CONNECT TO SUSTAINABILITY

Sustainability for Business Forum 2022

Track 1# Green Construction

Tuesday 11 October 2022 | Bangkok Marriott Marquis Queen's Park

DUO PRESENTATION

- Sustainable buildings
- Energy savings

Stephane DUFRENNE
Chief Commercial Officer
Greenyellow
"Support Thailand in the shift to profitable energy"

Mongkhon TANGSIRIWIT
Cluster Vice President, Strategic & Key Accounts Division
Schneider Electric
"Powering buildings with greener energy"

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Thai Swedish Chamber of Commerce

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HOTEL PARTNER

MARRIOTT MARQUIS BANGKOK QUEEN'S PARK

Insights into **Sustainable Buildings** by **Schneider Electric**

Mongkhon Tangsiriwit – Cluster BVP, Strategic Accounts (Thailand / Myanmar / Laos) – Schneider (Thailand) Limited

11 October 2022 – FTCC Sustainability for Business Forum 2022

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The world of your building

~40%

of the world's CO_2 emission comes from buildings[1]

>350

natural + man-made disasters in the world in 2019[2]

>30%

of the energy is wasted in buildings[3]

~90%

of our time is spent indoors[4]

Source:
[1] Architecture 2030, 2020
[2] Facts + Statistics: Global catastrophes, Insurance Information Institute, 2020
[3] U.S. Environmental Protection Agency, 2020
[4] Joseph G. Allen, Healthy Buildings Program, Harvard University, 2019

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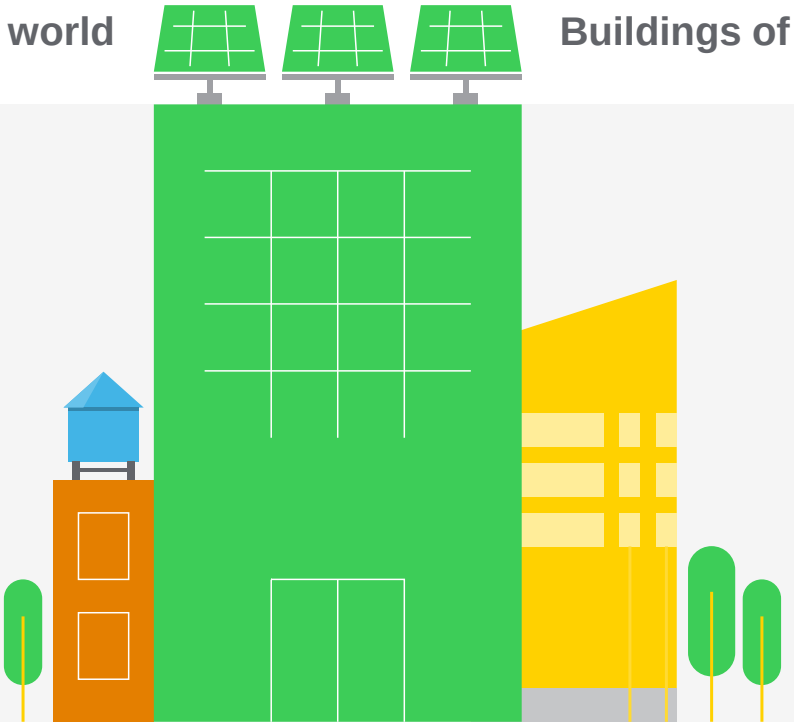
Two major transitions already underway

All-digital, all-electric world



Buildings of the future

Digitization

IoT **10x** more new connected devices than individuals
Source: GSMA 2019

Big Data **x5** 81 bn GB in 2017, 403 bn GB in 2021
Source: IDC, 2018

AI **x6** increase in AI expenditures between 2017 and 2022
Source: International Data Corporation, 2020

Electrification

50% of energy production will be solar or wind-driven by 2050
Bloomberg New Energy Finance, New Energy Outlook 2019

30% of vehicle stocks will become electric by 2040
Source: Bloomberg New Energy Finance, New Energy Outlook 2019

x2 Electricity consumption doubles until 2050
Source: Global Energy Perspective 2019, McKinsey, 2019

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Key figures for 2021 | Global

5% of revenues devoted to R&D

€29 billion
2021 revenues

43%
of revenues in new economies

128,000+
employees in over 100 countries

#1

Key figures for Thailand

Established in **1978**

1,500+ employees

1 office in **Bangkok** and 1 branch in **Rayong**

1 manufacturing facility
in Bangpoo Industrial Estate
certified with ISO50001 Energy Management

1 local distribution center
with critical safety stock

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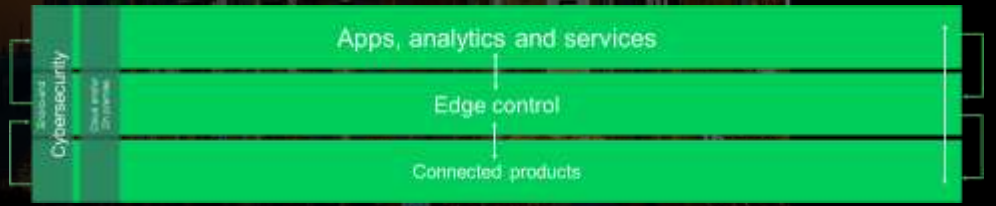
We provide
energy and automation
digital solutions
for efficiency
and sustainability

Building
Industry
Data Centers
Infrastructure

EcoStruxure AVEVA RIB etap IGE+XAO PLANON



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Schneider Electric | Offering unique Hardware & Software expertise for Sustainable Buildings across the life cycle

Agnostic + **Independent** + **Integrated**

Leveraging the **all-digital, all-electric world** for new and existing buildings

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Enabling our own
Buildings of the Future

Kallang Pulse

Schneider Electric
East Asia & Japan HQ

Building age: **25 years**
Total gross floor area: **18,500 m^2**
Objective: **achieve 100% CO_2 neutrality by 2020**

Software and Analytics
Building Advisor, Power Advisor, Resource Advisor, Asset Advisor Power, Asset Advisor IT, Workplace Advisor, MicroGrid Advisor, Augmented Operator Advisor

Edge Control
Power Monitoring Expert, Building Management System (BMS), Security Expert, Facility Expert

IoT-enabled Connected Products
Over 5000 connected products

- Power Logic, Power Tag, MTZ
- BTU, Water Meter, PAHU, Chiller Plant (data exchange with BCA Portal through Web Service)
- Motion Sensors, CO_2 Sensor, Env Sensor, lighting control KNX/Dali, UPS, InRow, CCTV, Card Access
- Conext Solar/ Battery Monitoring / Battery Energy Storage Solution (BESS)
- Elink(Kone lift), Data exchange with offsite solar energy retailers

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Sustainable rooftop

Kallang Pulse
Schneider Electric
East Asia & Japan HQ

Building age: **25 years**
Total gross floor area: **18,500 m^2**
Objective: **achieve 100% CO_2 neutrality by 2020**

80 solar panels on the rooftop

The building runs on 100% renewable (solar) energy in the daytime (9.30am to 4.30pm). Accompanied with offsite solar energy, this accounts for 47% of the building's monthly energy consumption (220Mwh).

The BMS is linked to **meteorological weather forecast** to improve **energy efficiency** and **system performance**.

- On a hot day, the pump will regulate the pumping of the VSD
- On a cold day, the chiller plant will be set at a lower speed to regulate the temperature at optimum levels.

Integrated with Real Time Data at the IBMS Level

Magnetic bearing chiller with VSD

A chiller plant also acts as a centralized cooling system, providing a portion of air conditioning in the building's HVAC systems. The magnetic bearing chiller with VSD regulates the speed according to the demand. This helps to achieve higher efficiency rating.

Window panels

The design of the building facade and window panels meet the Envelope Thermal Transfer Value (ETTV) to enhance energy performance.

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Renewable energy

Kallang Pulse
Schneider Electric
East Asia & Japan HQ

Building age: **25 years**
Total gross floor area: **18,500 m^2**
Objective: **achieve 100% CO_2 neutrality by 2020**

Renewable energy usage

- More than 10 solar panels on car park rooftops and in the gardens
- Electric Vehicle charger stations powered by solar energy
- Landscape lightings are powered by harvested solar energy on site
- Battery Energy Storage System (BESS) stores conserved solar energy for nighttime use

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Smart office

Kallang Pulse
Schneider Electric
East Asia & Japan HQ

Building age: **25 years**
Total gross floor area: **18,500 m^2**
Objective: **achieve 100% CO_2 neutrality by 2020**

Space management

EcoStruxure™ Workplace Advisor

- Ensure safe distancing
- Monitor occupancy levels
- Adapt office layout

Occupant well-being

EcoStruxure Workplace Advisor

- Adaptive lighting & temperature adjustment
- Confirm optimal humidity
- Check air circulation
- Monitor rise of VOC

Operational efficiency

EcoStruxure Building Advisor

- Smarter cleaning
- Optimize building management and power systems
- Better manage amenities

Occupant engagement

EcoStruxure Engage Enterprise

- Communicate effectively
- Simplify access to IT tools
- Enable occupants to easily navigate the new office

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Outcomes

45% reduction in electricity consumption

- Re-designed building to be **people-centric** and **resilient** by utilizing technologies and engineering solutions, reducing consumption in electricity
- Proactive EcoStruxure Solutions provide analytics-based service to optimize energy performance and create a **hyper-efficient** building

1253 tons p.a. carbon emissions

- Reduced carbon emissions are equivalent to removing 358 cars (2.0cc) from roadways, increasing the **sustainability** of the building
- 100% solar powered during the day
- Reduced carbon footprint with solar blended power supply and Microgrid Advisor

Achievements

- Awarded BCA Green Mark Platinum (Version 2017) building
- Awarded Leadership in Sustainability & Performance by SGBC-BCA (2019)
- Increased brand recognition and improved on Corporate Social Responsibility (CSR)

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Green Heroes for Life Initiative

A Sustainability initiative of Schneider Electric and an urgent call for conscious businesses to unite to make the planet more sustainable

These actions include the adoption of

Sustainable practices in the area of energy efficiency, renewables, automation and digitization to meet individual and corporate sustainability goals.

Some of our Green Heroes for Life partners

PEA · SET · trueIDC · SUPERNAP THAILAND · Bhatara Progress · SiS · โรงพยาบาลระยอง RAYONG HOSPITAL

and more …….

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We welcome you all to share your Sustainability Stories and become #GreenHeroesforLife

Register to join the campaign

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Sustainability for Business Forum

Your Energy Transition Journey

Starts Here!

Stephane Dufrenne –
Chief Commercial & Partnership Officer

11 October 2022

Franco-Thai Chamber of Commerce

NTCC

The Swedish Chamber of Commerce

greenyellow
SHIFT TO PROFITABLE ENERGY!

01

GREENYELLOW IN BRIEF

Global overview

FOUNDED in 2007

LONG TERM OPERATOR specialized in Energy Transition to help our customers to consume greener and consume less energy

Build-Own-Operate-Transfer (B.O.O.T) model

550 employees
Worldwide
(100+ in South-East Asia)

Operating in
4 continents
16 countries

Global overview

2 MAIN AREAS OF OPERATION

- Decentralized photovoltaic solar power generation
- Energy Efficiency

MORE THAN 1.3 BILLION EUROS MOBILIZED
in our assets since inception

+ 740 MWp
of Solar PPA (Power Purchase Agreement) Installed or under construction

+ 520 power plants
worldwide

+ 3,100 sites
On Energy Efficiency Contracts for

985 **GWh**
in energy savings per year

Strong and committed **shareholders**

Casino Group | French Retailer
Revenue: 38 BEUR

Tikehau Capital |
Asset management group
Asset: 32 BEUR

Bpifrance | Investment bank
Revenue: 1,444 BEUR

02

MAIN AREAS OF **OPERATION**

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Decentralized SOLAR PV

B.O.O.T

(Build, Own, Operate, Transfer) model through a Power Purchase Agreement (PPA)

Rooftop

Floating

Carport

Ground-mounted

MORE THAN 200 MWp (220 SOLAR PLANTS)
under construction or in operation In South-East Asia (Thailand, Vietnam, Cambodia)

SOLAR POWER PURCHASE AGREEMENT (PPA)
a long-term agreement where GreenYellow finances, designs, constructs, licenses, operates and maintains a tailor-made solar plant that delivers cheaper and greener energy to the client.

Energy efficiency

END-TO-END APPROACH TO REDUCE YOUR ENERGY CONSUMPTION

B.O.O.T

(Build, Own, Operate, Transfer)

through an Energy Efficiency Agreement

Performance Guaranteed

Share of Energy Savings

B.O.O.T. Long term benefits

WIDE RANGE OF BENEFITS
over the long term without investment and hassle-free

ENERGY AND FINANCIAL SAVINGS ALONG WITH CARBON FOOTPRINT ENHANCEMENT
operational excellence with reliable equipment managed by experts and with guaranteed performance

03

GREENYELLOW ASIA
ACHIEVEMENTS

greenyello w in asia

REGIONAL HUB IN THAILAND
since 2017

RAPID LOCAL GROWTH
opening of
- Cambodia office in 2018
- Vietnam office in 2020

Investment to date
5+ BTHB
(150+ MUSD)

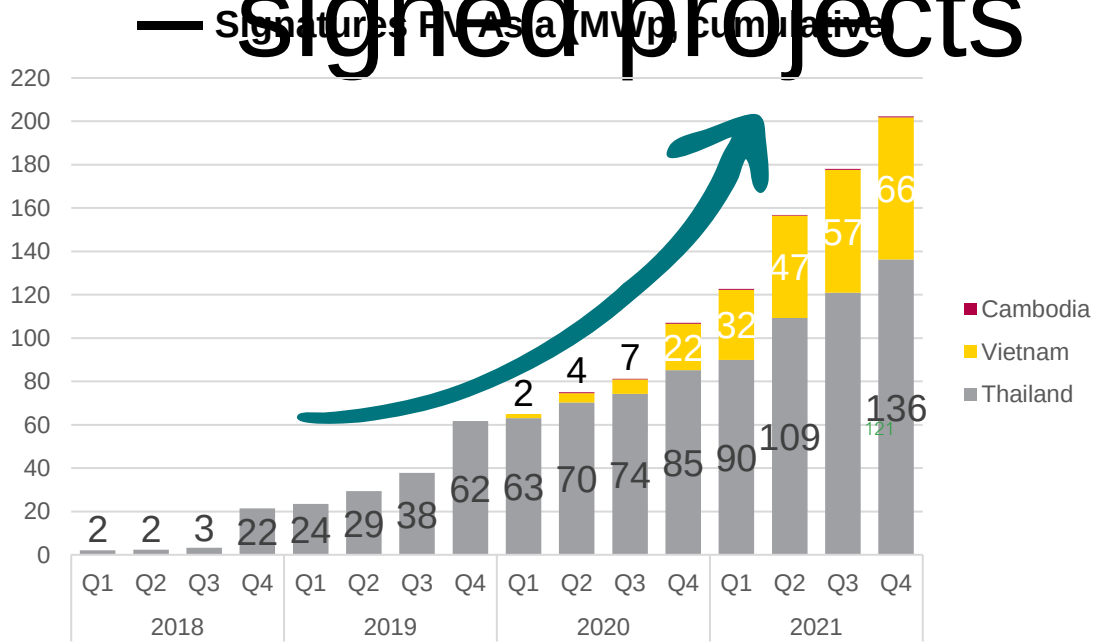
2017	2021
8	113

Thailand	67
Vietnam	43

PV/EE CONTRACTS	**230**
In Thailand	155
In Vietnam	75
CAPACITY (MW) (*)	**202**
In Thailand	136
In Vietnam	66
IN OPERATION (MW)	**113**
In Thailand	71
In Vietnam	42

(*) EEA: Energy Efficiency Agreements – GWh/Y of savings counted as MW

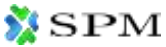
Greenyellow IN asia — signed projects



MODIFIEZ LE STYLE DU TITRE

A diversified and balanced portfolio combining leading **international players with major local companies.**

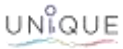
FOOD INDUSTRY



LOGISTICS

RETAIL/MALL

INDUSTRY



Siam makro

Thailand

INSTALLED CAPACITY
30 MWp

TOTAL PRODUCTION/YEAR
43.5 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
22,000 tons

50 stores across Thailand

Thailand

INSTALLED CAPACITY
6 MWp

TOTAL PRODUCTION/YEAR
8.7 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
4,400 tons

19 distribution centres across Thailand

Cpram

Thailand

INSTALLED CAPACITY
5 MWp

TOTAL PRODUCTION/YEAR
7.2 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
3,600 tons

8 factories across Thailand

bet agro

Thailand

BETAGRO

INSTALLED CAPACITY
9.62 MWp

TOTAL PRODUCTION/YEAR
14 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
7,000 tons

9 sites across Thailand

ric
Thailand
oh

RICOH

INSTALLED CAPACITY
4 MWp

TOTAL PRODUCTION/YEAR
5.8 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
2,900 tons

SPM Thailand Feed mill

INSTALLED CAPACITY
2 MWp

TOTAL PRODUCTION/YEAR
2.9 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR
1,400 tons

First Private PPA **Solar Floating project**

Thailand royal porcelain

Royal Porcelain

INSTALLED CAPACITY

2 MWp

TOTAL PRODUCTION/YEAR

2.9 GWh

REDUCE CARBON DIOXIDE EMISSION/YEAR

1,400 tons

Solar Farm Project

Thailand

OLIC (Thailand) Limited
A member of Fuji Pharma group

EE – Cooling Service Agreement

- ✓ Optimized chiller with VSD installation
- ✓ BMS to control the chiller plant

SAVINGS PER YEAR UP TO:

฿3.2 million

Plastic Thailand

PLASTIC OMNIUM

EE - Lighting Service Agreement

- ✓ Lighting replacement and optimization
- ✓ 1000+ lights replaced
- ✓ LUX management

ENERGY SAVINGS/YEAR

฿ 1.2 million

Southeas

SOUTHEAST TEXTILE

END-TO-END APPROACH TO REDUCE YOUR ENERGY CONSUMPTION

t t

Solar

Solar PPA

Installed capacity
6 MWp

Energy generated
8.7 GWh/year

Energy Efficiency

Cooling Service Agreement

Installed equipment
Chiller replacement and Smart Management

Energy Saved
2.0 GWh/year

Total CO_2 avoided
More than 5,000 tons/year

Total savings up to
฿11 million/year

greenyellow
SHIFT TO PROFITABLE ENERGY!
makro
คู่คิดธุรกิจคุณ

Thank you!

ขอบคุณครับ

Merci!

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