# Gerardo Arango S.J. School of Arts - Javeriana

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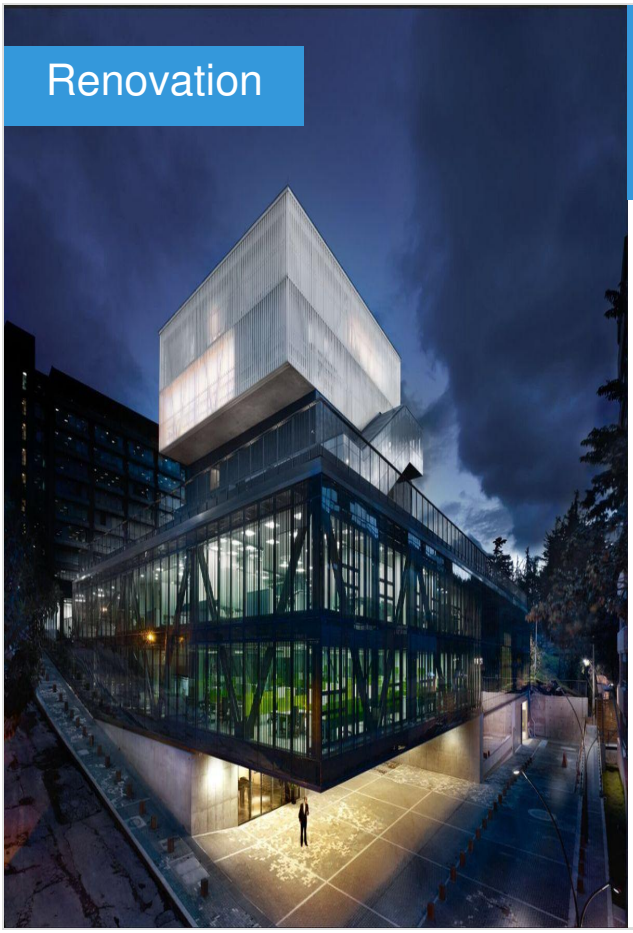


**Primary energy need :**
**kWhpe/m².year**
**(Calculation method : Other )**

**ENERGY CONSUMPTION**

*Economical building* *Building*

- *< 50* **A**
- *51 à 90* **B**
- *91 à 150* **C**
- *151 à 230* **D**
- *231 à 330* **E**
- *331 à 450* **F**
- *> 450* **G**

*Energy-intensive building*

**Building Type** : School, college, university
**Construction Year** : 1623
**Delivery year** : 2019
**Address 1 - street** : Calle 40b 5-37 Ciudad Universitaria Javeriana 110231 BOGOTá, CUNDINAMARCA, Colombia
**Climate zone** : [Cfb] Marine Mild Winter, warm summer, no dry season.

**Net Floor Area** : 17 335 $m^2$

**Certifications :**

**Proposed by :**

## General information

The Gerardo Arango S.J. Building – School of Arts at the Pontificia Universidad Javeriana provides a space for students and the arts to flourish. The building is architecturally divided into three sections that represent different forms of art. Designed to feel like autonomous worlds connected by art, each section serves a different purpose. The top of the building is dedicated to visual arts with a focus on natural lighting provided by large skylights. Below lies the world of music, where finished concrete flooring and glass reinforced concrete walls contribute to both quality acoustics and a more introspective atmosphere for practicing. The final section at the bottom of the building houses the performing arts, where high ceilings, large classrooms and auditoriums provide adequate space for dancers and performers. With classrooms, multifunctional spaces for individuals and group work, as well as laboratories for photography, sculpture and painting, every part of the building is designed to foster learning, creativity and innovation.

The five-story building is located on the south side of the campus, facing the National Park. Its design incorporates not only aesthetic and acoustic considerations, but also how the building is integrated sustainably with its surrounding environment. The resource-efficient building has photoelectric sensors that automatically turn off lights when there is sufficient daylight as well as occupancy sensors. Other features such as low-flow faucets and water-efficient single flush water closets reduce water use. These green features enable the university to reduce the building's operational costs by nearly one third.

Gerardo Arango S.J. Building – School of Arts is the latest addition to Pontificia Universidad Javeriana's ambitious master plan to renovate a series of its buildings. Its Research and Laboratories Building of the Faculty of Engineering has also been EDGE certified. Gerardo Arango S. J. Building – School of Arts has received final EDGE certification by CAMACOL.

## See more details about this project

https://www.edgebuildings.com/projects/gerardo-arango-s-j-building-school-of-arts/

## Photo credit

Pontificia Universidad Javeriana

# Stakeholders

## Construction Manager

Name : La Rotta Arquitectos
Contact : +57 310 8832510
https://www.facebook.com/LaRottaArquitectos/

## Stakeholders

Function : Investor

Pontificia Universidad Javeriana

l.pinto[at]javeriana.edu.co

Project owner

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Function : Manufacturer

Corev, Accesorios y Acabados, ESTAHL, Titan, Pórticos, Etex Colombia, Lucky Global, High Lights, Etex, Solinoff, Dismec

Manufacturers

# Energy

## Energy consumption

Calculation method : Other

Breakdown for energy consumption : 5 kWh/ m2.year: Heating energy
1 kWh/ m2.year: fan energy

2 kWh/ m2.year: cooling energy
5 kWh/ m2.year: hot water
2 kWh/ m2.year: Lighting
6 kWh/ m2.year: Catering
3 kWh/ m2.year: Equipement, Lift , STP, Water Pumps

Initial consumption : 33,00 kWhpe/$m^2$.year

## Envelope performance

More information :
Roof U-value: 1.99
Wall U-value: 1.86
Glass U-value: 5.75

## More information

Embodied Energy Savings: 1,249.74 MJ/$m^2$

## Real final energy consumption

Final Energy : 26,00 kWhfe/$m^2$.year

# Renewables & systems

## Systems

Heating system :

- Electric radiator

Hot water system :

- Individual electric boiler

Cooling system :

- Water chiller

Ventilation system :

- Natural ventilation

Renewable systems :

- No renewable energy systems

# Products

## Product

Insulation of Roof: U-value of 0.95
Insulation of External Walls: U-value of 2.28
Air Conditioning with Water Cooled Chiller
Energy-Saving Light Bulbs (internal and external spaces)
Occupancy Sensors in Bathrooms/classrooms
Photoelectric Sensors to Harvest Daylight

Product category : Second œuvre / Plomberie, sanitaire

Low-Flow Showerheads - 21.93 L/min
Low-Flow Faucets in All Other Bathrooms - 4.7 L/min
Single Flush/Flush Valve Water Closets in Bathrooms - 4.8 lt/ flush
Water-Efficient Urinals in All Other Bathrooms - 0.5 L/flush
Water-Efficient Faucets for Kitchen Sinks - 5 L/min

Product category : Second œuvre / Cloisons, isolation

Glass Fiber Reinforced Concrete Cladding
Honeycomb Clay Blocks with Plaster on Both Sides
Plasterboards on Metal Studs with Insulation
Finished Concrete Floor
Wall Insulation: Polystyrene
Roof Insulation: Polystyrene

# Costs

## Construction and exploitation costs

Cost of studies : 167 792 €

Additional information on costs :
Incremental Cost: 189,338.37 $
Payback in Years: 19.44 Yrs.

To know more about the incremental cost: https://www.edgebuildings.com/edge-cost-model/

## Energy bill

Forecasted energy bill/year : 255 600,00 €

Real energy cost/m2 : 14.74

Real energy cost/Pupil : 11.62

# Health and comfort

## Water management

Consumption from water network : 24 620,00 $m^3$

Water Consumption/m2 : 1.42

Water Consumption/Pupil : 1.12

Final Water Use: 8,028 $m^3$/Month

Water Savings: 15867.87 $m^3$/Year

## Comfort

Health & comfort : The final section at the bottom of the building houses the performing arts, where high ceilings, large classrooms and auditoriums provide adequate space for dancers and performers. With classrooms, multifunctional spaces for individuals and group work, as well as laboratories for photography, sculpture and painting, every part of the building is designed to foster learning, creativity and innovation.

Acoustic comfort : The top of the building is dedicated to visual arts with a focus on natural lighting provided by large skylights. Below lies the world of music, where finished concrete flooring and glass reinforced concrete walls contribute to both quality acoustics and a more introspective atmosphere for practicing.

# Carbon

## GHG emissions

GHG in use : 5,71 $KgCO_2/m^2$/year

Methodology used :

$CO_2$ Emissions from Electricity Generation: 219.8 g/kWh

219.8 (g/kWh) *0.001*26 = 5.71 KgCO2/m2/year

## CONTEST

## Reasons for participating in the competition(s)

Bogota's climate is classified as warm and temperate. There is significant rainfall throughout the year in Bogota. Even the driest month still has a lot of rainfall.The average temperature in Bogota is 13.5 °C.

**Energy** ( 23% energy savings): Insulated roofing and external walls, air conditioning with water cooled chiller, energy-saving lighting, occupancy sensors and photoelectric sensors to harvest daylight.
**Water** (22% water savings): Low-flow faucets, water-efficient single flush water closets and water-efficient urinals.
**Materials** (44% less embodied energy in materials): Controlled use of concrete and glass fiber reinforced concrete cladding for external walls, honeycomb clay blocks with plaster on both sides and plasterboards on metal studs with insulation for internal walls, and finished concrete flooring.

## Building candidate in the category


Energy & Temperate Climates



Users' Choice

Date Export : 20230314020441