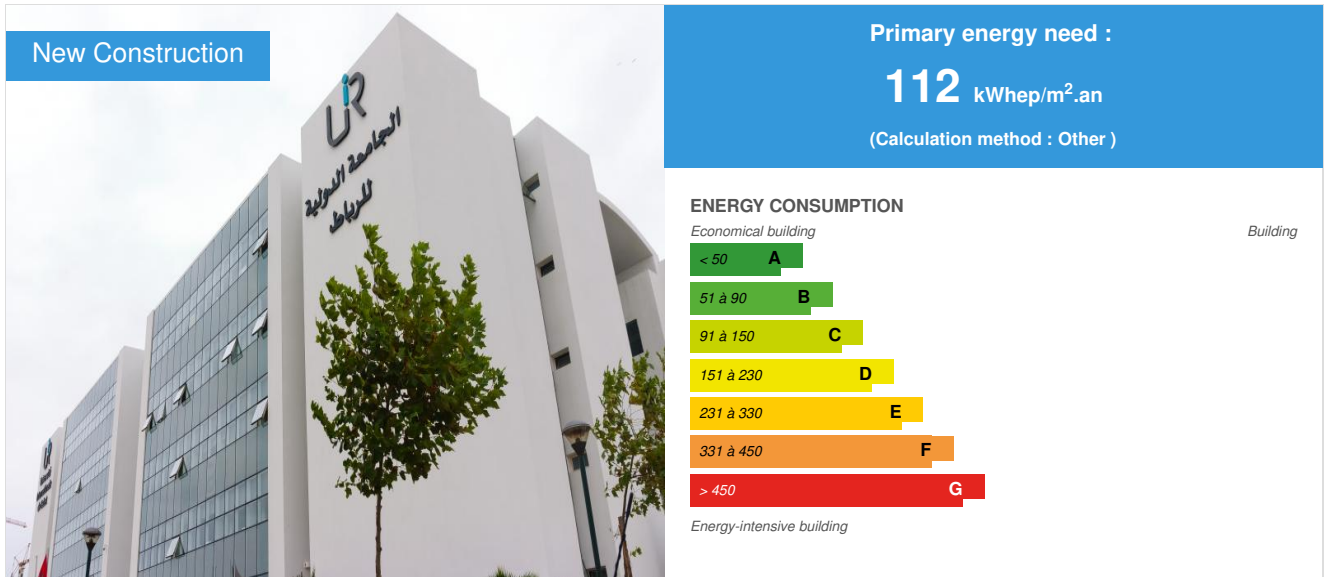


## International University of Rabat - building "Teaching 2»

by Zakaria SADIK / 2014-11-18 18:12:03 / Maroc / 16406 / FR



**Building Type** : School, college, university

**Construction Year** : 2013

**Delivery year** : 2013

**Address 1 - street** : Technopolis Rabat-Shore Rocade Rabat-Salé 11 100 SALA EL JADIDA, Maroc

**Climate zone** : [BSH] Subtropical Dry Semi-arid (Steppe)

**Net Floor Area** : 12 000 m<sup>2</sup>

**Certifications :**



**Proposed by :**



### General information

The International University of Rabat (UIR), for its commitment to respect the environment, committed to realize his building "Teaching 2" by integrating environmental aspects in all phases of the project. For this, the UIR is surrounded by an expert in bioclimatic architecture, engineering and a recognized benchmark in the environmental approach.

The "Teaching 2" building was built as part of the High Environmental Quality approach adapted internationally. Today, the building "Teaching 2" UIR is the first building certified "High Environmental Quality International - Non Residential" phase of realization (final phase of the HQE certification process) in Africa.

The Campus of the UIR, unique space of learning and research, the Campus UIR is an equipment to the height of the development zone "Technopolis". It represents openness and welcome, both by the presence of social services and student life and residential life and leisure spaces, a scientist by education buildings 1 and 2, which are the real link between users and the Public Campus.

This building is designed to transmit, promote and develop the knowledge and understanding of scientific, social, cultural and educational, for students and faculty.

### Data reliability

## Stakeholders

### Owner approach of sustainability

Choosing the High Environmental Quality approach for Environmental Performance Building (PEB) is in line with the sustainable development policy of the UIR. ILL The stakes for the operation, result in asset management (sustainability, adaptability, maintenance maintenance, operating cost), environmental protection (conserve resources, reduce pollution, reduce waste), the comfort (users, other interested parties) and the health of users. As part of the HQE® approach, the project includes the following environmental requirements: • 2200 m<sup>2</sup> of photovoltaic solar panels cover, • 470 MWh of renewable energy per year (20% of the energy needs of the Campus) • Plantation 2 500 trees on the campus, • Consolidation and pooling of services entity buildings • Using environmental materials of good quality health, healthy • Use of materials from local production chains, • Implementation of a green site at the execution of works, • Implementation of innovative solutions in the management of energy: solar panels, light type LED, ... • drinking water reduction devices to the right fixtures for saving water • Water management optimized on site by the infiltration and optimized green spaces, interior • Acoustic performance of the building by the establishment of special equipment: sound insulation, acoustic doors and acoustic false ceilings • Installation instead of atriums for the optimization of natural lighting, • Sectorization networks to facilitate maintenance maintenance.

### Architectural description

The project has been designed to enable autonomous operation of the various services. Indeed, these services are immediately accessible from the outside, which ensures them autonomy, while preserving the link with the outside world. The heart of the campus is preserved external pollution, noise, dust, weather hazards to maximize user comfort and offers him a space of relaxation and tranquility.

## Energy

### Energy consumption

Primary energy need : 112,00 kWh/m<sup>2</sup>.an

Primary energy need for standard building : 175,00 kWh/m<sup>2</sup>.an

Calculation method : Other

## Renewables & systems

### Systems

Heating system :

- Heat pump
- Fan coil

Hot water system :

- Solar Thermal

Cooling system :

- Reversible heat pump
- VRV Syst. (Variable refrigerant Volume)

Ventilation system :

- Natural ventilation
- Nocturnal Over ventilation
- Free-cooling
- Single flow
- Double flow

Renewable systems :

- Solar photovoltaic

## Products

### Product

Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '0'

CFD - Computational Fluid Dynamic modeling of fluid or dynamic

DesignBuilder Software

designbuilder.maroc@gmail.com

<http://www.designbuildermaroc.com/>



Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '29'

The CFD analysis (ComputationalFluidDynamic) allows you to study the distribution of temperature, pressure, comfort, the air speed of an inner area and the winds and pressure fields outside a bâtiment.CFD means ComputationalFluid Dynamics. It includes all methods of numerical calculations to predict the air temperature, its speed, its direction in an open space or fermé.Répondre to questions such as: What effect my (my) building (s) has or do they have on the wind? What is the temperature distribution in a room of high ceilings? What is the effectiveness of air diffusers according to their placement, the air speed? Radiateurs peuvent- they be better positioned to maximize comfort? The CFD Module DesignBuilder 3DEst designed to offer users an airflow prediction tool and temperature distributions inside and outside of a building in the same so that the dedicated software but at a rock-bottom prices and without need the assistance of a spécialiste.L'usage current CFD software proves time-intensive and requires special attention to establish correct geometries and boundary conditions. Using CFD DesignBuilder module drastically reduces these tasks by automatically providing the geometry and conditions limites.Les températures, heat flow and air exchange volumes calculated by EnergyPlus can be used as boundary conditions by simply specifying time and CFD CFD analysis souhaitée.L'interface date is designed to allow analysis 'push button' using automatically generated data but with option for more experienced users to alter data. This approach allows users to obtain reliable 3D CFD analysis without recourse to specialized knowledge of models numériques.Quelques key features: 3D grids are generated automatically from the model geometry and boundary conditions by promoting the use of algorithms optimal solutions convergenceLe CFD engine is built on the SIMPLER algorithm that is one of the most widely distributed and used methods. Turbulence is modeled using the well-documented ke model and having been the subject of much research. Other models will be added later louse meet spécifiques.L'interface applications included many tools for the boundary conditions such as air diffusers, extractors, temperature patch, etc. A component library is provided offering radiators, fan coil units, furniture, occupants, etc. to place anywhere and automatically included in the analyse.Les boundary conditions can be deduced from a EnergyPlus simulation antérieureLes 3D CFD results are displayed using the OpenGL graphics engine DesignBuilder with impressive images easily interpreted, velocity vectors of films, temperature contours, iso-surfaces, particle streams, etc.

DesignBuilder is a dynamic simulation software, with a graphical interface with many features not available simultaneously in existing software: Calculation of heat loss / heat gain of the envelope in the winter / étéDimensionnement chauffageDimensionnement of the refresh by natural ventilation and / or dynamic climatisationSimulation (STD) comfort restoring data, heat balance, ventilation, etc.Construction realistic 3D views with drop shadows (BIM model) Modeler building including window creation wizards, construction assembly, automatic detection of the type wall that avoid you numerous seizures or dessinGestion occupation, mechanical ventilation, window openings, the occultation berries, internal gains ... by configurable schedule depending on the day, month, hours (or sub zone) Energy saving: free cooling, Energy Recovery on exhaust air, night ventilation, lighting by dimming brightness, temperature regulating air blown according to demand, volume variable air ... already available in some clics.Plusieurs hundreds of materials and examples are delivered with the Pack French FrançaisCarte natural lighting, FLJCalculs RT2012Calculs on LEED and ASHRAE 90.1 EAp2Calcul overall cost using powerful function estimation of construction costs, energy, lifecycle-based optimization model BIMModule allowing you to determine the building's parameters providing the best compromise between cost, convenience, GES

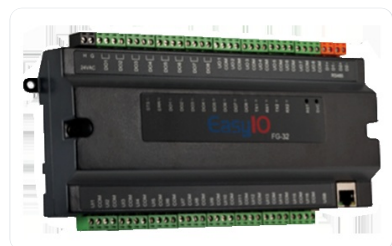
EasyIO FG Serie

EasyIO

0637923080

<http://www.easyio.eu>

Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '19'



The controllers of the FG series are powerful machines doublemicroprocesseurs ARM Linux kernel and stockageintégrée whose capacity can be up 16Go.Les FG controllers are compact platforms to climb railDIN. They boarded a web server capable of performing multi-protocol data acquisitionde, automation and supervision of touttype installation with a single software. Thus, FGembarquent all logical programming and vuesgraphiques. They are able to archive all types of data (consumption, alarms, etc.) and send the alarm etrapports automatiquement.Les FG controllers can be adapted to different types and taillesd'application. They perform the Sedona Virtual Machine and take encharge open protocols such as BACnet, Modbus, TCOM, andthe web services such as HTML5, and SQL / PHP for managing basesdonnées.

EasySmart Vision

EasySmart

0637923080

<http://www.Easyio.eu>

Product category : Table 'c21\_spain.innov\_category' doesn't exist SELECT one.innov\_category AS current,two.innov\_category AS parentFROM innov\_category AS oneINNER JOIN innov\_category AS two ON one.parent\_id = two.idWHERE one.state=1AND one.id = '13'



This building automation solution, combining cost control, safety of installations and occupant comfort, initially consists of: • flood detection: The water sensors are placed in the toilet (men and women) as well as kitchen their status is visible from the supervision room, and a light signal is activated 5 minutes after continuous activation sensors • Lighting control. In automatic mode, the system allows the total extinction of the lights on a schedule and calendar the ability to order from the supervision room. • Temperature sensors: two probes are placed per plate to raise the temperature of the equipment room and board, alarms on thresholds can be set up. • Energy Monitoring: Detailed tracking and real-time power consumption of your registration with

the values (general consumption, air consumption and consumption of lighting) • Control of air conditioning. Failing to change the already installed thermostats by Communicating Thermostats, the proposed system controls the air conditioning directly from the control cabinet and an hourly schedule (one day off), knowing that the control and supervision of all these modules are accessible from the supervision room and see Intranet Internet, depending on your need other modules can be integrated. Beyond a simple oversight, this tool will allow you to secure your systems and effectively control your energy consumption.

Product that fits perfectly and simply, combining comfort, security and economy.

Costs

Contest



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