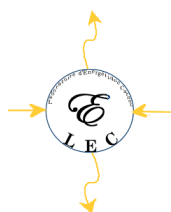


LABORATOIRE D'ENERGETIQUE CARNOT (CARNOT LABORATORY OF ENERGETICS)

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Brief presentation

The Laboratoire d'Energétique Carnot is a research institution of the Physics Department of Bangui University. It was created in February 2007, and aims at animating a doctoral school in the field of applied physics, with particular interests on renewable energy and environmental problems.

Structure of the laboratory, different groups and their thematic directions

We have three groups in the laboratory:

- Applied Energetics (EA).
- Applied Mechanics (MA).
- Signal and Image Processing (TSI).

Activities, actions, results, projects

Fundamental research

Applied Energetics

- Conception, modeling, simulation and construction of devices for renewable energies (solar dryers, cookers, heaters, etc).
- Physico-chemical studies of african vegetal oils for use as biofuel, and particularly as biodiesel.

Applied Mechanics

- Interaction fluid–structure. Application in the liquid transportation (oil) in tubes.
- Control of solar radiation perturbations by clouds.

Signal and image processing

- Satellite image processing using linear and non-linear filtering methods, neural networks, and Bayes method.
- Comparative study of classical methods for image improvement and of attenuation methods.
- Image compression by attenuation and attenuation correction methods.
- Study of the forest degradation (Centrafrican region) by contours detection, and segmentation methods.

Applied research

Applied Energetics

- Work out of solar radiation map of Central African Republic.

- Conception and construction of solar devices for agriculture, health, mines, and usual life.
- Study of vegetal oils as energy sources.

Signal and image processing

- Restoration of old argentic images.
- Constitution of a bank of satellite images.

Projects

- Several projects in the frame of the improvement of artisanal transformation of food products using renewable energy devices (*submitted to AIRES-SUD/IRD, TOTAL RCA, UNESCO, World Bank*).
- Using antennas and network technology to reduce poverty in Central African Republic (with TWAS).

Collaborations, national and international, present and calls for collaborations

National

- French secondary school “Lycée Charles de Gaulle”.
- Total Centrafrique.
- Laboratory of Biological Sciences for the Development (University of Bangui).
- Technological Institute of the University.

International

- University of Yaoundé1 (Cameroon).
- Université de Picardie Jules Verne (Amiens, France).
- Commissariat à l'Energie Atomique (France).
- University of Provence (Marseille, France).

Pedagogical activities in related fields

Master on Renewable energies

Head of the preparation: Dr. Luc Bara MARBOUA.

Professional bachelor in solar technology

Head of the preparation: Dr. Jean M'BOLIGUIPA.

CONTACTS

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