'Amitié between the cities of Léogane and Jacmel

Travel time by car from Port au Prince: 3 hours



PHOTODOCUMENTATION



Building the foundations



Fixing and aligning the aluminum metal frames for the panels into the foundations

PHOTODOCUMENTATION



Mounting the panels



Inserting powercables into main tubing from panels to container 3



BEFORE AND AFTER



Former solar system for UNIF



New Solar system for UNIF

BEFORE AND AFTER



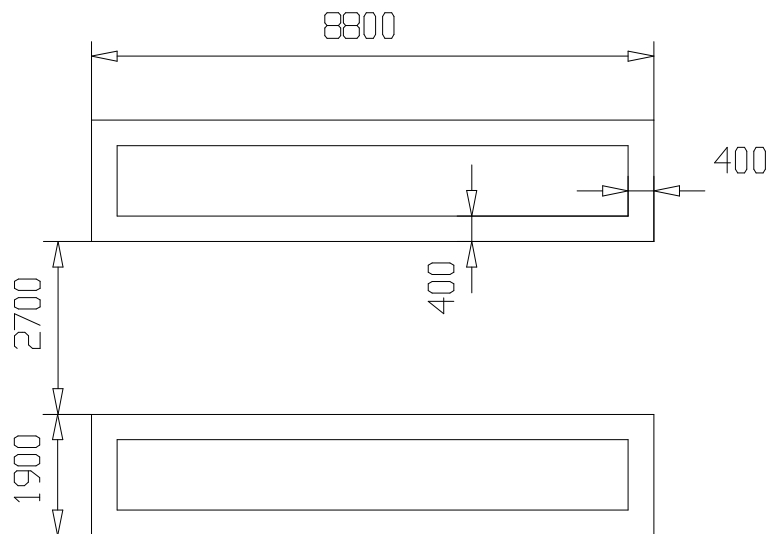
old inverter , battery + charger system, old generator



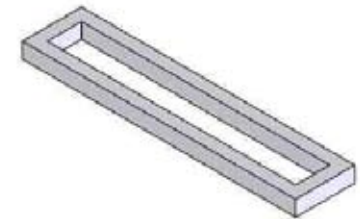
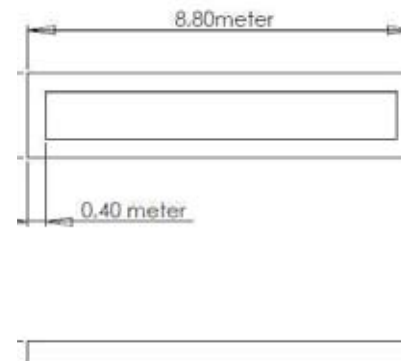
new inverter + charger system
very important is usage of long-life led-gel batteries

TECHNICAL PLANS

Very important is the angle and positioning of the panels towards the sun.
Here some sketches to inform the UNIF how to dig the trenches.



Umlaufendes Fundament 50 cm tief
Jedes einzelne Fundament muß in sich völlig eben sein!
Das obere Fundament (nördlich vom unteren) sollte in der gleichen Ebene oder höher als das vordere Fundament sein, damit sich die Module nicht verschatten.

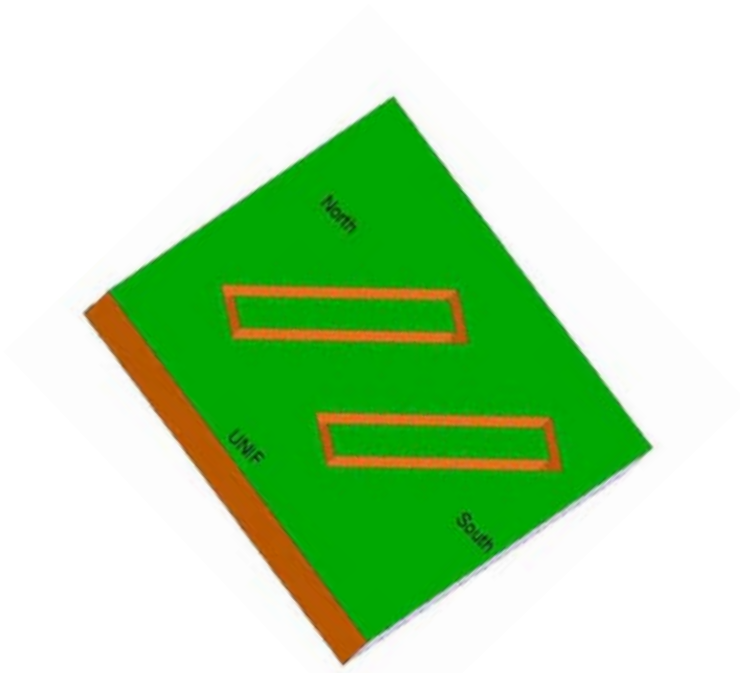


sizes of a single base of concrete

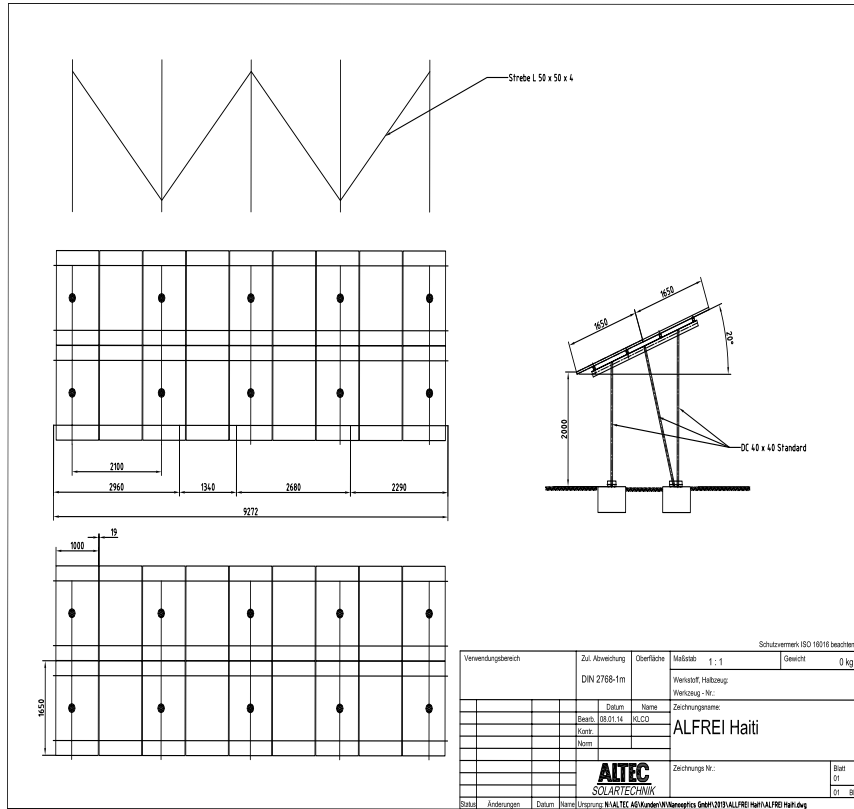
TECHNICAL PLANS



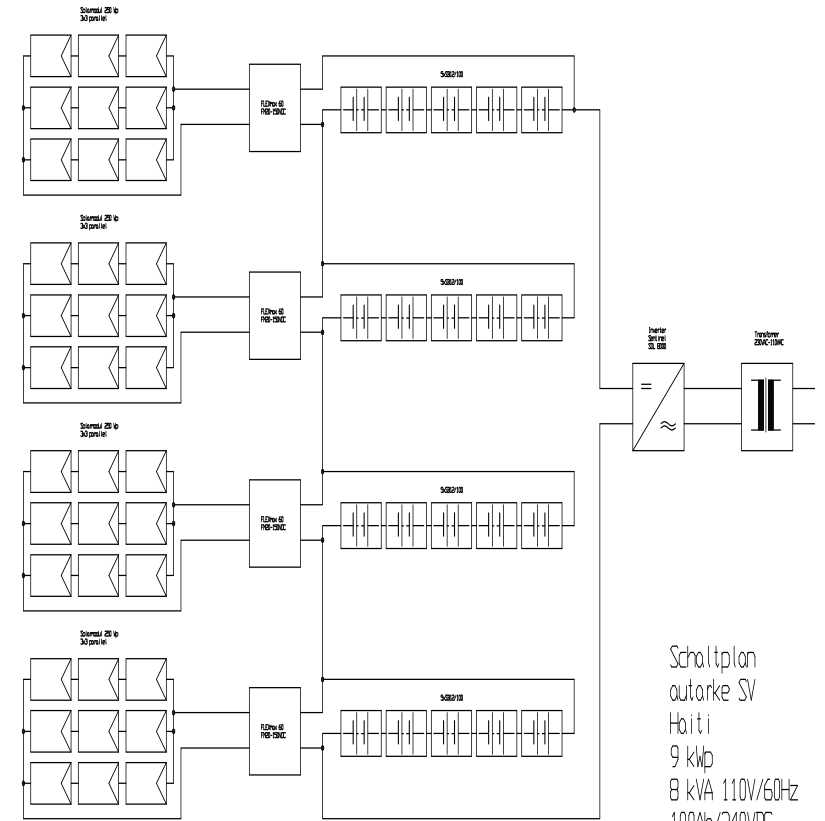
Bringing the power cables from panels to transformer and inverter container. Because the „main“ container (**blue**) with batteries + converter) was at the front of the UNIF, we needed to lay 4 X 50-meters of cable (**green**) from the back where the panels were installed (**red**).



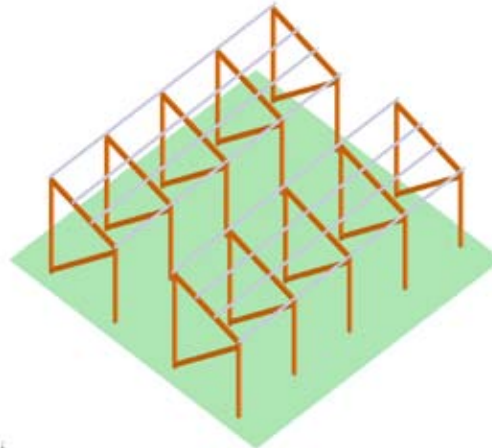
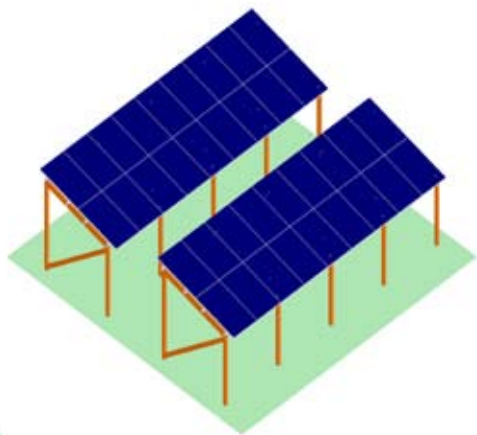
TECHNICAL PLANS



Plan for aluminum racks



Battery plan





German engineer Alex Kallweit inspecting both containers on arrival



Alexander Kallweit from Nanooptics/ Dresden unpacking the equipment container

THE IDEA

I visited Haiti first in January 2013 with the set idea of helping its people. My mother had originally founded a non-profits organisation (Friends of Haiti) in order to buy products from local artists and handworkers and resell them in the U.S. at benefit dinners. She would then bring back the profit and donations from these sales as building funds and books for rural schools. After her death in 2012 the budget of the organisation was to be spent for a project in Haiti together with private funds of my mother's heritage.

After visiting various charity organizations and sites I was particularly impressed by Fonkoze and the APF, grass roots self-help associations run by the Father Joseph Philippe (Association of Peasants of Fondwa) with a microcredit institute, hospital, farmer assistance, radio station, and university.

I noted that the students at the University had laptops and computers but were unable to use them properly because of the lack of electricity. Hence my project to provide them with enough solar energy. The idea was that with access to the Internet and lighting in the classrooms at night they would be able to study more efficiently.

Because of high taxes and limited supply and quality of solar equipment in Haiti I decided to import the the modules and technology from Germany. Having myself recently installed a 10 KW at my farm outside of Berlin I chose the same company to fulfill the task of buying quality equipment at a reasonable price and shipping it to Haiti.

It was decided to ship two 8-foot containers: one would be set up as main control container with pre-installed converters, chargers, and batteries, the other for the transport of panels, cables, and mounting racks. We would also supply an alarm system and steel anchoring cables against hurricane winds.

A company engineer would travel to Haiti and have local assistants to install, maintain and secure the solar system on the hillsides in Fondwa. The APF/UNIF would be responsible for financial costs of customs, transport of the containers from Port au Prince, foundation work, and a perimeter fence.



The team:
 from left to right: Ed Mahood (local supervisor and English teacher at UNIF),
 Benoit Maubrey (initiator/producer),
 above: Jonas Exume + Jackson Elise (main electriciens)
 below: Matthieu (assistant), Father Joseph Philippe (chief of APF/UNIF)
 and Alex Kallweit (main engineer).



from left: Benoit Maubrey, Father Joseph Philippe, Alexander Kallweit

The idea was to create a prototype „island“-type photovoltaic system that could be transported anywhere around the world and be installed with a minimum of logistics.

The approximate total cost of the project (including costs to the APF/ UNIF) was 65,000 USD which comes to a KW price of about 7.500 USD per KW.

During the day the system can produce much more than the 9 KW for which it is planned: locals could also profit from the extra energy. At night the system can provide more than enough stored energy for lighting, a refrigerator, and 40 + computers.

The project was completed in 5 days on January 16th 2015. We worked too fast: the school itself wasn't ready for the 400 volts of power: a fuse box, new outlet plugs and cables had to be installed inside the rooms but on the inauguration on the 19th we did see LIGHT and computers working in the UNIF rooms!

I see this project as a prototype for people and organisations that are interested in assisting populations that are in need of assistance. Money and the environment are being being wasted via generators that work on diesel. Even though they have plenty of sun that can provide them with all the energy they want at low cost the local population has no money to invest in such environmental friendly systems.

If we work together we can build many more such systems.

** in the memory of Luce de Vitry d'Avaucourt Maubrey*

Benoit Maubrey (initiator/producer)
 Baitzer Bahnhofstr 47
 14822 Brueck OT Baitz Germany
 mail@benoitmaubrey.com
 +49-33841-8265