



CORAL LIFE

The future is clean.

The future is cool.

Pioneer in end-to-end measurable high-performance building-energy solution

Delivering over 70% energy savings, while ensuring wellness air quality and long-term value.

Thien Juengwirunchodinan,
Solution Development Director



53 Floors Tower Completed 2014



FRAGRANT GROUP RECEIVED A COMMEMORATION AWARD FOR ITS CONTRIBUTION TO THE WATERWAY CONSERVATION PROJECT



Prime Minister Yingluck Shinawatra honored a commemoration award to Mr. James Duan, CEO of Fragrant Group for the company's contribution to the Waterway Conservation Project. The project had successfully dredged and cleaned the canals to improve the city's drainage capacity and beautified the 307 waterways in Bangkok and its vicinity. The awarding ceremony was held recently at Central World Shopping Complex.

GENERAL ANATAPORN KANJANARAT, MINISTER OF ENERGY, PRESIDED OVER THE BUILDING ENERGY CODE (BEC) AWARDS 2016 CEREMONY



Ministry of Energy's Department of Alternative Energy Development and Efficiency (DEDE) awarded an accredited label of the energy efficiency building design to two of Fragrant Property's projects: the Circle Living Prototype and the Circle Sukhumvit 11. Both projects design meets the 'Building Energy Code' [BEC] requirements as regulated by DEDE.

This ceremony was held to deliver accredited label of the energy efficiency building design for new building, both private and government buildings that meet all the requirements. DEDE have been assessing contending building designs that were sent in for evaluation during 2009-2015. There are 30 energy efficiency buildings which awarded 'Good' label. There are 24 buildings which awarded 'Excellent' label and 9 buildings were awarded 'Outstanding' label.

Mr. Praphon Wongtharua, DEDE director-general revealed that BEC accreditation label 2016 campaign is part of the government's effort to promote and encourage both government and private sectors to give importance to designing green building in accordance to the Building Energy Code [BEC] requirements. The BEC standard enforcement should be presented to the Building Control Committee by November 2016.

ESG REAL.

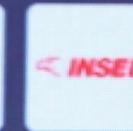
VISION TO ACTION



2025

Real CONNEXt

Presented by



12 - 13 MARCH 2025

Island Hall @Fashion Island



EMBODIED CARBON 1



REDUCE



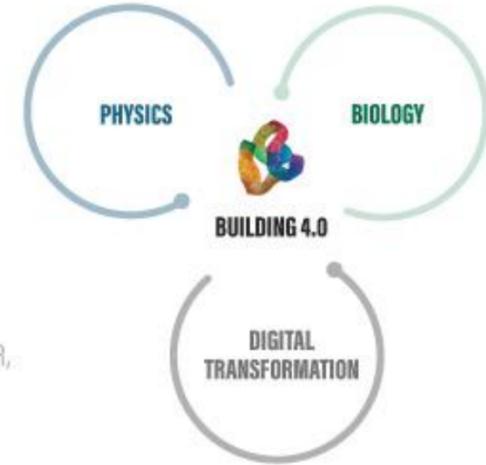
ZHEN DING TECH GROUP HEADQUARTERS
TAOYUAN CITY, TAIWAN

15,264
sq.m.
BUILDING AREA

11,933
sq.m.
COOLING AREA

209 -> 82
kWh/m²-yr
ENERGY USE INTENSITY (EUI)

2 OPERATIONAL CARBON



REDUCE

THERMAL COMFORT
FOR WELL-BEING AND PRODUCTIVITY

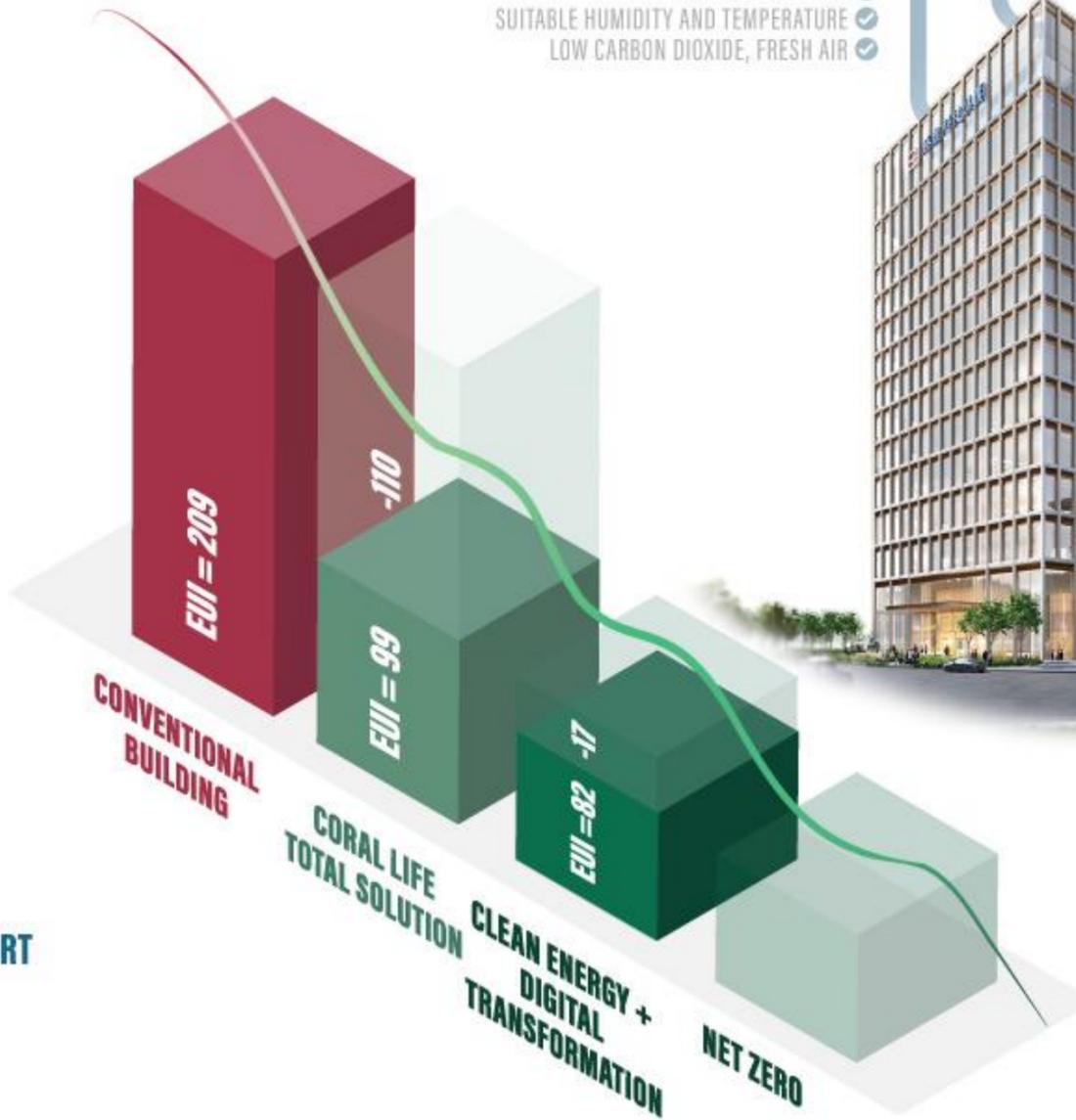
AIR QUALITY
PERFECT INDOOR AIR QUALITY
NO PM2.5 OR VOCs ✓
SUITABLE HUMIDITY AND TEMPERATURE ✓
LOW CARBON DIOXIDE, FRESH AIR ✓

ESG ROI
SUSTAINABLE RETURNS THROUGH ENERGY EFFICIENCY
AND ENVIRONMENTAL STEWARDSHIP

ESG WELLNESS
ENHANCING WELLNESS WITH PERFECT INDOOR AIR,
OPTIMAL COMFORT, AND SUSTAINABLE LIVING

ESG EPS
BOOSTING EARNINGS PER SHARE BY LOWERING OPERATIONAL COSTS

ESG CARBON CREDIT
MEASURABLE CARBON CREDITS TO REDUCE ENVIRONMENTAL IMPACT



OPTIMIZED COMFORT & ENERGY SAVINGS
MONITORS AND ADJUSTS INDOOR CONDITIONS FOR LOWER ENERGY COSTS

SMART PREDICTIVE MAINTENANCE
AI DETECTS ISSUES BEFORE THEY HAPPEN, REDUCING DISRUPTIONS

ENHANCED SECURITY & PRIVACY
ON-PREMISES DEPLOYMENT ENSURES DATA PROTECTION

REAL-TIME SAFETY & SURVEILLANCE
AI-POWERED MONITORING FOR INSTANT ALERTS AND HAZARD DETECTION

REPORT

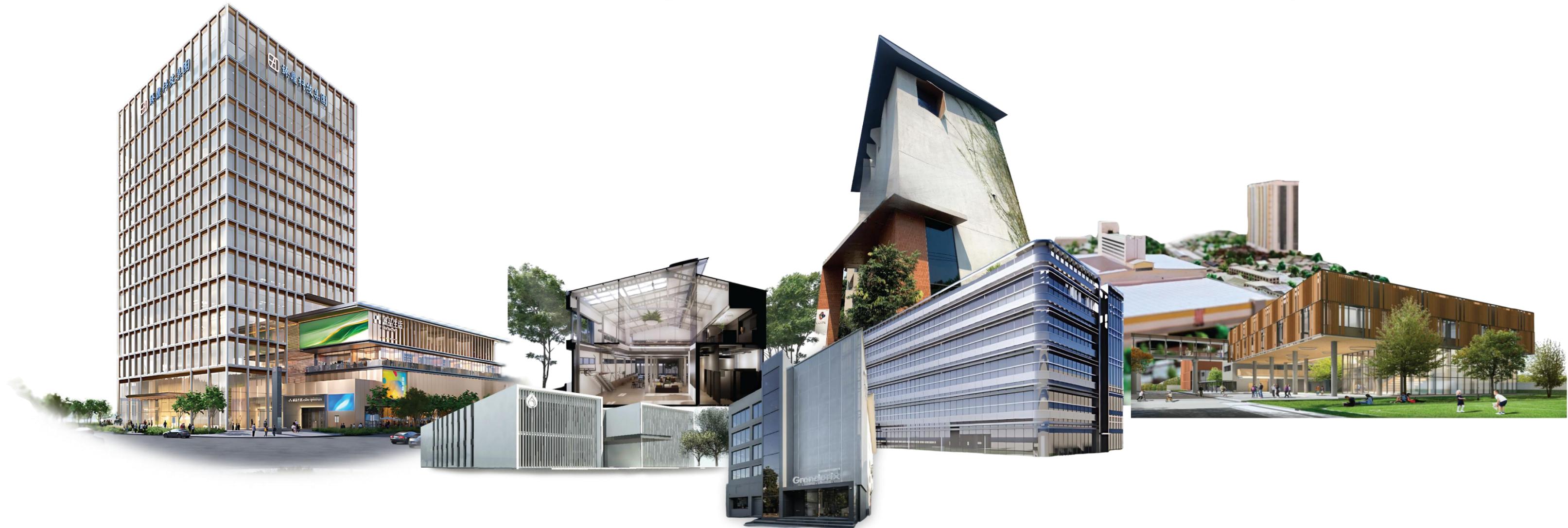
OFFSET

NET ZERO EMISSION





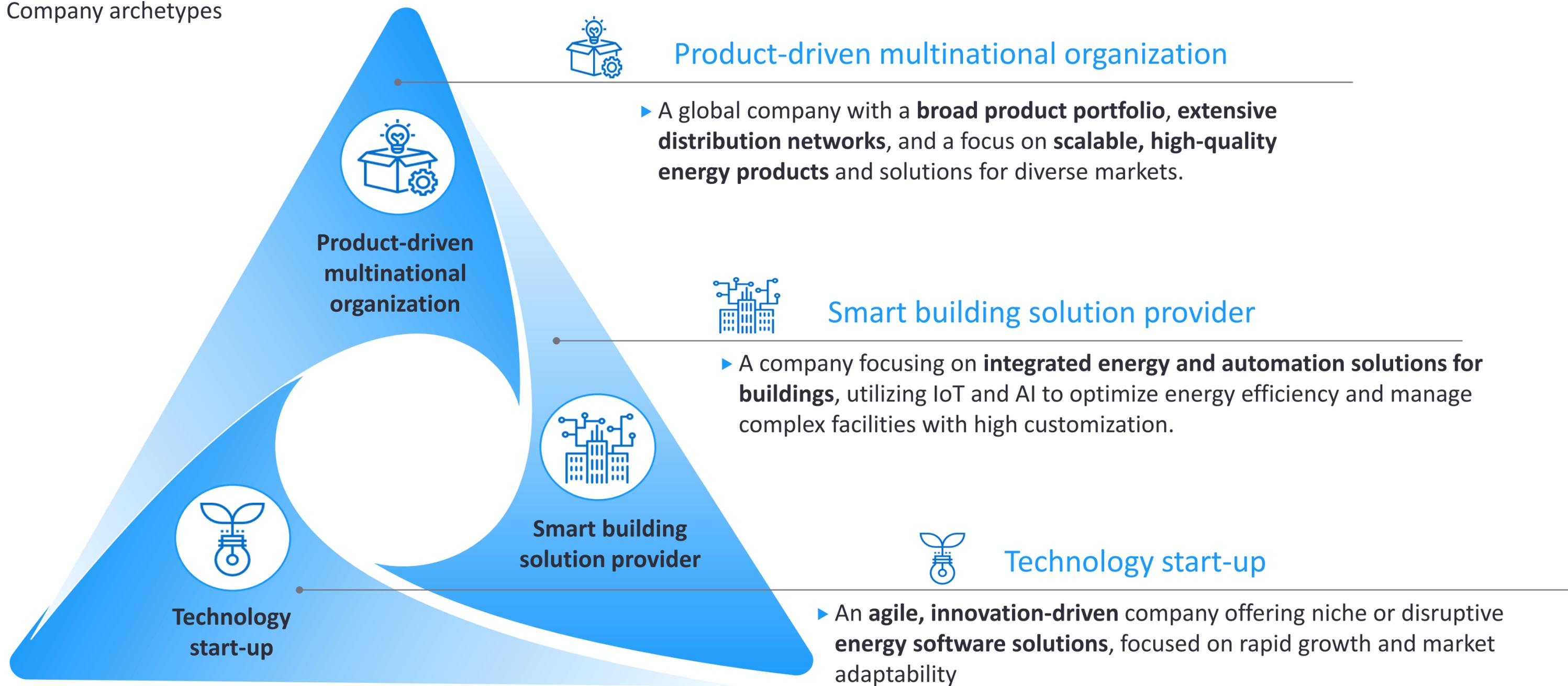
**THEY SAVE 70% ENERGY COST
THEY BREATHE IN WELLNESS AIR
THEY ARE TANGIBLE ESG SOLUTIONS
THEY ARE MODERN LANDMARKS**





3 archetypes in the energy solution space: many MNOs started off with products; smart building solution providers and tech start-up focus more on solutions and services

Company archetypes



We utilize innovative products to create a transformative business model that delivers measurable energy-efficient and well-being solutions



Coral Life Model – EaaS

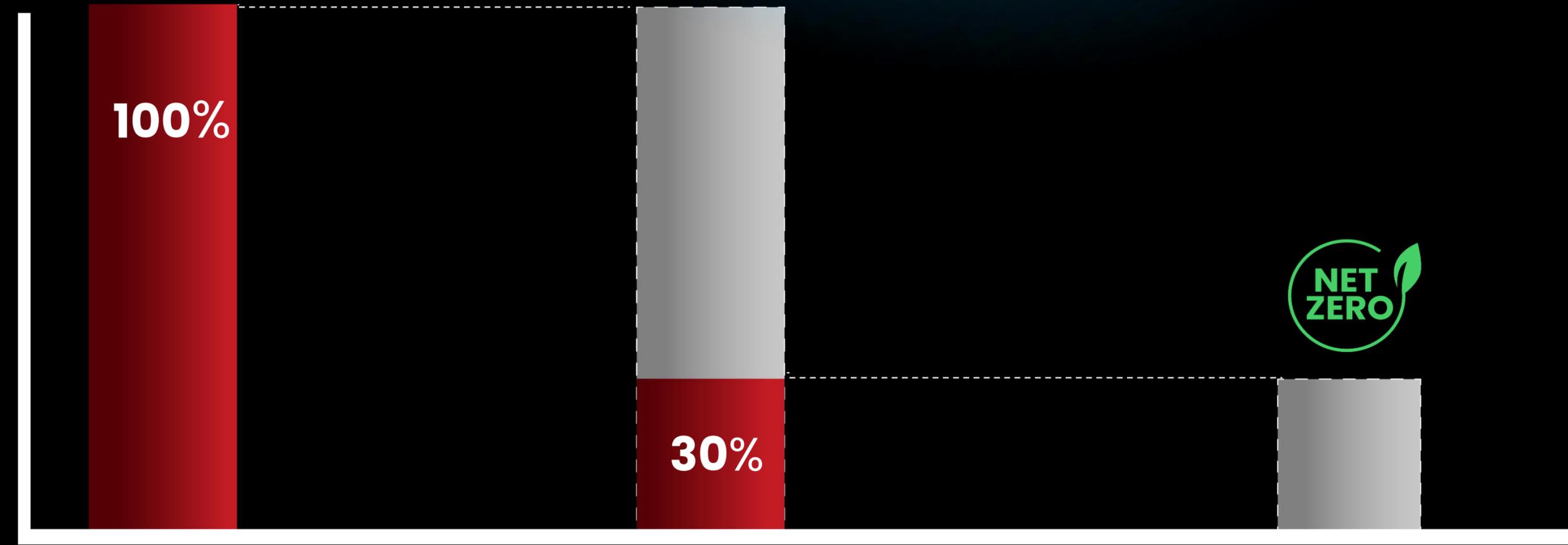
Benefits to owners

- no initial investment cost
- Earn energy saving after contract end
- Realize tangible ESG delivery
- Wellness-grade indoor air quality for occupants and customers



THE BEST WAY TO SAVE ENERGY IS ENERGY UNUSED.

Energy Demand



Net Zero Pathway



Conventional Building



Coral Building



+



Coral Building + Solar cell

Measurable Energy Efficiency & Perfect Air Quality



EUI

THAILAND
300 kWh/m²yr

SINGAPORE
225 kWh/m²yr

FRANCE
Saint-Gobain Tower
34 kWh/m²yr

USA
Bullitt Center
28 kWh/m²yr

SINGAPORE
UWCSEA
70 kWh/m²yr

THAILAND
 **CORAL LIFE**
68 kWh/m²yr



IAQ



PM2.5 _____ Level 0
 VOC _____ Level 0 - 1
 CO₂ _____ < 1000 ppm
 R. Humidity _____ 40 - 60 %
 Cooling temp _____ 25 °C

Measurable Energy Efficiency & Perfect Air Quality



Coral Life standard for Indoor air



1 - 3

รายละเอียดผลการตรวจวัด

สถานประกอบการ:	บริษัท คอร์ลไลฟ์ จำกัด						
ที่อยู่:	28 แขวงคลองตันเหนือ เขตวัฒนา กรุงเทพมหานคร 10110						
วันที่ตรวจวัด:	9 ธันวาคม 2566	เวลาที่ตรวจวัด:	09:40 น.				
สถานที่ตรวจวัด:	ชั้น 3: SHOW Room 2						
สภาพแวดล้อม:	ออฟฟิศสำนักงาน, ลิฟท์กระเบื้องยาง, มีปรับอากาศและตรวจวัดไม่ติดกับพื้นที่						

ลำดับ	รายการตรวจวัด	ผลการตรวจวัด	หน่วย	มาตรฐาน		ผลการประเมิน		หมายเหตุ
				*	**	*	**	
1	อุณหภูมิ (Temperature)	24.3	°C	24 - 26	23 - 25	✓	✓	
2	ความชื้นสัมพัทธ์ (Relative Humidity, %RH)	43.1	%	50 - 65	≤ 70	✗	✓	
3	ความดันต่าง (Difference Pressure) - ออฟฟิศ กับ ทางเดินชั้นนอกอาคาร	+ 1.4	Pa	-	-	-	-	
4	ก๊าซคาร์บอนไดออกไซด์ (Carbon Dioxide, CO ₂)	421	ppm	≤ 1,000	≤ 1,141	✓	✓	Outdoor=414
5	ก๊าซคาร์บอนมอนอกไซด์ (Carbon Monoxide, CO)	0.3	ppm	≤ 9	≤ 9	✓	✓	Outdoor=0.0
6	ฝุ่นละอองทั้งหมด (TSP)	8	µg/m ³	-	-	-	-	Outdoor=27
7	ฝุ่นละอองขนาดเล็กกว่า 10 ไมครอน (PM 10)	3	µg/m ³	≤ 50	-	✓	-	Outdoor=23
8	ฝุ่นละอองที่เข้าสู่ระบบทางเดินหายใจได้ (Respirable Dust)	1	µg/m ³	-	≤ 50	-	✓	Outdoor=18
9	ฝุ่นละอองขนาดเล็กกว่า 2.5 ไมครอน (PM 2.5)	1	µg/m ³	≤ 25	≤ 37.5	✓	✓	Outdoor=16
10	สารอินทรีย์ระเหยง่ายทั้งหมด (Total VOCs)	0.061	ppm	≤ 1	≤ 1	✓	✓	Outdoor=0.000
11	ฟอร์มัลดีไฮด์ (Formaldehyde, CHOH)	0.000	ppm	≤ 0.08	≤ 0.08	✓	✓	Outdoor=0.000
12	เชื้อแบคทีเรียทั้งหมด (Total Bacteria Count) (Airborne)	53	cfu/m ³	≤ 500	≤ 1,000	✓	✓	
13	เชื้อราทั้งหมด (Total Fungi Count) (Airborne)	7	cfu/m ³	≤ 500	-	✓	-	

หมายเหตุ: * มาตรฐานตาม DIN EN 18225-1 สำหรับสภาพแวดล้อมภายในอาคารตามมาตรฐาน EN 15250
 ** มาตรฐานตาม Singapore Standard SS 554: 2016(A1:2021) [Code of practice for indoor air quality for air-conditioned buildings]
 Carbon Dioxide, CO₂ (700 above outdoor) = 1,141 ppm
 - ไม่มีการตรวจวัด
 ✓ ผลดี มีค่าตามมาตรฐานที่กำหนด ✗ ผลไม่ดี ไม่ทำตามมาตรฐานที่กำหนด

ขอรับรองความถูกต้อง

(นางสาวนวลกานดา ศรีอาชะวะวัฒน์)
 ผู้จัดการศูนย์ห้องปฏิบัติการวิเคราะห์
 บริษัท โอลิมปัสคอนซัลแตนท์ จำกัด

WHO standard for hospital operation clean room air

1. Bacterial Count (TBC)

Condition	Standard (CFU/m ³)
At rest (no people)	≤ 10 CFU/m ³
In operation (with staff)	≤ 50-100 CFU/m ³

2. Fungal Count (TFC)

Standard (CFU/m ³)
≤ 0-5 CFU/m ³ (ideal)
≤ 10 CFU/m ³ (acceptable in tropical climates)

Fungi such as *Aspergillus* are a major concern in immunocompromised patients and surgical settings.

12	เชื้อแบคทีเรียทั้งหมด (Total Bacteria Count) (Airborne)	53	cfu/m ³	≤ 500	≤ 1,000	✓	✓	
13	เชื้อราทั้งหมด (Total Fungi Count) (Airborne)	7	cfu/m ³	≤ 500	-	✓	-	



Coral Head Quarter @ Sukhumvit 39, Bangkok



Cooling area 3,000 sqm – 5 floors

Conventional Buildings

BTU 3,000,000

Electricity Bill

4-500,000 Baht / Month
(14,000 USD / Month)

VS

CORAL HQ
Sukhumvit 39

BTU 500,000

Electricity Bill

70,000 Baht / Month
(2,000 USD / Month)

↓ 80%

↓ 86%



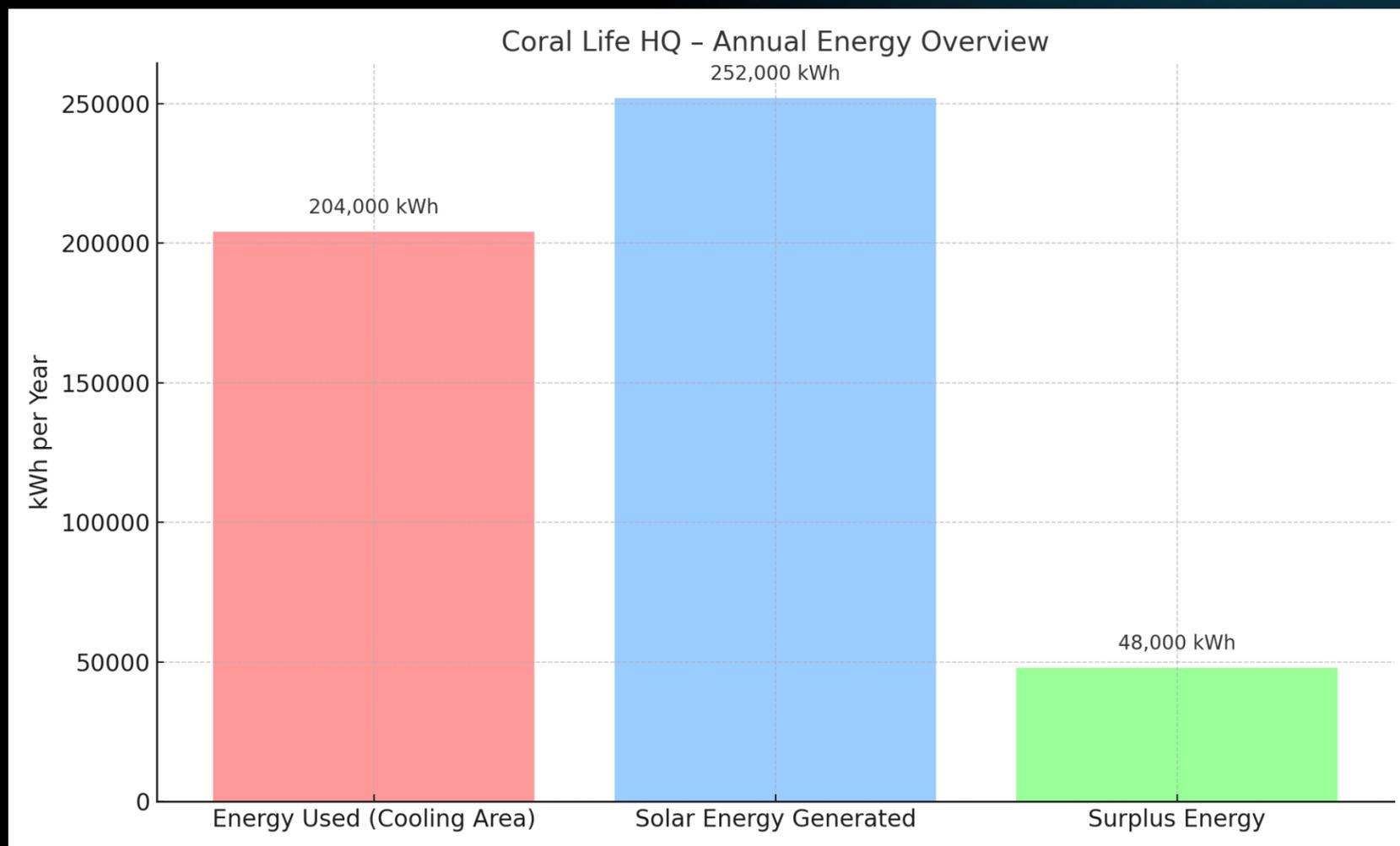
Cooling area 3,000 sqm – 5 floors



Electricity Bill
~ 70,000 Baht/Month
(2,000 USD / Month)



Cooling area 3,000 sqm – 5 floors



Coral Life HQ – Solar & Energy Overview

- **Total building area:** 4,300 m²
- **Cooling zone:** 3,000 m²

- **Energy use:** 204,000 kWh/year
- **Rooftop solar (900 m²):** 252,000 kWh/year

- **Surplus:** 48,000 kWh/year
- **Revenue at 2.75 THB/kWh:**
132,000 THB/year



OUR TRACK RECORD



HouseX (New Construction)

Cooling load : reduce 90%

EUI Range : 50-70 kWh/m²yr



PTT OFFICE (New Construction)

Cooling area : 2,600 sqm.

Cooling load : 646,000 BTU. (reduce 75%)

EUI Range : 50-70 kWh/m²yr



Grandprix (Retrofit)

Cooling area : 2,200 sqm.

Cooling load : 522,000 BTU.
(reduce 76%)

EUI Range : 53.97 kWh/m²yr



A49 Office (Extension)

Cooling area : 1,293 sqm.

Cooling load : 300,000 BTU. (reduce 77%)

EUI Range : 50-70 kWh/m²yr



Circle Sukhumvit 31 (New Construction)

Cooling load : reduce 70%

EUI Range : 50-70 kWh/m²yr



UNO (New Construction)

Cooling area : 780 sqm.

Cooling load : 176,000 BTU.
(reduce 77%)

EUI Range : 50-70 kWh/m²yr



JKN (Extension)

Cooling area : 1,573 sqm.

Cooling load : 374,000 BTU. (reduce 76%)

EUI Range : 50-70 kWh/m²yr



Coral Head Quarter @ Sukhumvit 39 (New Construction)

Cooling area : 3,000 sqm.

Cooling load : 500,000 BTU. (reduce 80%)

EUI Range : 68 kWh/m²yr



BEFORE



AFTER



Office (Retrofit) – Reduction from fan coil from 80 units down to only 12 units

Cooling area : 2,200 sqm.

Cooling load : 522,000 BTU. (43.5 Ton)

Saving CO2
emission
90 Ton/Y





BEFORE



AFTER



Office (Retrofit) – Reduction of electricity bill from 500,000 ฿/Month to 100,000 ฿/Month

Cooling area : 2,200 sqm.

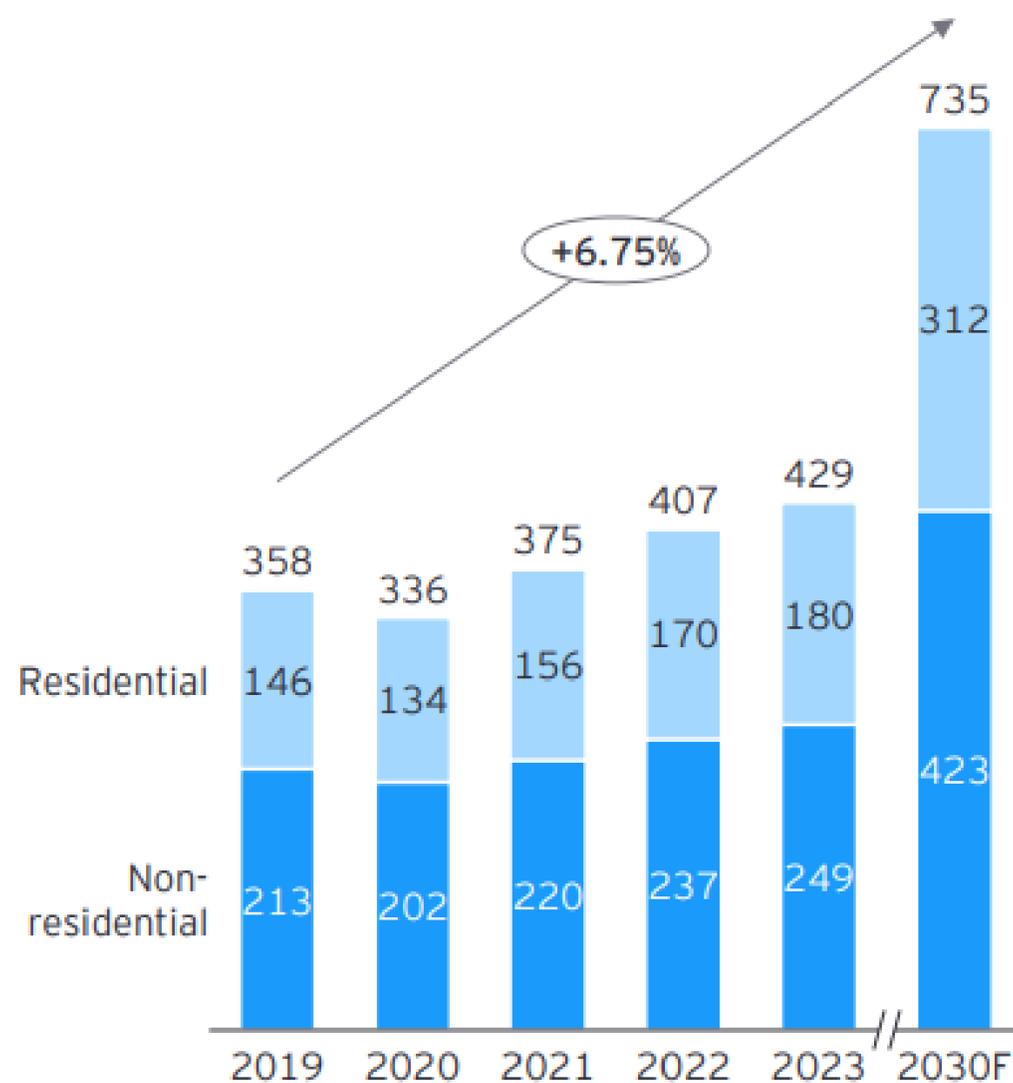
Cooling load : 522,000 BTU. (43.5 Ton)

Saving CO2
emission
90 Ton/Y

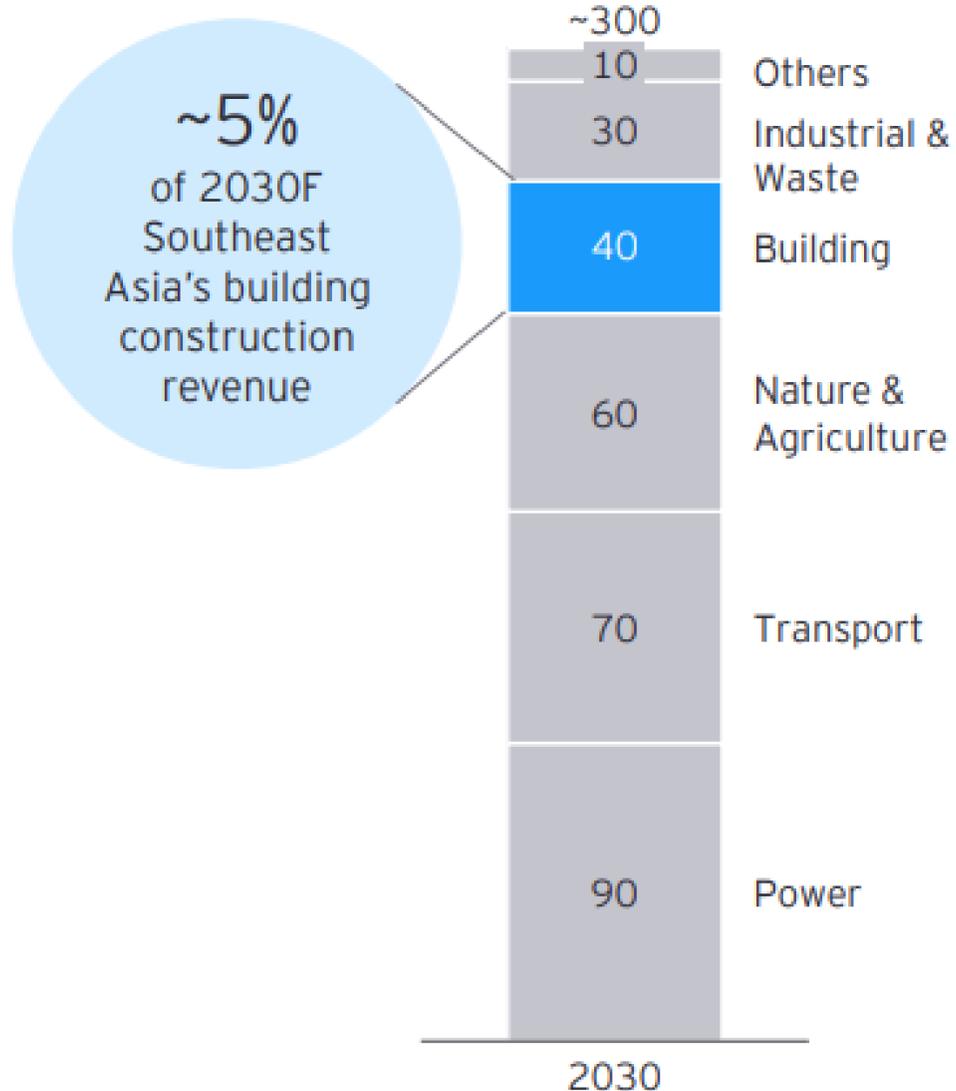


SEA's building construction market size is estimated to grow at ~7% to USD 735B by 2030; Out of which, green economy to take up 5% via building energy-saving solutions

Southeast Asia's Building Construction¹ Revenue by Type (traditional building + green building), (2019-30, USD B)



Southeast Asia's Green Economy revenue pool (2030, USD B)



Investment opportunities	Recent developments
<p>Energy-saving tech</p> <p>Interest and adoption driven by cost-savings business case</p>	<p>pci A Celestica Company</p> <p>SG-based company providing smart home appliances (e.g. IoT solutions, telematics) invested by Canadian electronics company Celestica</p>
<p>Cooling-as-a-service</p> <p>Emerging innovative business model with demand driven by cost-savings and enabled by tech/hardware</p>	<p>tabreed IFC</p> <p>Joint venture between UAE's national central cooling company and IFC to deploy \$400M in SEA and India</p>
<p>Green building products</p> <p>Large but fragmented market for building products, expect increase in adopt as regulations evolve</p>	<p>VIGLACERA</p> <p>Vietnam-based to produce sustainable construction materials invested by Vietnam Electrical Equipment Joint Stock Corporation</p>
<p>District cooling</p> <p>Growing interest in SEA but expect opportunities to remain small / strategic, given that tech is new and needs master planning</p>	<p>Keppel</p> <p>Singapore-based Keppel District Heating and Cooling System secured \$220M contract to develop and operate district cooling system in Jurong Innovation District</p>

1. Revenue refers to output value of services and activities associated with building construction, such as design, engineering and installation

Source: Frost & Sullivan, EMIS Insights, NESDC, EY-Parthenon analysis



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The future is cool.

Thien Juengwirunchodinan,
Solution Development Director

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