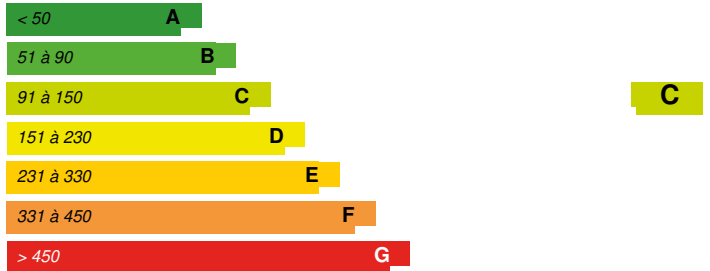


## African Development Bank (BMCE)

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**Building Type** : Office building < 28m  
**Construction Year** : 2014  
**Delivery year** : 2016  
**Address 1 - street** : 27182 BOUSKOURA, Maroc  
**Climate zone** : [Csa] Interior Mediterranean - Mild with dry, hot summer.

**Net Floor Area** : 17 000 m<sup>2</sup>  
**Construction/refurbishment cost** : 180 000 €  
**Number of Work station** : 6 Work station  
**Cost/m2** : 10.59 €/m<sup>2</sup>

### General information

The project involves the realization of BMCE Academy, located bouskoura. This project consists of a set of training rooms, a reception center, an amphitheater, a restaurant, a bank branch and finally a Data Center.

See more details about this project

<http://www.construction21.org/maroc/articles/ma/laureat-coup-de-coeur-building-gbcsawards-2016-bmce-bank-of-africa-academy-maroc.html>

Data reliability

3rd part certified

### Stakeholders

Stakeholders

Function : Contractor  
BMCE Bank

## Owner approach of sustainability

BMCE Bank is a company committed to sustainable development, with an environmental policy and a system certified ISO 14001 and ISO 9001. The choice of the HQE certification to the International for its project will translate the performance of its project following an international unit of measure and demonstrate compliance commitments by a third party. BMCE BANK wants to set an example. The orientation HQE (phase test) will allow taking into account economic, social and environmental characteristics of Morocco, that in order to encourage innovation, corporate social responsibility and green economy with common sense and in a continuous improvement process.

## Architectural description

As part of the development of its educational activities and to meet its computing needs, BMCE BANK provides the realization of a TRAINING CENTER with OFFICES & WORKSHOPS. The new project under the BMCE Bank responds to the desire to provide quality services at international academic standards in terms of operational and managerial training. As equipment collective public interest, the TRAINING CENTRE is strategically located on the most visible part of the land. Easily accessible, it is next to a green area of sports fields and parking areas. Due to the accessibility TRAINING CENTER therefore benefits both to the people of Bouskoura that the population of the city of Casablanca and its visitors. In addition, all equipment that includes this project should generate over 70 permanent jobs and several contractors and jobs is part of the development of Nouacer Prefecture and the city of Casablanca.

## Energy

### Energy consumption

Primary energy need : 132,00 kWh/m<sup>2</sup>.an  
Primary energy need for standard building : 181,00 kWh/m<sup>2</sup>.an  
Calculation method : Other  
CEEb : 0.0003

### Envelope performance

Envelope U-Value : 0,40 W.m<sup>-2</sup>.K<sup>-1</sup>

## Renewables & systems

### Systems

Heating system :

- Heat pump

Hot water system :

- Individual electric boiler
- Solar Thermal

Cooling system :

- VRV Syst. (Variable refrigerant Volume)

### Smart Building

BMS :  
Yes

## Products

### Product

CFD - Computational Fluid Dynamic modeling fluid dynamics or

Design Builder Software

designbuilder.maroc@gmail.com

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

Product category : Table 'c21\_italy.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 velocity of an inner area and the winds and pressure fields outside a bâtiment.CFD means ComputationalFluid Dynamics. It includes all the methods of numerical calculations to predict the temperature of the air, its speed, its direction in an open space or fermé.Répondre 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? How effective air



diffusers according to their placement, the air speed? radiators 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 of the same so that the dedicated software but at competitive prices and without the need for assistance from a spécialiste.L'usage current CFD software turns greedy time and requires special attention to establish correct geometries and boundary conditions. Using CFD module DesignBuilder drastically reduces these tasks by automatically providing the geometry and conditions limites.Les temperatures, 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 modify the 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 around the SIMPLER algorithm which is one of the most widely distributed and used methods. Turbulence is modeled using the well documented ke model and have 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 derived from an 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 in existing software simultaneously: Calculation of loss / heat gain in winter envelope / étéDimensionnement chauffageDimensionnement of the refresh by natural ventilation and / or dynamic climatisationSimulation (STD) restoring comfort data, heat balance, ventilation and 3D etc.Construction realistic view of shadows (BIM model) Modeling of the building including window creation assistants, construction assembly, automatic detection of the type wall that you avoid many seizures or dessinGestion occupation, mechanical ventilation, window openings, the occultation berries, internal gains ... by configurable schedule depending on the day, month, hour (or sub zone) energy saving: free cooling, energy recovery on exhaust air, night ventilation, dimming the lighting according to brightness, air temperature regulation blown according to demand, volume variable air ... already available in some clics.Plusieurs hundreds of examples and materials are delivered in french with the Pack FrançaisCarte natural lighting, FLJCalculs RT2012Calculs LEED for ASHRAE 90.1 and EAp2Calcul overall cost with powerful function estimation of construction costs, energy, lifecycle-based optimization model BIMModule allowing you to determine the building parameters offering the best compromise between cost, convenience, GES

## Costs

### Construction and exploitation costs

Total cost of the building :18 000 000 €

## Urban environment

The project site is located south of Casablanca, in the town of Bouskoura, which falls within the province of Nouacer. The project field is limited by the Bouskoura forest southeast, north-west by the future high-speed line (LGV), and northeast through Sidi Massoud (Casa-Mediouna link). The metropolis of Greater Casablanca is justified taking into account the following key points: - The development strategy for Greater Casablanca, which aims to improve the economy of the region, Morocco occupies the locomotive status for more than a century, both economically and culturally. - The strong urbanization facing the metropolis. Indeed, the registered urban growth is 700 to 1000 hectares per year - Encouraging dedensification through the opening 25 000 ha to urbanization by 2030. - The economic dynamics that knows the axis Casablanca-Nouaceur. - The pipeline, structuring and control of urban development of the city Bouskoura; - The role of vocational training in promoting economic and social activity.

### Land plot area

Land plot area : 50 000,00 m<sup>2</sup>

### Built-up area

Built-up area : 60,00 %

### Green space

Green space : 20 000,00

## Building Environmental Quality

### Building Environmental Quality

- Building flexibility
- indoor air quality and health
- biodiversity
- works (including waste management)
- acoustics
- comfort (visual, olfactive, thermal)
- waste management (related to activity)

- water management
- energy efficiency
- renewable energies
- maintenance
- integration in the land
- mobility
- products and materials

## Contest

Building candidate in the category



Energie & Climats Chauds



Bâtiment Intelligent



Coup de Coeur des Internautes



**Green Building  
Solutions** Awards 2016

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