



Energy Absolute Public Company Limited



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Over View

2

Our Power Business

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Our Biodiesel Business

4

Our Financial Results

5

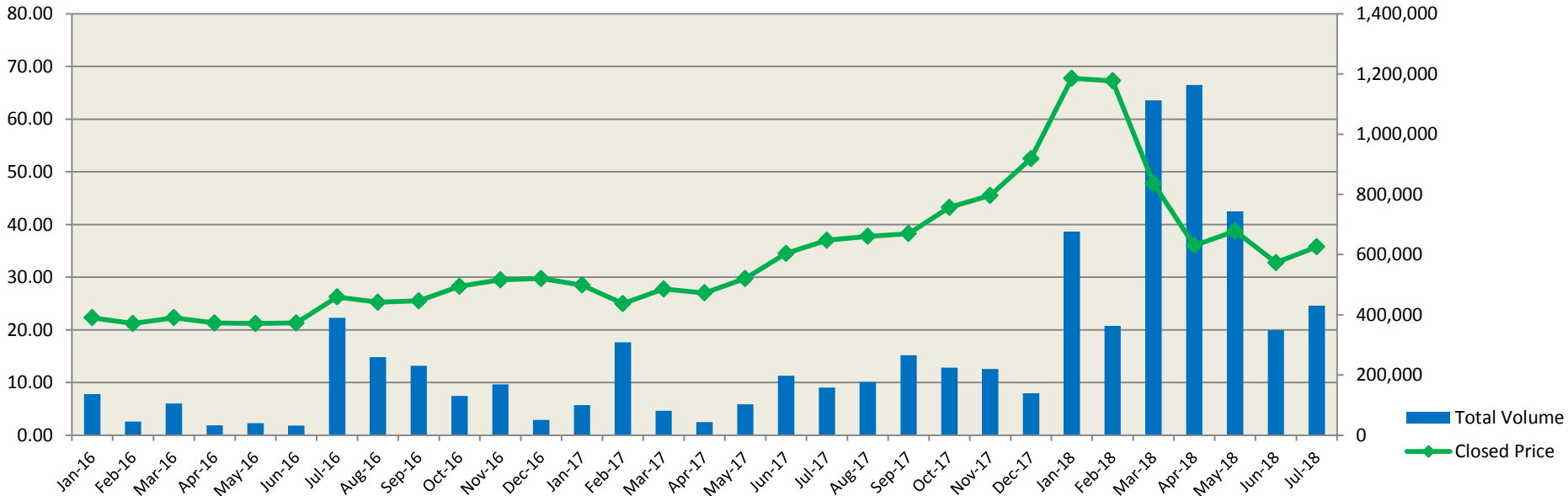
Our Growth



Established	In 2006 to produce palm oil
Core Business	Energy (Renewable and Utilities)
Secondary Market	The Stock Exchange of Thailand since 30 Jan 2013
Market Capitalization As of 31 Jul 2018	Approximately THB 133.347 billion (US\$ 4.17 billion) Included in the SET50 index since 1 Jul 2017 Included in FTSE SET Large Cap index since 18 Dec 2017
Credit Rating	Corporate rating : A-

Closed price : THB/share

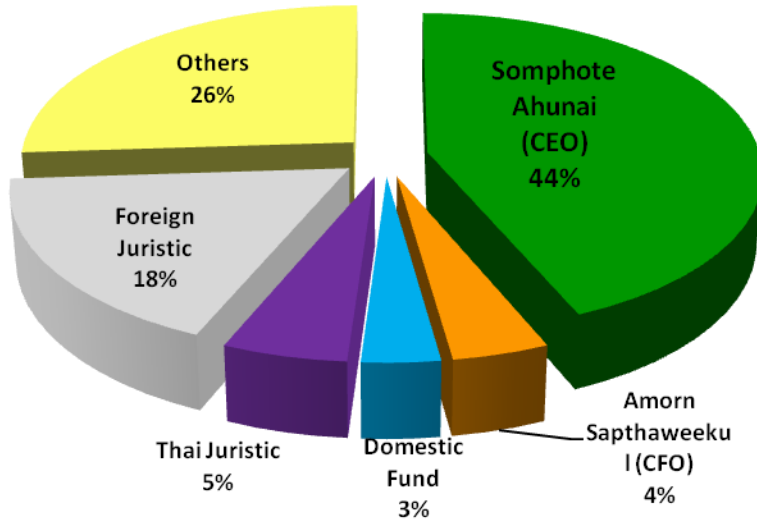
'000 shares





Shareholder Structure

As of 20 March 2018



Number of Total Shareholders = 17,888

Free Float = 39.87%

Mr.Somphote Ahunai

Chief Executive Officer

Education

- MBA from University of Pittsburgh, USA
- Bachelor of Engineering from Chulalongkorn University, Thailand

Previous Work

- Analyst and Researcher in USA.
- Managing Director of a Securities Brokerage company in Thailand
- Managing Director of a Renewable Energy company in Thailand

Mr.Amorn Saphaweekul

Deputy to CEO and Chief Finance Officer

Education

- Master of Science from Chulalongkorn University, Thailand
- Bachelor of Business Administration
(Finance and Banking) from Thammasat University, Thailand

Previous Work

- Investment Banker and Financial Advisor,
- Director in a Renewable Energy company



Our Business and Group Structure



*A leader in alternative energy business,
by using the modern technology and
environmentally friendly*



Biodiesel

B100

Glycerin

Renewable Power Plant

Solar

Wind

Energy
Storage

EV Charging

Electrical
Vehicle

➤ 2009
Biodiesel

➤ 2011
Solar Power

➤ 2015
Wind Power

➤ 2016
Energy Storage

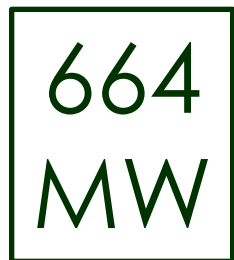
➤ 2017
EV Charging

➤ 2018
EV & Green Diesel & PCM



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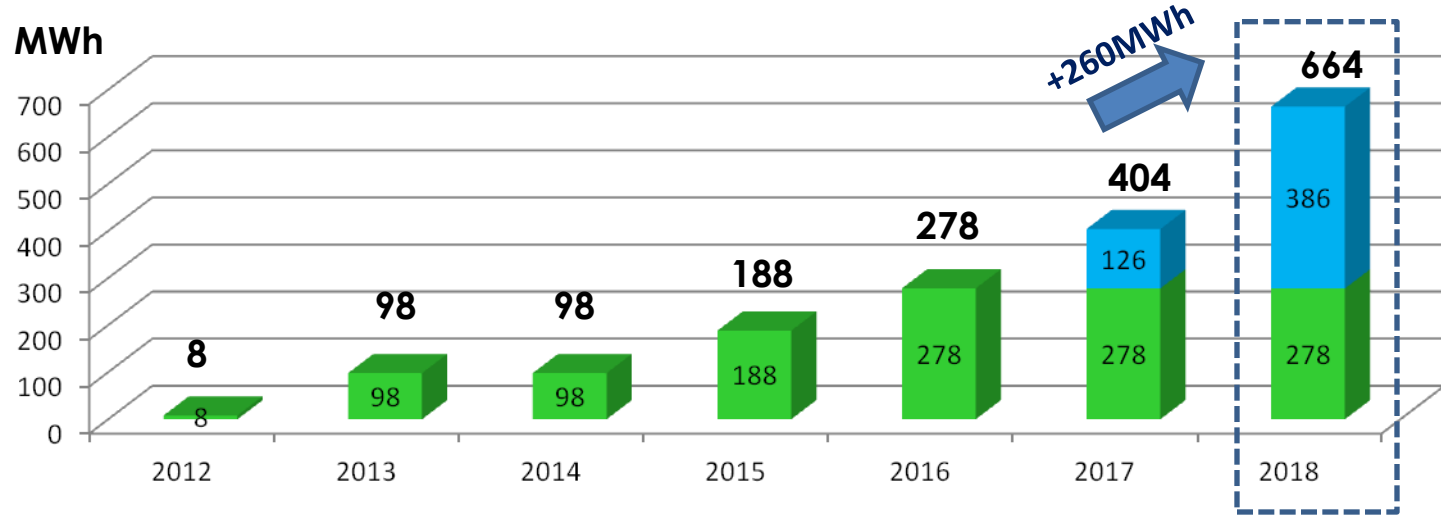
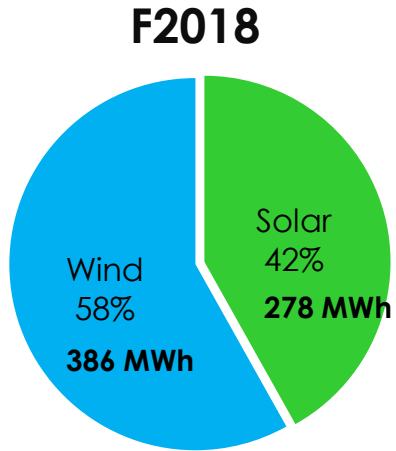
Our Financial Results

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Our Growth



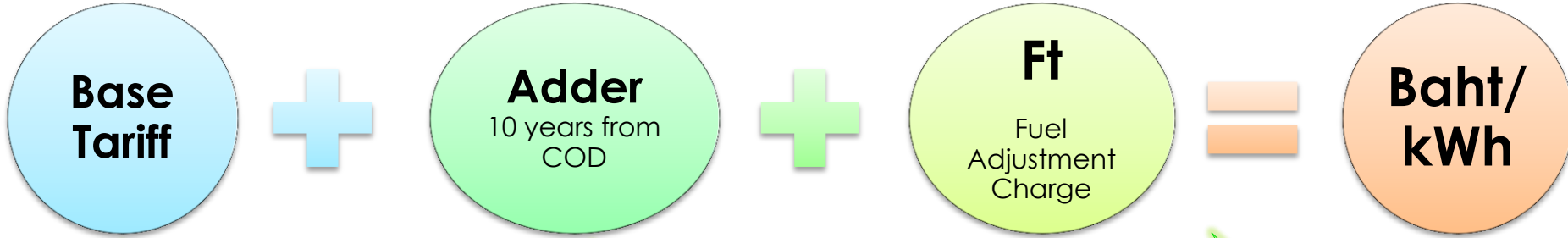
Project Pipeline



Solar	+ 8 MW	+ 90 MW		+ 90 MW	+ 90 MW
	Lopburi	Nakorn-sawan		Lampang	Phitsanu-lok
Wind	Had Kangan (Songkhla and Nakornsritammarat)			126 MW	
	Hanuman (Chaiyaphum)				+ 260 MW



Electricity Price Structure



Peak Time:

Weekdays
09.00 – 22.00

4.2243 Bt./kWh

Off-Peak Time:

Weekdays
22.00 – 09.00
+ Weekend + Holidays

2.3567 Bt./kWh

Solar

8 Bt.

Lopburi
8 MWh
Until Oct
2022

Solar

6.5 Bt.

Nakornsawan
90 MWh
Until Dec 2023

Lampang
90 MWh
Until Feb 2025

Phitsanulok
90 MWh
Until Apr 2026

Wind

3.5 Bt.

HKH 1 = 36 MWh
Until Mar 2027

HKH 2&3 = 90 MWh
Until Jun 2027

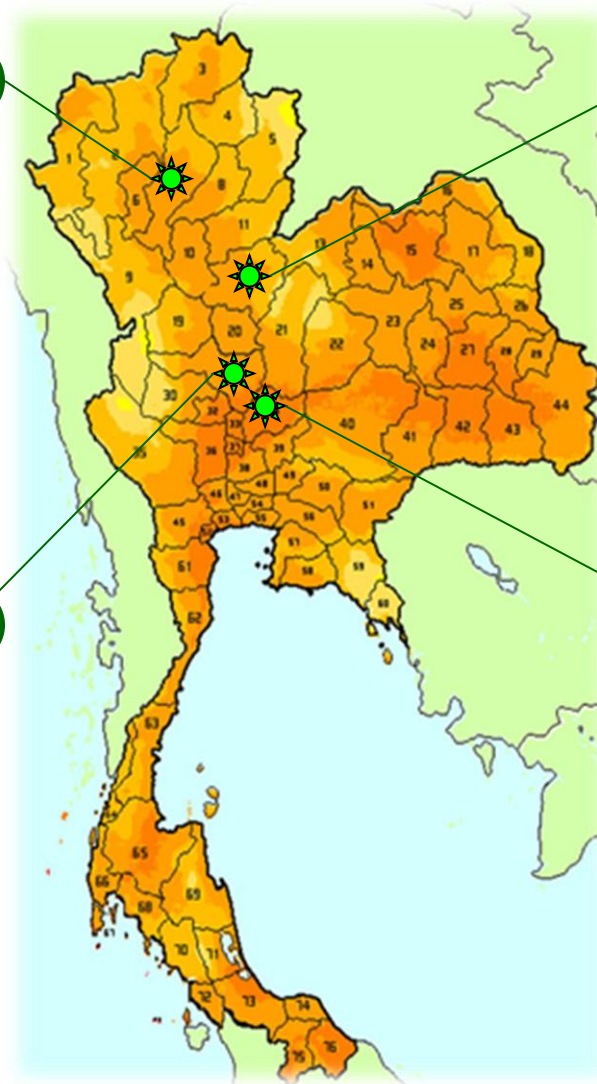
Hanuman
Projects
260 MWh

-0.159 Bt./kWh
For May – Dec 2018

Lampang (THB 8.07 bil)

3

Contracted Cap: 90 MW
 Installed Cap : 128.396 MW
Technology: Tracking system
COD : 17 Feb 2015
 Land area : 2,354 Rais (930 acres)
Adder : 6.50 baht/kwh



Phitsanulok (THB 9.5 bil)

4

Contracted Cap: 90 MW
 Installed Cap : 133.92 MW
Technology: Tracking system
COD : 1 Apr 2016
 Land area : 1,800 Rais (732 acres)
Adder : 6.50 baht/kwh

Nakornsawan (THB 6.7 bil)

2

Contracted Cap: 90 MW
 Installed Cap : 126.126 MW
Technology: Fixed system
COD : 23 Dec 2013
 Land area: 1,858 Rais (735 acres)
Adder : 6.50 baht/kwh

Lopburi (THB 812 mil)

1

Contracted Cap: 8 MW
 Installed Cap : 9.33 MW
Technology: Fixed System
COD : 17 Oct 2012
 Land area: 315 Rais (124.5 acres)
Adder : 8 baht/kwh

Hanuman : HNM
(Chaiyaphum)

THB 20 bil.

Contracted Cap: 260 MW

SCOD : Q4/2018

Adder : 3.50 baht/kwh

Status: **During Construction**

2

1

Hadkanghan : HKH
(East Coast Southern)

THB 10.4 bil.

Contracted Cap: 126 MW

COD :

HKH 1 = 36 MW

COD 3 Mar 17

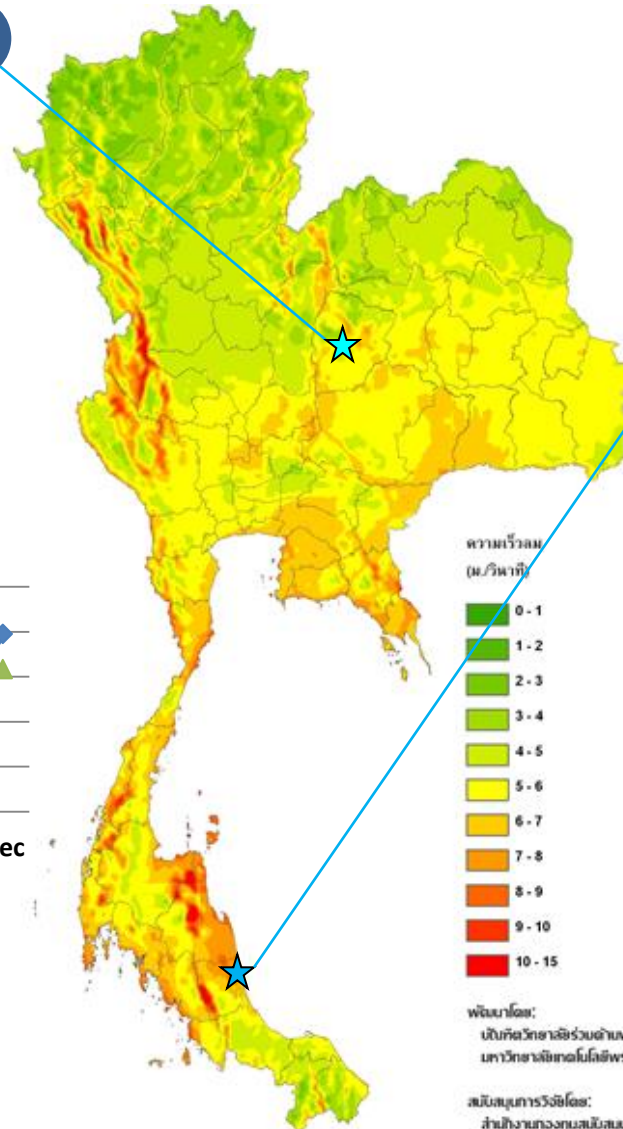
HKH 2 = 45 MW

COD 10 Jun 17

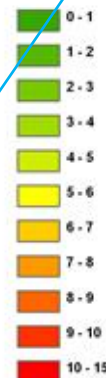
HKH 3 = 45 MW

COD 23 Jun 17

Adder : 3.50 baht/kwh

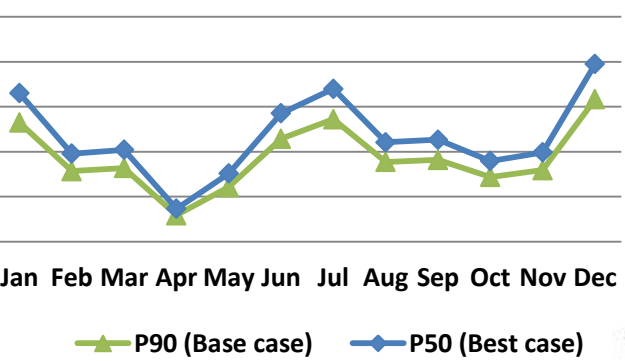


ความเร็วลม
(ม.วินาที)



พัฒนาโดย:
บริษัท วิศวกรที่ปรึกษา ร่วมด้วย พลังงาน และ สิ่งแวดล้อม
มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี

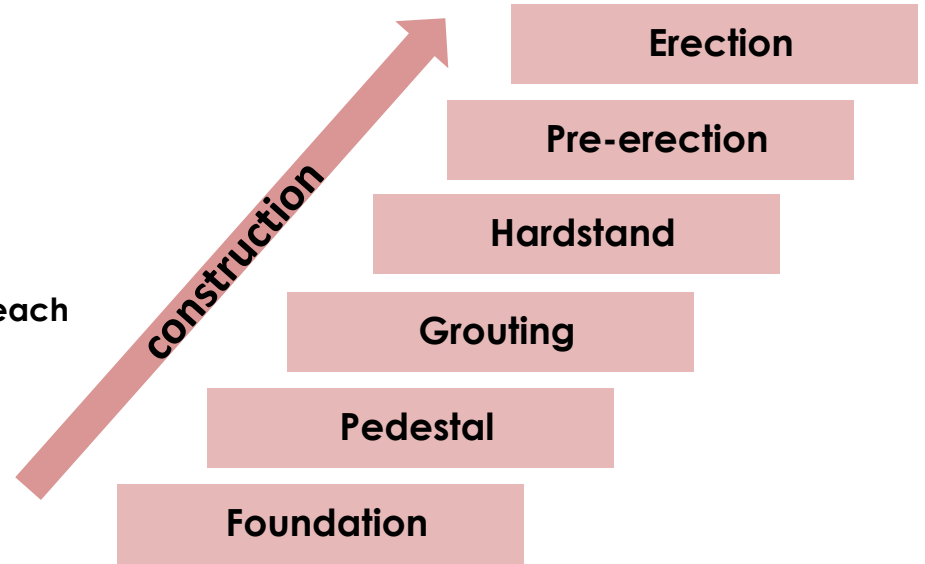
สนับสนุนการวิจัยโดย:
สำนักงานคณะกรรมการสนับสนุนการวิจัย





Hanuman Wind Farm 260 MWh

- Current Status : During construction
- Project Budget : THB 20 billion
- Project Specification : Technology from Siemens Gamesa, Spain
 - ✓ 103 sets of Wind Turbine Generator at 2.5 MWh each
 - ✓ Hub height 163 m.
 - ✓ Blade length 67 m.
 - ✓ Cut in wind speed = 3 m/sec

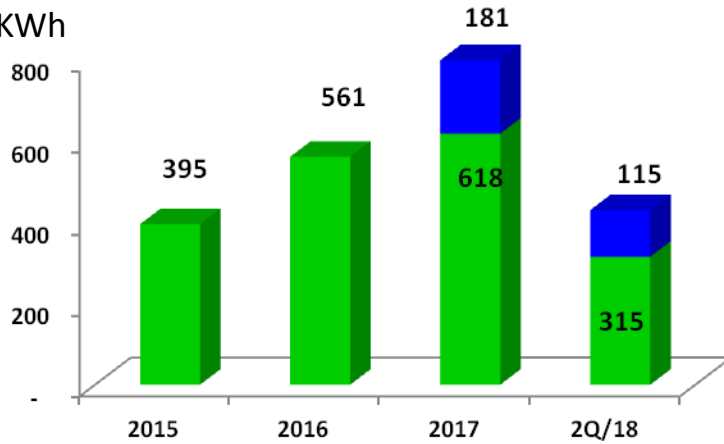


Sub-Project	Capacity (MW)	Construction Progress
Hanuman 1	45 (18 WTG)	100%
Hanuman 8	48 (19 WTG)	100%
Hanuman 5	45 (18 WTG)	Foundation+ Pedestal+grouting + Hardstand
Hanuman 9	42 (16 WTG)	
Hanuman 10	80 (32 WTG)	



Output from power production

mil.KWh



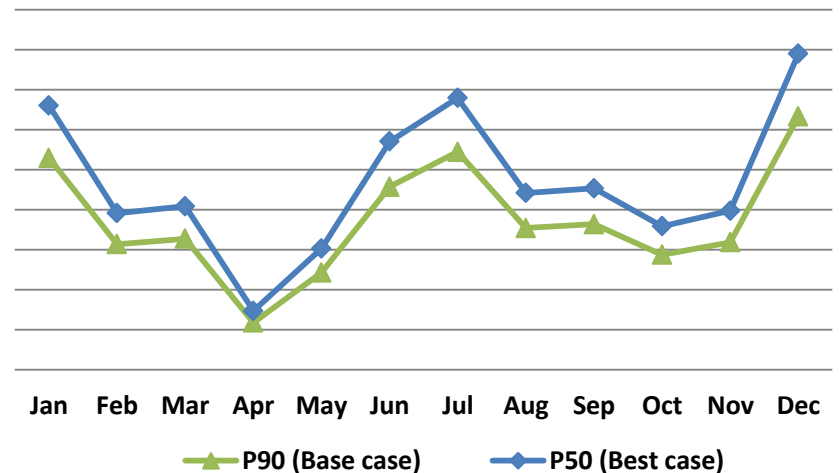
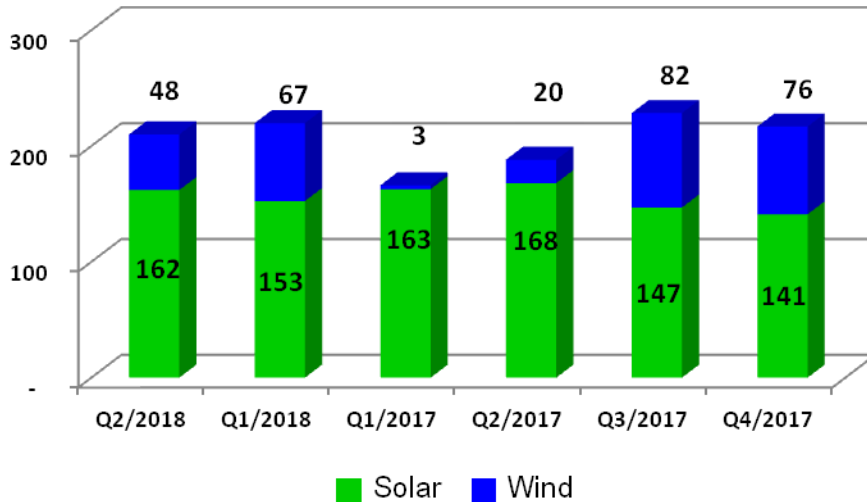
Total capacity : 188 278 404 404

In Q2/2018 : Full operation of 4 Solar Power Plants and 3 Wind Power Plants with the total contract capacity of 404 MWh

Power production output from Wind Power Plants QoQ decreased 28% due to low wind speed, average capacity factor in Q2/2018 = 17.7% (Q2/2017 = 15.08%)

Power production output from Solar Power Plants increased QoQ 5.9% but decreased YoY 3.6% due to longer period of raining days.

mil.KWh





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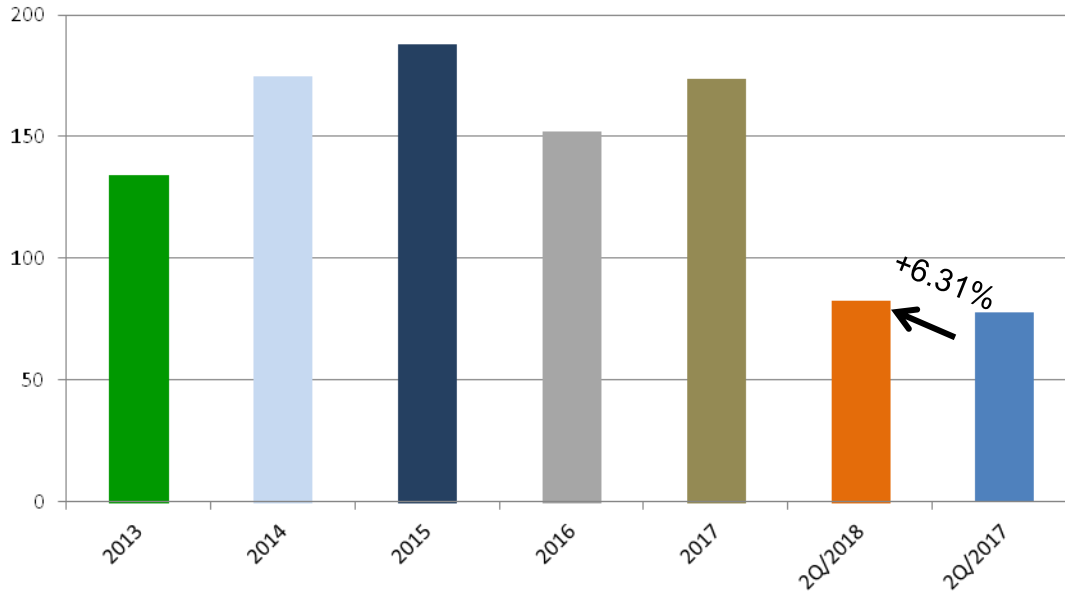
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Our Growth

Location	Kabinburi Industrial Estate, Prachinburi under BOI promotion & privileges
Plant Capacity	<ul style="list-style-type: none"> • Biodiesel 800,000 Liters per day • Pilot production of green diesel/PCM 1 Ton per day • Refined Glycerin 80 Tons per day (by product)

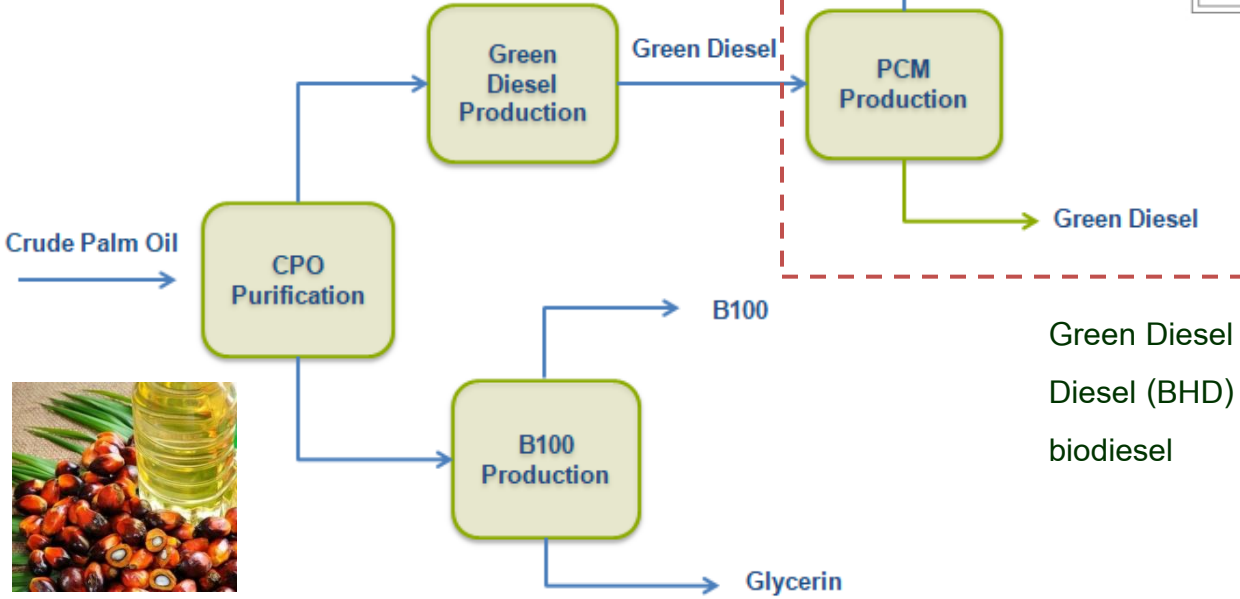
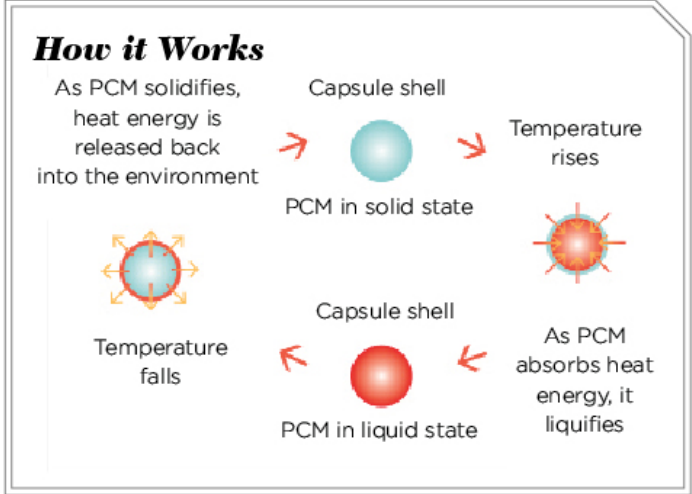


- B100 volume 2Q/2018 = 82.67 mil.liters increased 6.31%.
- Blending of B100 to high speed diesel = 7-20%
- Glycerin volume 2Q/2018 = 6,119.51 tons increased 13.91% price increased 38.83% due to stronger demand





Total Investment of the new plant to be located in Rayong province = THB 2 bil. in 2018-2019



Green Diesel or Bio Hydrogenated Diesel (BHD) : Advance product of biodiesel



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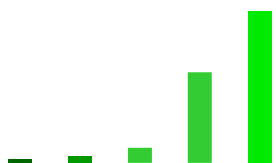
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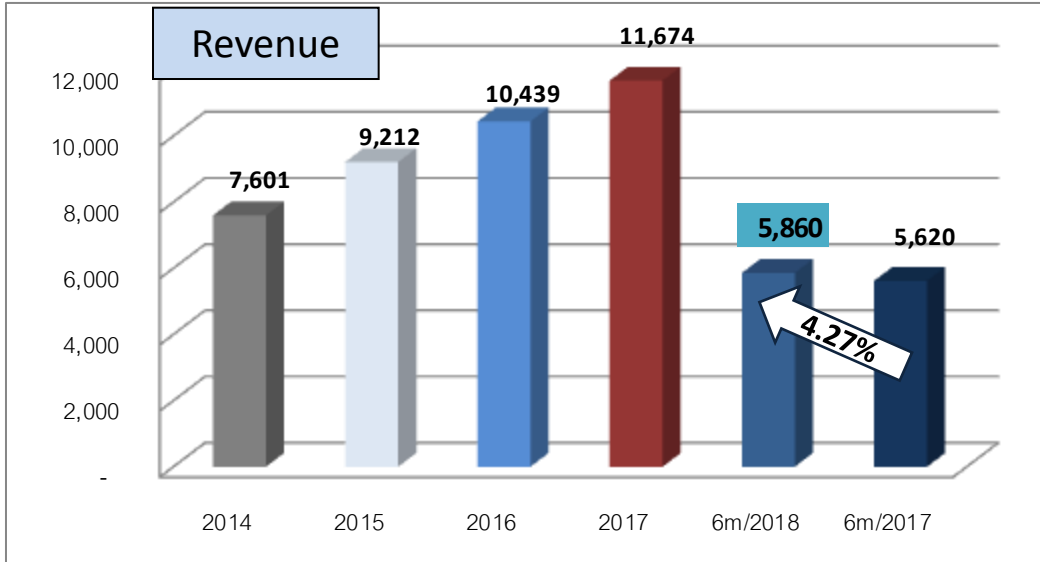
Our Growth



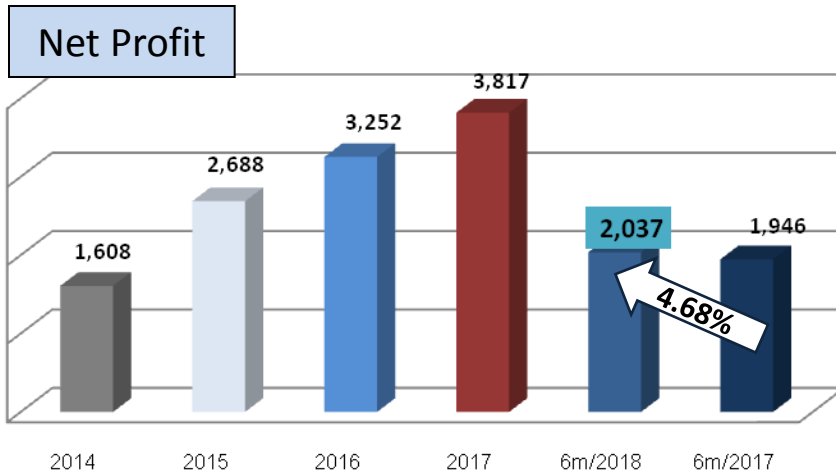


Strong Growth in Revenue and Net Profit

THB Mil.



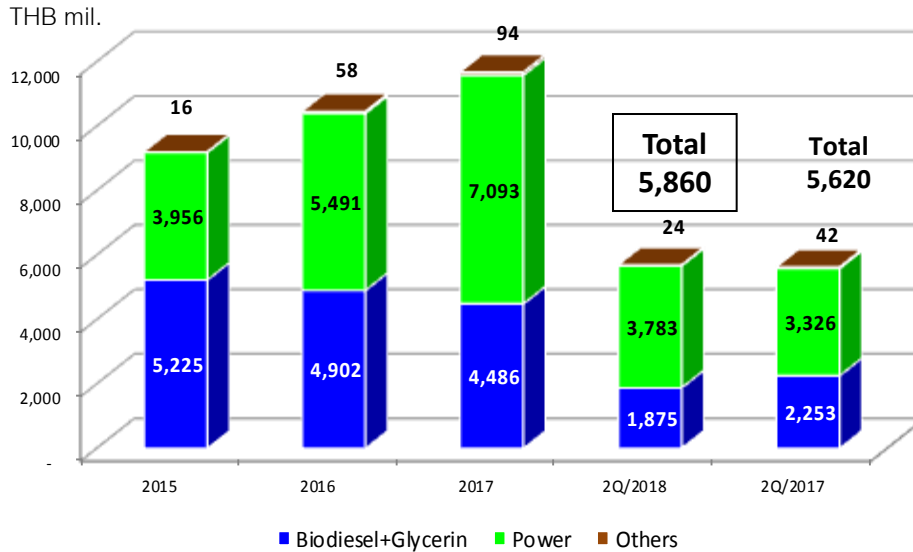
THB Mil.



- Total revenue for 6m/2018 was THB 6,754.27 mil. including accounting gain on a business combination (AMITA) THB 894.58 mil.
- Total revenue from normal operation for 6m/2018 was THB 5,859.69 mil. increased 4.27%
- Net profit from normal operation for 6m/2018 was THB 2,037 mil. increased 4.68%
- Incremental operating revenue and net profit resulted from full operation of power business, contributed from 4 Solar Power Plants (278 MW) and 3 Wind Power Plants (126 MW)
- Successful in power business strengthen operating EA's cash flow which is planned to invest in new projects



Growth from Power Business

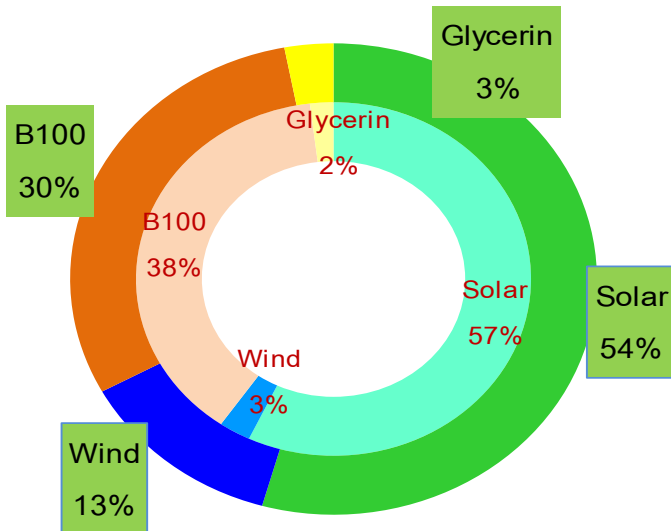


Power Business : contribution 67%

- Total capacity was 404 MW comprised of 278 MW of solar and 126 MW of wind
- Solar** : Total units sold decreased 4.95% resulted from lower of solar radiation and heavy rain. But average selling price increased 1.46%.
Gross profit margin = 81%
- Wind** : Total units sold increased 392.98% resulted from full operation and strong wind speed. But average selling price decreased 0.48%.
Gross profit margin = 53%
- EBT of power business = THB 2,381 mil.**

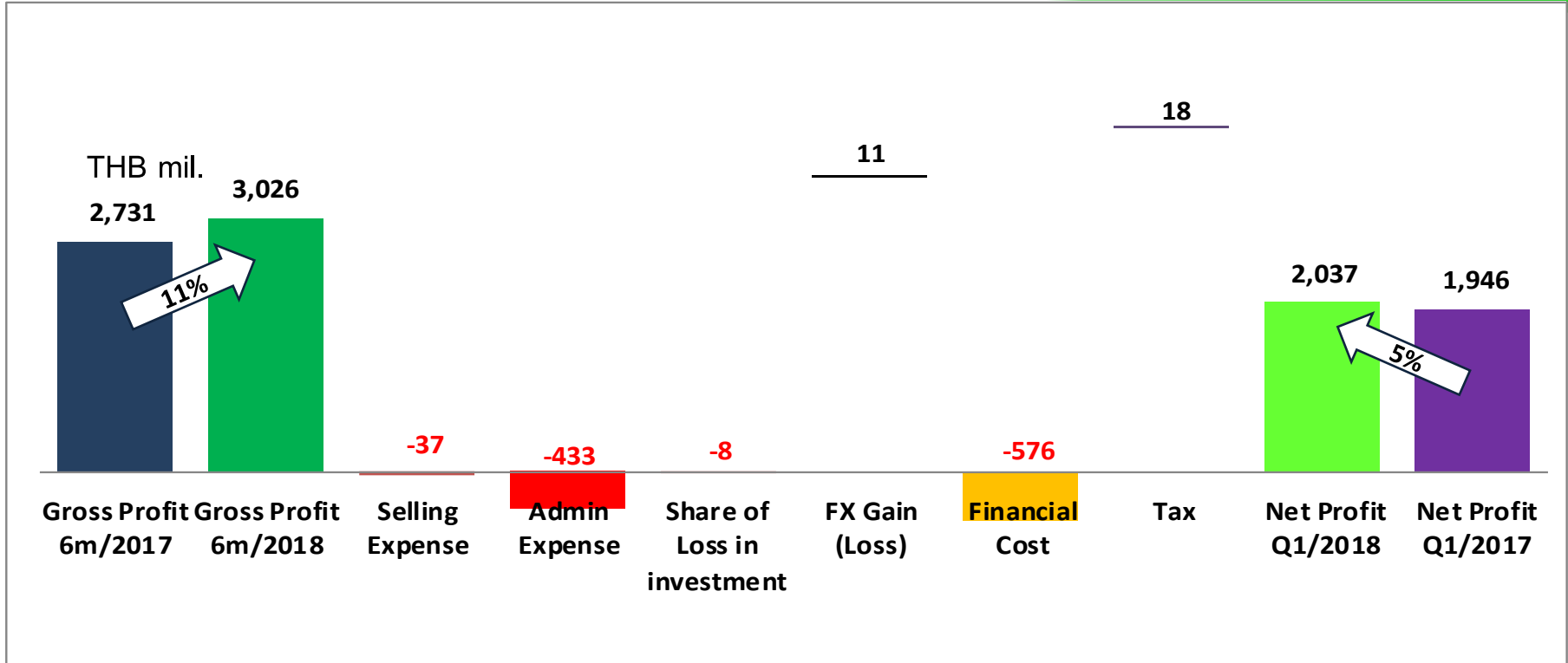
Biodiesel Business : contribution 33%

- B100** : Total sale volume increased 6.31%. But average selling price decreased 25.92% resulted from over supply of crude palm oil that effected to the selling price and also high competition.
- Glycerin** : Revenue from Glycerin increased 58.24% effected from the increase of sale volume by 13.97% and selling price by 38.83% resulted from stronger demand in global market
- Gross profit margin = 8% and EBT = THB 117 mil.**





Effects on 2Q/2018 Net Profit

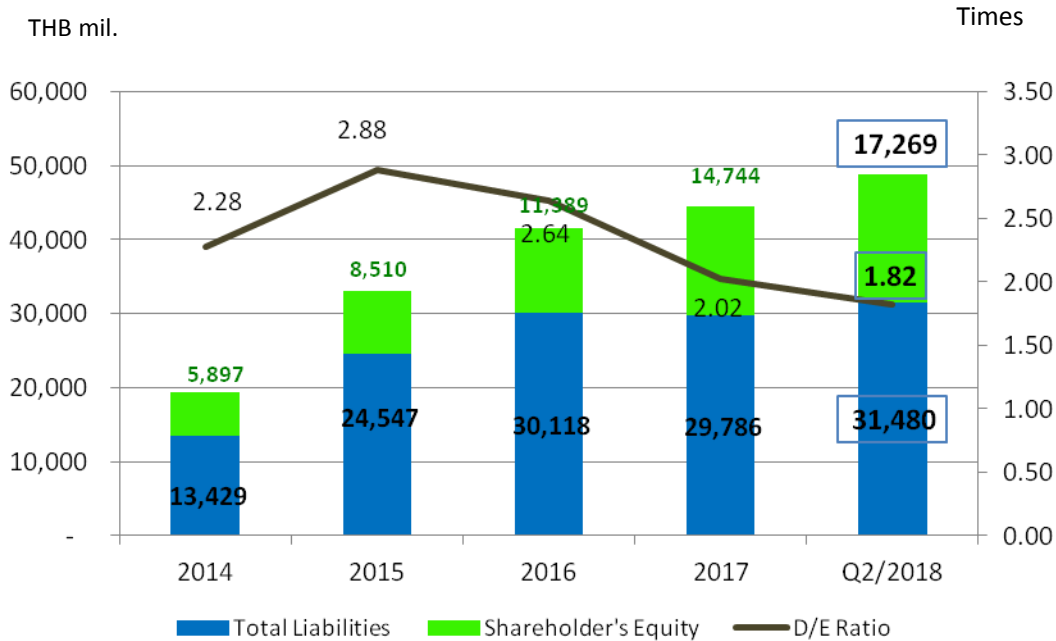


The increase of Admin Expense in Q2 (YoY)

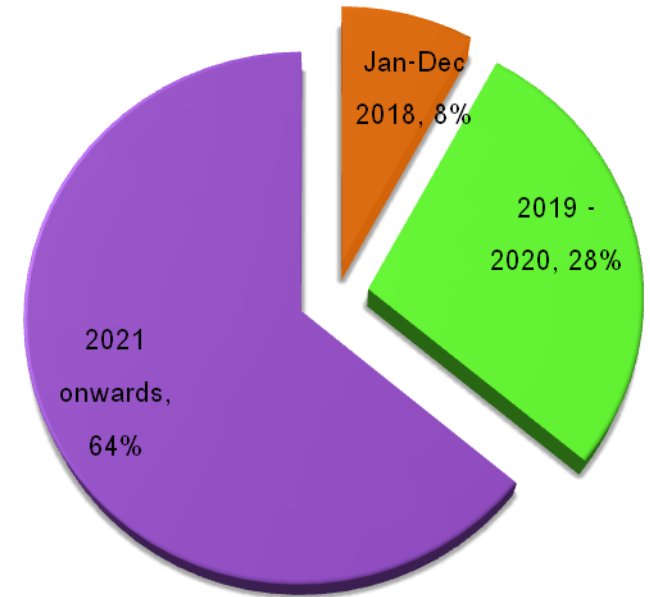
- Personnel expenses increased THB 56 mil due to business expansion.
- Admin expense from AMITA THB 25 mil. (61% of this item was R&D expense)
- PR and advertising expense increased THB 28 mil. due to activities to promote EA Anywhere and MINE Mobility as EA's strategic plan.

The increase of Financial Cost in Q2 (YoY)

- The financial cost incurred after COD of 126-MW wind power plants was recorded as expense instead of asset as previously.



Loan repayment profile



TRIS Rating has upgraded the company rating from “BBB+” to “A-”. The upgrade reflects the enlarged cash flow from EA’s power portfolio and the improvement in financial profile



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Our Growth and New Business



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environmentally friendly*



Biodiesel

B100

Glycerin



Renewable Power Plant

Solar

Wind



Energy
Storage



EV Charging



Electrical
Vehicle

➤ 2009
Biodiesel

➤ 2011
Solar Power

➤ 2015
Wind Power

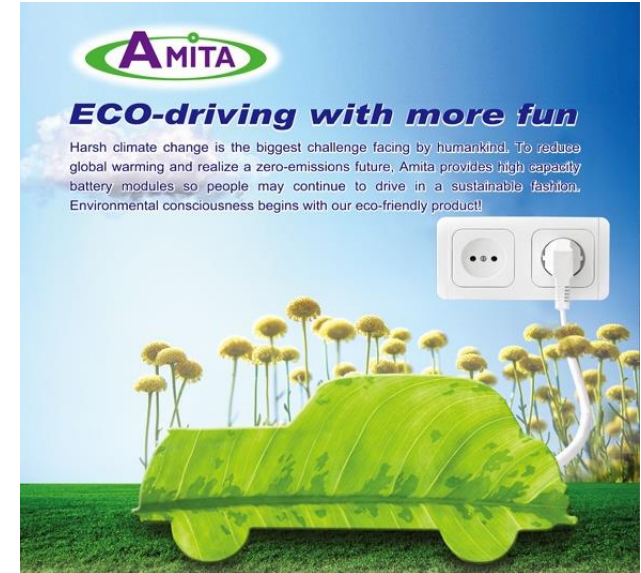
➤ 2016
Energy Storage

➤ 2017
EV Charging

➤ 2018
EV & Green Diesel & PCM



Start investing in energy storage business : Amita Technologies Inc.



Lynx E-Carver with Amita Batteries

AMITA has branched out into the sights of Japanese energy storage applications market with a new strategic thinking electric....

[Link to Youtube](#)





Start investing in energy storage business : Amita Technologies Inc.

- Amita Technologies Inc. was established in March 2000 by Dr. Jim Cherng on lithium-ion power battery with strong material science research and long test data accumulation.
- **Main Businesses**
 - High Power Battery for EV, E-Scooter, Power Plant
 - OEM (Original Equipment Manufacturer)
 - PDCA- Post Dry Cell Battery
 - Turnkeys of High Technology Battery Factory for EV
 - ✓ Beijing Phase 1 : 250 MWh – already completed
 - ✓ Beijing Phase 2 : 2 GWh – during construction
- **Current production capacity and capability** : 44Ah power battery cell or over **500MWh** per year
- **Shareholders structure** : Currently, EA holds 69.99%
- **Main Clients** : UPS Units, Power Bank, Power Tools, Battery- powered Vehicles, and Energy Storage
 - Europe: EV (Electric Vehicle)
 - Taiwan: E-Scooter
 - Japanese: ESS (Energy Storage Systems)
 - China: Turnkey :





Investment in Amita



17.68 mil.shares
@35 = NTD 618.92 mil.
(THB 685.91 mil.)

7.78 mil.shares
@35.20 = NTD 273.87 mil.
(THB 301.27 mil.)

9.70 mil.shares
@80 = NTD 775.84 mil.
(THB 844.11 mil.)

Fair value of equity interest (50.69%)
Book value of equity interest (50.69%)
Fair value of equity interest
Less FX loss
Accounting gain

= 1,821.695
= 911.135
= 910.560
(15.983)
= **894.577**



Patents 805.776 mil.
Brand 277.869 mil
Goodwill 962.546 mil.

*The patents and brand are amortized based on its estimated useful life which is 20 years.
Goodwill is not amortized but is tested for impairment annually.*



For Example:

- IEC Safety Certified Since 2012
- QC-T 743 (China Certified in 2011)
- Electric Vehicle Battery Cell Safety Certification
- Certificate IATF (EV)
- Certificate SGS TW12/11511
- ISO 9001:2008
- ISO/TS 16949:2009

Patents

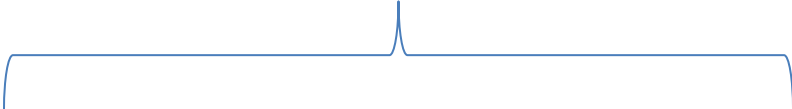


Awards





Summary of Lithium-based Batteries



Chemistry	Lithium Cobalt Oxide (LCO)	Lithium Manganese Oxide (LMO)	Lithium Nickel Cobalt Aluminum Oxide (NCA)	Lithium Iron Phosphate (LFP)	Lithium Nickel Manganese (NMC)	Lithium Titanate (LTO)
Cycle life (ideal)	500–1000	300–700	500	1,000–2,000	1,000–2,000	3,000–10,000
History	1991 (Sony)	1996	1999	1996	2008	2008
Applications	Mobile phones, tablets, laptops, cameras	Power tools, medical devices, powertrains	Medical, industrial, EV (Tesla)	Stationary with high currents and endurance	E-bikes, medical devices, EVs, industrial	UPS, EV, solar street lighting
Comments	High energy, limited power. Market share has stabilized.	High power, less capacity; safer than Li-cobalt; often mixed with NMC to improve performance.	Highest capacity with moderate power. Similar to Li-cobalt.	Flat discharge voltage, high power low capacity, very safe; elevated self-discharge.	High capacity and high power. Market share is increasing. Also NCM, CMN, MNC, MCN	Long life, fast charge, wide temperature range and safe. Low capacity, expensive.



50 GWh Energy Storage Factory



The production in Phase I at 1 GWh will be served to power plant to stabilize production and distribution both domestically and internationally.

The production in Phase II to reach the total of 50 GWh will cover to other industries including EV.

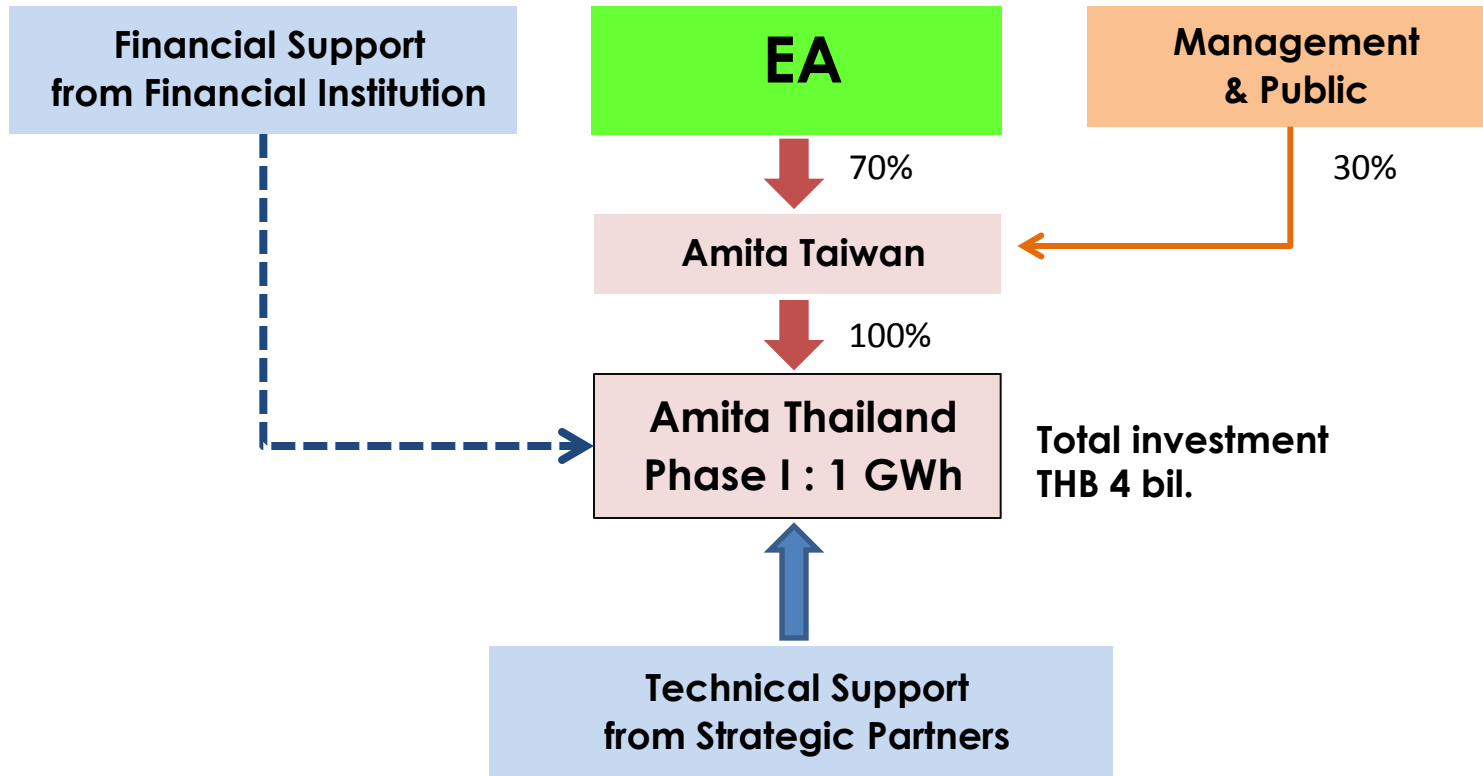
Progress update

- ✓ Ordered Coater Machine from Toray (First class technology) to be ready in Q1/2019
- ✓ BOI promotion has been approved
- ✓ Conceptual design and detail design have been inished
- ✓ Started land clearance end of Q2/2018
- ✓ To be concluded with target customers in neighbor countries (Solar system + ESS)





Phase I : 1 GWh Energy Storage Factory

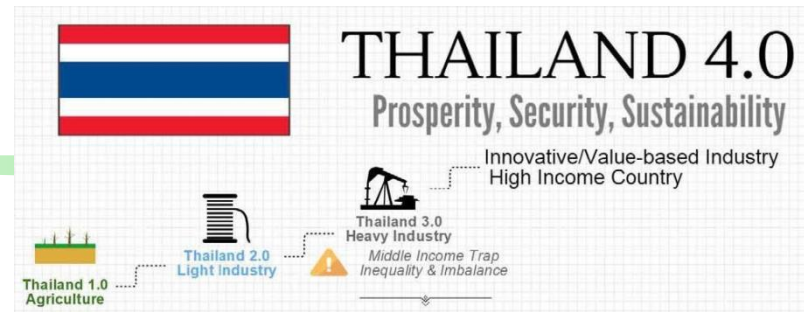


- Lead Power Control System (PCS) for Battery

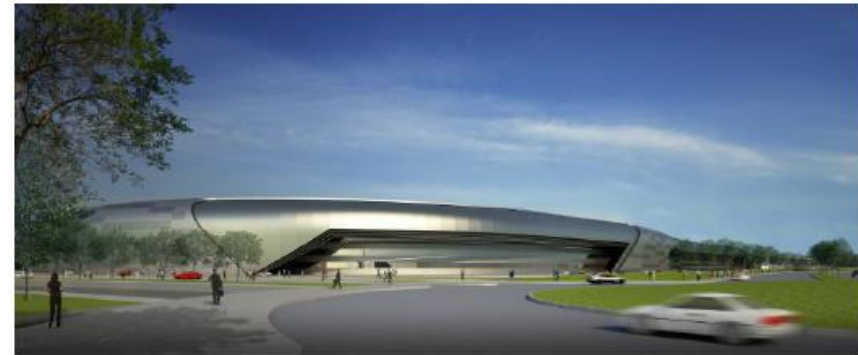


- One of the World's Leading Technology R&D
- Co-Developed STOBA Technology with Amita





EA's 50 GWh energy storage factory is strongly supported by the government under BOI best scheme and EEC promotion.



MOU signing between the Industrial Technology Research Institute (ITRI), EA and Amita, Taiwan to co-develop new technology of battery with high safety for EA's new battery factory, the 50 GWh factory

ITRI, a nonprofit R&D organization of Taiwan, has played a vital role in Taiwan's economic growth, strengthen capabilities of multidisciplinary innovation and cooperation with international partners all over the world.

MOU signing in May 2017 and April 2018





Energy Storage Brings Benefits Of Renewable Energy To Islands of Molokai & Isles Of Scilly

August 16th, 2018 by Steve Hanley

The islands of the world all offer spectacular ocean vistas — they are islands, after all — but they also share a common scourge. Bereft of natural resources, most of them rely on diesel generators for electricity. That means electricity is expensive and the skies over those pristine locations are filled with carbon dioxide and other emissions that are harmful to the environment and human health.

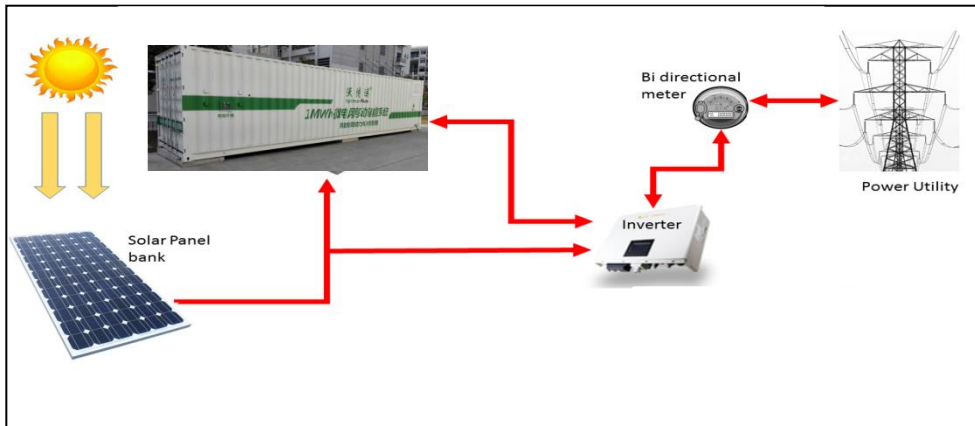
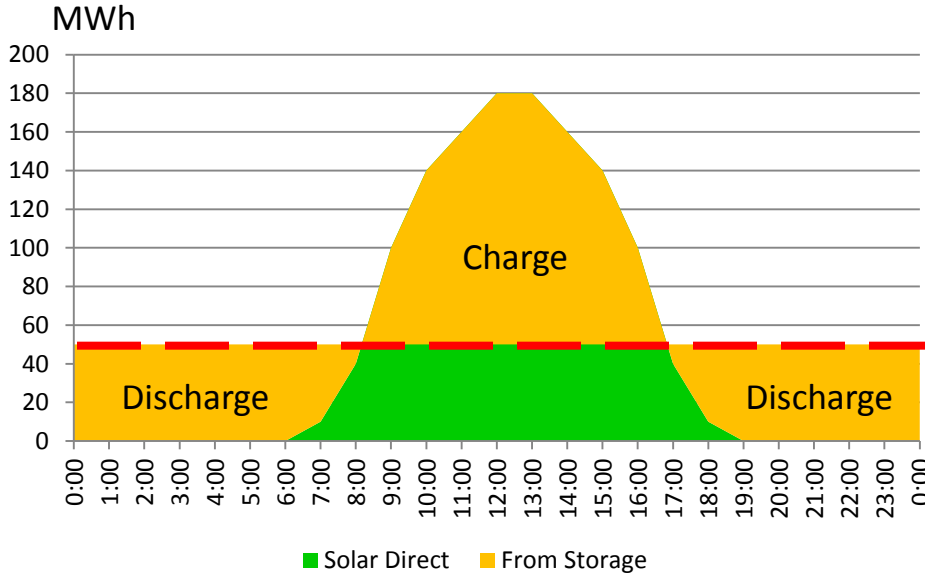


The Hawaiian island of Molokai has a population of under 10,000 people but some of the most expensive electricity in the world at 36 cents per kWh. This week, the Hawaii Public Utilities Commission approved a **22-year power purchase agreement** with Maui Electric to buy energy for the island of Molokai from a solar-plus-storage system at half that rate — 18 cents per kWh.



Example Of Solar System + Battery at 50 MWh

- Install Solar System at 200 MW (20% efficiency)
- Install battery for the total of 750 MW
- To serve 50 MWh for 24 hours



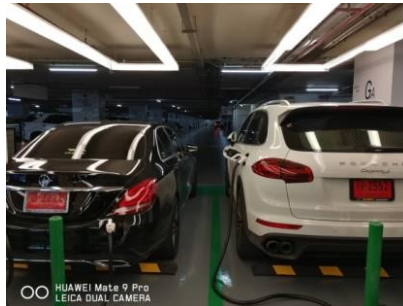
- This model is suitable for remote area i.e. island, mountain, rural, desert to serve independently. Thus it can help reduce the huge investment cost in electrical transmission line from main power plant.



<https://www.eaanywhere.com>

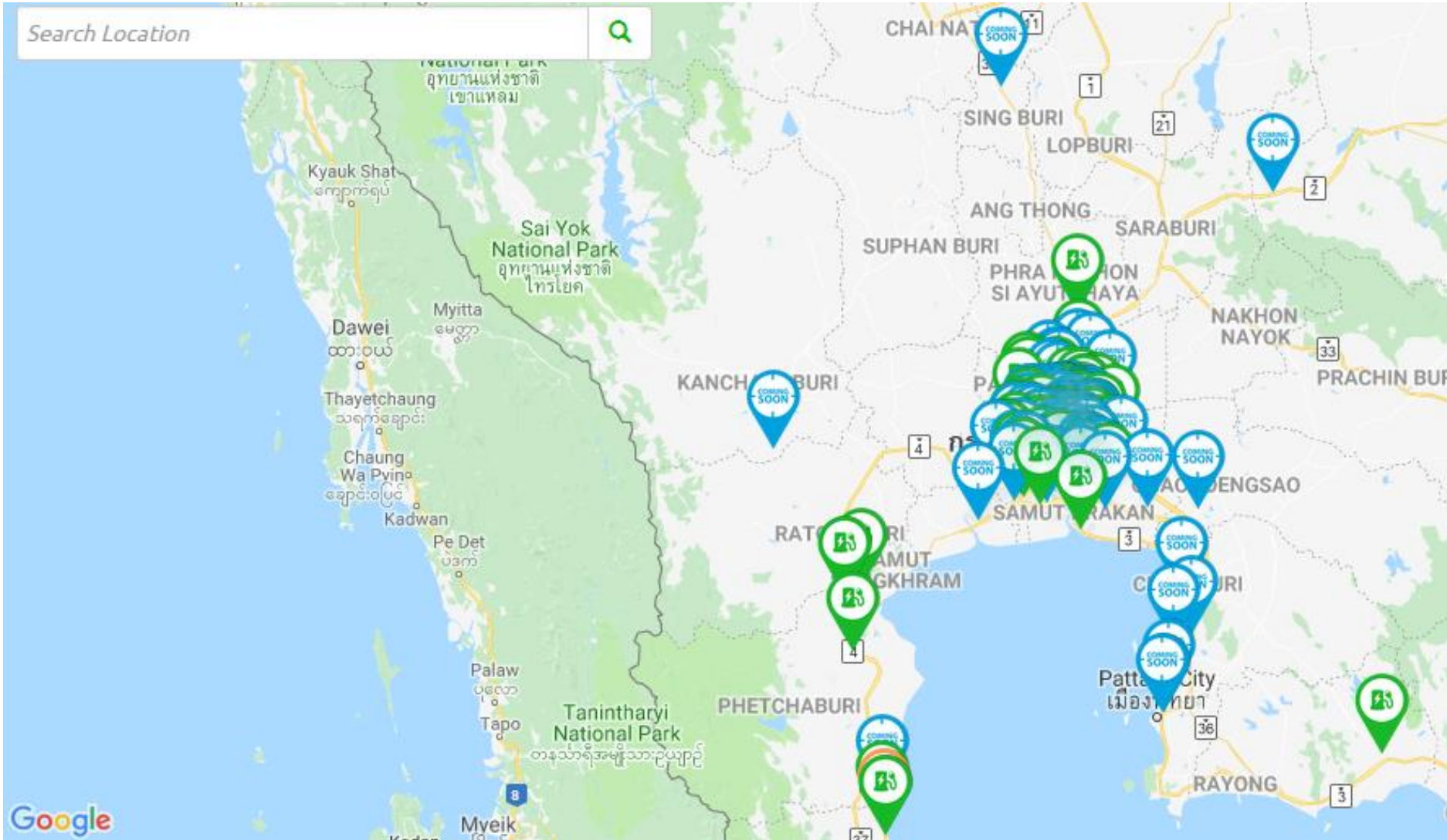


Partnership investment between EMN and landlord in order to secure strategic location to serve EV in the near future.





Expand to Big and Important Cities





MINE Mobility : Mission No Emission in Bangkok International Motor Show 2018



MINE
MISSION NO EMISSION

City EV-CONCEPT

Specification

Max Power (PS/kW)	68/50
Max Torque (Nm)	160
Max Speed (km/h)	120
0-100 km/h (s)	12
Battery type	Lithium-ion
Battery (kWh)	20
Range (km)	200*
Dimension (mm)	3250x1600x1750
Weight (kg)	900
Wheel base (mm)	1850
Drive	Front wheel drive
Suspension	FR : Macpherson strut RR : Double wish bone
Wheel	225/40 ZR18

Range : 200-250 km per charge



MINE
MISSION NO EMISSION

Sport EV-CONCEPT

Specification

Max Power (PS/kW)	160/120
Max Torque (Nm)	350
Max Speed (km/h)	180
0-100 km/h (s)	8
Battery type	Lithium-ion
Battery (kWh)	45
Range (km)	250*
Dimension (mm)	4300x1200x1700
Weight (kg)	1100
Wheel base (mm)	2500
Drive	Front wheel drive
Suspension	FR : Macpherson strut RR : Double wish bone
Wheel	255/30 R20

MINE
MISSION NO EMISSION

MPV EV-CONCEPT

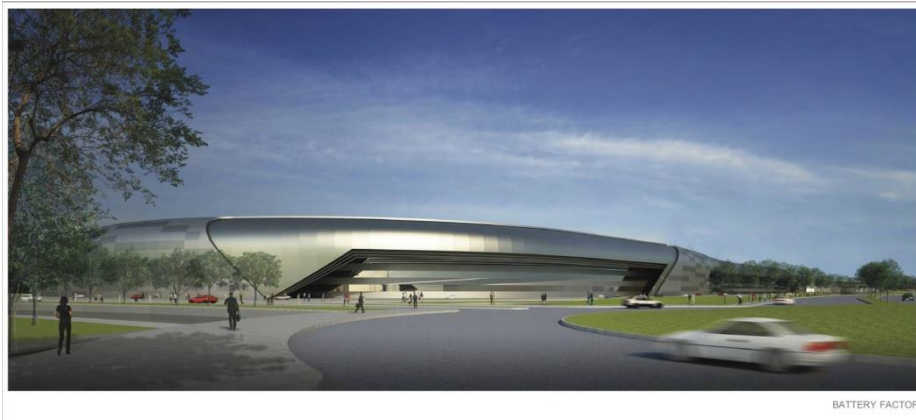
Specification

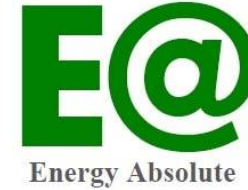
Max Power (PS/kW)	107/80
Max Torque (Nm)	250
Max Speed (km/h)	140
0-100 km/h (s)	10
Battery type	Lithium-ion
Battery (kWh)	30
Range (km)	200*
Dimension (mm)	4100x1660x1750
Weight (kg)	1200
Wheel base (mm)	2650
Drive	Front wheel drive
Suspension	FR : Macpherson strut RR : Double wish bone
Wheel	225/40 ZR18





Presenting EA's Technology and Investment Plan in Thailand Industry Expo 2018 : 2nd Aug 2018



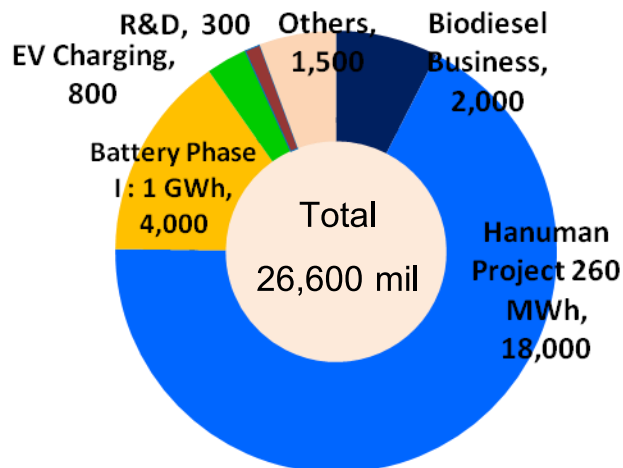


12 Jul 2018 : MOU with KEPCO KDN Co., Ltd. and ILJIN Power Co., Ltd. to join hands together in order to find opportunities for cooperation in energy related businesses such as Power ICT and renewable energy including photovoltaic power plant in Thailand and nearby countries.



Investment Plan for 2018-2019

Investment Plan	Progress / Target	Source of Fund
Biodiesel Business (including Expansion + Green Diesel + PCM)	Start commissioning of PCM in July 2018 To be completed in 2019	Internal cash + long term debt
Wind Power Plant Hanuman Project 260 MWh	Erection and installation of blades To be completed and COD in Q4/2018	On Shore 5,000 : Internal Cash WTG 10% deposit in 2017 : Internal Cash WTG 90% due in Mar 2019 : Long Term Debt)
Energy Storage Phase I : 1 GWh (including infrastructure)	Order machinery To be completed in 2H/2019	Internal cash + long term debt
EV Charging 1000 stations	Achieved 200 Stations in Q2/2018 To be completed in 2018	Internal cash
R&D	Battery / Green Diesel / EV	Internal cash
Others	Acquired 19.30% of AMITA Shares in April Others budget	Internal cash



Net cash	THB 3,600 mil.
Operating Cash in Flow in 2018	THB 8,000 mil.
New issue of Debentures or Long term financing	THB 20,000 mil.



Energy Absolute PCL

Our Vision

A leader in alternative energy business, by using the modern technology and environmentally friendly for the best benefit of consumers, shareholders, partners and fairness to employees.

THANK YOU

