



Energy Mastering Solutions.
Control and ease access to electricity.

Energy Controlling

MICHAUD
Export 

Challenge of access to energy



Electrification in RURAL AND SUBURBAN AREAS

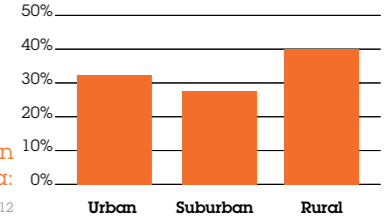
Just a few hundred watts required



Electrification in URBAN AREAS

Several thousand watts required

Population distribution in sub-Saharan Africa:
Data: AFD as of CEMAC, CEDEAO / 2012



Efficient electrification of areas with contained facility costs.

Fixed price energy management system
Solution on pages 4 and 5

Simplified and energy fraud preventing meter system
Solution on pages 6 and 7

Necessary fight against common practices of electricity theft.

Simplified energy metering system
Solution on page 6

Energy fraud preventing system
Solution on page 7

A few of Michaud Export's successes:



Mali

62,000 installations have been equipped with energy fraud preventing systems.



Gabon

210,000 installations have been equipped with energy fraud preventing systems.



Senegal

5,000 homes have been equipped with Fixed price energy billing systems.

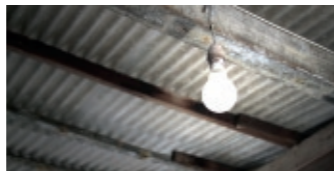


The Philippines

13,000 homes have been equipped with Fixed price energy billing systems.

This project won an Energy Globe Award.

One-fourth of the world's population does not yet have access to electricity, a key factor in economic development. Though, low power loads (25-1000W) would be sufficient.



How can energy be distributed at low cost?



How can non-technical losses be restrained?



How can electricity be equally distributed?



How can distribution networks be long lasting?

Fixed price energy tariffs



Efficient electrification of areas with contained facility costs.



Fixed price energy management system. **Master Power.**

The electronic load limiter grants automatic power checking, without the intervention of the customer / operator. The electronic load limiter is provided with a fuse switch connector to simplify any power cuttings in the event of energy fraud or failure to pay. Products are tropical-rated for outdoors implementation.



Product solution
Aladin kit



Product solution
Easynergy kit



The electronic control unit (ECU) checks power and automatically controls energy, without the intervention of the customer or network operator. The ECU is provided with a fuse switch connector to simplify any power cuttings in the event of energy fraud or failure to pay. Products are tropical-rated for outdoors implementation.

Fixed price energy management system. **Manage Energy.**



STATEMENT: 5 REASONS TO ABANDON PRE-PAYMENT ENERGY METER IN FAVOUR OF FIXED PRICE ENERGY MANAGEMENT SYSTEM

- Higher costs:** the pre-payment energy meter is more expensive than a standard energy meter or the Fixed price energy management system (20 to 40% additional cost).
- Costly management:** implementing a pre-payment energy meter requires developing an extensive retail network, which is often uneasy to be in control of or installing expensive and complex GSM facilities.
- Lower demand:** as end-users cannot control their energy expenses, they tend to save on credits reducing then consumption, which largely affects the return on investment for the operator.
- Complex implementation:** specific skills and training are required as for the implementation of a pre-payment energy meter and its relating management facility, both at installation and later maintenance and service work.
- Potential energy fraud:** the pre-payment system does not necessarily imply a reduction in fraudulent practices.



ENERGY FIXED PRICE MANAGEMENT SYSTEM



How can a Fixed price energy service be set up?

Through site investigation and analysis of demands.

Some ranges of power subscription demands

Through identifying medium power loads and end-users' ability to pay.

Service S1 ⚡x5 📶x1
Fixed price contract 50 W
5 lamps, 1 outlet

Through offering electrical services rather than selling kWhs.

Service S2 ⚡x7 📶x2
Fixed price contract 250 W
7 lamps, 2 outlets

Through determining customer energy tariffs tailored to the demand.

Service S3 ⚡x12 📶x3
Fixed price contract 500 W
12 lamps, 3 outlets

Through using a spreadsheet / software support.

Service S4 ⚡📶 as needed
Metering above 500 W
S3 cost + rate per kWh

Through adopting simplified area-suited technologies to keep oversizing down.

Why adopting a Fixed price energy system?

Fixed price is the most cost-effective and efficient solution in rural areas for required power below 1000 W.

A simplified billing system adapts to both pre- and post-payment solutions.

Performance of the electricity grid



OPTIMIZATION OF ELECTRICAL NETWORKS OR PRODUCTION INVESTMENT?

Experts from the World Bank have set that it is **3 times less expensive to save 1 kWh of electricity by improving the electricity grid efficiency** rather than invest in new production means for the same 1 kWh.



MICHAUD'S QUALITIVENESS: OPTIMIZATION IS THE GREATEST SOLUTION FOR ENERGY SAVINGS

The World Energy Council has identified non-technical energy losses and non-recovery high rates as one of the major factors, which more contribute to financial losses for many electric utility companies rather than low energy prices.

Necessary fight against common practices of electricity theft.

Why is fraud being committed?

In many countries, due to a lack of means, the electricity grid is ageing and has to face power cut-offs, whilst the local population strives for better quality electricity. Since the latter cannot be available, we are currently witnessing the outspread of non-technical losses (theft of electricity and measurement errors that could exceed 30% in some African countries).

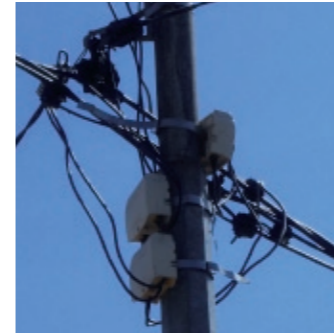
Electricity grid upgrading and mitigation of energy fraud are then made necessary to electricity operators.



What alternatives are there?

Against emerging countries' constraints, new **customer interfaces** are necessary.

Such diverse solutions help to reduce meter reading and billing processing costs by setting up retail outlets offering monthly Fixed price energy services or simplified meters in rural and suburban areas in need of low power supply.



- 1 The energy fraud preventing system on top of the pole** avoids exceeding the subscribed demand. This outdoors cutout, which can be equipped with an electronic load limiter cabinet, provides the network management system with a cutoff point against energy fraud risk.
- 2 The secure meter cabinet** placed outdoors prevents from for-all-to-see fraudulent acts thanks to dissuasive peer pressure.
- 3 The Fixed price energy management system** located on top of the pole or façade helps move outside the core system as to prevent fraudulent acts inside end-users' homes.

Simplified energy metering system for low power loads.

The turnkey cost-effective meter cabinet allows accurate energy metering (1 to 15A, class 1). This cabinet is provided with a protection cutout, possibly a 220V electrical socket as well as a trapdoor for meter reading and access to the earth leakage circuit breaker (ELCB).



Product solution
RE Meter kit

Product solution
Energy fraud preventing kit



The multi-size cutout sleeve (6-35mm²) can be installed on the customer's tap line off mechanical traction by means of a simple wrench. The sleeve is provided with a fuse or thermal load limiter to keep consumption under control.

Energy fraud preventing system. Optional to the meter.



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Cécilia : jolimonde Photos : Michaud, Shutterstock

Operating worldwide in the energy domain, **Michaud Export** designs, develops and implements a complete range of reliable systems for electrical installations with contained maintenance on distribution lines.

As the architect of your solution, the company focuses on on-going innovation and leverages on the worldwide renowned expertise of the 250 employees at **Michaud Group**, leader in the industry for systems and connection fittings for electrical installations.

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