THIS CERTIFIES THAT

Innside Bangkok Sukhumvit

HAS ACHIEVED AN

EDGE PRELIMINARY CERTIFICATE

CERTIFICATE NUMBER

GP1-THA-21083110118163-P

Excellence In Design For Greater Efficiencies

Edge

Exemplifying achievement in the following areas:

31%

Energy Savings

24%

Water Savings

49%

Less Embodied Energy in Materials

1323.38 tCO_2/year

Operational CO_2 Emissions

592.01 tCO_2/year

Operational CO_2 Savings

DEVELOPED BY

ASSET WORLD CORP PUBLIC Co., Ltd.

CERTIFIED BY

Sintali-SGS

Thomas Saunders, Managing Director

DATE OF ISSUE: 21-DEC-2022

Sintali

path to a sustainable future

WORLD BANK GROUP

THE WORLD BANK IBRD • IDA

IFC International Finance Corporation

Excellence In Design For Greater Efficiencies

Edge

THIS CERTIFIES THAT

Innside Bangkok Sukhumvit
Sukhumvit Road
Phrakhanong Sub-district, Klongtoey District
Bangkok,
Thailand

DEVELOPED BY

ASSET WORLD CORP PUBLIC Co., Ltd.

HAS ACHIEVED AN

EDGE PRELIMINARY CERTIFICATE

CERTIFICATE NUMBER

GP1-THA-21083110118163-P

WAS AUDITED BY

Hai Nguyen Hang
EDGE Software Version: v2.1.5

CERTIFIED BY

Sintali-SGS

Thomas Saunders, Managing Director

Sintali
path to a sustainable future

DATE OF ISSUE

21-DEC-2022

DATE OF EXPIRY

20-DEC-2025

ENERGY MEASURES

Reduced Window-to-Wall Ratio
Exterior Shading Devices
Insulated Roof
Efficient Cooling System
Variable Speed Drive Pumps
Heat Pump for Water Heating
Efficient Interior Lighting
Submeters for Space Conditioning Systems

WATER MEASURES

Water-efficient Showerheads
Efficient Water Closets
Water-efficient Urinals
Efficient Water Closets
Water-efficient Faucets in Bathrooms
Water-efficient Dishwashers

MATERIALS

Material-efficient Floor Slabs - In-Situ Trough Concrete Slab
Material-efficient Roof Slab - In-Situ Trough Concrete Slab
Material-efficient Exterior Walls - In-Situ Reinforced Wall
Material-efficient Exterior Walls - Autoclaved Aerated Concrete Blocks
Material-efficient Interior Walls - Autoclaved Aerated Concrete Blocks
Material-efficient Interior Walls - Cement Fibre Boards on Metal Studs
Material-efficient Flooring - Vinyl Flooring
Material-efficient Flooring - Finished Concrete Floor

www.edgebuildings.com

The EDGE standard requires 20% efficiencies in energy, water and materials compared to a local benchmark. Predicted efficiencies are not a guarantee of future operational performance. Energy savings may be associated with virtual energy for comfort depending on the presence of heating and cooling systems. Virtual energy does not contribute savings to utility bills.

This certificate is issued by the Certifier based on information provided by the client and the audit by the Auditor, and is subject to the terms and conditions of the Certifier. Contact edge@ifc.org if the above measures are not consistent with your observation on the project.

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IFC International Finance Corporation

Project Details

Project Name
Innside Bangkok Sukhumvit

Number of Distinct Buildings
1

Number of EDGE Subproject(s) associated
1

Total Project Floor Area (㎡)
11,157.3

Project Owner Name
Israwut Insamorn

Project Owner Email
israwut.i@assetworldcorp-th.com

Project Owner Phone
Mobile 66 - 659868985

Share project name and basic information to potential investors or banks?
Yes

Address Line1
Sukhumvit Road

Address Line2
Phrakhanong Sub-district, Klongtoey District

City
Bangkok

State/ Province

Postal Code

Country
Thailand

Project Number
1000878347

Associated Subproject(s)
Total associated subprojects: 1
The complete list of Associated Subprojects is available in the last section of this document.

Subproject Details

Subproject Name
Innside Bangkok Sukhumvit

Property Name
Innside Bangkok Sukhumvit

Subproject Multiplier for the Project
1

Certification Stage
Preliminary

Status
Certified

Auditor
Hai Nguyen Hang

Certifier
Sintali-SGS

Address Line1
Sukhumvit Road

Address Line2
Phrakhanong Sub-district, Klongtoey District

City
Bangkok

State/ Province

Postal Code

Country
Thailand

Subproject Type
New Building

Location

Country
Thailand

City
Bangkok

Basic Parameters

Property Type*
Hotel

Star Rating
3-Star

Average Occupancy Rate* (%)
70

Irrigated Area (m^2)
✓ 1,000

In-house Laundry

✓ Banquet/Conference Facility

Breakfast Area Only (No Restaurant)

Health Spa

✓ Swimming Pool

Building Data

Floors Above Ground (no.)
33

Floors Below Ground (no.)
1

Total Guest/Bed Rooms (no.)
208

Default	*User Entry*
Guest Rooms/Apartment Area (m²)	
~~6,656~~	4,677.20
Front of House (m²)	
~~2,346~~	385.60
Corridors (m²)	
~~1,681~~	3,000
Conference/Banquet (m²)	
~~682~~	103.9
Back of House (m²)	
~~1,597~~	2,990.60

Gross Internal Area (m²)
11,157

Building Systems

Does the building design include an AC system?
Yes

Does the building design include a space heating system?
No

Key Assumptions for the Base Case

Default	*User Entry*
Fuel Used for Electric Generator Diesel	Diesel
Fuel Used for Hot Water Generation Electricity	Electricity
Fuel Used for Cooking Electricity	Electricity
Fuel Used for Space Heating Electricity	Electricity
% of Electricity Generation Using Diesel (% Ave. Yrly) 5%	
Cost of Electricity ($/kWh) 0.04	
Cost of Diesel Fuel ($/L) 0.87	
Cost of Natural Gas ($/L) 0.17	
Cost of Water ($/kL) 0.2	
CO_2 Emissions from Electricity Generation (g/kWh) 389.6	
Window to Wall Ratio (%) 55%	
Roof U-value (W/m².K) 1.99	
Wall U-value (W/m².K) 1.86	
Glass U-value (W/m².K) 5.75	
Glass SHGC (Factor) 0.50	
Cooling System ASHRAE 90.1.2007	ASHRAE 90.1.2007
AC System Efficiency (COP) 2.66	
Heating System ASHRAE 90.1.2007	ASHRAE 90.1.2007
Heating System Efficiency (COP) 2.66	

Default	*User Entry*
Jan 25.9	
Feb 27.4	
Mar 28.7	
Apr 29.7	
May 29.2	
Jun 28.7	
Jul 28.3	
Aug 28.1	
Sep 27.8	
Oct 27.6	
Nov 26.9	
Dec 25.6	
Latitude (Deg) 13.8	
Average Annual Rainfall (Deg) 1397.00	

Results

Final Energy Use (kWh/Month)
274,242

Final Water Use (m^3/Month)
2,352

Base Case Utility Cost ($/Month)
19,682.56

Utility Cost Reduction ($/Month)
5,927.82

Energy Savings (MWh/Year)
1,472.18

Embodied Energy in Materials Savings (GJ)
14,799.94

Carbon Emissions (tCO_2/Year)
1,323.38

Operational CO_2 Savings (tCO_2/Year)
592.01

Embodied Energy Savings (MJ/m^2)
1,326.48

Incremental Cost ($)
-170,815.42

Payback in Years (Yrs.)
0.00

Water Savings (m^3/Year)
-892.53

Total Subproject Floor Area (m^2)
11,157.3

Number of People Impacted (No./Year)
90418

ENERGY SAVINGS

Energy Efficiency Measures 30.91%

Meets EDGE Energy Standard

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

Carbon Emissions: 1323.38 tCO_2/Year

Energy Efficiency Measures 30.91%

- ✓ HTE01 Reduced Window to Wall Ratio - WWR of 24.85%
  WWR % 24.85
- ✓ HTE02 External Shading Devices - Annual Average Shading Factor (AASF) of 0.13
  AASF 0.13
- ✓ HTE03 Insulation of Roof : U-value of 0.54
  W/m².K 0.54
- HTE04 Insulation of External Walls : U-value of 0.42
- HTE05 Low-E Coated Glass : U-value of 3 W/m².K and SHGC of 0.45
- HTE06 Higher Thermal Performance Glass : U-value of 1.98 W/m².K and SHGC of 0.28
- HTE07 Natural Ventilation - Corridors
- HTE08 Natural Ventilation - Guest Rooms/Apartment Area with Auto Controls
- HTE09 Variable Refrigerant Volume (VRV) Cooling System - COP of 3.5
- HTE10 Air Conditioning with Air Cooled Screw Chiller - COP of 3.2
- ✓ HTE11 Air Conditioning with Water Cooled Chiller - COP of 5.56
  COP 5.56
- HTE12 Ground Source Heat Pump - COP of 4.1
- HTE13 Absorption Chiller Powered by Waste Heat - COP of 0.7
- HTE14 Recovery of Waste Heat from the Generator for Space Heating
- HTE15 Variable Speed Drives on the Fans of Cooling Towers
- ✓ HTE16 Variable Speed Drives Pumps
- HTE17 Sensible Heat Recovery from Exhaust Air - Efficiency of 60%
- HTE18 High-Efficiency Condensing Boiler for Space Heating - Efficiency of 90%
- HTE19 High-Efficiency Boiler for Water Heating - Efficiency of 90%
- HTE20 Variable Speed Hoods with Automated Fan Controls
- HTE21 Preheat Water Using Waste Heat from the Generator
- HTE22 Heat Recovery from Grey Water - Efficiency of 30%
- HTE23 Heat Recovery from Laundry Waste Water - Efficiency of 30%
- ✓ HTE24 Heat Pump for Hot Water - COP of 4
- HTE25 Energy-Saving Light Bulbs - Internal Spaces
- HTE26 Energy-Saving Light Bulbs - External Spaces
- ✓ HTE27 Energy-Saving Light Bulbs - Back-of-House
- HTE28 Lighting Controls for Corridors
- HTE29 Occupancy Sensors in Bathrooms
- HTE30 Solar Hot Water Collectors - 20% of Hot Water Demand
- HTE31 Solar Photovoltaics - 25% of Total Energy Use
- HTE32 Other Renewable Energy for Electricity Generation
- HTE33 Offsite Renewable Energy Procurement - Equal to 100% of tota Operational CO2
- HTE34 Carbon Offset - 100% of Total CO_2
- ✓ HTET3 Consumption Based Energy Meters For Cooling Energy
- HTET4 Smart Energy Meters for Electrical Energy

WATER SAVINGS

Water Efficiency Measures 23.83%

Meets EDGE Water Standard

- ✓ HTW01 Low-Flow Showerheads - 6.25 L/min
  L/min 6.25
- ✓ HTW02 Low-Flow Faucets in Guest Rooms/Apartment Area - 8 L/min
  L/min 8.00
- ✓ HTW03 Dual Flush for Water Closets in Guest Rooms/Apartment Area - 4.5 L/first flush and 3 L/second flush
  High Volume Flush 4.5 Low Volume Flush 3
- HTW04 Water-Efficient Front Loading Washing Machine - 6 L/kg. of clothes
- ✓ HTW05 Water-Efficient Urinals in All Bathrooms - 1 L/flush
  L/flush 1
- ✓ HTW06 Dual Flush for Water Closets in All Other Bathrooms - 4.34 L/first flush and 3.18 L/second flush
  High Volume Flush 4.34 Low Volume Flush 3.18
- ✓ HTW07 Aerators & Auto Shut-off Faucets in All Other Bathrooms -2 L/min
  L/min 2.00
- ✓ HTW08 Water-Efficient Dishwashers - 5.3 L/Rack
- HTW09 Pre-rinse Valve for Rinsing Operation - 2.1 L/min
- HTW10 Water-Efficient Kitchen Faucets - 12.7 L/min
- HTW11 Water-Efficient Landscaping - 4 L/m²/day
- HTW12 Swimming Pool Cover
- HTW13 Condensate Water Recovery
- HTW14 Rainwater Harvesting System - 50% of Roof Area Used for Rainwater Collection
- HTW15 Grey Water Treatment and Recycling System
- HTW16 Black Water Treatment and Recycling System

EMBODIED ENERGY SAVINGS

Materials Efficiency Measures 49.15%

Meets EDGE Materials Standard

			Proportion %	Thickness (mm)	Steel Rebar (kg/m²)
HTM01	Floor Slabs In-Situ Reinforced Concrete Slab 350 mm Steel : 35 kg/m²	In-Situ Trough Concrete Slab		270	27.13
HTM02	Roof Construction In-Situ Reinforced Concrete Slab 350 mm Steel : 35 kg/m²	Type 1 In-Situ Trough Concrete Slab	100 %	300	40.4
HTM03	External Walls Common Brick Wall with Internal & External Plaster 200 mm	Type 1 Autoclaved Aerated Concrete Blocks Type 2 In-Situ Reinforced Wall	53 % 47 %	150 300	
HTM04	Internal Walls Common Brick Wall with Plaster on Both Sides 100 mm	Type 1 Cement Fibre Boards on Metal Studs Type 2 Autoclaved Aerated Concrete Blocks	21.5 % 78.5 %	 100	
HTM05	Flooring Ceramic Tile	Type 1 Vinyl Flooring Type 2 Finished Concrete Floor	75.85 % 24.1500000000000006 %		
HTM06	Window Frames Aluminium Single Glazing	Type 1 Aluminium	100 %		Single Glazing
HTM08	Roof Insulation No Insulation U : ~ 1.99 W/m²k	Glass Wool		50	

EDGE Certification Checklist

Building Type	Certification Stage	Subproject Name
Hospitality	Preliminary	Innside Bangkok Sukhumvit

Energy Measures		Preliminary Audit Requirements
HTE01	Reduced Window to Wall Ratio	✓ Calculation of "Glazing Area" and "Gross Exterior Wall Area" for each façade of the building and the average building area weighted WWR using the WWR calculator
		✓ All façade elevation drawings showing glazing dimensions and general building dimensions.
HTE02	External Shading Devices	✓ All façade elevation drawings highlighting the provision of horizontal and vertical shading devices.
		✓ Window details clearly showing the depth of the shading device and the calculation of the proportion.
		✓ If vertical and horizontal shading are not provided on all windows, the design team will need to provide the output from the solar shading design software.
HTE03	Insulation of Roof	✓ A roof construction detail drawing showing the type and thickness of insulation material. Ideally the roof detail drawing should be annotated with the U Value of the roof.
		✓ Calculations of U value either using the formula or U value calculators.
		✓ Manufacturer's data sheet of specified insulation material for the roof.
HTE11	Air Conditioning with Water Cooled Chiller	✓ Mechanical drawings with air conditioning schematics for all floors.
		✓ Manufacturer's data sheets for the Water cooled chiller system specifying COP information.
		✓ For systems including more than one chiller unit, the design team must provide the ton-weighted average COP calculation.
		✓ Mechanical layout drawings/schematic showing the location of the external and internal units.
HTE16	Variable Speed Drives Pumps	✓ Mechanical and electrical layout drawings showing the whole HVAC system and highlighting the use of VSD pumps.
		✓ Manufacturer's data sheets VSD pumps.
HTE24	Heat Pump for Hot Water	✓ Manufacturer's data sheets for the heat pumps system specified, including the water heater's COP information; and
		✓ For systems including more than one heat pump water heater unit, the design team must provide the average COP calculation; and
		✓ Mechanical and electrical layout drawings showing the heat pump system and the location of the water heaters.
HTE27	Energy-Saving Light Bulbs- Back-of-House	✓ Lighting schedule listing type and number of bulbs specified.
		✓ Electrical layout drawings showing the location and type of all installed bulbs.

HTET3	Consumption Based Energy Meters	✓ Electrical drawings/specifications showing the make and model of the electricity meters and the connection with the mains; and
		✓ Manufacturer's data sheets of the meters; or
		✓ Technical specifications for an equivalent online system.

Water Measures		Preliminary Audit Requirements
HTW01	Low-Flow Showerheads	✓ Plumbing drawings/specifications including make, model, and flow rate of the showerhead(s).
		✓ Manufacturer's data sheet for the showerhead(s) confirming the flow rate at 3 bar.
HTW02	Low-Flow Faucets in Guest Rooms/Apartment Area	✓ Plumbing drawings/specifications including make, model, and flow rate of the washbasin faucet(s) or flow restrictor(s).
		✓ Manufacturer's data sheet for faucet(s)/flow restrictor(s) confirming the flow rate at 3 bar.
HTW03	Efficient Flush for Water Closets in Guest Rooms/Apartment Area	✓ Plumbing drawings/specifications including make, model, and flush volumes of water closet(s).
		✓ Manufacturer's data sheet for water closet(s) with information on the flush volume of the main and reduced flushes.
HTW05	Water-Efficient Urinals in all other Bathrooms	✓ Plumbing drawings/specifications including make, model, and flush volume of the urinal (s).
		✓ Manufacturer's data sheet for urinal(s) with information on the flush volume.
HTW06	Efficient Flush for Water Closets in all other Bathrooms	✓ Plumbing drawings/specifications including make, model, and flush volumes of water closet(s).
		✓ Manufacturer's data sheet for water closet(s) with information on the flush volume of the main and reduced flushes.
HTW07	Aerators for Faucets & Auto Shut-Off Faucets in all other Bathrooms	✓ Plumbing drawings/specifications including make, model, auto shut-off mechanism and flow rate of the washbasin faucet(s)
		✓ Manufacturer's data sheet for faucet(s)/flow aerator(s) confirming the flow rate at 3 bar.
HTW08	Water-Efficient Dishwashers	✓ Summary list of the dishwasher(s) to be installed in the building, including quantity and proof of maximum water use.
		✓ Specifications from manufacture detailing water use.

Material Measures		Preliminary Audit Requirements
HTM01	Floor Slabs	✓ Floor sections showing build-up of the floor; or
		✓ Manufacturer's data sheet for specified building material if applicable; or
		✓ Bill of quantities with the floor slab specification clearly highlighted.
HTM02	Roof Construction	✓ A section drawing of roof showing the materials and thicknesses; or
		✓ Manufacturer's data sheet for specified building material; or
		✓ Bill of quantities with the materials used for roof construction clearly highlighted.

HTM03	External Walls	✓ Façade drawings clearly marking the external wall specification selected; and
		✓ Drawings of the external wall sections; or
		✓ Manufacturer's data sheet for specified building material; or
		✓ Bill of quantities with the materials used for the external wall clearly highlighted.
HTM04	Internal Walls	✓ Drawings of the internal wall sections; or
		✓ Manufacturer's data sheet for building materials used for internal wall specifications if available; or
		✓ Bill of quantities with the materials used for the internal wall clearly highlighted.
HTM05	Flooring	✓ Drawings clearly marking the flooring specification selected; or
		✓ Manufacturer's data sheet for building materials used for floor specifications; or
		✓ Bill of quantities with the materials used for the flooring clearly highlighted.
HTM06	Window Frames	✓ Façade drawings clearly marking the window frame(s) specification; or
		✓ Manufacturer's data sheet for glazing specified; or
		✓ Bill of quantities with the windows/window frames clearly highlighted.
HTM08	Roof Insulation	✓ Drawings clearly marking the insulation specification selected; or
		✓ Manufacturer's data sheet for insulation specified; or
		✓ Bill of quantities with the insulation materials clearly highlighted.

Associated Subproject(s)

Sr No.	Associated Subproject Name	Country	City
1	Innside Bangkok Sukhumvit	Thailand	Bangkok