



**Partnership Mission for French Renewable Energies Clusters, labs
and Innovative Companies
“ENERGY EFFICIENCY IN BUILDINGS, SMART GRIDS & WIND
POWER”**

DENMARK – 10th to 13th March 2010

■ **Wednesday, March 10th, 2010**

Place : Copenhagen Cleantech Cluster (CCC) Gammel Kongevej 1, DK-1610 Copenhagen V

14.30–15.00

■ **Presentation of Copenhagen Cleantech Cluster**

Speaker: Steen Donner, CEO of Copenhagen Capacity and Head of the Steering Committee for Copenhagen Cleantech Cluster.

15.00–15.30

■ **Presentation of the French clusters**

15.30–16.25

■ **Edison Project**

Speaker: Anders Foosnæs from the Danish Energy association (25 min)
DEA strategy approach and the general project story of the EDISON project

Speaker: Ningling Rao, Chief Engineer, PhD de DongEnergy (30 min)
Dong's R&D strategy and Dong's tasks in the EDISON project

16.25 – 16.50

■ **Risø-DTU**

Speaker: Anders Troi , Head of the program
SYSLAB activities

16.50–17.30

■ **GridManager A/S**

Speaker : Mogens Birkelund CEO

18.00–20.30

**Cocktail at the European Environment Agency
Kongens Nytorv 6, 1050 Copenhagen K**

■ **18.45 -19.15**

Presentation of the French clusters

■ **19.15-19.30**

Risø/DTU

Speaker : Christina Beller, Phd Student

■ **Thursday , March 11th, 2010 : Field trip to Samsø**

■ **Friday, March 12th, 2010**

Place: Global Connect A/S - Hørskættens 3 - DK-2630 Taastrup

09.00–09.45

- **Presentation of the French clusters**

09.45–10.30

- **seas-nve**
Presentation of the start pilot projects of a smart energy management system that will pave the way for the eco-homes of the future in Europe (Panasonic).
Speaker: Mr. Gordon Pedersen - Head of Metering and Installations

10.30 – 11.15

- **Zensys A/S**
Speaker : Bent Sorensen - Director of Sales

11.15 – 12.00

- **NorthQ**
Speaker : Christian von Scholten

12.00-13.00

- **Lunch**

Place : VillaWatt, Hørskættens 5, 1. sal – DK-2630 Taastrup

13.00-14.00

Speaker : Birger Hauge, founder of the project VillaWatt

Place: French Embassy, Trade Commission - Hammerensgade 6, 1267 Copenhagen K

15.00–16.00

- **Danfoss**
Speaker : Ramus Banke
Danfoss activities in the Lean Energy Cluster, which is a public/private alliance which deals in energy efficiency, and energy net integration.

16.00–17.00

- **Baltic Sea Solutions**
Speaker : Jesper Krogh Jensen, Chief Engineer - Energy and Environment - BASS
Hydrogen and Microgrid.
Présentation the “microgrid” project



www.ubifrance.fr





From **10 to 13 Mars 2010** in **Copenhagen**, France's high-tech clusters specialised in renewable energy, together with research laboratories and innovative companies in the sector, will present and introduce their R&D projects on Energy Efficiency in Buildings and networks, as well as their expectations in terms of Danish-French technological and business partnerships.

The objective of this mission is therefore to talk over R&D projects, organize meetings between the main Danish and French players on these subjects, and develop relationships that can lead to successful technology partnerships between the two countries.

The French delegation will include the three hi-tech clusters in France that are involved in R&D in the field energy efficiency equipment and technology - TENERDIS, S2E2 and CAPENERGIES.

The three clusters of scientific and industrial excellence combine the whole value chain of R&D skills in the field (with cutting-edge companies, advanced-research centres and world-leading educational institutions), and have much to offer to potential partners and investors.

France's clusters are taking part in this mission to Denmark with the support of the DGCIS (a division of the French government that supports business and innovation), of UBIFRANCE (the French export-support agency), of the French Trade Commission in Denmark.

For more information on the French delegation, interested parties should contact the French Trade Commission in London (brigitte.marcel@ubifrance.fr), and a full catalogue will be sent to them.

MEMBERS of the FRENCH DELEGATION (updated list on 09.02.2010)

Competitiveness cluster S2E2
Sciences & Systems of Electrical Energy
www.s2e2.fr

Mr Jérôme FINOT, General Manager
Mr Daniel MECHAUSSIE, Project Manager

Competitiveness cluster CAPENERGIES
www.capenergies.fr

Ms Marie-Isabelle FERNANDEZ,
International Manager

Competitiveness cluster DERBI
www.pole-derbi.com

Mr Gilles CHARIER
General Manager

Association ARVE STRATEGIE
Observatoire Stratégique de la Sous-Traitance
Activity: competitive intelligence association
www.osst.com

Mr Eric VALENTINI
General Manager

during the mission ARVE STRATEGIE
will represent the Competitiveness Cluster
specialized in machining and precision mechanics :
ARVE-INDUSTRIES HAUTE-SAVOIE MONT BLANC
www.arve-industries.fr

C2EI
Activity: design and manufacturing of industrial
solutions based upon low voltage coils & transformers
www.c2ei.fr

Mr Christian MADELON
President

**ENSAM – Ecole Nationale Supérieure
d'Arts et Métiers**

Activity: Engineering High School
www.ensam.fr
www.pole-innovation.fr

SAS FORCLUM VAL DE LOIRE

Activity: civil construction engineering
www.eiffage.com

SCHNEIDER ELECTRIC

Activity: solutions for energy management
www.schneider-electric.com

SOMFY

Activity: Home motion –
motors and controls for openings
www.somfy.com

STMICROELECTRONICS SAS

Activity: semiconductors
(Triac, rectifiers, protection, etc)
www.st.com

UNIVERSITE de TOURS

Laboratoire de Microélectronique de Puissance
(Microelectronics Power laboratory)
www.univ-tours.fr

Ms Emma CHENIER,

Mr Alain GEORGES,
Business Development Manager Unit

Mr Alain GLATIGNY
Innovation Energy Manager

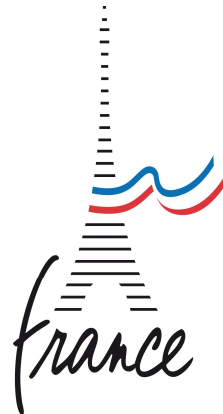
Mr Richard BEUHORRY-SASSUS
Market Developer

Mr Laurent GONTHIER
Application Group Manager

Mr Ambroise SCHELLMANN
Associate Professor



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>> organizers



UBIFRANCE

UBIFRANCE is the French Agency for International Business Development. UBIFRANCE promotes French technologies, products, services and know how abroad. Capitalizing on its resources and those of the network of the Economic Departments of French Embassies abroad, the Agency offers French companies a full range of products and services designed to support them in their efforts to penetrate foreign markets: informational services, business watch tools, on demand services & researches... Professional publications: Network of UBIFRANCE press offices to place articles on French technology in the international trade press. Dedicated promotional website for French exporters: www.firmafrance.com. Organisation of sector specific events (conferences, French pavilions at international trade fairs, technical seminars...) Organisation of bilateral industrial and technical meetings with some ten emerging countries. Bringing foreign delegations to France.

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EMBASSY OF FRANCE IN DENMARK

The French Trade commission - Ubifrance: supporting businesses in their international development. Main operational activities: to provide information and assistance to business seeking to export, to promote French firms and technologies (trade fairs, etc...), to help with export financing, to help business setting up in Denmark.

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Cultural, scientific and cooperation counsellor's office

Contact:

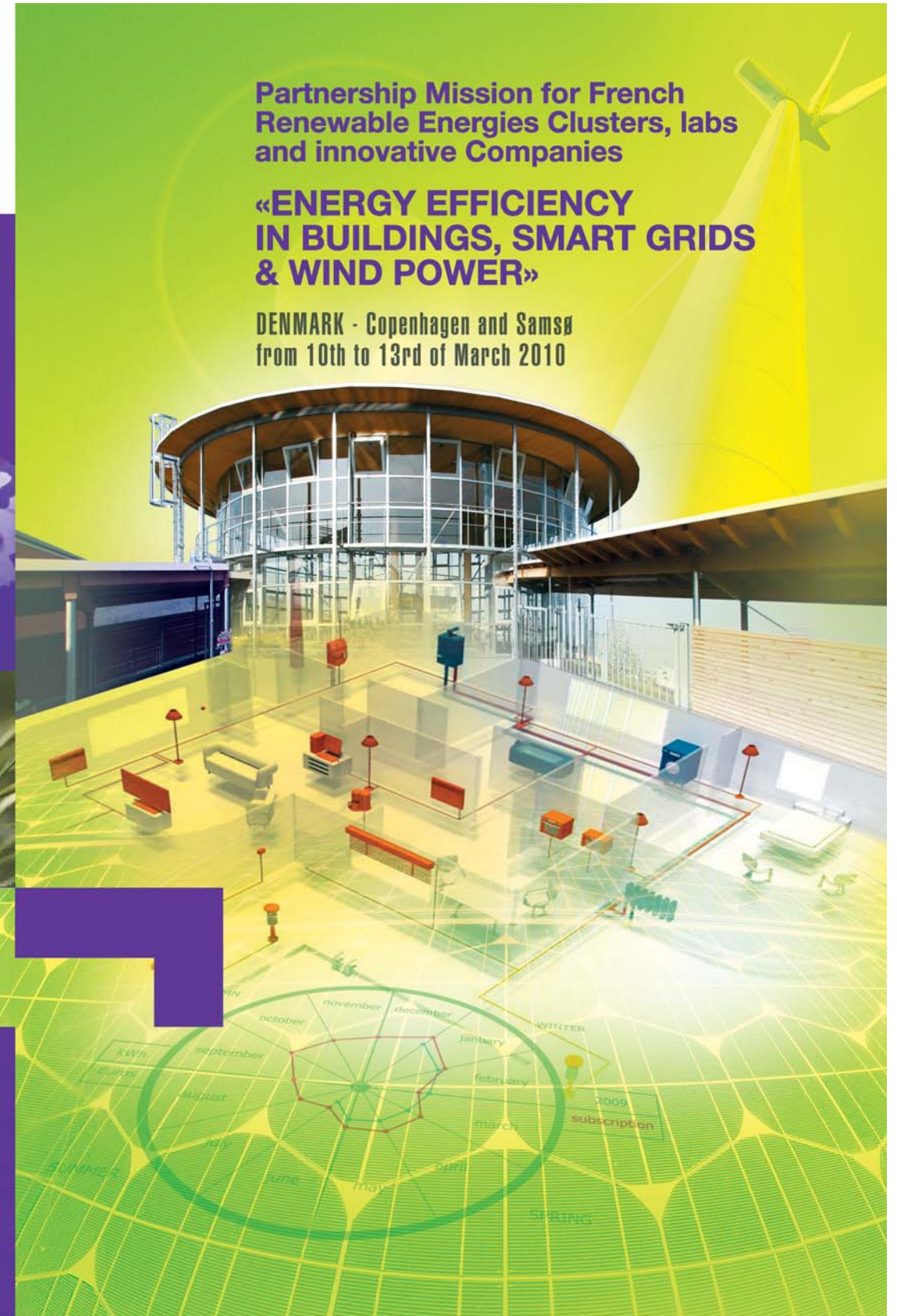
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GENERAL DIRECTORATE OF COMPETITIVENESS, INDUSTRY AND SERVICES (DGCIS)

DGCIS' Missions: to improve the competitiveness of French companies (Industries, Telecommunications, Tourism and Services) in the international environment, to promote and implement an environment that fosters enterprises and employment as well as France's attractiveness, to support innovation and industrial research, to provide universal access to efficient electronic communications and postal services in an open environment, to ensure the security and the safety of industrial activities.

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Partnership Mission for French
Renewable Energies Clusters, labs
and innovative Companies

«ENERGY EFFICIENCY
IN BUILDINGS, SMART GRIDS
& WIND POWER»

DENMARK - Copenhagen and Samsø
from 10th to 13rd of March 2010

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Preface & summary

From 10 to 13 March 2010 in Copenhagen, French high-tech clusters specialised in renewable energy, together with research laboratories and innovative companies in the sector, will present and introduce their R&D projects on Energy Efficiency in Buildings, smart grids and wind energy, as well as their expectations in terms of Danish-French technological and business partnerships. The objective of this mission is therefore to talk over R&D projects, organize meetings between the main Danish and French players on these subjects, and develop relationships that can lead to successful technology partnerships between the two countries. The French delegation will include the four high-tech clusters in France that are involved in R&D in the field of energy efficiency equipment and technology - CAPENERGIES, DERBI, S2E2 and TENERRDIS.

The ARVE INDUSTRIES Haute-Savoie Mont Blanc Cluster specialised in complex machining and precision mechanics will be represented during the event. The five clusters of scientific and industrial excellence combine the whole value chain of R&D skills in the field (with cutting-edge companies, advanced-research centres and world-leading educational institutions), and have much to offer to potential partners and investors.

MEMBERS OF THE FRENCH DELEGATION

Competitiveness cluster S2E2 - Sciences & Systems of Electrical Energy [p. 4]

Mr Jérôme FINOT,
General Manager
Mr Daniel MECHAUSSIE,
Project Manager

Competitiveness cluster CAPENERGIES [p. 8]

Mrs Marie-Isabelle FERNANDEZ,
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Competitiveness cluster DERBI [p. 12]

Mrs Monique POLIT,
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Competitiveness cluster TENERRDIS [p. 15]

Mr Michel DEFLACHE,
PITER European Project Manager

ARTS ET MÉTIERS PARISTECH [p. 19]

Mrs Emma CHENIER,
Master Coordinator

ARVE STRATEGIE [p. 20]

Competitiveness cluster
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Observatoire Stratégique
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ARVE-INDUSTRIES
HAUTE-SAVOIE MONT BLANC

C2EI [p. 22]

Mr Christian MADELON,
President

CEA [p. 23]

Mr Florent MONTIGNAC
Project Manager

DCNS [p. 24]

Mr Yves ANDRÉ,
Marine Renewable Energy Project Engineer

IBM [p. 25]

Mr Steven WOODWARD,
Business Development

SAS FORCLUM VAL DE LOIRE [p. 26]

Mr Alain GEORGES,
Business Development Manager unit

SCHNEIDER ELECTRIC [p. 27]

Mr Alain GLATIGNY,
Innovation Energy Manager

SOMFY [p. 28]

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Market Developer

STMicroelectronics (Tours) SAS [p. 29]

Mr Laurent GONTHIER,
Application Group Manager

UNIVERSITÉ DE TOURS [p. 30]

Mr Ambroise SCHELLMANS
Lecturer

WIRECOM TECHNOLOGIES [p. 31]

Mr Thierry ALLARD,
Founder and President

Competitiveness clusters in France

Competitiveness Cluster policy has been launched by the French government in order to comply with the Lisbon agenda objectives, to increase the share of private research in the innovation process at the national level and to improve the cooperation between research bodies and enterprises. The aim of the policy was three fold:

- Identifying high-potential clusters and focus public aids on them,
- Strengthening the link between research & industry by promoting industry-driven research programs and developing the «triple helix relationship» between firms, research centres and higher education institutions,
- Developing a full ecosystem including Education, private financing (business angels, VC,...) IP management, entrepreneurship, international development,

71 clusters have been selected by the government in 2005. The members of these clusters are industrial global players, SMEs, large research bodies and universities. The second stage of the policy «pôles V2.0» has been launched by president Sarkozy in June 2008 for a new 3 years period. It will benefit of the new impulse in European strategy for world class clusters, validated by the competitiveness council on 1st December 2008, under French presidency.

The cluster policy is part of a larger innovation policy set up in France since. A few example of this innovation policy are the Young Innovative Enterprise initiative (rated by the OECD in 2006 has the best schemes for early stage companies) and the improvement of the research tax credit in 2008 in order to be more attractive and to increase research expenses by companies. The level of the tax credit is now of 1/3 of these expenses without limit of the total amount of these expenses.

International strategy is one of the priorities of the competitiveness clusters. This priority has been reinforced by the results of the national clusters' evaluation conducted in 2008. International strategy means ability to establish profitable relationships for the companies and labs of the clusters with foreign partners both at the level of research and development projects and at the level of industrial cooperation agreements. This means also to improve mobility of talents and companies between France and foreign countries. For that purpose for example, foreign companies cooperating with French actors of clusters can benefit of the same advantages than French companies if they perform research and development in France.

Web site: www.competitivite.gouv.fr

dgcis

direction générale de la compétitivité
de l'industrie et des services

LES PÔLES DE COMPÉTITIVITÉ
MOTEURS DE CROISSANCE ET D'EMPLOI



Competitiveness cluster
>> S2E2 Sciences and System
of Electrical Energy

Presentation

The **S2E2 Cluster** is a network of a **hundred participants** including more than 70 companies (groups and SME), research centres and training organisations.

The S2E2 Cluster aims to optimise the consumption of electrical energy from its source to its use including storage, conversion and distribution. In this perspective, S2E2 addresses 3 strategic markets:

- energy management in the buildings (new and renovated),
- energy efficient equipment (industrials equipments, mass-market equipments and household appliances, nomadic appliances),
- new energy sources (wind, solar photovoltaic, fuel cells, geothermic).

S2E2 has as main mission to instigate and support **collaborative R & D projects** between companies, research centres and training organisations. All the S2E2 projects are in the service of energy management according to 5 R & D subjects:

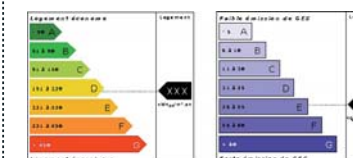
- Wind, Photovoltaic, geothermic: conversion and monitoring,
- Electricity and hydrogen: conversion and storage,
- Devices, packaging, connectors and systems,
- Technologies of communication in the building,
- Technologies of lighting and signaling systems.

From September 2005 to December 2009, 50 projects certified by the S2E2 Cluster have been financing and under development. They represent a total amount of 166 M€ of R & D expenditure.

With the energy efficiency for main issue, S2E2 is in the heart of the sustainable development, and contributes to position the Centre region as an «European centre of excellence for energy efficiency».

Created in September 2005, the S2E2 Cluster *Sciences and Systems Electrical Energy* is one of the 71 clusters selected by the French government. It is a not-for-profit association. S2E2 is in an expanding area based in the Centre and Limousin regions and towards the west-center of France.

To know more about the S2E2 Cluster, its actors, its projects:
www.s2e2.fr



competitiveness cluster
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of Electrical Energy

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R&D project



«AFFICHECO» PROJECT 1

Car manufacturers integrated, for a long time, a fuel consumption display into dashboards of their cars with the argument of a drop in consumption. Nevertheless, at this time of expensive energy and climate change, houses possess no such dashboard.

AFFICHECO is a behavioral study, on a regional sample group of occupants in residential areas, to determine the relevant technical data, and the preferred display mode to induce modifications in the consumer habits by quantifying the resulting energy savings.

This study will be lead according to the typology of housing and of the occupants. It will, at first, determine what is the most effective information to induce savings and what are the most opportune modes of display and presentation of the data. Secondly, an experiment will establish how the display mode modifies consumer habits and to quantify the resulting energy savings, by purpose of consumption, or, more detailed, by item.

The main expected result is the knowledge of the behavior of the residential occupants in front of a display of their consumption, and the impact on their consumptions in terms of energy saving. From this knowledge, it will be possible to integrate this behavior and the related savings in various regulations and recommendations.

The expected effects will be then a drop in energy expenditure in residential areas by the marketing of such a display system. Furthermore, if it is generalized, this display will allow, thanks to the knowledge of the real consumptions, a much more precise implementation of the possible future energy-saving measures (energy diagnosis).

Partners

Companies: LEGRAND, DALKIA, ENERGIO, WIRECOM TECHNOLOGIES.

Research laboratories:

- Sensors and Automatism Pole (University of Orléans - Bourges),
- ETICS-CITERES (University of Tours),
- PRISME / MCDS (University of Orléans),
- CRESITT (Orléans).

Duration: 3 years (2008-2011)

Total budget: 1.42 M€

«CARENE» PROJECT 2
(CARrefour d'ENERgies = «energies crossroad»)

The work of this program is designed to respond to the request from wind turbine manufacturers for means to eliminate noise emissions caused by the braking system for rotating the equipment housing of the turbine.

The aim is twofold:

- To define, by experimental methods, short term technical solutions to eliminate the screeching noise produced during the rotation of the wind turbine equipment housing currently in use. Find solutions, design and manufacture of prototype parts, test development and validation.
- To gain understanding of the physical phenomena involved and to identify the conditions contributing to the noise emissions. Identify appropriate technical solutions and materials that can be considered during the design phase of wind turbines. Develop expertise in this area through modeling, parametric studies, in situ measurements and interpretation.

Partners:

Companies:

- STROMAG France
- FLERTEX

Research laboratory:

- POLYTECH' Lille

Duration: 3 years (2009-2012)

Total budget: 0.8 M€

«CREOLE» PROJECT 3

This project has the objective of providing the distribution of energy for the whole of a building, from renewable sources of energy (photovoltaic, wind, fuel cell, ...), and to be able to re-inject the surplus (or all the energy produced by the building, typically some KW) to the public grid. The building becomes an energy-producer.

The target of the CARENE project is to allow the launch on the market of an inverter specifically dedicated to the residential / tertiary buildings needs (3 - 36 kVA).

Partners:

- AINELEC (Amboise, 37)
- LMP (University of Tours)

Duration: 3 years (2007-2010)

Total budget: 0.4 M€

«SÉSAME» PROJECT 4

This global project, consisting of 4 sub-projects, has the objective of covering the needs of buildings in terms of management of electric power, by supporting the development of sensors and actuators, and by bringing an interoperability and a global system intelligence. The targeted sectors are energy efficiency, comfort of the house, safety and the health of people, while securing total compatibility with future evolutions.

Sub-projects

GEDELOC: Universal module constituting the intelligent and communicating element of each of the junctions of a PLC (Power Line Communication) network. It authorizes the distribution of relevant data and processing within energy-consuming equipment in the building.

CAPTHOM: Universal sensors of human presence applying intelligence to the prevention of inopportune detection. Application in the supply of relevant information on the occupancy of buildings to optimize energy management.

ISIS: Intelligent and communicating switch for the electricity network integrating functions of protection of equipment and persons. It aims at replacing the electro-mechanical switches by bringing miniaturization and the required communication functions for their integration in embedded wall equipment.

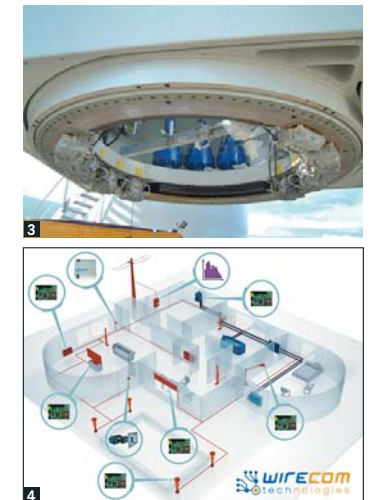
CAPI: Integrated circuits on silicon or glass substrates allowing integration, within the same component, of active and passive elements such as resistances, capacitances and inductances. Applications in the RF filtering and PLC in the buildings.

Partners

10 companies: AGILICOM, AINELEC, INEL, LEGRAND, MECAGIS, SOREC, STMicroelectronics, THERMOR, VERMON, WIRECOM Technologies. 9 research laboratories of the Universities of Tours, Orléans and Toulouse: LEMA, LMP, LUSSI, LVR, CRESITT, GREMI, LESI, Sensors and Automatism Pole, LCC.

Duration: 4 years (2006-2010)

Total budget: 15 M€



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Competitiveness cluster
>> CAPENERGIES

Presentation

CAPENERGIES is a competitiveness cluster dedicated to the energy sources that do not produce greenhouse gases: energy efficiency, renewable energies and nuclear.

CAPENERGIES pools together 410 members, industrial, research and higher education players in Provence-Alpes-Côte d'Azur, Corsica, Reunion and Guadeloupe regions.

The missions of CAPENERGIES are:

- Facilitate exchanges between their members,
- Develop cooperative and innovating projects on energy / solutions systems,
- Assisting members in developing their projects and products,
- Supporting members in their international development.

Since its creation in 2005, CAPENERGIES has certified 240 projects for a global amount of investment of 593 M€.

The objective of the international strategy of Capenergies and its members is to develop R&D and industrial partnerships with foreign companies and clusters in the fields of climate change, specially on Energy Efficiency, renewable energies and smart technologies.



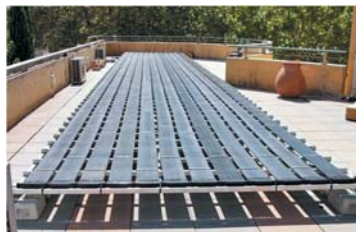
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R&D project



competitiveness cluster
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«PREMIO» PROJECT

Distributed generation, Renewable Energies & Load Management through an integrated and optimized sort of a way.

An innovative and collaborative project - A pilot in the PACA region

The goal of Premio is to implement and test in a district of the PACA region a new innovative concept aimed at dynamically optimizing the local electricity demand on the main grid and reducing the CO² emissions, through load/ supply management, renewable energies, distributed generation and energy savings. Premio is a Local Demand Side Management project. Its purpose is to demonstrate an innovative and replicable architecture (in the south of France) aimed at optimizing distributed generation, storage, renewable energy sources, demand response and energy efficiency measures. Its further aim is to reduce the constraints of a local grid and CO² emissions. It is an innovative example of a mark grid project.

The partners and their technical implementations within the program

Promotion of the biogas for local authorities, Partner VERDESIS

In the Premio project, the biogas is continuously produced. The goal of the experiment is to study in practice the technico economic relevance of the addition of a unit of storage of biogas allowing to concentrate the electricity production during the daily points of the consumption. Similar study are in progress in Germany.

Piloting of domestic electric devices, Partner WATTECO

Within the framework of the premio project, WATTECO suggests adapting this range of products so that the electric devices can be piloted by outside commands. The control panel of consumption will allow to record and to display the immediate electric consumption of the accommodation. With Pulssi, WATTECO brings, without modification of the electricity network, a little expensive solution of remote control piloted around.

Control of the street lighting, Partner WATTECO

Within the framework of the premio project, WATTECO suggests piloting urban electric bulbs either by a scenario of individual decline of lighting according to hours in the night, or by an outside command in case of request of remote control. A module of measure of consumption, installed in the electrical panel, will allow to record the electric consumptions and so to display the realized savings.

The «optilesteur», for control the demand of power in an electric installation, Partner EDF (Electricity of France)

The «optilesteur» is a management system, in the commercialisation demand, of the electrical energy settling down at the level of the electrical panel and which allows to limit the power of demand of a park of electric equipments in a most transparent possible way for the customer. (Objective: contribute in a dynamic way to reduce consumption points on the electricity network).

Residential storage of electrical energy, Partner EDF (Electricity of France)

The MICROSCOPE system is an equipment containing a battery and a photovoltaic field connected to the electricity network. It allows to store and to restore some electrical energy according to the needs of the electric system (network, production).

Heat pump and water storage, Partner EDF (Electricity of France)

This experiment addresses houses which are already equipped with an electric heat pump. The objective is to propose a mode of piloting allowing to smooth the consumption of electricity. This principle is tested in life-size in the laboratories of EDF Research and development. Besides there are already commercial offers of this type proposed by energy companies in Germany and in Switzerland. They come along generally with a specific counting for the Pump A heat associated with a preferential rate.

Power plant solar electro, Partner SAED (Sophia Antipolis Energy Development)

This project sets up a mean of production of electricity innovating based on solar energy combined with thermal storage. It is so possible to produce some electricity in a continuous way or quickly with strong amplitudes, in the same way as a classic thermal power plant. This solar electric production will be piloted according to the electric needs of the network (and not of the period of sunshine) while looking for a cost in synchronisation with markets.

Storage of cold for the tertiary sector air conditioning, Partner CRISTOPIA

The storage of cold, here proposed, allows a reduction of the power installed by the refrigerated machine. It supplies the necessary energy in case of requests superior to the installed power. Its works in continuous and the technical output on the machine is optimal. Very important savings are realized on operating costs when costs are low.

SOLAR PUMP, Partner GIORDANO INDUSTRIES

The solar pump is a system of production of Domestic hot water of several thousand liters a day. This system is produced by a high temperature Heat pump which draws its energy from solar cells. The solar pump gets back the energy of the sun. In its absence, the sensor is able to get back the energy of the ambient air and the thermal exchange is improved in case of condensation, of rain, of wind...



competitiveness cluster
CAPENERGIES

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Competitiveness cluster
» DERBI

Presentation

The **DERBI Competitiveness Cluster** has the mission of promoting innovation, research, training, and technology transfer, to stimulate the creation and the development of companies that are active in the field of applied renewable energies within industry and the building trades.

The **DERBI Competitiveness Cluster** was born in the heart of the Languedoc Roussillon region, rich in natural resources (sun, wind, water) and the leading French region in terms of financial incentives for the application of renewable energies. The Cluster has networks at regional, national and international levels, including various partnerships.

The Cluster's technological strategy addresses three themes:

- **The building as an energy producer**, based on an intelligent global conception involving the optimisation of the outer envelope's performance and the integration of renewable energies, specifically within the context of a Mediterranean climate.
- **Networks (electricity, heat, cold) and the storage of energy**, the linking of housing, centres of activity, and sites of energy production.
- **Energy production beyond the building's envelope** (electricity, hydrogen, bio-fuels), by solar energy (photovoltaic, concentrated thermodynamic), wind farms and biomass.

The collaborative R&D projects which the DERBI Competitiveness Cluster accompanies have access to innovative technological platforms (PTF) of the highest calibre:

- **PTF THEMIS** Solar Innovation, for concentrated thermodynamic solar and solar-tracking photovoltaic, both with and without concentration,
- **PTF ECOTEC LR**, for branches relating to biomass energy valorisation (methanisation, gasification...),
- **PTF CARTECH and BELENOS** for solar panel and solar hot-water testing and certification,
- **PTF SEPN** for the testing and qualification of smaller windmill installations.

The DERBI Competitiveness Cluster has 151 members including:

- 154 members,
- 84 companies, of which 80% are small to medium,
- 21 research centres, universities, and high-level training establishments,
- 38 professional federations, consular, institutional and financial structures,
- 11 local authorities.

Since its creation, the DERBI Competitiveness Cluster has labelled 110 projects representing 217 million Euros of investment and involving some 296 partners.



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R&D project

RIDER

As Renewable Energy becomes more and more present, at every level of our society (from houses, villages, cities, regions and countries), private and business environments will be in the middle of thousands of energy sources and energy consuming devices.

Our vision is that the global management and optimization of such a new energy environment will require Information Technology to be at the heart of it and form a "renewable energy IT platform". This IT platform will be able to structure the communication, the flow of real time data and the optimisation between energy providers and energy consumers, combining centralised and distributed governance models, within a coherent architecture. The purpose of RIDER project is to develop new methods, associated software & hardware, to treat energy related data in a very dynamic and innovative manner, with the objective to optimise energy consumption at a scale and gra-

nularity which is not addressed today. The scope of RIDER will include modeling, business intelligence and data analysis, optimization algorithms, visualization, technical architecture, communication standards development and test.

Several pilots have been defined, including IBM Green Data Centre and industrial buildings, Languedoc Rousillon offices and public buildings, combining IT and traditional buildings, energy consumers and energy providers, in a coherence and efficient manner, to achieve unmatched levels of energy efficiency.

RIDER consortium is made of: Université Montpellier 2 - Sciences et Technologies du Languedoc (UM2 & its LIRMM & IES laboratories), ELIAUS lab from Université de Perpignan Via Domitia (UPVD), as well as industrial partners: IBM, EDF, Cofely GDF-Suez, Pyrescom, Coronis and their contractors: ASA, Enoleo, Oceasoft. Project approved by the DERBI competitiveness cluster.



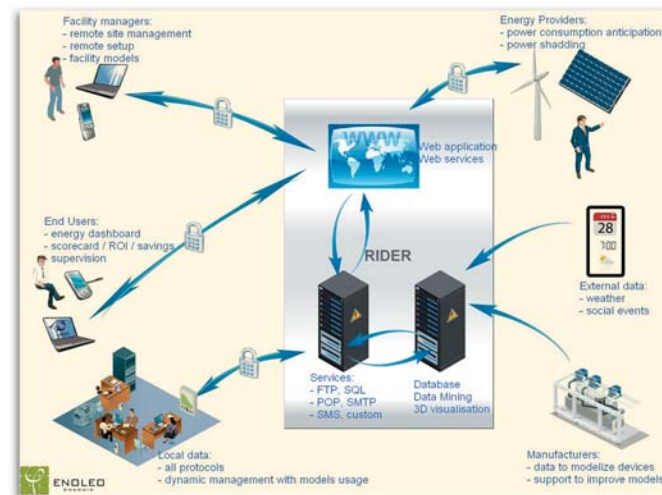
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Competitiveness cluster
>> TENERRDIS

Presentation



Mission

Responding to worldwide energy issues, **TENERRDIS** in the Rhône-Alpes region leverages innovation to develop and attract the new energy sectors.

TENERRDIS encourages partnerships between companies, the world of research, training and institutional stakeholders in order to develop projects that create skills, economic activities and jobs.

Activity

The cluster addresses a comprehensive energy package with 5 technology programs:

- Hydrogen and Fuel Cells (hydrogen production, transport and storage; fuel cells),
- Solar energy and construction (photovoltaic solar power, thermal solar power, energy efficiency in buildings),
- Network management (smart grids),
- Biomass (harnessing agricultural and forest biomass, thermo/biochemical processing),
- Hydroelectric power (renovation, optimization, water turbines).

Key figures

The cluster gathers 200 stakeholders. Since 2005, TENERRDIS has labelled 326 collaborative R&D projects, out of which 123 have received public funding up to €116M.

Since 2006, 189 patents have been filled by the cluster's stakeholders on hydrogen and fuel cells as well as solar and biomass, which represents 60% of French patents and 6% of European patents in these sectors.



competitiveness cluster
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Renewable Energies

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R&D project

The GENHEPI building methodology

The GENHEPI methodology focuses on reducing consumption of primary energy and decreasing greenhouse gas emissions in the building sector.

It aims at methodically investigate retrofit operations to ensure an effective renovation of existing buildings and to progress in new building design.

Three phases typically structure a building project: the planning phase, the conception phase and the realisation phase. Engineering offices usually work with architects during the conception phase. Due to a lack of both time and means, in most cases they base their studies on past experiences rather than conducting completely new studies really adapted to each project. Hence, architects and engineering offices actually use ratios to define the new energetic system or the additional insulation needs. These methods result in non optimised operations and are far from being energy efficient approaches. Indeed, not only the specificity of each building is not considered appropriately but in addition the insufficient feedbacks from monitoring project and experiences allow errors to be reiterated.

GENHEPI concept aims at answering these problems by integrating additional activities in the classical building

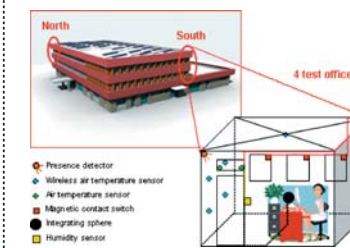
process. The first one is a global approach which consists in detailed modelling analyses and sensitivity studies of various technical solutions adapted to the project. It occurs upstream of the conception phase and gives good orientations to the project. The second one happens during the design phase with a tight control of energetic topics to be considered (lighting, HVAC, air tightness, ...).

The third activity consists in an intensive quality control activity during the construction or retrofitting phase with infrared and air tightness measurement campaign.

And finally, downstream of the realisation phase, the building monitoring activity consists in collecting and analysing data given by the building energy consumption measurement.

The GENHEPI methodology has been designed by a team project lead by the **CEA INES** (French Solar Energy National Institute), CIAT, GAZ de FRANCE, CLIPSOL, **SCHNEIDER ELECTRIC**, ITF an engineering office, and University of Savoie.

After 4 years of experimental activity and a first successful demonstrative operation with the ALLP retrofitting, the GENHEPI methodology is commercially applied by a start-up MANASLU Ing. created by the former project leader.



ALLP Demonstrative building measurement equipment



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>> OTHER CLUSTERS, LABS
& INNOVATIVE FRENCH COMPANIES

>> ARTS ET MÉTIERS PARISTECH

Arts et Métiers ParisTech was founded in 1780.

3 major fields of study and research

- Mechanics-Materials-Manufacturing processes,
- Fluids and energy systems,
- Design, Industrialization, Risk and Decision Making.

Arts et Métiers ParisTech is a single institution placed under the authority of the French Ministry of Education, comprising:

- 8 Graduate and Research Campuses : (Aix-en-Provence, Angers, Bordeaux-Talence, Chalons-en-Champagne, Cluny, Lille, Metz, Paris),
- 3 Post master Institutes (Bastia, Chalons-sur-Saône, Chambéry).

Staff

- 400 permanent teaching staff,
- 200 teaching staff holding professional positions in industry,
- 260 full-time research staff,
- 620 administrative and technical staff.

4400 students

- 3500 graduate students,
- 200 PhD students,
- 700 students in continual training,
- 10% of international students.

Degrees awarded

- The Arts et Métiers ParisTech Engineering Degree diplôme d'ingénieur,
- Master of research 21 specialities,
- Professional Master,
- PhD.

The pole Mediterranean d'Innovation is a department of the Campus Arts et Métiers ParisTech Aix-en-Provence. Its aim is to place Arts et Métiers ParisTech within its social and economical regional environment concerning the themes of innovation and sustainable development. In this context this department proposes a year of specialization in «sustainable construction and sustainable housing» (construction et habitat durable).

The aims of the Master in specialized construction and sustainable housing is to train professionals within this sector, for the concepts, tools and methods of sustainable development, with the participation of companies, engineering consulting firms and clients.

To form experts, on national and international levels, capable of:

- Comprehending the judicial context of construction, housing and sustainable urbanism and its links with other judicial fields (employment law, public health code...),
- With the intervention of professional experts and case studies, taking part in the conception of new low energy buildings and of using the appropriate tools,
- Activating their knowledge in other fields such as energy, materials, architecture, automatism, risk and cost analysis...
- Taking into account the human and organizational factors in the conception and exploitation of these constructions,
- Promoting a sustainable development culture.



Arts et Métiers ParisTech

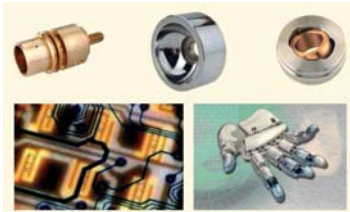
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>> ARVE-INDUSTRIES Competitiveness cluster

Presentation



Automotive



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A cluster serving local ambitions

To be recognised throughout France as a zone of industrial excellence and to promote the area's international image to business.

ARVE VALLEE: over 800 mechanical sub-contracting SME-SMIs and almost 500 SMEs specialising in cutting.

Haute-Savoie is excellence in mechatronics: 53,000 industrial jobs with 2,500 manufacturing companies & 30% of GDP from industry (compared with 20% for France as a whole).

The **Arve-Industries cluster** specialises in complex machining and precision mechanics. Its themes cover processes, mechatronics and organisation. The cluster unites its members energies in order to help sub-contracting companies move toward new forms of organisation and integrate new skills to design, produce and market more complex products.

Ambitions of Arve-Industries are:

- promoting the area to clients, emphasizing the change from a sub-contracting logic of developing and co-developing clean products,
- concentrating European centres of expertise in the local area, focusing on machining and mechatronics,
- implementing innovation in all of programs and projects.

Arve-Industries operates in 3 sectors areas of strategics activities:

- cutting,
- module assembly,
- mechatronics,
- and 6 in Quality & Performance:
- product quality & tolerancing,

- industrial performancec,
- collaborative design,
- human resources,
- international performance,
- socioeconomic environment.

KEY figures:

Today 300 companies are members of Arve-Industries and 90% are SMEs. This dense and dynamic industrial fabric operates in a very wide range of markets, making full use of widely-recognised expertise. this dense and dynamic industrial fabric operates in a very wide range of markets, making full use of widely-recognised expertise that has been passed on from generation to generation for over 150 years. The technical complexity of its products and its industrial expertise are highly sought-after.

A network of researchers: 1,500 researchers/250 patents a year/28 public laboratories/30 private laboratories/12 technical and university training centres.

Key sectors supplied by the sub-contractors : Automotive, aeronautics, telecoms, medical, luxury goods, home automation etc.

>> ARVE-INDUSTRIES Competitiveness cluster

R&D project

Process innovation: CUTTING Program (MAAT Project: Technological auto-adaptative Machine)

Program goal:

To strengthen the skill of the sub-contracting machining operators to make them key specialists of the competitive machining, on a long-term basis.

Technical goals of the project :

- To reduce the set-up and adjusting times,
- To optimize the productivity of the machining operations,
- To survey and analyze the production failures,

- To auto-adapt the machining parameters in real time,
- To capitalize on the know-how by scientifically assisting the user just near the production machines making the production machines «smart».

Expected results :

- Significant productivity gains,
- Reinforced high-tech image,
- A know-how perpetuation (papy boom effect).



Cut optimizer mallet



Medical



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>> C2EI



Transforming your energies®

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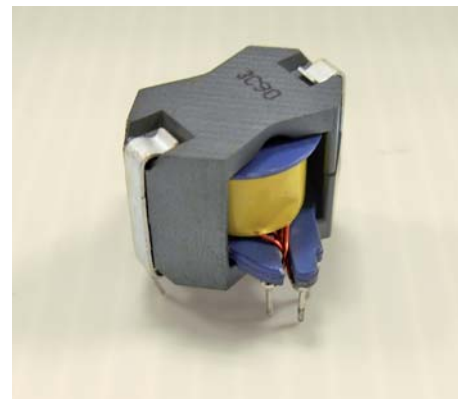
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Established in 1972 close by the city of Grenoble, **C2EI** is the French expert in Low Voltage Electrical Transformation.

By taking benefit of being close to Applied Research Laboratories of the area such as CEA, CNRS, Engineering universities or competitiveness cluster such as Tenerrdis, C2EI has developed a very solid experience and expertise in designing and manufacturing any kind of low voltage coils and transformers with associated overmoulding activities from 0.1VA electromagnets to 1MVA power transformers.

C2EI does master most of technics about designing and manufacturing any kind of coils and transformers:

- From winding to plating,
- From soldering to varnishing
- Through cabling, terminal assembly and molding possibly.



Mastering these occupations is made easier thanks to a brand new and performing tooling as well as a highly skilled and experienced staff.

Our installations inside a 30,000 sqm brand new and modern building as well as permanent and consistent industrial investments allow C2EI to get the right infrastructure and industrial means.

Thanks to its organization, its industrial means and its resolute involvement in quality and sustainable development, C2EI has become the favorite partner of the biggest names in the Industry such as Group Schneider, Staubli, Eltek Valere and many others, each of them installed leaders in their own business fields.

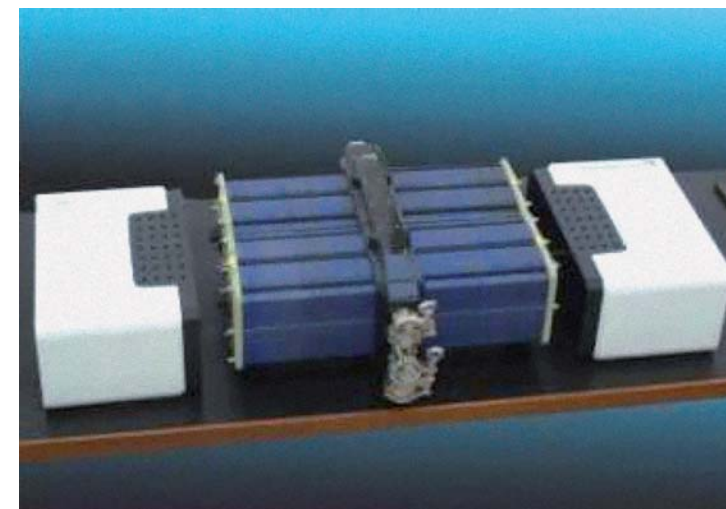
>> CEA

Liten (Laboratory for Innovation in New Energy Technologies and Nanomaterials) is a CEA institute located for the most part in Grenoble and Chambéry (on the INES site). It is one of Europe's newest and most important research centres in the new energy technology field.

It works to support the nation's efforts to diversify its energy mix through more effective use of renewables, in particular to meet energy requirements in transport, housing and mobile electronics. It also seeks to make French businesses more competitive.

Involved in 350 research partnership contracts every year, Liten works hand in hand with French industry. It is one of the CEA laboratories with the most patents - 96 new applications filed in 2008 and a portfolio of 324 international patents.

Liten's research activities are focused on solar energy, low-energy buildings, future transport applications (hydrogen, fuel cells and batteries), as well as nano-materials for energy and methods guaranteeing their safe use.



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OTEC

**Marine Renewable Energy
A Significant Growth Potential**

Studies undertaken as part of the Group's recently announced **championship** strategic plan suggest that marine renewable energy offers significant growth potential and the prospect of a market worth several billion euros per annum in a decade or so.

DCNS Business Incubator aims to invest in four key areas: marine current turbines, floating offshore windfarms, wave energy and ocean thermal energy conversion (OTEC).

The Group's proven expertise and technologies cover the entire cycle needed to design, build and maintain next-generation energy systems.

In line with DCNS's declared intention to play a leading role in marine renewable energy, the Group has announced that it will set up a Marine renewable energy (MRE) incubator in Brest (French Brittany). The aims are to assemble and expand R&D spending and resources at the one location. A further objective is to share the Group's expertise with partners. The decision is also in line with French government initiatives following the Grenelle de la Mer marine environment summit.

DCNS Is Already Participating in Three Projects

Drawing on its proven expertise in naval systems, DCNS is already participating, with various partners, in studies and projects expected to lead to future industrial programmes. These include WINFLO, CETO and OTEC.



WINFLO



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IBM has been well known through most of its recent history as the world's largest computer company and systems integrator. With over 407,000 employees worldwide. IBM is also the largest private IT Research institute with more patents than any other technology company (more than 3,000 per year) and has eight research laboratories worldwide. The company has scientists, engineers, consultants, and sales professionals in over 200 countries. IBM employees have earned five Nobel Prizes, four Turing Awards, nine National Medals of Technology, and five National Medals of Science.

IBM's «Smarter Planet» strategy starts with three big ideas:
● Instrument the world's systems,
● Interconnect them,
● Make them intelligent.

The smarter a company or organization becomes, the more it needs smart IT systems to turn its vision into reality. IBM hardware, software and services are the Tools to enable this transformation.

IBM Montpellier is a unique site, comprised of production facilities, client data centers, comprehensive benchmark, testing, briefing, and education facilities who engage with customers on IT infrastructure and Data center projects. Every year IBM Montpellier hosts many of the world's largest companies. Over 7,000 visitors representing 1,200 companies

from 60 countries participated in 1,000 engagements performed at the center.

IBM Montpellier's has launched an Innovation Lab to further develop expertise to «Smarter Cities» in the areas of:

- Smart Buildings: Energy Efficiency in data centers, building, offices, homes,
- Water Management through the use of «High performance computing»,
- Medical uses of Information Technology,
- Security uses of analytic computing,
- Transportation uses of Information Technology.

In France, IBM has developed partnerships with competitive clusters including DERBI and the leader of the RIDER Consortium which includes Université Montpellier 2 - Sciences et Technologies du Languedoc (UM2 & its LIRMM & IES laboratories), ELIAUS lab from Université de Perpignan Via Domitia (UPVD), as well as industrial partners: EDF, Cofely GDF-Suez, Pyrescom, Coronis and their contractors: ASA, Enoleo, OceaSoft.



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>> SAS FORCLUM VAL DE LOIRE



Forclum Company became established in Touraine in 1939. During the sixties the group diversifies its activities and creates 2 subsidiaries in Orléans and Bourges. In 1985 FORCLUM becomes part of the Fougerolle group.

The merger of Fougerolle, SAE and Quillery results in the creation of EIFFAGE, one of Europe's top construction and civil engineering groups.

In 1993 Forclum Val of Loire was born

A hundred-year-old know-how in the field of electricity has allowed Forclum to evolve towards new techniques, and develop additional jobs in the fields of industry and service sector.

The Core Businesses of Forclum are:

- Electric and climatic engineering,
- Telecommunications systems and networks,
- Lighting systems,
- Supervision of networks,
- New renewable energy,
- Generating and Transporting Energy,
- Multi-technical maintenance.

To hire for the future of our planet, Forclum propose puts its experience so as to optimize your production of energy while respecting environment.

Since 2003 Forclum has created in a new department devoted to renewable energy such as photovoltaic solar energy or wind energy.

Forclum offers also a guarantee of functioning and performance 7 days over 7 and 24 h on 24.



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>> SCHNEIDER ELECTRIC

The global specialist in energy management

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions to make energy safe, reliable, efficient, productive and green across multiple market segments.

The Group has leadership positions in energy and infrastructure, industrial processes, building automation, and data centres/networks, as well as a broad presence in residential applications. With more than 18.3 billion euros sales in 2008, the company's 114,000 employees are committed to help individuals and organizations «Make the most of their energy».

Worldwide leading positions

Safe,
with power and control: **1**

Reliable,
with critical power & cooling: **1**

Efficient,
with energy efficiency: **1**

Productive,
with industrial, building
and home automation: **Top 3**

Green, with renewable
energy solutions: **Top 3**

Walking the talk in Sustainable development

«You must be the change you wish to see in the world.» This quote from Mahatma Gandhi sums up the mindset of Schneider Electric.

Beyond business solutions, we cover all the aspects of sustainable development: society, governance and environment.

And because you cannot manage what you cannot measure, we follow our improvements with a unique tool: the Planet & Society barometer.



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>> SOMFY



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Autonomous sun sensor

somfy

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Somfy is the creator and worldwide reference in **Home Motion** : powering and moving the openings in the house by means of Somfy motors, controls and automatic devices to make life easier, safer, more comfortable... and to save energy.

Home Motion by Somfy More energy savings

Today, automated openings means that you can live in a house that's always at the right temperature and that respects the environment! By reducing heat exchange between the inside and the outside, sun protection and automated roller shutters make it easy to obtain an excellent degree of comfort while saving more and more energy. It's great for ecology... and it's great for you too!

With **Dynamic Insulation™** by Somfy, your home reacts automatically to climate variations to save energy and increase your comfort.

In winter

To increase window insulation against cold or to allow your windows to capture the sun's free heat.

A saving of up to 10%* on heating energy

In summer

Excess heat is reflected to keep the inside of the building cool.

Indoor cooling of up to 9°C*



Impresario Chronis io
Multi-application remote control

>> ST Microelectronics (Tours) SAS

STMicroelectronics (Tours) SAS is a leader worldwide for Triacs, IPAD and Protection components, number 2 for Power Rectifiers, 1st rank in innovation for new energies products.

- Applications : Consumer- Computer - Industrial-Communication-Automobile,
- Sales per Region: Greater China (38%), Asia Pac (23%), America (8%), Japan (1%), Europe & Emerging Markets (29%)

Tours at a glance

- 1.3 million wafers (6"/8") and 5.5 billions of components,
- 1480 employees,
- 9100 m² of clean rooms,
- Production of Rectifiers, Thyristors & Triacs, Protection, ASD (Applications Specific Devices) IPADTM(Integrated Passive and Active Device)components,
- Certifications : ISO/TS 16949-2002, ISO14001 & SMEA, OH-SAS 18 001- ISO 9001-2000,
- Member in Pole of competitiveness «Sciences & Systems of Electrical Energy S2E2».

Division ASD & IPAD belongs to IMS Group (Industrial Multisegment Sector)
Tours center has a Research &

Development Center which is among one the most important in Europe & collaborates with an important network of laboratories.

- 280 patents on 10 years,
- Focus on Innovation with different innovative processes: ASD,IPAD,IPD, Flip Chip, Sic, GaN, PZT, Trench, SOI,
- New business unit dedicated to fuel cell & new energies development.

STMicroelectronics commitment to Sustainable Excellence

For us, understanding our stakeholders' expectations is a precise business strategy, reflecting our many years of experience and our conviction that socially responsible companies are intrinsically more competitive and generate higher returns for shareholders.

We encourage ST employees to exercise a strong sense of individual responsibility to the environment and to the local communities in which we operate.

Our approach to Corporate Responsibility extends well beyond our Company, as we actively seek to involve our suppliers in our approach, significantly expanding our impact.



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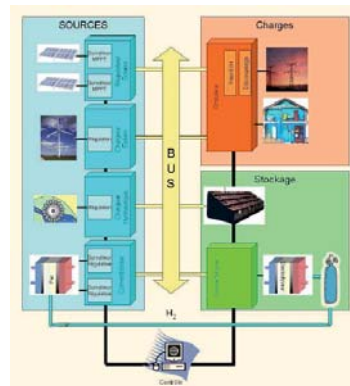


Diagram of «CARENE» connection



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The Power Microelectronics Laboratory (LMP) is a French Laboratory which works on applied electronics, and microelectronics technologies in processing steps for the manufacturing of power components and design, reliability and electromagnetic compatibility of electronic devices and power converters.

The laboratory has already participated in several projects dealing with energy conversion. Two examples are especially presented here:

- One of this project has the objective of providing the distribution of energy on the whole of a building, from renewable energy sources (photovoltaic, wind, fuel cell, ...), and to be able to re-inject the surplus (or all the energy pro-

duced by the building, typically some kW) to the public grid. Thus, the building will become an «energy-producer». The target of the CARENE (energies crossroad) project is to put on the market an inverter, especially dedicated to the residential/tertiary buildings needs (3-36kVA).

- The aim of the second project is to define and validate the technical and economical communicating architecture applied to photovoltaic modules integrated with their converters.

The project goal is to design and implement (few kW demonstrators) a set of photovoltaic modules and intelligent modular: this system is called «CEPIM» which means Photovoltaic Energy Conversion and Intelligent Modular.

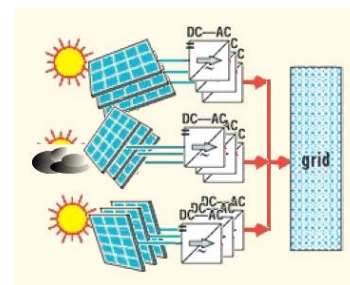


Diagram of PV modules connection with the «CEPIM» integrated modules

WIRECOM Technologies develops and sells Energy Demand Management solutions for Building Management Systems, OEMs and power utilities operators. Its transversal approach combined with its exclusive technology makes WIRECOM's solutions unique and comprehensive:

- Hardware:** Energy saving modules.
- Software:** communication protocols, algorithms for energy saving, web supervision.
- Services:** set-up, maintenance, remote control, and consumer's services.

WIRECOM Technologies' Unique Selling Proposition is based on 4 key differentiators:

- A communication between equipments through the power grid (Power Line Modem),
- A neuronal architecture allowing a decentralized, global approach of energy management,
- Energy management proprietary algorithms optimizing equipments synergies,
- A user friendly "Plug and Play" installation and a web based Man Machine Interface.

By combining these 4 benefits WIRECOM can save up to 50% on energy consumption of buildings.

With over 10 years of expertise on the field with large groups of building owners (BNP, Belambra, L'Oréal), facility managers (Icade, OPAC), building engineering companies (Bouygues, Vinci, Eiffage, Inéo/suez), energy suppliers (Poweo, GDFSuez, EDF), equipment manufacturers (Thermor, Spirec, Wesper). Over 2 000 buildings equipped up to now.



Man Machine Interface



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