

DEPARTEMEN ARSITEKTUR
FAKULTAS TEKNIK
UNIVERSITAS BRAWIJAYA
SEMESTER GANJIL 2024/2025



UJIAN AKHIR SEMESTER

MK. ARSITEKTUR HEMAT ENERGI

NAMA:

MICKO KUSNADI - 215060507111060

DOSEN PJK:

IR. AGUNG MURTI NUGROHO, ST., MT., PH.D.



PROGRAM STUDI ARSITEKTUR
FAKULTAS TEKNIK
UNIVERSITAS BRAWIJAYA
SEMESTER GANJIL 2024/2025

Modul Edge 1

NAMA : MICKO KUSNADI
NIM : 215060507111060

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Offices University of Brawijaya

DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility/Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 11,131.58 Thousand Rp
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Design Energy -0.09% Water 0.00% Materials 0.00% Operations

HIDE RESULTS


Project Details

Project Name* University of Brawijaya	Address Line1	Postal Code	Number of EDGE Subproject(s) associated
Number of Distinct Buildings* 1	Address Line2	Project Owner Phone Mobile eg 0001	Total Project Floor Area (m ²)
Project Owner Name	City	Do you intend to certify? Yes	Project Number
Project Owner Email	State/ Province	Share project name and basic information to potential investors or banks? Yes	
Owner Organization	Country Select	Is this Project created for Training Purpose? Yes	

UPLOAD project-level documents. DOWNLOAD project audit documents.

Subproject Details

Subproject Name* University of Brawijaya	Address Line1* Jalan Veteran	Country* Indonesia
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University of Brawijaya

DASHBOARD
PRELIMINARY
VERSION 2.1.5 ▾
FILE ▾
SAVE


Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00	57,951.79	777.48	93,491.07	-74.00	11,131.58
m ²	kWh/Month	m ³ /Month	Thousand Rp/Month	Thousand Rp/Month	Thousand Rp

HIDE RESULTS ▾

Design
Energy -0.09%
Water 0.00%
Materials 0.00%
Operations

Subproject Details

Subproject Name* University of Brawijaya	Address Line1* Jalan Veteran	Country* Indonesia ▾
Office Name* University of Brawijaya	Address Line2	Status
Subproject Multiplier for the Project* 1	City* Jakarta	Auditor
Certification Stage* Preliminary ▾	State/ Province	Certifier
Subproject Type New Building ▾	Postal Code	File Number



No image uploaded

Building Data

	Default	User Entry
Gross Internal Area Excluding Car Parking (m ²) 4,000	Occupancy Density (m ² /Person) 10	Occupancy Density (m ² /Person)
Floors Above Grade (no.) 3	Operational Hours (Hours/Day) 10	Operational Hours (Hours/Day)

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	57,951.79 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	-74.00 Thousand Rp/Month	11,131.58 Thousand Rp

Design Energy -0.09% Water 0.00% Materials 0.00% Operations

Location

Country: Indonesia

City: Jakarta

Project Details

Project Name* University of Brawijaya

Address Line1 _____ Postal Code _____ Number of EDGE Subproject(s) associated _____

Number of Distinct Buildings* 1

Address Line2 _____ Project Owner Phone _____ Mobile eg 0001 _____ Total Project Floor Area (m²) _____

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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 11,131.58 Thousand Rp
---	--	--	--	---	--

Design | Energy -0.09% | Water 0.00% | Materials 0.00% | Operations

Building Data

Gross Internal Area Excluding Car Parking (m ²) 4,000	Occupancy Density (m ² /Person) 10	User Entry
Floors Above Grade (no.) 3	Operational Hours (Hours/Day) 10	Occupancy Density (m ² /Person)
Floors Below Grade (no.) 2	Working Days (Days/Week) 5	Operational Hours (Hours/Day)
Floor-to-Floor Height (m) 3.5	Holidays (Days/Year) 12	Working Days (Days/Week)

Food Court
 Cellular Office

Default | User Entry

Open Plan Office (m ²) 2,426	Open Plan Office (m ²)
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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 11,131.58 Thousand Rp
---	--	--	--	---	--

Design Energy -0.09% Water 0.00% Materials 0.00% Operations

HIDE RESULTS

Building Orientation

Floor Plan Depth*** (m)
20

Main Orientation***
Southeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

Building Lengths		User Entry (m)
Default		
North	0.0	North
South	0.0	South
East	0.0	East
West	0.0	West
Northeast	20.0	Northeast
Northwest	40.0	Northwest
Southeast	40.0	Southeast
Southwest	20.0	Southwest

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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 11,131.58 Thousand Rp
---	--	--	--	---	--

Design | Energy -0.09% | Water 0.00% | Materials 0.00% | Operations

HIDE RESULTS

Project Details

Project Name* Brawijaya University	Address Line1	Postal Code	Number of EDGE Subproject(s) associated 1
Number of Distinct Buildings* 1	Address Line2	Project Owner Phone Mobile eg 0001	Total Project Floor Area (m ²) 4000
Project Owner Name	City	Do you intend to certify? Yes	Project Number 1001669757
Project Owner Email	State/ Province	Share project name and basic information to potential investors or banks? Yes	
Owner Organization	Country	Is this Project created for Training Purpose? Yes	
	Select		

project-level documents.
 project audit documents.

Associated Subproject(s)

Saved successfully

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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	57,951.79 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	-74.00 Thousand Rp/Month	11,131.58 Thousand Rp

Design | Energy -0.09% | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3

-0.09% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	83
Fan Energy	0	0
Pump Energy	0	0
Other	0	0
Lighting	21	21
Computers	28	28
Food Court/ Kitchenette	0	0
Total	134	133.2

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.



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Modul Edge 2

NAMA : MICKO KUSNADI
NIM : 215060507111060

MODULE 2.1

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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	67,059.19 kWh/Month	777.48 m ³ /Month	106,629.07 Thousand Rp/Month	-103.00 Thousand Rp/Month	16,650.45 Thousand Rp

Design | Energy -0.11% | Water 0.00% | Materials 0.00% | Operations

**The M&E Rooms, Store field is equal to the remaining space required to total the gross internal area excluding car parking.

Building Orientation

	Building Lengths	User Entry (m)
Floor Plan Depth*** (m)	Default	
10	North 0.0	North
Main Orientation***	South 0.0	South
Southeast	East 0.0	East
	West 0.0	West
	Northeast 10.0	Northeast
	Northwest 80.0	Northwest
	Southeast 80.0	Southeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 64,778.19 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 106,629.07 Thousand Rp/Month	Utility Cost Reduction 3,195.00 Thousand Rp/Month	Incremental Cost -37,350.13 Thousand Rp
---	--	--	---	---	---

Design Energy 3.30% Water 0.00% Materials 0.00% Operations

HIDE RESULTS

**The M&E Rooms, Store field is equal to the remaining space required to total the gross internal area excluding car parking.

Building Orientation

Floor Plan Depth*** (m)
10

Main Orientation***
North

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

Building Lengths		User Entry (m)
Default		
North	80.0	North
South	80.0	South
East	10.0	East
West	10.0	West
Northeast	0.0	Northeast
Northwest	0.0	Northwest
Southeast	0.0	Southeast

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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 69,034.48 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 106,629.07 Thousand Rp/Month	Utility Cost Reduction -2,959.00 Thousand Rp/Month	Incremental Cost 59,790.62 Thousand Rp
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Design | Energy -3.06% | Water 0.00% | Materials 0.00% | Operations

HIDE RESULTS

**The M&E Rooms, Store field is equal to the remaining space required to total the gross internal area excluding car parking.

Building Orientation

Floor Plan Depth*** (m)
10

Main Orientation***
East

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

Building Lengths		User Entry (m)
Default		
North	10.0	North
South	10.0	South
East	80.0	East
West	80.0	West
Northeast	0:0	Northeast
Northwest	0:0	Northwest
Southeast	0:0	Southeast

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 67,059.19 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 106,629.07 Thousand Rp/Month	Utility Cost Reduction -103.00 Thousand Rp/Month	Incremental Cost 16,650.45 Thousand Rp
---	--	--	---	--	--

Design Energy -0.11% Water 0.00% Materials 0.00% Operations

**The M&E Rooms, Store field is equal to the remaining space required to total the gross internal area excluding car parking.

Building Orientation

	Building Lengths	User Entry (m)
Floor Plan Depth*** (m) 10	North 0.0	North
Main Orientation*** Northwest	South 0.0	South
	East 0.0	East
	West 0.0	West
	Northeast 10.0	Northeast
	Northwest 80.0	Northwest
	Southeast 80.0	Southeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

MODULE 2.2

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 61,935.23 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -5,834.00 Thousand Rp/Month	Incremental Cost 461,734.83 Thousand Rp
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Design Energy -6.97% Water 0.00% Materials -0.91% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

-6.97% ENERGY SAVINGS

Base Case Virtual Energy for Comfort* Improved Case Virtual Energy for Comfort*

Category	Base Case	Improved Case
Heating Energy	83	93
Cooling Energy	21	23
Fan Energy	28	28
Pump Energy	0	0
Other	0	0
Lighting	0	0
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	123

OFE01* Reduced Window to Wall Ratio - WWR of 80%
 North % [] South % []
 East % [] West % []
 Northeast % [80] Northwest % [80]
 Southeast % [80] Southwest % [80]

OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
 OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
 OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
 OFE05 Insulation of Roof: U-value of 0.393
 OFE06 Insulation of External Walls: U-value of 0.47
 OFE07 Low-E Coated Glass: U-value of 3 W/m².K and SHGC of 0.45
 OFE08 Higher Thermal Performance Glass: U-value of 1.95 W/m².K and SHGC of 0.28
 OFE09 Natural Ventilation with Operable Windows and No A/C

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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Brawijaya University

DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	57,951.79 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	-74.00 Thousand Rp/Month	11,131.58 Thousand Rp

Design | Energy -0.09% | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

-0.09% ENERGY SAVINGS

OFE01* Reduced Window to Wall Ratio - WWR of 60%

North %	South %
East %	West %
Northeast %	Northwest %
Southeast %	Southwest %

- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C

Category	Base Case	Improved Case
Heating Energy	83	83
Cooling Energy	0	0
Fan Energy	21	21
Lighting	0	0
Computers	0	0
Pump Energy	0	0
Food Court/ Kitchenette	0	0
Other	28	28

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 53,968.36 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 5,685.00 Thousand Rp/Month	Incremental Cost -439,471.66 Thousand Rp
--	---	---	---	--	---

Design Energy 6.79% Water 0.00% Materials 0.91% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 40%

North %	South %
East %	West %
Northeast %	Northwest %
Southeast %	Southwest %
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C

6.79% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	74
Fan Energy	21	18
Pump Energy	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Other	0	0
Total	132	74

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 49,984.93 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 11,444.00 Thousand Rp/Month	Incremental Cost -890,074.90 Thousand Rp
--	---	---	---	---	---

Design Energy 13.67% Water 0.00% Materials 1.81% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

13.67% ENERGY SAVINGS

OFE01* Reduced Window to Wall Ratio - WWR of 20%

North %	South %
East %	West %
Northeast % 20	Northwest % 20
Southeast % 20	Southwest % 20

OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7

OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7

OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58

OFE05 Insulation of Roof : U-value of 0.393

OFE06 Insulation of External Walls : U-value of 0.47

OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45

OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28

Category	Base Case	Improved Case
Heating Energy	83	64
Cooling Energy	21	16
Fan Energy	28	28
Pump Energy	0	0
Lighting	0	0
Computers	0	0
Food Court/ Kitchenette	0	0
Total	104	64

ENERGY(kWh/m²/Year)

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

MODULE 2.3

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Total Subproject Floor Area: 4,000.00 m²
Final Energy Use Intensity: 55,973 kWh/m²Year

Design Energy 3.33% Water 0.00% Material 0.00%

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity
- OFE03 Reflective Paint for External Walls - Solar Reflectivity
- OFE04 External Shading Devices - Annual Average Shading Coefficient
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m²·K and Solar Heat Gain Coefficient
- OFE08 Higher Thermal Performance Glass : U-value of 1.5 W/m²·K and Solar Heat Gain Coefficient
- OFE09 Natural Ventilation with Operable Windows and Thermal Mass
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System

Calculator

OFE05 - Average U-value Calculator for Roofs

The order in which the materials are entered into the calculator does not make a difference to the U-value calculation

Select Material for each Layer of Roof Construction	Thickness (mm) Example: 20	Conductivity (W/mK)	Resistance (m ² K/W)
			Outside Air Film 0.040
Bitumen -- Felt / sheet	2.00	0.230	0.009
Insulation -- Board, expanded polystyrene EPS, high-density (32)	50.00	0.033	1.515
Concrete -- High density (2400)	200.00	2.000	0.100

+ ADD MATERIAL FROM LIST + ADD CUSTOM MATERIAL

Inside Air Film 0.100

Roof U-value (W/m²·K) 0.57

Insert calculated value on measure? INSERT

Note:
Calculated value(s) will be displayed on the measure when inserted. If you edit the value(s) manually on the measure, changes will not be reflected on the Calculator.

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Offices
Brangjaya University

Total Subproject Floor Area: 4,000.00 m² Final Energy Use Intensity: 55,973.7 kWh/m²Year

Design Energy 3.33% Water 0.00% Material

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity
- OFE03 Reflective Paint for External Walls - Solar Reflectivity
- OFE04 External Shading Devices - Annual Average Shading Coefficient
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and Solar Heat Gain Coefficient of 0.4
- OFE08 Higher Thermal Performance Glass : U-value of 1.5 W/m².K and Solar Heat Gain Coefficient of 0.4
- OFE09 Natural Ventilation with Operable Windows and Mechanical Exhaust
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System

Calculator

OFE05 - Average U-value Calculator for Roofs

The order in which the materials are entered into the calculator does not make a difference to the U-value calculation

Select Material for each Layer of Roof Construction	Thickness (mm) Example: 20	Conductivity (W/mK)	Resistance (m ² K/W)
			Outside Air Film 0.040
Bitumen -- Felt / sheet	2.00	0.230	0.009
Insulation -- Board, expanded polystyrene EPS, high-density (32)	100.00	0.033	3.030
Concrete -- High density (2400)	200.00	2.000	0.100
+ ADD MATERIAL FROM LIST + ADD CUSTOM MATERIAL			
			Inside Air Film 0.100
			Roof U-value (W/m ² .K) 0.30
			Insert calculated value on measure? INSERT

Note:
Calculated value(s) will be displayed on the measure when inserted. If you edit the value(s) manually on the measure, changes will not be reflected on the Calculator.

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Offices
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Total Subproject Floor Area: 4,000.00 m² | Final Energy Use Intensity: 55,565.6 kWh/m²·Year

Design Energy 4.03% | Water 0.00% | Materials

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity
- OFE03 Reflective Paint for External Walls - Solar Reflectivity
- OFE04 External Shading Devices - Annual Average Shading Coefficient
- OFE05 Insulation of Roof : U-value of 0.21
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m²·K and Solar Heat Gain Coefficient
- OFE08 Higher Thermal Performance Glass : U-value of 1.5 W/m²·K and Solar Heat Gain Coefficient
- OFE09 Natural Ventilation with Operable Windows and Mechanical Exhaust
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System

Calculator

OFE05 - Average U-value Calculator for Roofs

The order in which the materials are entered into the calculator does not make a difference to the U-value calculation

Select Material for each Layer of Roof Construction	Thickness (mm) Example: 20	Conductivity (W/mK)	Resistance (m ² K/W)
			Outside Air Film 0.040
Bitumen -- Felt / sheet	2.00	0.230	0.009
Insulation -- Board, expanded polystyrene EPS, high-density (32)	150.00	0.033	4.545
Concrete -- High density (2400)	200.00	2.000	0.100

+ ADD MATERIAL FROM LIST + ADD CUSTOM MATERIAL

Inside Air Film 0.100

Roof U-value (W/m²·K) 0.21

Insert calculated value on measure? INSERT

Note:
Calculated value(s) will be displayed on the measure when inserted. If you edit the value(s) manually on the measure, changes will not be reflected on the Calculator.

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Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	56,368.43 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	2,215.00 Thousand Rp/Month	59,988.89 Thousand Rp

Design | Energy 2.65% | Water 0.00% | Materials 0.12% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.57 W/m².K
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

2.65% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	83	80
Cooling Energy	0	0
Fan Energy	0	0
Pump Energy	0	0
Lighting	28	28
Other	21	20
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	129

ENERGY(kWh/m²/Year)

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	55,766.31 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	3,085.00 Thousand Rp/Month	46,680.77 Thousand Rp

HIDE RESULTS

Design | Energy 3.69% | Water 0.00% | Materials 0.12% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.3 W/m².K
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

3.69% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	78
Fan Energy	0	0
Pump Energy	0	0
Other	21	19
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	124

ENERGY(kWh/m²/Year)

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	55,565.60 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	3,376.00 Thousand Rp/Month	42,244.73 Thousand Rp

Design | Energy 4.03% | Water 0.00% | Materials 0.12% | Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.21
W/m².K
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

4.03% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	78
Fan Energy	21	19
Pump Energy	0	0
Lighting	26	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	130	125

ENERGY(kWh/m²/Year)

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	61,939.60 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	-5,840.00 Thousand Rp/Month	197,494.85 Thousand Rp

Design Energy -6.98% | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 5.8 W/m².K and SHGC of 0.8
 W/m².K: SHGC:
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

-6.98% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	83	93
Cooling Energy	21	23
Fan Energy	28	28
Pump Energy	0	0
Lighting	0	0
Computers	0	0
Food Court/ Kitchenette	0	0
Other	0	0
Total	112	103

ENERGY(kWh/m²/Year)

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 110,182.63 Thousand Rp
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Design | Energy -0.09% | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 5.8 W/m².K and SHGC of 0.6
W/m².K: SHGC:
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

-0.09% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	83
Fan Energy	21	21
Lighting	28	28
Other	0	0
Computers	0	0
Pump Energy	0	0
Food Court/ Kitchenette	0	0

ENERGY(kWh/m²/Year)

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 56,140.29 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 2,545.00 Thousand Rp/Month	Incremental Cost 69,961.05 Thousand Rp
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Design | **Energy 3.04%** | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

3.04% ENERGY SAVINGS

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.6
W/m².K: SHGC:
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

Category	Base Case	Improved Case
Heating Energy	83	79
Cooling Energy	0	0
Fan Energy	0	0
Pump Energy	0	0
Other	21	20
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	130	127

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 52,502.47 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 7,804.00 Thousand Rp/Month	Incremental Cost -9,887.97 Thousand Rp
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Design Energy 9.32% | Water 0.00% | Materials -2.58% | Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 2 W/m².K and SHGC of 0.45
 W/m².K: SHGC:
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

9.32% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	70
Fan Energy	21	18
Pump Energy	0	0
Other	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	120

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 56,755.45 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 1,655.00 Thousand Rp/Month	Incremental Cost 341,521.67 Thousand Rp
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Design Energy 1.98% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.1
AASF:
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

1.98% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	81
Fan Energy	21	20
Pump Energy	0	0
Other	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	129.24

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 55,559.11 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 3,385.00 Thousand Rp/Month	Incremental Cost 315,328.01 Thousand Rp
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HIDE RESULTS

Design Energy 4.04% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.2
AASF
- OFE05 Insulation of Roof: U-value of 0.393
- OFE06 Insulation of External Walls: U-value of 0.47
- OFE07 Low-E Coated Glass: U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass: U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

4.04% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	78
Fan Energy	21	19
Pump Energy	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Other	0	0
Total	132	78

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 54,362.77 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 5,115.00 Thousand Rp/Month	Incremental Cost 289,134.34 Thousand Rp
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Design Energy 6.11% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.3
AASF:
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

6.11% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	75
Fan Energy	21	19
Pump Energy	0	0
Other	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	124

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	53,166.42 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	6,844.00 Thousand Rp/Month	262,940.67 Thousand Rp

Design **Energy 8.18%** Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.4
AASF:
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U-value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

8.18% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	72
Fan Energy	21	18
Pump Energy	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	121

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 51,970.08 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction 8,574.00 Thousand Rp/Month	Incremental Cost 236,747.00 Thousand Rp
--	---	---	---	--	--

Design Energy 10.24% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.5
AASF:
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

10.24% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	83	69
Cooling Energy	21	17
Fan Energy	28	28
Pump Energy	0	0
Lighting	0	0
Computers	0	0
Food Court/ Kitchenette	0	0
Total	132	118

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
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DASHBOARD | PRELIMINARY | VERSION 2.1.5 | FILE | SAVE

Total Subproject Floor Area 4,000.00 m ²	Final Energy Use 57,951.79 kWh/Month	Final Water Use 777.48 m ³ /Month	Base Case Utility Cost 93,491.07 Thousand Rp/Month	Utility Cost Reduction -74.00 Thousand Rp/Month	Incremental Cost 11,131.58 Thousand Rp
---	--	--	--	---	--

Design | **Energy -0.09%** | Water 0.00% | Materials 0.00% | Operations

Energy Efficiency Measures
Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U-value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3

-0.09% ENERGY SAVINGS

Category	Base Case	Improved Case
Heating Energy	0	0
Cooling Energy	83	82.91
Fan Energy	21	21
Pump Energy	0	0
Lighting	28	28
Computers	0	0
Food Court/ Kitchenette	0	0
Other	0	0
Total	112	111.91

▼ Show the Carbon Emissions/Offset

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Modul Edge 3

NAMA : MICKO KUSNADI
NIM : 215060507111060

MODULE 3A

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	23,226.87 kWh/Month	777.48 m ³ /Month	43,360.07 Thousand Rp/Month	0.00 Thousand Rp/Month	10,531.41 Thousand Rp

Design Energy 5.62% Water 0.00% Materials 0.00% Operations

Location

Project Details

Subproject Details

Building Data

Building Orientation

	Building Lengths	User Entry (m)
Floor Plan Depth*** (m)	Default	
30	North 0.0	North
Main Orientation***	South 0.0	South
Southeast	East 0.0	East
	West 0.0	West
	Northeast 26.7	Northeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	23,226.87 kWh/Month	777.48 m ³ /Month	43,360.07 Thousand Rp/Month	0.00 Thousand Rp/Month	11,131.58 Thousand Rp

HIDE RESULTS

Design Energy 6.39% Water 0.00% Materials 0.00% Operations

- Location
- Project Details
- Subproject Details
- Building Data

Building Orientation



Floor Plan Depth*** (m)
20

Main Orientation***
Southeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

Building Lengths	User Entry (m)
Default	
North	0:0
South	0:0
East	0:0
West	0:0
Northeast	20.0

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	23,226.87 kWh/Month	777.48 m ³ /Month	43,360.07 Thousand Rp/Month	0.00 Thousand Rp/Month	16,650.45 Thousand Rp

HIDE RESULTS

Design Energy 10.65% Water 0.00% Materials 0.00% Operations

Location

Project Details

Subproject Details

Building Data

Building Orientation

	Building Lengths	User Entry (m)
Floor Plan Depth*** (m) 10	Default	
Main Orientation*** Southeast	North 0:0	North
	South 0:0	South
	East 0:0	East
	West 0:0	West
	Northeast 10.0	Northeast

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

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SAVE

Payback in Years	Operational CO ₂ Savings	Embodied Energy Savings	Energy Savings	Water Savings	Carbon Emissions
1.50	57.51	0.00	65.47	0.00	552.90
<small>Yrs.</small>	<small>tCO₂/Year</small>	<small>MJ/m²</small>	<small>MWh/Year</small>	<small>m³/Year</small>	<small>tCO₂/Year</small>

HIDE RESULTS ▾

Design
Energy 9.42%
Water 0.00%
Materials 0.00%
Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

9.42% ENERGY SAVINGS

Base

Cooling Energy: 83.00 (48%)

Total: 173.00

Virtual Energy for Comfort*

Improved Case

Virtual Energy for Comfort*

● Heating Energy	● Cooling Energy	● Fan Energy	● Pump Energy
● Other	● Lighting	● Computers	● Food Court/ Kitchenette

ENERGY(kWh/m²/Year)

⌵ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 <small>m²</small>	48,898.35 <small>kWh/Month</small>	777.48 <small>m³/Month</small>	93,491.07 <small>Thousand Rp/Month</small>	13,015.00 <small>Thousand Rp/Month</small>	166,244.99 <small>Thousand Rp</small>

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HIDE RESULTS ^

Design Energy 15.55% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE01* Reduced Window to Wall Ratio - WWR of 30%
- OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7
- OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7
- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5

15.55% ENERGY SAVINGS

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Category	Base Case	Improved Case
Heating Energy	21	0
Cooling Energy	83	68
Fan Energy	10	10
Pump Energy	0	0
Other	0	0
Lighting	28	28
Computers	28	28
Food Court/ Kitchenette	0	0

⌵ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	51,127.12 kWh/Month	777.48 m ³ /Month	93,491.07 Thousand Rp/Month	9,793.00 Thousand Rp/Month	321,358.39 Thousand Rp

HIDE RESULTS

Design Energy 11.70% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3
- OFE13* Air Conditioning with Water Cooled Chiller - COP of 6.1

11.70% ENERGY SAVINGS

ENERGY(kWh/m²/Year)

● Heating Energy ● Cooling Energy ● Fan Energy ● Pump Energy
● Other ● Lighting ● Computers ● Food Court/ Kitchenette

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 <small>m²</small>	42,181.66 <small>kWh/Month</small>	1,035.34 <small>m³/Month</small>	93,491.07 <small>Thousand Rp/Month</small>	19,482.66 <small>Thousand Rp/Month</small>	321,358.39 <small>Thousand Rp</small>

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HIDE RESULTS ▾

Design ✔ Energy 27.15% Water -33.17% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- OFE05 Insulation of Roof : U-value of 0.393
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3
- OFE13* Air Conditioning with Water Cooled Chiller - COP of 6.1

27.15% Meets EDGE Energy Standard

Category	Value (kWh/m ² /Year)
Heating Energy	0
Cooling Energy	83
Fan Energy	21
Other	0
Lighting	28
Computers	0
Food Court/ Kitchenette	0
Pump Energy	0
Total	83

ENERGY(kWh/m²/Year)

⌵ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 <small>m²</small>	70,937.71 <small>kWh/Month</small>	661.00 <small>m³/Month</small>	13,720.20 <small>Thousands MNT/Month</small>	2.00 <small>Thousands MNT/Month</small>	3,802.04 <small>Thousands MNT</small>

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Design
Energy 0.00%
Water 0.00%
Materials 0.00%
Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

OFE01* Reduced Window to Wall Ratio - WWR of 30%

OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7

OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7

OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58

OFE05 Insulation of Roof : U-value of 0.162

OFE06 Insulation of External Walls : U-value of 0.2

OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45

OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28

OFE09 Natural Ventilation with Operable Windows and No A/C

OFET1 Reduce Envelope Area Infiltration by 50%

OFE10 Ceiling Fans for Office Spaces

0.00% ENERGY SAVINGS

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Category	Base Case	Improved Case
Heating Energy	96	96
Cooling Energy	10	13
Fan Energy	0	0
Pump Energy	0	0
Other	0	0
Lighting	30	30
Computers	0	0
Food Court/ Kitchenette	0	0
Total	200	130

⌵ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	71,737.57 kWh/Month	661.00 m ³ /Month	13,720.20 Thousands MNT/Month	-114.00 Thousands MNT/Month	81,401.81 Thousands MNT

Design Energy -1.13% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE06 Insulation of External Walls : U-value of 0.2
- OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE10 Ceiling Fans for Office Spaces
- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3
- OFE13* Air Conditioning with Water Cooled Chiller - COP of 6.1
- OFE14* Ground Source Heat Pump - COP of 3.4
- OFE15 Absorption Chiller Powered by Waste Heat - COP of 0.7

COP

-1.13% ENERGY SAVINGS

ENERGY(kWh/m²/Year)

- Other
- Lighting
- Computers
- Food Court/ Kitchenette

▼ Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	65,348.44 kWh/Month	661.00 m ³ /Month	13,720.20 Thousands MNT/Month	1,297.00 Thousands MNT/Month	3,862.36 Thousands MNT

Design **Energy 7.88%** Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE11* Variable Refrigerant Flow (VRF) Cooling System - COP of 3.5
- OFE12* Air Conditioning with Air Cooled Screw Chiller - COP of 3.3
- OFE13* Air Conditioning with Water Cooled Chiller - COP of 6.1
- OFE14* Ground Source Heat Pump - COP of 3.4
- OFE15 Absorption Chiller Powered by Waste Heat - COP of 0.7
- OFE16 Radiant Cooling and Heating System - COP of RC 2.92
- OFE17 Recovery of Waste Heat from the Generator for Space Heating
- OFE18 Variable Speed Drives on the Fans of Cooling Towers
- OFE19 Variable Frequency Drives in AHUs
- OFE20 Variable Speed Drives Pumps
- OFE21 Sensible Heat Recovery from Exhaust Air - Efficiency of 60%

7.88% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	73,770.23 kWh/Month	661.00 m ³ /Month	13,720.20 Thousands MNT/Month	-646.00 Thousands MNT/Month	6,555.58 Thousands MNT

HIDE RESULTS

Design Energy -4.00% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE16 Radiant Cooling and Heating System - COP of RC 2.92
- OFE17 Recovery of Waste Heat from the Generator for Space Heating
- OFE18 Variable Speed Drives on the Fans of Cooling Towers
- OFE19 Variable Frequency Drives in AHUs
- OFE20 Variable Speed Drives Pumps
- OFE21 Sensible Heat Recovery from Exhaust Air - Efficiency of 60%
- OFE22 High-Efficiency Boiler for Space Heating - Efficiency of 90%
% Eff.
- OFET2 Room Heating Controls with Thermostatic Valves
- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces

-4.00% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	67,796.31 kWh/Month	661.00 m ³ /Month	13,720.20 Thousands MNT/Month	455.00 Thousands MNT/Month	5,834.41 Thousands MNT

Design Energy 4.43% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE16 Radiant Cooling and Heating System - COP of RC 2.92
- OFE17 Recovery of Waste Heat from the Generator for Space Heating
- OFE18 Variable Speed Drives on the Fans of Cooling Towers
- OFE19 Variable Frequency Drives in AHUs
- OFE20 Variable Speed Drives Pumps
- OFE21 Sensible Heat Recovery from Exhaust Air - Efficiency of 60%
- OFE22 High-Efficiency Boiler for Space Heating - Efficiency of 90%
- OFET2 Room Heating Controls with Thermostatic Valves
- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces
- OFF26 Lighting Controls for Corridors and Staircases

4.43% ENERGY SAVINGS

Show the Carbon Emissions/Offset

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SEMESTER GANJIL 2024/2025

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	44,398.82 kWh/Month	661.00 m ³ /Month	20,279.20 \$/Month	872.00 \$/Month	1,022.45 \$

HIDE RESULTS

Design Energy 4.47% Water 0.00% Materials 0.00% Operations

Floor Plan Depth*** (m)	30	Building Lengths	User Entry (m)
Main Orientation***	North	Default	
*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.			
		North	North
		South	South
		East	East
		West	West
		Northeast	Northeast
		Northwest	Northwest
		Southeast	Southeast
		Southwest	Southwest

MODULE 4A

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	44,533.92 kWh/Month	661.00 m ³ /Month	20,508.20 \$/Month	1,045.00 \$/Month	575.89 \$

HIDE RESULTS

Design Energy 5.30% Water 0.00% Materials 0.00% Operations

Floor Plan Depth*** (m)	20	Building Lengths	User Entry (m)
Main Orientation***	North	Default	
*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.		North	North
		40.0	
		South	South
		40.0	
		East	East
		20.0	
		West	West
		20.0	
		Northeast	Northeast
		0.0	
		Northwest	Northwest
		0.0	
		Southeast	Southeast
		0.0	
		Southwest	Southwest
		0.0	

✓ Saved successfully

MODULE 4A

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	47,433.33 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	1,897.00 \$/Month	-318.00 \$

HIDE RESULTS

Design Energy 8.71% Water 0.00% Materials 0.00% Operations

Floor Plan Depth*** (m)	10	Building Lengths	User Entry (m)
Main Orientation***	North	Default	
		North	80.0
		South	80.0
		East	10.0
		West	10.0
		Northeast	0.0
		Northwest	0.0
		Southeast	0.0
		Southwest	0.0

*** These parameters will be used to estimate building dimensions. If the exact details of the dimensions and orientation are available, then complete the User Entry fields in the Building Lengths section. The orientation of the building will have a direct effect on energy consumption.

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MODULE 4B

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	45,391.47 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	2,753.00 \$/Month	17,761.92 \$

Design Energy 12.64% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces
- OFE26 Lighting Controls for Corridors and Staircases
- OFE27 Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins
- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 25% of Total Energy Use
- OFE31 Other Renewable Energy for Electricity Generation
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

12.64% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	51,606.45 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	147.00 \$/Month	5,813.39 \$

HIDE RESULTS

Design Energy 0.68% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces
- OFE26 Lighting Controls for Corridors and Staircases
- OFE27 Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins
- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 25% of Total Energy Use
- OFE31 Other Renewable Energy for Electricity Generation
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

0.68% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	51,912.83 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	19.00 \$/Month	444.59 \$

HIDE RESULTS

Design Energy 0.09% Water 0.00% Materials 0.00% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces
- OFE26 Lighting Controls for Corridors and Staircases
- OFE27 Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins
- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 25% of Total Energy Use
- OFE31 Other Renewable Energy for Electricity Generation
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

0.09% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

MODULE 4B

The screenshot displays the Edge Buildings software interface for a project named "Offices" at Brawijaya University. The browser address bar shows the URL "app.edgebuildings.com/project/offices". The interface includes a navigation sidebar on the left with icons for home, search, and other functions. The main content area features a dashboard with key performance indicators (KPIs) and a list of energy efficiency measures.

Dashboard Summary:

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	51,031.80 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	388.00 \$/Month	2,544.59 \$

Energy Efficiency Measures:

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE23 Air Economizers During Favorable Outdoor Conditions
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE25 Energy-Saving Light Bulbs - External Spaces
- OFE26 Lighting Controls for Corridors and Staircases
- OFE27 Occupancy Sensors in Bathrooms, Conference Rooms, and Closed Cabins
- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 25% of Total Energy Use
- OFE31 Other Renewable Energy for Electricity Generation
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

1.78% ENERGY SAVINGS

Show the Carbon Emissions/Offset

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.

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MODULE 4C

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Offices

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	25,167.98 kWh/Month	783.12 m ³ /Month	22,576.20 \$/Month	11,084.46 \$/Month	61,666.98 \$

HIDE RESULTS

Design **Energy 51.56%** Water -18.47% Materials 0.57% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 10% of Total Energy Use
% of Annual El... Capacity (kWp)
- OFE31 Other Renewable Energy for Electricity Generation
- OFE32 Offsite Renewable Energy Procurement - Equal to 100% of total Operational CO₂
- OFE33 Carbon Offset - 100% of Total CO₂
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

*Indicates a measure that must be ticked and a value entered, whether or not it contributes positively to savings. OFE01 is required; include only those asterisked systems and solutions that are present.

51.56% Meets EDGE Energy Standard **EDGE ADVANCED**

Hide the Carbon Emissions/Offset

Carbon Emissions: 112.90 tCO₂/Year

Offsite Offset	0
Building Emissions	113

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

SAVE NEXT STEP: WATER

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Brawijaya University

DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	22,371.54 kWh/Month	783.12 m ³ /Month	22,576.20 \$/Month	12,257.46 \$/Month	90,374.12 \$

HIDE RESULTS

Design **Energy 56.94%** Water -18.47% Materials 0.57% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 20% of Total Energy Use
% of Annual El... Capacity (kWp)
- OFE31 Other Renewable Energy for Electricity Generation
- OFE32 Offsite Renewable Energy Procurement - Equal to 100% of total Operational CO2
- OFE33 Carbon Offset - 100% of Total CO2
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

*Indicates a measure that must be ticked and a value entered, whether or not it contributes positively to savings. OFE01 is required; include only those asterisked systems and solutions that are present.

56.94% Meets EDGE Energy Standard **EDGE ADVANCED**

Hide the Carbon Emissions/Offset

Carbon Emissions: 100.40 tCO₂/Year

Offsite Offset	100
Building Emissions	100.40

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

SAVE Saved successfully

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	0.00 kWh/Month	783.12 m ³ /Month	22,576.20 \$/Month	21,636.46 \$/Month	320,031.20 \$

HIDE RESULTS

Design **Energy 100.00%** Water -18.47% Materials 0.57% Operations

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

- OFE28 Occupancy Sensors in Open Offices
- OFE29 Daylight Photoelectric Sensors for Internal Spaces
- OFE30 Solar Photovoltaics - 100% of Total Energy Use
% of Annual El... Capacity (kWp)
- OFE31 Other Renewable Energy for Electricity Generation
- OFE32 Offsite Renewable Energy Procurement - Equal to 100% of total Operational CO2
- OFE33 Carbon Offset - 100% of Total CO2
- OFET3 Consumption Based Energy Meters for Both Cooling and Heating Energy
- OFET4 Smart Energy Meters for Electrical Energy

*Indicates a measure that must be ticked and a value entered, whether or not it contributes positively to savings. OFE01 is required; include only those asterisked systems and solutions that are present.

100.00% Meets EDGE Energy Standard **EDGE ADVANCED**

Hide the Carbon Emissions/Offset

Carbon Emissions: 0.00 tCO₂/Year

● Offsite Offset ● Building Emissions

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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FAKULTAS TEKNIK
UNIVERSITAS BRAWIJAYA
SEMESTER GANJIL 2024/2025

Modul Edge 5

NAMA : MICKO KUSNADI
NIM : 215060507111060

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SAVE

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	51,995.79 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	-16.00 \$/Month	144.59 \$

⏪ ⏩

HIDE RESULTS ▾

Design
Energy -0.07%
Water 0.00%
Materials 17.23%
Operations

Materials Efficiency Measures

Choose building material options to achieve savings of at least 20%, indicating thickness.

Floor Slabs
⋮

In-Situ Concrete with >30% PFA
▾

OFM01*

Thickness (mm)

Steel Rebar (kg/m²)

Roof Construction
⋮

Type 1

In-Situ Reinforced Concrete Slab
▾

OFM02*

Proportion %

Thickness (mm)

Steel Rebar (kg/m²)

External Walls
⋮

Type 1

Common Brick Wall with Internal & External Plaster
▾

OFM03*

Proportion %

Thickness (mm)

Internal Walls
⋮

17.23% EMBODIED ENERGY SAVINGS

100

Component	Base Case (MJ/m ²)	Improved Case (MJ/m ²)
Floor Slabs	1148	605
Roof Construction	230	230
External Walls	967	967
Internal Walls	377	377
Flooring	377	377
Windows	377	377
Insulation	0	0

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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SAVE

Total Subproject Floor Area

4,000.00
m²

Final Energy Use

51,995.79
kWh/Month

Final Water Use

661.00
m³/Month

Base Case Utility Cost

22,576.20
\$/Month

Utility Cost Reduction

-16.00
\$/Month

Incremental Cost

144.59
\$

⏪ ⏩ HIDE RESULTS ▾

Design Energy -0.07% Water 0.00% Materials 21.48% Operations

Materials Efficiency Measures

Choose building material options to achieve savings of at least 20%, indicating thickness.

Floor Slabs

Concrete Filler Slab ▾

OFM01*

	Thickness (mm)	Steel Rebar (kg/m ²)
	<input type="text"/>	<input type="text"/>

Roof Construction
Type 1

In-Situ Reinforced Concrete Slab ▾

OFM02*

Proportion %	Thickness (mm)	Steel Rebar (kg/m ²)
<input type="text" value="100"/>	<input type="text"/>	<input type="text"/>

External Walls
Type 1

Common Brick Wall with Internal & External Plaster ▾

OFM03*

Proportion %	Thickness (mm)
<input type="text" value="100"/>	<input type="text"/>

Internal Walls

21.48% Meets EDGE Material Standard

☰ ☰

Base Case vs Improved Case

Category	Base Case (MJ/m²)	Improved Case (MJ/m²)
Floor Slabs	1148	471
Roof Construction	230	230
External Walls	967	967
Internal Walls	0	0
Flooring	377	377
Windows	377	377
Insulation	0	0
Total	3148	1686

Legend: ● Floor Slabs ● Roof Construction ● External Walls ● Internal Walls ● Flooring ● Windows ● Insulation

EMBODIED ENERGY(MJ/m²)

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SAVE

Offices
Brawijaya University

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00	51,391.39	661.00	22,576.20	237.00	-993.99
m ²	kWh/Month	m ³ /Month	\$/Month	\$/Month	\$

HIDE RESULTS ▾
⏪ ⏩

Design Energy 1.09% Water 0.00% ✔ Materials 26.30% Operations

Materials Efficiency Measures
Choose building material options to achieve savings of at least 20%, indicating thickness.

Floor Slabs

OFM01* **In-Situ Reinforced Concrete Slab** ▾

	Thickness (mm)	Steel Rebar (kg/m ²)
	<input type="text"/>	<input type="text"/>

Roof Construction
Type 1

OFM02* **In-Situ Reinforced Concrete Slab** ▾

Proportion %	Thickness (mm)	Steel Rebar (kg/m ²)
<input type="text" value="100"/>	<input type="text"/>	<input type="text"/>

External Walls
Type 1

OFM03* **Cellular Light Weight Concrete Blocks** ▾

Proportion %	Thickness (mm)
<input type="text" value="100"/>	<input type="text"/>

Internal Walls

26.30% Meets EDGE Material Standard

☰

Component	Base Case (MJ/m ²)	Improved Case (MJ/m ²)
Floor Slabs	1148	1148
Roof Construction	230	230
External Walls	967	230
Internal Walls	377	377
Flooring	377	377
Windows	377	377
Insulation	0	0
Total	3149	2148

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

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SAVE

Offices
Brawijaya University

Total Subproject Floor Area	Final Energy Use	Final Water Use	Base Case Utility Cost	Utility Cost Reduction	Incremental Cost
4,000.00 m ²	53,561.77 kWh/Month	661.00 m ³ /Month	22,576.20 \$/Month	-673.00 \$/Month	3,094.65 \$

⏪ ⏩

Design Energy -3.09% Water 0.00% ✔ **Materials 26.84%** Operations

Materials Efficiency Measures

Choose building material options to achieve savings of at least 20%, indicating thickness.

26.84% Meets EDGE Material Standard

📄

Floor Slabs

OFM01* In-Situ Reinforced Concrete Slab ▾

	Thickness (mm)	Steel Rebar (kg/m ²)
	<input type="text"/>	<input type="text"/>

Roof Construction
Type 1

OFM02* In-Situ Reinforced Concrete Slab ▾

Proportion %	Thickness (mm)	Steel Rebar (kg/m ²)
<input type="text" value="100"/>	<input type="text"/>	<input type="text"/>

External Walls
Type 1

OFM03* Compressed Stabilized Earth Blocks ▾

Proportion %	Thickness (mm)
<input type="text" value="100"/>	<input type="text"/>

Internal Walls

26.84% Meets EDGE Material Standard

Component	Base Case (MJ/m ²)	Improved Case (MJ/m ²)
Floor Slabs	1148	1148
Roof Construction	230	230
External Walls	967	230
Internal Walls	377	377
Flooring	377	377
Windows	377	377
Insulation	0	0
Total	3094.65	1148

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.



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Modul Edge 6

NAMA : MICKO KUSNADI
NIM : 215060507111060



Profil Objek Arsitektur

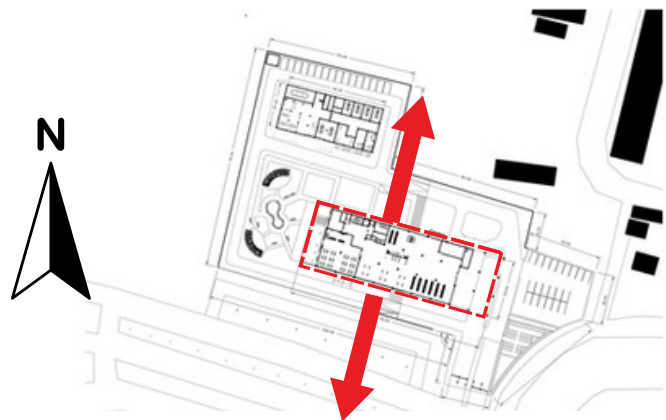
Pusat Perpustakaan Ivory adalah perpustakaan umum di kota Surabaya yang berfungsi sebagai tempat perlindungan untuk pengetahuan dan eksplorasi intelektual. Ivory melambangkan keanggunan dan keindahan murni dari fasad putihnya, dihiasi dengan jendela kaca yang menarik yang mengundang pencari pengetahuan ke dalam ranah pencerahan.

LOCATION:
 MAYJEND. JONOSEWOJO NO.2, BABATAN STREET,
 KEC. WIYUNG, SURABAYA CITY, JAVA EAST 60227



Orientasi Bangunan

Bangunan dengan sisi terpanjang cenderung menghadap ke arah utara dan selatan agar mengurangi paparan sinar matahari yang berlebihan terhadap gedung perpustakaan.



Self Shading

Bentuk bangunan yang menjorok keluar memberi fitur self-shading bagi lantai di bawahnya.



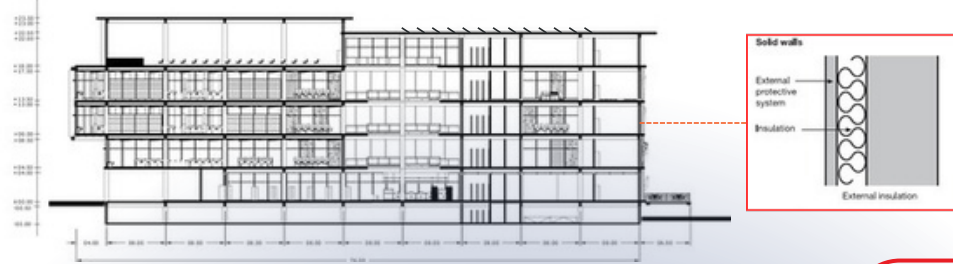
Penggunaan Atrium

Penggunaan atrium pada atap dan fasad bangunan dapat mengoptimalkan masuknya cahaya matahari pada pagi-sore dimana sesuai dengan aktivitas dan jam operasional perpustakaan.

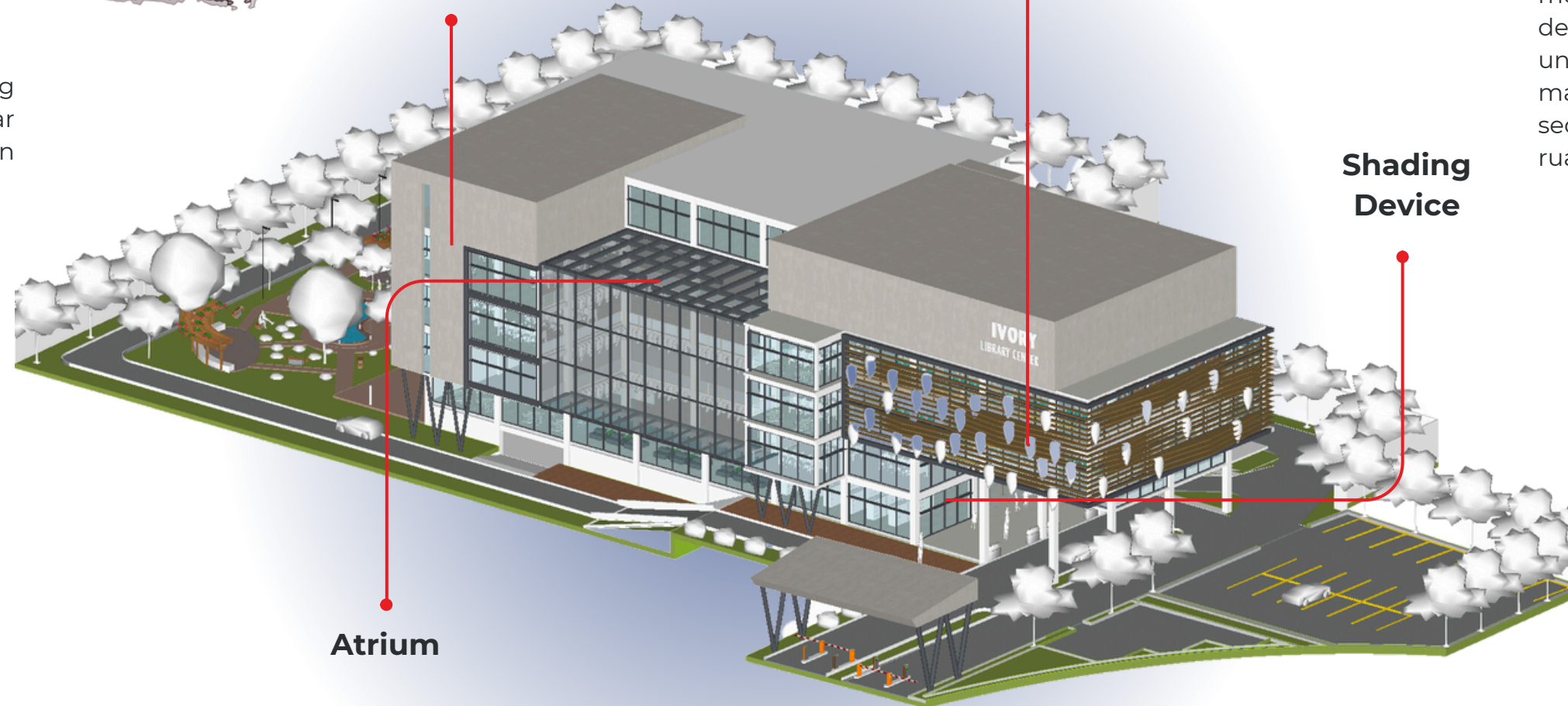


Insulated Walls

Insulated walls mengurangi kehilangan panas, meningkatkan efisiensi energi, dan menciptakan kenyamanan bagi penghuni dengan menstabilkan suhu interior dan mengurangi kebisingan.



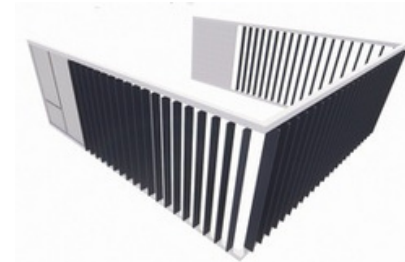
Insulated Walls



Atrium

Secondary Skin

Fasad perpustakaan didominasi oleh secondary skin yang terdiri dari vertical shading untuk meminimalisir radiasi matahari yang masuk ke dalam ruangan secara berlebihan.



Secondary Skin

Shading Device

Shading Device

Detail jendela juga didesain memiliki horizontal shading device yang berguna juga untuk meminimalisir radiasi matahari yang masuk secara berlebihan ke dalam ruangan.



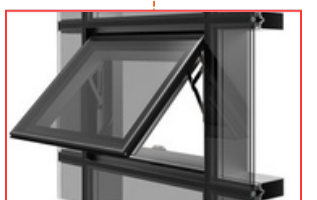
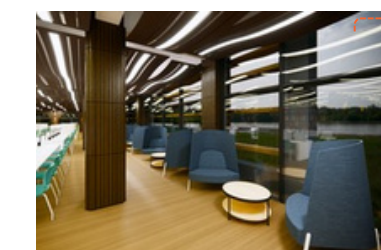
Ceiling Fan

Penggunaan kipas langit-langit untuk membantu sirkulasi udara, memberikan kenyamanan, dan mendinginkan ruangan dengan penggunaan energi yang minim.



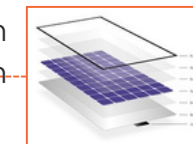
Natural Ventilation

Penggunaan ventilasi kaca jendela yang dapat dibuka pada perpustakaan memungkinkan terjadinya sirkulasi udara alami yang baik yang dapat meningkatkan kualitas udara di dalam ruang.



Solar Hot Water

Solar panel diinstalasi pada Rooftop perpustakaan sebagai tenaga alternatif listrik. Solar panel dihadapkan ke arah timur untuk memaksimalkan penangkapan energi surya.



PROFIL BANGUNAN

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DASHBOARD

PRELIMINARY

VERSION 2.1.5

FILE

SAVE

Total Subproject Floor Area
4,500.00
m²

Final Energy Use
0.00
kWh/Month

Final Water Use
542.73
m³/Month

Base Case Utility Cost
48,659.65
Thousand Rp/Month

Utility Cost Reduction
41,833.26
Thousand Rp/Month

Incremental Cost
2,941,891.30
Thousand Rp



HIDE RESULTS

Design Energy 75.86% Water 37.27% Materials 38.26% Operations

Location

Country

Indonesia

City

Jakarta



Project Details

Subproject Details

Building Data

	Default	User Entry
Gross Internal Area Excluding Car Parking (m ²)	Occupancy Density (m ² /Person)	Occupancy Density (m ² /Person)
4,500	10	
Floors Above Grade (no.)	Operational Hours (Hours/Day)	Operational Hours (Hours/Day)
3	10	

ENERGY SAVING 75,86%

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Creating Markets, Creating Opportunities

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SAVE

Total Subproject Floor Area

4,500.00 m²

Final Energy Use

0.00 kWh/Month

Final Water Use

542.73 m³/Month

Base Case Utility Cost

48,659.65 Thousand Rp/Month

Utility Cost Reduction

41,833.26 Thousand Rp/Month

Incremental Cost

2,941,891.30 Thousand Rp

Design
Energy 75.86%
Water 37.27%
Materials 38.26%
Operations

HIDE RESULTS ▾

Energy Efficiency Measures

Choose energy efficiency measures to achieve savings of at least 20%.

OFE01* Reduced Window to Wall Ratio - WWR of 38.5%

North %	<input type="text"/>	South %	<input type="text"/>
East %	<input type="text"/>	West %	<input type="text"/>
Northeast %	<input type="text" value="20"/>	Northwest %	<input type="text" value="30"/>
Southeast %	<input type="text" value="50"/>	Southwest %	<input type="text" value="30"/>

OFE02 Reflective Paint/Tiles for Roof - Solar Reflectivity (albedo) of 0.7

OFE03 Reflective Paint for External Walls - Solar Reflectivity (albedo) of 0.7

OFE04 External Shading Devices - Annual Average Shading Factor (AASF) of 0.58

AASF

OFE05 Insulation of Roof : U-value of 0.21

W/m².K

OFE06 Insulation of External Walls : U-value of 0.47

W/m².K

OFE07 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45

OFE08 Higher Thermal Performance Glass : U- value of 1.95 W/m².K and SHGC of 0.28

75.86% Meets EDGE Energy Standard EDGE ADVANCED

Base Case	Virtual Energy for Comfort*	Improved Case	Virtual Energy for Comfort*
<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #ffc107; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; background-color: #fd7e14; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; background-color: #ff5722; margin-right: 5px;"></div> </div> <p style="font-size: 8px; margin-top: 5px;">7 28</p>	<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #007bff; margin-right: 5px;"></div> </div> <p style="font-size: 8px; margin-top: 5px;">104 26</p>	<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #007bff; margin-right: 5px;"></div> </div> <p style="font-size: 8px; margin-top: 5px;">-</p>	<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 20px; height: 20px; background-color: #007bff; margin-right: 5px;"></div> </div> <p style="font-size: 8px; margin-top: 5px;">39 10</p>

● Heating Energy
 ● Cooling Energy
 ● Fan Energy
 ● Pump Energy
 ● Other
 ● Lighting
 ● Computers
 ● Food Court/ Kitchenette

^ Hide the Carbon Emissions/Offset

Carbon Emissions: 0.00 tCO₂/Year

|


● Offsite Offset
 ● Building Emissions

*Virtual energy is the amount of energy that will be required based on the assumption that the office will eventually install air conditioning or heating.
 Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

ELEMENTS

- OFE01 Reduced Window to Wall Ratio - WWR of 26.12%
- OFE10 Ceiling Fans for Office Spaces
- OFE04 External Shading Devices
- OFE24 Energy-Saving Light Bulbs - Internal Spaces
- OFE05 Insulation of Roof : U-value of 0.393
- OFE26 Lighting Controls for Corridors and Staircases
- OFE06 Insulation of External Walls : U-value of 0.47
- OFE28 Occupancy Sensors in Open Offices
- OFE09 Natural Ventilation with Operable Windows and No A/C
- OFE30 Solar Photovoltaics - 30% of Total Energy Use

WATER SAVING 37,27%



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DASHBOARD
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VERSION 2.1.5 ▾
FILE ▾
SAVE

Offices
Brawijaya University

Total Subproject Floor Area 4,500.00 <small>m²</small>	Final Energy Use 0.00 <small>kWh/Month</small>	Final Water Use 542.73 <small>m³/Month</small>	Base Case Utility Cost 48,659.65 <small>Thousand Rp/Month</small>	Utility Cost Reduction 41,833.26 <small>Thousand Rp/Month</small>	Incremental Cost 2,941,891.30 <small>Thousand Rp</small>
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Design
Energy 75.86%
Water 37.27%
Materials 38.26%
Operations

HIDE RESULTS ▾

Water Efficiency Measures
Choose water efficiency measures to achieve savings of at least 20%.

- OFW01* Low-Flow Faucets in All Bathrooms - 2 L/min
- OFW02* Dual Flush for Water Closets in All Bathrooms - 6 L/first flush and 3 L/second flush

Single Flush/Flush Valve

High Volume Flush
 Low Volume Flush
- OFW03* Water-Efficient Urinals in All Other Bathrooms - 2 L/flush

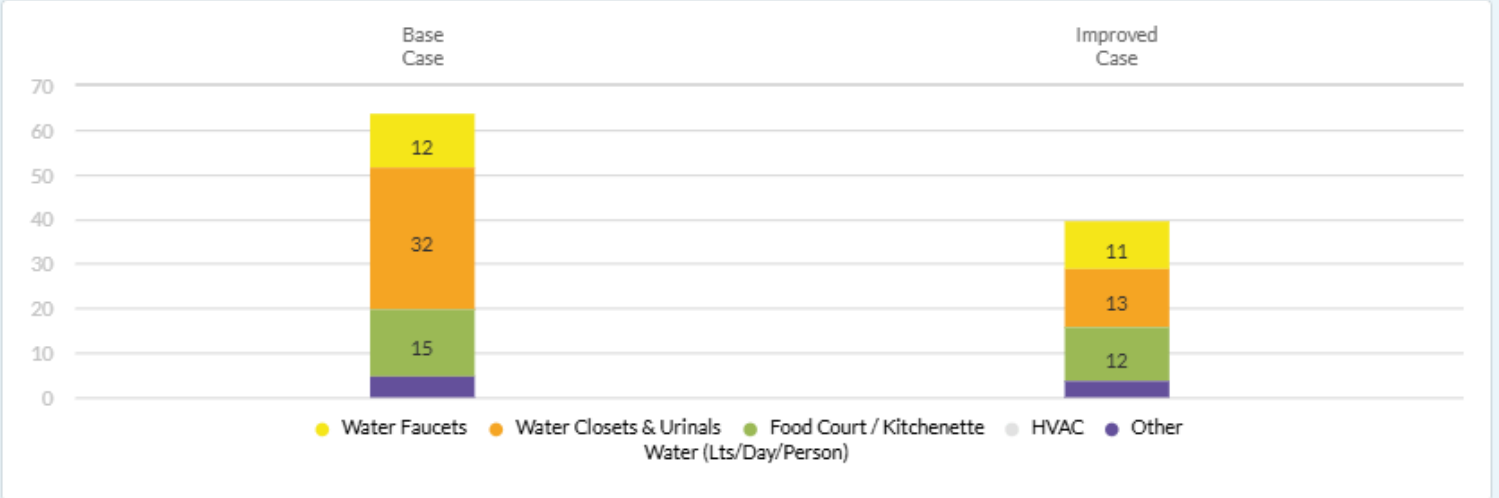
L/flush
- OFW04* Water-Efficient Faucets for Kitchen Sinks - 4 L/min
- OFW05 Condensate Water Recovery
- OFW06 Rainwater Harvesting System - 50% of Roof Area Used for Rainwater Collection

% of Roof Area Us...
- OFW07 Grey Water Treatment and Recycling System
- OFW08 Black Water Treatment and Recycling System

*Indicates a measure that must be ticked and a value entered, whether or not it contributes positively to savings.

SAVE
NEXT STEP: MATERIALS

37.27% Meets EDGE Water Standard



Category	Base Case (Lts/Day/Person)	Improved Case (Lts/Day/Person)
Water Faucets	12	11
Water Closets & Urinals	32	13
Food Court / Kitchenette	15	12
HVAC	0	0
Other	0	0
Total	62	34

Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

ELEMENTS

- OFW02 Dual Flush for Water Closets in All Bathrooms
- OFW03 Water-Efficient Urinals in All Other Bathrooms - 2 L/flush
- OFW06 Rainwater Harvesting System
- OFW07 Grey Water Treatment and Recycling System

MATERIAL SAVING 38,26%

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DASHBOARD PRELIMINARY VERSION 2.1.5 FILE SAVE

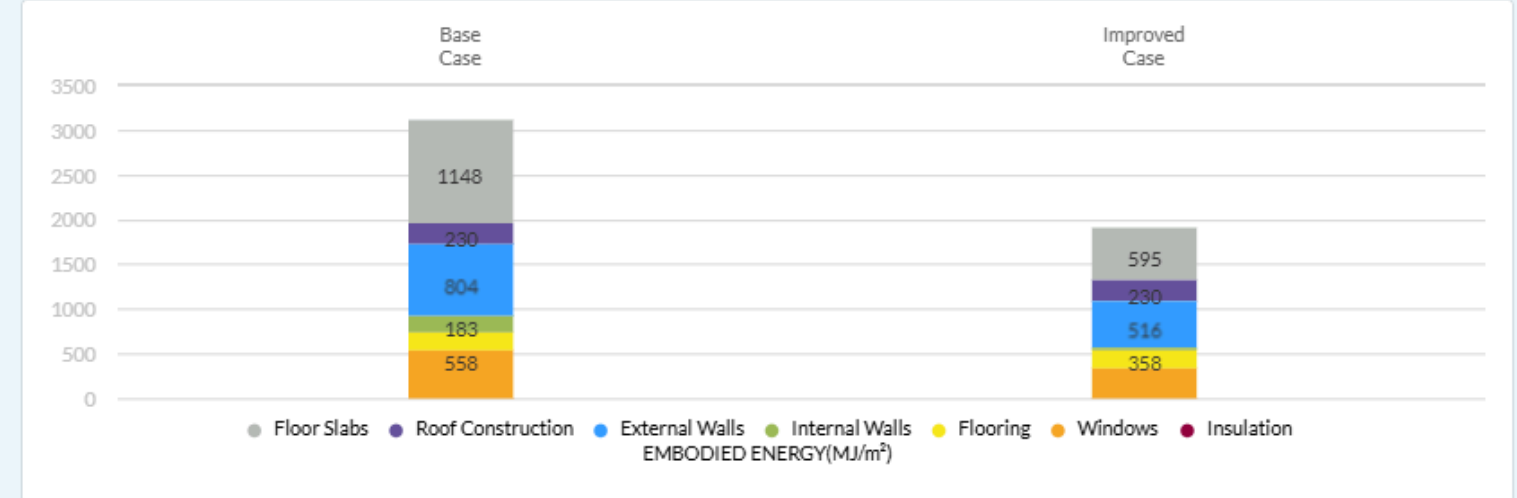
Total Subproject Floor Area 4,500.00 m ²	Final Energy Use 0.00 kWh/Month	Final Water Use 542.73 m ³ /Month	Base Case Utility Cost 48,659.65 Thousand Rp/Month	Utility Cost Reduction 41,833.26 Thousand Rp/Month	Incremental Cost 2,941,891.30 Thousand Rp
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Design Energy 75.86% Water 37.27% **Materials 38.26%** Operations

Materials Efficiency Measures

Choose building material options to achieve savings of at least 20%, indicating thickness.

38.26% Meets EDGE Material Standard



Disclaimer: EDGE is designed as comparative software and is not a design tool. Therefore predicted results for energy, water and materials may vary from actuals.

OFM01*	Floor Slabs Type 1 In-Situ Concrete with >25% GGBS	Thickness (mm)	Steel Rebar (kg/m ²)
OFM02*	Roof Construction Type 1 In-Situ Reinforced Concrete Slab	Proportion %	Thickness (mm) / Steel Rebar (kg/m ²)
OFM03*	External Walls Type 1 Aluminium Profile Cladding	Proportion %	
OFM04*	Internal Walls Type 1 Cellular Light Weight Concrete Blocks	Proportion %	Thickness (mm)

ELEMENTS

Floor Slabs In-Situ Reinforced Concrete Slab	Roof Construction Type 1 In-Situ Concrete with >25% GGBS	External Walls Type 1 Aluminium Profile Cladding	Internal Walls Type 1 Cellular Light Weight Concrete Blocks
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MICKO KUSNADI - 215060507111060