



A CAMPUS IN TRANSITION, AN EDUCATIONAL TOOL



The **Université Catholique de Lille** offers students a scientific, cultural, and learning environment resolutely committed to energy and social transition. The goal is to allow them to act in a sustainable way throughout their personal, professional, and civic lives and to construct new models for a society that will be more fair, equitable, and respectful both of the environment and of the human person.

FUNDAMENTAL AND CONTINUING EDUCATION

- **Courses dealing with awareness of environmental and social transition** in a growing number of programmes
- **Specialist programmes** preparing for tomorrow's professions

Masters in Smart Cities

A two-year program offering seven different major streams to prepare students for the challenges of urban development, the environment, or housing management. Taught exclusively in English, the course is accessible to international students.
www.hei.fr

University Diploma in Socio-technical management of energy performance

This diploma program trains professionals to take use into account in approaches to controlling energy consumption in residential or public buildings, both at the design stage and in the operation of a building.
www.explorateurs-transition.fr


Digital Computing and Biology Programme

A double degree course for tomorrow's professionals in the areas of bioinformatics, precision agriculture, smart farming, computerised agricultural machinery, bio-nanotechnologies, big data, computerised objects, and more.
www.isen-lille.fr | www.isa-lille.fr

University Certificate "Create, manage and lead a Living Lab"

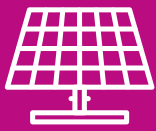
Consisting of 6 sessions and led by professionals and research professors, this university certificate forms the basis of Living Lab's approach.
www.lesateliershumanicite.fr

A LAB FOR ENVIRONMENTAL AND SOCIAL INNOVATIONS TO LEARN ABOUT TRANSITION OUTSIDE THE CLASSROOM

- **Ethical buildings** where the users are partners in developing new forms of behaviour in energy consumption (ISA, Rizomm, Faculty of Medicine and Midwifery, St Philibert Hospital...)
- **Interdisciplinary student work** : a group working on a portal for fleet management and charging terminals for electric vehicles; collaboration with local associations in Humanicité; Rizomm building users involved in its environmental performance
- **Support for student organisations promoting sustainable development**
- **Awareness of sustainable transport systems**
 - "CoPILOT": individualised advice and support to encourage employees to ask questions about their use of transport and alternative forms (with the support of ADEME, the French Environment and Energy Saving Agency)
 - Electric vehicles for shared use and installation of charging stations
- **Activities and awareness on campus**
 - Radio programme "1,2,3 REV3" on the 3rd Industrial Revolution
www.radiouclille.univ-catholille.fr
 - Workshop experiments for a sustainable future
 [Rev3UnivCatholille](https://www.facebook.com/Rev3UnivCatholille)
 - Conferences on the transition of energy and society

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APPROACHES TO TRANSITION & PROTOTYPE DEMONSTRATION BUILDINGS



Live TREE is supported by initiatives taken by institutions of the *Université Catholique de Lille* with projects in energy and social transition affecting both their buildings and their forms of organisation.

THE ISO 14001 APPROACH AT ISA

(Agricultural and Environmental Engineering School)

An environmental action plan has been drawn up around workplace priorities such as **waste management, reduction in consumption** (energy, water, paper), **reducing the carbon footprint**, and **preserving biodiversity**; 25 monitoring indicators regularly measure operations that could have a significant impact on the environment.

HUMANICITÉ, A LIVING LAB SERVING SOCIAL TRANSITION

(Institut Catholique de Lille)

Since 2013, the Living Lab initiative at the Humanité district (Lomme / Capinghem) has been supported through the Humanité workshops. Their mission: to **support all participating groups** – including inhabitants – in collective projects aimed at communal well-being within the neighborhood, and to **create bridges between these groups and the University's** – teacher-researchers and students (knowledge sharing and **training courses** for professionals and students, participation in **research projects**, and more).

FACULTY OF MEDICINE AND MIDWIFERY

(Faculties of the *Université Catholique de Lille*)

Renovated in 2017, the FMM incorporates many pedagogical and energy-efficient innovations: a **building that performs** above renewable energy standards currently in place; **audits of energy and usage; monitoring and display in real time of energy consumption**; undertaking an “**energy challenge**” with the Energic solution (spread over four buildings on the campus); selective paper **recycling** on a voluntary basis in partnership with Recygo La Poste; **new teaching methods** involving simulation workrooms and reconstitution and 3D printing of diseased organs; **shared vegetable garden** run by a collective of students and employees.

LE RIZOMM, SOCIO-TECHNICAL DEMONSTRATOR BUILDING

(Faculties of the *Université Catholique de Lille*)

The 6500m² *Rizomm* building has been subject to a complete thermal renovation from 2016 to 2018. New electric systems for heating and air treatment, and a new 1200m² solar panel plant and dynamic technical management of the building considerably **reduce greenhouse gas emissions**. The building, at the heart of a smart grid, will be the **subject of socio-technical research and training** (studies on user behaviour, 3D modelling, data usage,...) allowing users to be fully **active in reducing energy consumption** (consumption display, energy challenges, ...).

The Rizomm is the flagship of a project at the historic heart of the Université Catholique de Lille campus. The entire complex of buildings is gradually becoming a demonstration unit, with a Zero Carbon target of 2022 supported by the Hauts-de-France Region (HEI smart buildings, electrical storage, charging stations for electric vehicles ...) and by «So MEL So Connected» – a project of the European Metropolis of Lille.

The ICAM eco-campus

(the Catholic Institute of Arts and Crafts)

ICAM is equipped with a **photovoltaic production plant** (132 m²) dedicated to electrical production, mainly for charging electric vehicles. Its **eco-mobility platform** consists of a charging station for electric vehicles and a dozen electric bicycles. Emphasis is also placed on research (analysis and modeling of the energy efficiency of buildings) and training (eco-design).

The IÉSEG Village (IÉSEG School of Management)

In 2019, IÉSEG began the renovation and extension of its historic campus. Cooperatively designed (involving staff, students, and management), this project will create an additional 4000m² of energy efficient space (**optimization of energy consumption, a rain recovery system, conserved vegetation, honey production, selective sorting; charging stations** for electric vehicles ...).

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FROM RESEARCH TO INNOVATION

Live TREE energizes research. A vast site for experimentation, the campus enables researchers to create prototypes and test their innovations together, sharing expertise in order to respond to the challenges of the social and energy transition.

THE CAMPUS, A PLAYGROUND!

- Energy & Social Transition and Research are **strong, complementary focal points** for the University.
- The scope of activity at the UCLille enables researchers to explore **real-world conditions**, prototyping and testing innovations, and analyzing results.
- Buildings are considered **demonstrators**, both research object and showcase.

DOMAINS

- > **Network architecture and energy management** in buildings: *Smart Buildings, autoconsumption and energy-sharing...*
- > **Mobility of persons and goods:** *mobility management, sustainability development ...*
- > **Technical performance of buildings:** *technical innovation, use analysis, rehabilitation, biodiversity, energy management...*
- > **Ethics and evolving behavior:** *individual and group approaches, material and social environment changes, digital applications, behavioral nudges...*

A TRANSVERSAL APPROACH

- Questions pertaining to energy and society involve sociological, psychological, legal, and economic ideas.
- Social Sciences, Humanities, and Engineering work in dialogue, thanks to the multidisciplinary of the varied institutions and research teams. A **socio-technical** approach allows for proper consideration of human elements.

INTEGRATED RESEARCH IN THE REGION

This work environment offers opportunities for collaboration in research with business projects and national and regional research programs.

Examples: **SO MEL SO CONNECTED** (Metropolitan smart grid), **MASSÉNA** (smart grid with SNCF railways), **DEESSE** (storage with GB Solar and EDF R&D), **MAESTRO** (rural smart grid with Geredis et Seolis), **MODAICSS** (smart grid involvement in the Hauts-de-France region, L2EP and FGES), **COPILLOT** (individualised mobility advising on campus, with ADEME); **ANUER** (sociological approach to digital models, with ADEME); **MY ANOR MY MOBILITY** (behavioral impact of technical solutions techniques favouring eco-driving, with the Avesnois PNR)...

Chairs

Transition Explorer

Interventions in the region and with businesses in transition (studies, research, training, experimentation) employing a socio-technical approach to issues of mobility management, energy performance, housing, and lifestyle.

The Faculties of the Université Catholique de Lille

Smart Buildings as nodes of Smart Grids

Industrial Chair supported by the European Metropole of Lille along with 10 business partners, to explore the potential of smart buildings as nodes within smart energy networks.

Yncréa Hauts-de-France

Research units

Smart and Sustainable Cities

Participation in the construction of ecosystems that promote social, economic, and environmental development. The unit is structured around 3 themes: the energy, social, and digital transition; entrepreneurship (commercial and social impact); ecology and biodiversity (especially urban).

The Faculties of the Université Catholique de Lille

Lille Electrotechnics and Power Electronics Laboratory (L2EP)

Exploration of intelligent electricity networks: the study of constraints involved in the integration of intermittent renewable energy, energy storage and management of new charges (such as electric vehicles); impact studies and energy management strategies (auto-consumption and energy self-sufficiency).

Yncréa Hauts-de-France

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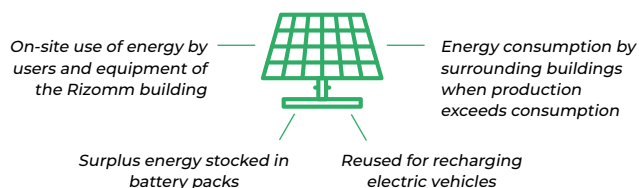
LE RIZOMM, A SOCIO-TECHNICAL DEMONSTRATION OF ENERGY PERFORMANCE

A true showcase and laboratory of the Third Industrial Revolution (Rev3), the Rizomm building is a unique ethical building. Managed by the Faculties of the *Université Catholique de Lille*, this 6500m² building dedicated to higher education and research benefited from a complete renovation between 2016 and 2018, to reduce the building's carbon footprint and improve user comfort, making the site an eco-system for studying best practices in energy consumption, and creating a research partnership.

RENOVATION WITH A VIEW TO EFFICIENT ENERGY USE

Built in stages starting in 1956, the Rizomm is now energy-efficient, generating the electricity that it consumes. Its features include :

- **Insulation work on the exterior** and replacement of window frames
- **Terra-cotta shading devices, window coverings, and external roller blinds** limit direct sunlight in summer and add to the comfort those inside
- **Ventilation system with energy recuperation**
- **High light output LEDs and automatic lighting management** using presence detection and able to adjust to the amount of natural light in the room
- **Photovoltaic roof and a local production plant:** 1200m² of solar panels allow the Rizomm to generate the energy it consumes



MANAGEMENT LINKED TO ITS USERS

- The building uses technologies designed to allow **occupants** to be involved in **managing their own comfort**:
 - Individual controls allow users to regulate the temperature and lighting within pre-programmed margins of tolerance.
 - An application for energy coaching on smartphones.
- A building manager for energy performance will accompany users as they learn to use the new systems.

A PLACE FOR EXPERIMENTATION

The Rizomm makes it possible to test the energy solutions of the future on a real scale.

- Researchers and students experiment with new **technical and sociological approaches** (3D modelling, data use, pro-environmental behaviour and reflexes,...)
- The **Plug & Play** interface allows users to make perform experiments in energy transition: testing new materials, green walls, etc.



Façade Plug & Play



The Rizomm, situated at the core of the Université Catholique de Lille, at the heart of Lille, 41 rue du Port, designed by the architectural agency MAES.

The Rizomm is also a demonstration building for the «So Mel So Connected» project, an experiment concerning smart electricity networks carried out by the Lille European Metropole.



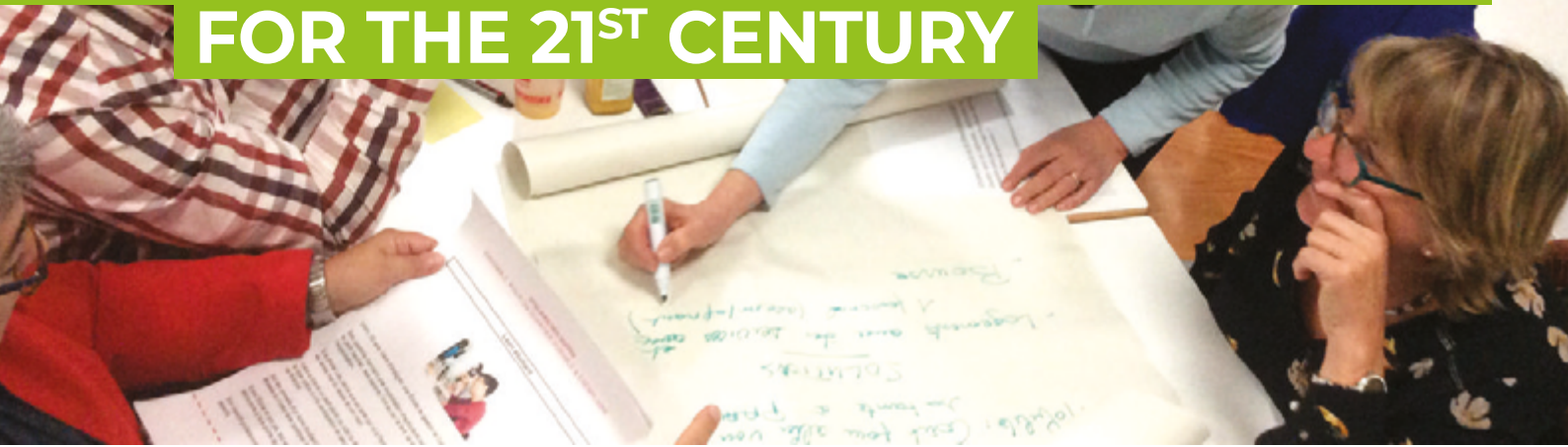
This project is co-financed by the European Union and the European Regional Development Fund.

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VAUBAN-ESQUERMES, A SUSTAINABLE NEIGHBOURHOOD FOR THE 21ST CENTURY



From the start of its Live TREE Programme (2013), the **Université Catholique de Lille** has sought to develop a strong association between the project and the **Vauban-Esquermes** neighbourhood, with all of its inhabitants and vital force. Supported by the University and the City of Lille (elected representatives and neighbourhood council), this approach aims to make **Vauban-Esquermes** Lille's Living Lab for the energy and social transition.

NEIGHBOURHOOD DYNAMICS

Everyone engaged in this transition – inhabitants and their resident associations, schools, companies, elected representatives, and more – is invited to take part in Live TREE. Regular facilitated meetings promote individual expression and participation in concrete action.

Exchanges

OPEN FORUM*

1st april 2017

«What should we be doing today to make Vauban-Esquermes a sustainable neighbourhood where it is good to live together?»

A hundred participants

14 discussion groups

RENDEZ-VOUS DE QUARTIER

9 juin 2018

40 participants

5 workshops for reflexion:

Cultural activities, Citizenship, Mobility & Travel,

Living Environment, Sanitation and the Economic Cycle

ATELIER DES SUITES

6 novembre 2018

50 participants

5 areas of reflection:

Garbage, Sustainable Mobility, Living Environment,

Good Neighbourliness, Intergenerational Communication

Initiatives undertaken following exchanges

BICYCLE REPAIR WORKSHOPS*

REPAIR CAFE*

THIRD SPACE (MEETING POINT)

ENERGY AWARENESS

INSTALLING COMPOST BINS

AUTHORISATIONS FOR REVEGETATION

Activities

Monthly **WORKSHOPS** on «Sustainable Solutions for Tomorrow» (permaculture, alternative transportation, composting...) and **EVENTS** organised on campus and open to the public

VISITS to get to know the neighbourhood

FAMILY CHALLENGES: "POSITIVE ENERGY" AND "ZERO WASTE" put in place by the Lille European Metropole

THE NEIGHBOURHOOD, RESEARCH SUBJECT

Neighbourhood participation in study and experimentation

· Vauban-Esquermes was recognised as a strategic area in the study "Spatialization of energy challenges" put in place by the Lille European Metropole

Improving people's knowledge of the area

· Climate and Energy Diagnosis of Vauban-Esquermes

*Projects of the Lille European Metropole within the framework of "Make the transition in your neighbourhood"

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