

**LABORATOIRE DE PHYSIQUE DU BATIMENT ET DES SYSTEMES -
EA4076
FACULTE SCIENCES DE L'HOMME ET DE L'ENVIRONNEMENT
UNIVERSITE DE LA REUNION
(LABORATORY OF BUILDING AND SYSTEMS PHYSICS, UNIVERSITY
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Brief presentation

LPBS is a French research laboratory specialized in the study of thermal comfort in building. Renewable energy, reduction of energy needs and environmental engineering applied to building are the main lines of research. The activities cover several aspects such as modeling, experiment and validation, fundamental and applied approach is developed.



General description

LPBS exists since the end of 2005. Our initial field of research is modeling and simulation of buildings thermal behavior and the associated components (complex systems, walls etc...). The principal directions taken were those of the development of code and tools for both research and design use.

Through industrial contracts, applications on a large scale of our work were born, in the form of a label of construction applicable to the whole of the DOM (French overseas department). Since its creation, approximately 800 residences were built compared to the regulations enacted following a contract of simulations on residences standard, in partnership with the direction of EDF Departments overseas.

Structure of the laboratory

Head: Professor François Garde (garde@univ-reunion.fr)
Members: 12 (4 Pr., 1 Associate Pr., 7 Lecturers), 3 Researchers, 9 Associate researchers, 13 PhD students.

Research Teams

The laboratory is structured in 4 directions:

– **Pôle PhyBat** “Building Physics”

Dr. Frédéric Miranville (Frederic.Miranville@univ-reunion.fr)

– **Pôle SEERAB** “Renewable Energy and Energetic system applied to Building”

Dr. Franck Lucas (lucas@univ-reunion.fr)

– **Pôle GEAB** “Environmental engineering applied to building”

Pr. Jean-Claude Gatina (gatina@univ-reunion.fr)

– **Pôle OMAB** “Tools and method applied to building simulation”

Dr. HDR Philippe Lauret (lauret@univ-reunion.fr)

Activities, actions, results, projects

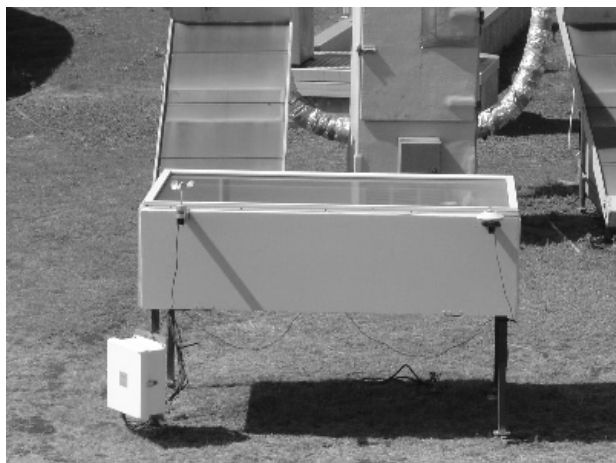
Activities

- System Modeling.
- Building Physics.
- Renewable Energy: Photovoltaic, solar system (cooling, heating...).
- Analysis and control tools development.
- Environmental Science, Biomass.
- System experiment under laboratory and natural conditions.

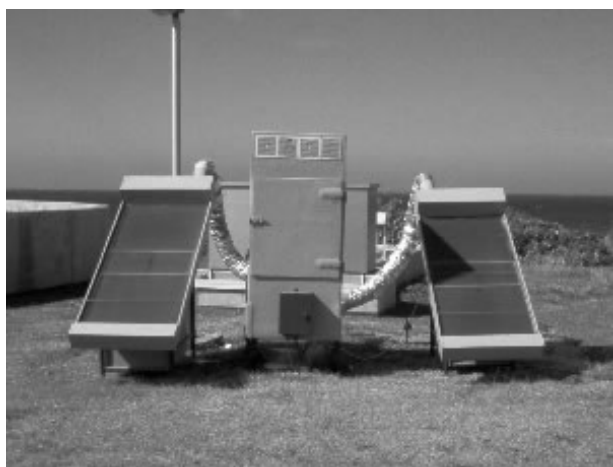
Results and Projects

- Sustainable building 2002-2005 (330 k€).
- ADIBE² 2006-2009 (200 k€).
- Renewable Energy pilot site (640 k€).
- Positive energy building (2 M€).
- ANR PREBAT 2005: “Photovoltaic” CEA (70 k€).
- ANR PREBAT 2006 ORASOL: Solar cooling system optimization (1351 k€).
- ANR PREBAT 2006 ENERPOS: Development of modeling method and design of positive energy building (533 k€).
- ANR PREBAT 2006 DYNASIMUL: Development of a common simulation platform (1800 k€).
- MEER-TAAF, financement ministère de l’Outre mer: Renewable energy in antarctic austral French territory (30 k€).
- RAFSOL: solar cooling research program (493 k€).
- VEOLIA: solar drying research program (56 k€).
- INCIVOL: Incineration of waste (36 k€).

Experiment Setup



Solar sludge dryer



Mixed solar dryer with air solar collectors



Solar collectors test bench according EN 12975-2

Collaborations, national and international

- LEPTAB, Université de La Rochelle, INSA Lyon, LEMTA Nancy, Université de Cortet, LOCIE Chambéry;
- Ecole Polytechnique de Montréal, Université de Liège;
- Centre for Building Performance Research, Wellington, New Zealand;
- EDF Réunion, Conseil Régional, Agence Régionale de l’Energie Réunion ARER, ADEME, EDF R&D.
- INES (Institut National de l’Energie Solaire), CNRS;
- CEA Cadarache;
- Agence Internationale de l’Energie (IEA);
- Professionnels du Bâtiment, Architectes, Bureaux d’études, Industriels ENR;
- Université de Perpignan;
- Université Malgaches (Antananarivo, Mahajunga, Fianarantso).

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