



# CHEM GROUP

2018.12.06

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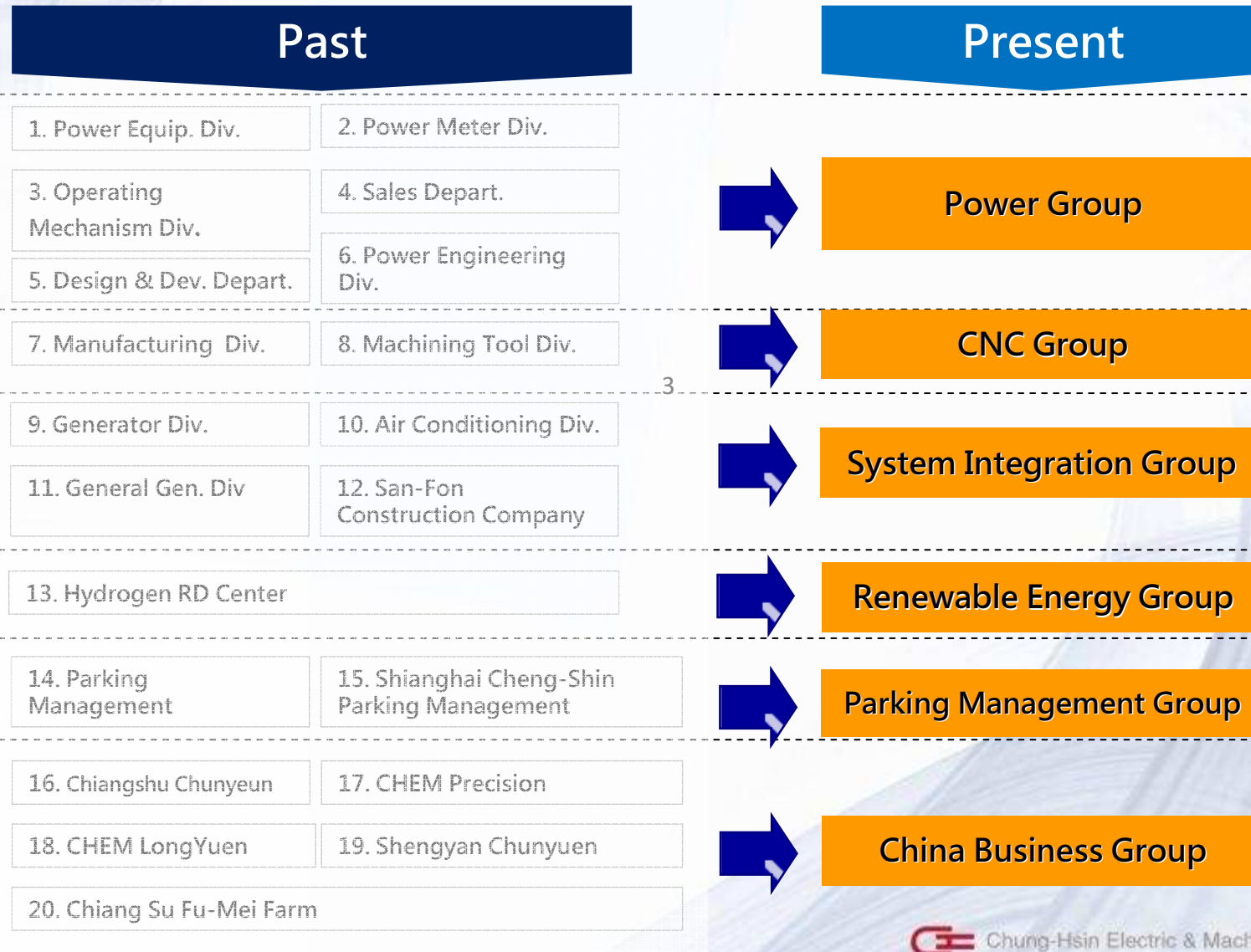
# Company Overview

- Established in 1956
- Group Capital: USD 140 Million
- Group Revenue: USD 330 M/Yr
- Power Equipment, Engineering and Energy Management
- TSE: Code 1513, listed since 1994
- Headquarter: Linkou, Taiwan
- ISO 9001/9002/14001/AS 91
- [www.chem.com.tw](http://www.chem.com.tw)





# Organization Re-Structured





# Strategy

## Green Energy Integrated in Total Power Solution Upgraded and Transformed for Continuing Growth



- GIS – Independent Technology for Turn-Key Solution. Successful JP/CH/Middle-East Asian Market Penetration with Our Own Brand



- H<sub>2</sub> Generating – Core Tech. in Critical Components. Competiveness in R&D and Patents. Innovative Business Model for Global Market.



- Smart Micro-Grid – off /combined power grid solution with Full Package in Power Management. Best Solution in instability and/or remote area for Power Shortage seen from *2025 Nuclear-Free Homeland Policy*.



- 5 Axis Gantry Machining Center with High Precision and Speed with Outstanding Quality. Value-Added for precision machining, esp. for aerospace and automobile industry.

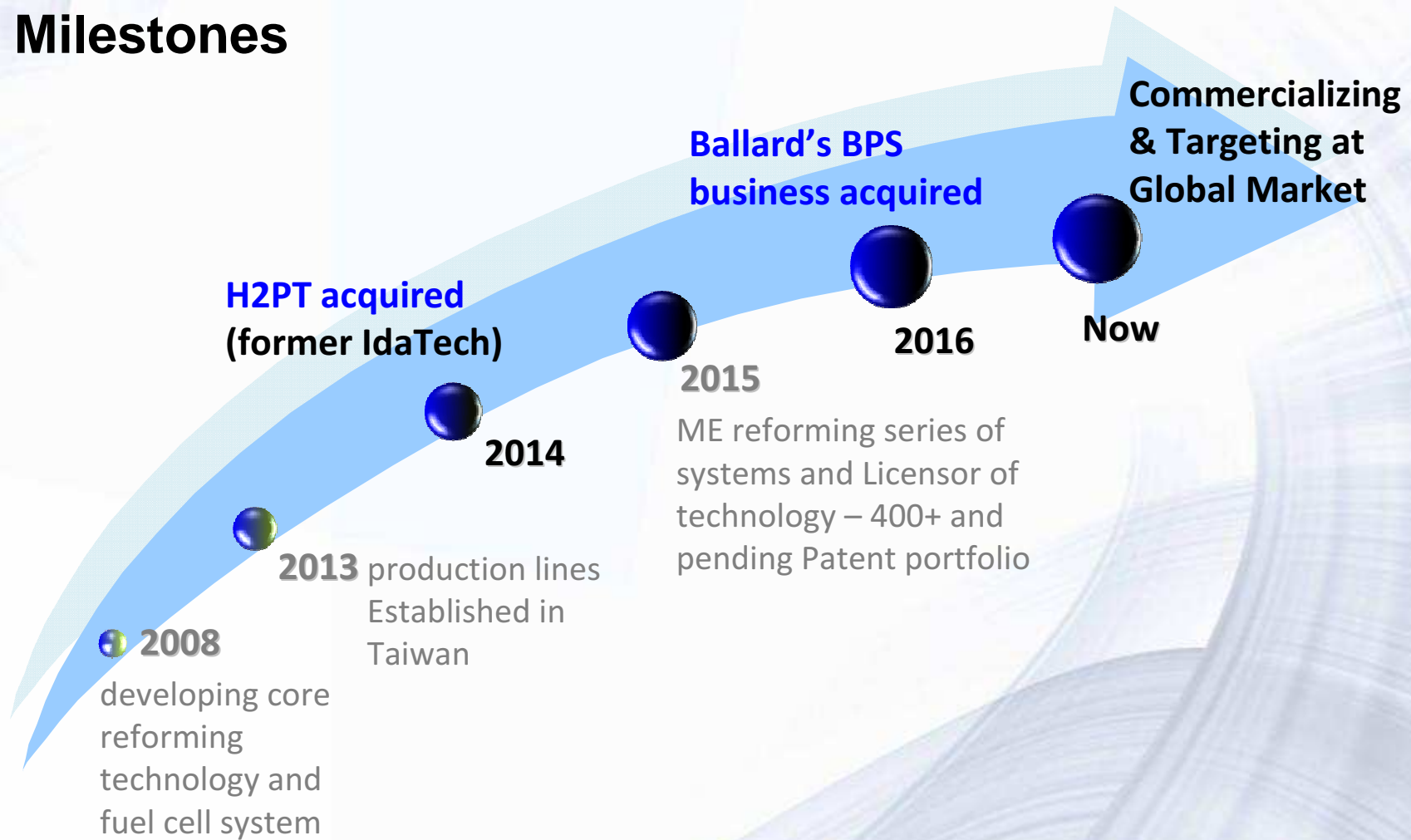


- Leading Brand of Parking Management Solution in TW. Apps with *Mobile Payment System* via the 3<sup>rd</sup> party payment for high added-value to the integrated business of “O2O” (Online to Offline)



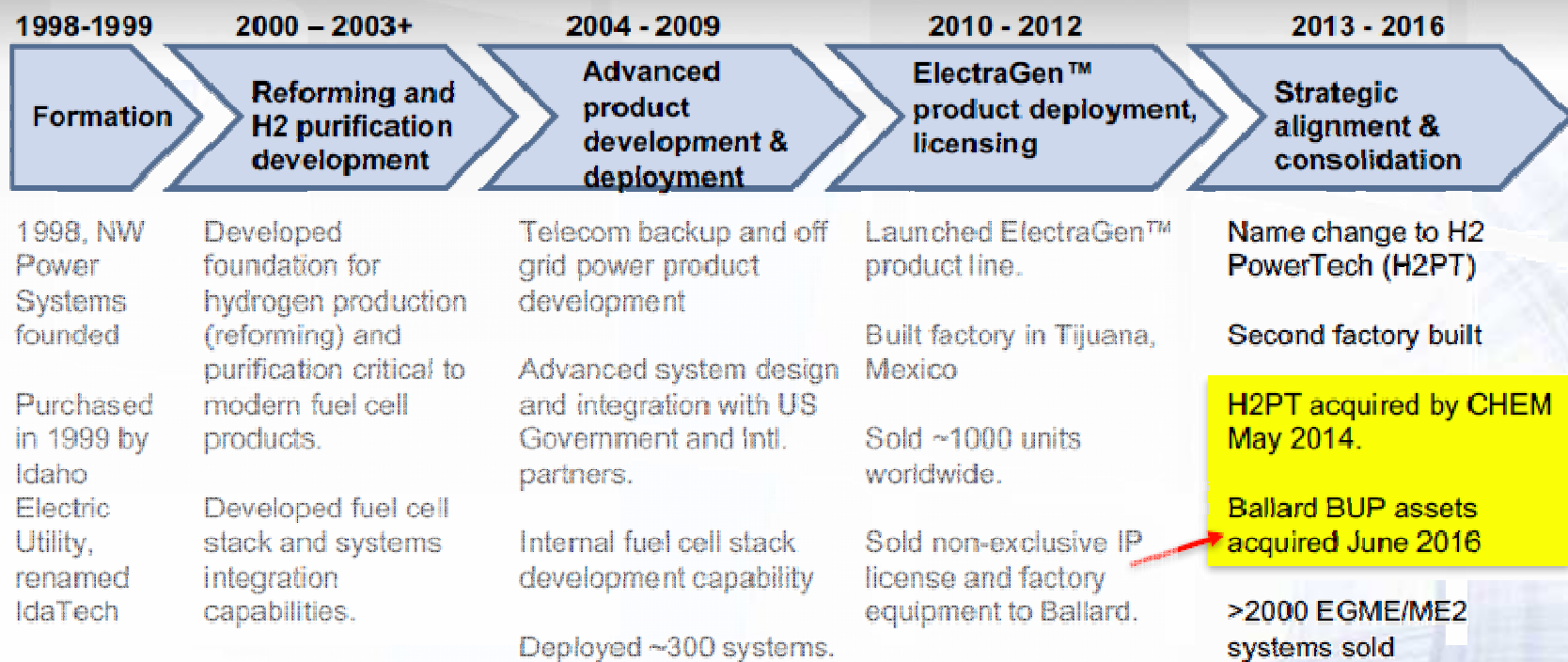
# Renewable Energy Group

## H<sub>2</sub> Generating Technology Milestones





# H2PT Overview(Former IdaTech)



- All commercial methanol fuel cell products based on licensed IP
- 15+ years of experience and \$240+ million invested
- IP based on 400+ patents awarded and pending
- Continuing core development for advanced fuel cell products



# Renewable Energy Group – Fuel Cell + uGrid

## Fuel Cell



## Engine Carbon Removal



## Hydrogen Generating Module

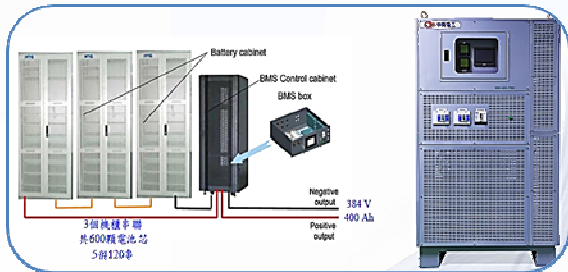


## DC Charging



## 10/50/100kW Smart Inverter

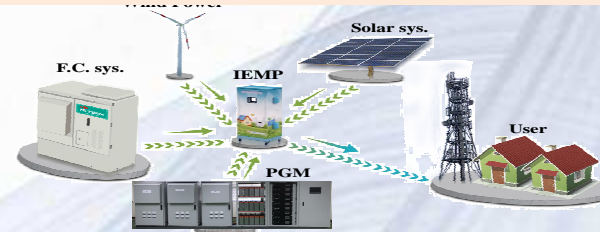
## 5kW/6kWh, 5kW/12kWh Home uGrid



## Fuel Cell uGrid



## Intelligent Energy Management't





# Core Technology Highlights

## Reforming Tech.

400+ patented approval  
Methanol to H<sub>2</sub> for Power,  
Engine carbon removal,  
Backup power FC & H<sub>2</sub> vehicles

## Fuel Cell

Backup Power, esp. for Telecom  
>3000 units on-going operation  
No compromise to performance

## Total Solution Provider

## Smart Micro-grid

Field-Proven Technology  
Inverter, PGM, Management,  
Customized Solution  
Recognized by APEC Program

## H<sub>2</sub> Fueling Station

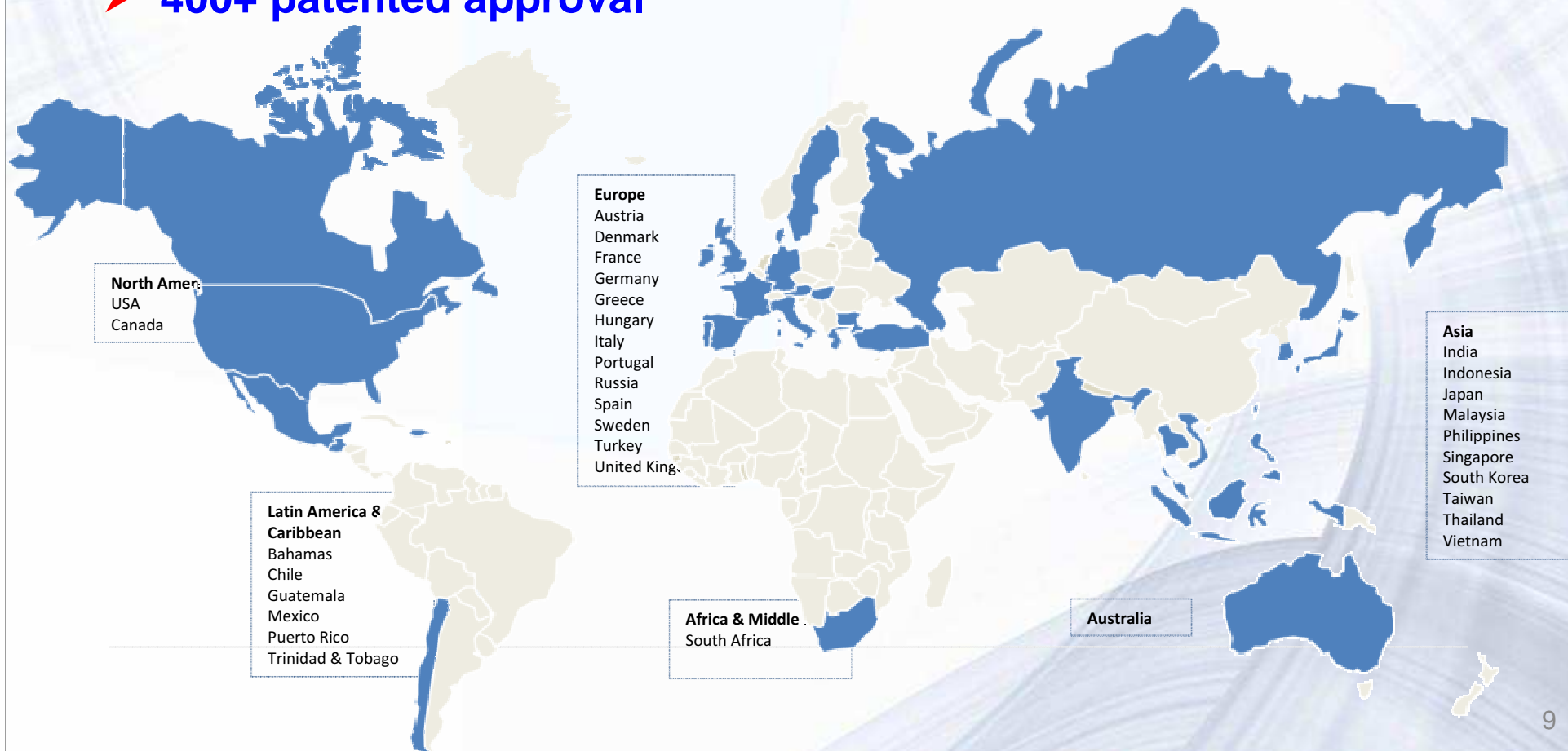
Cost-Efficiency - \$10 vs. \$6  
Mobility & Flexibility for Installation  
“Plug-in & Produce”  
Stress-free over Storage Vessels





# Achievement

- > 3,000 units installed in 30 countries
- Recognized by the 6 from the world's top 10 mobile companies
- 400+ patented approval





# Island Mode Micro-Grid – DJY Island

APEC 2017 ESCI-KSP Smart Grid–Silver Award – Dongjiyu

## Phase 1

- DG (prime power)
- To Integrate PV + ESS

## Phase 2

- Smart Inverter+PMS
- Remote Monitoring
- Real-time Data

## Phase 3

- iFlex-μEMS for storage
- Capacity expanded
- 60 kWh to 180kWh



- The maximum penetration rate of solar power increased from 32% up to 92.8%;



# 2017 APEC ESCI-KSP Awards Ceremony



Best Practices for Energy Smart Community - Silver Award





# Hybrid Mode Micro-Grid – **Community in S.A.**

3 Fuel Cells, powering 34 homes, off grid, for >3 years



Location : Naledi Trust Community, Kroonstad, Free State, South Africa from Aug. 2014 till now

- **Unaffected from weather, 24/7 uninterrupted power supply**
- **Technical feasibility proven, commercial requirement identified**
- **Smart-Generation, Smart-Storage, Smart-Dispatching**



# Household Micro-Grid – Nagano, JP

- backup system & public rescue awareness after 311
- **“home-built micro-grid system”**

## Household $\mu$ -Grid System

- ✓ **self-sustaining**
- ✓ energy reserved for emergency

## Power Management System

- ✓ Solar energy for a self-sustaining environment
- ✓ Extra is available to sell back to Power Company
- ✓ speeds up investment returns, saves the cost for recovery
- ✓ not only uses power but also creates it.



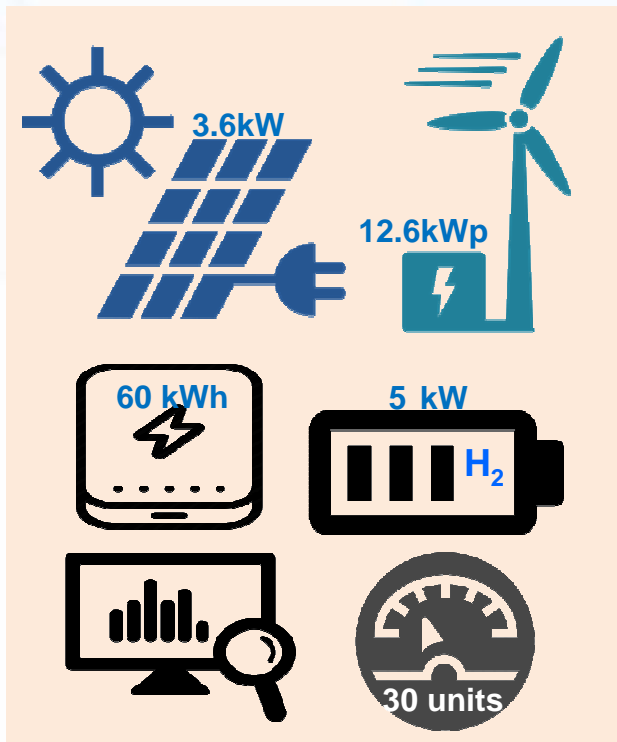
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# Community – PoEr/ZuiFeng in Taipei

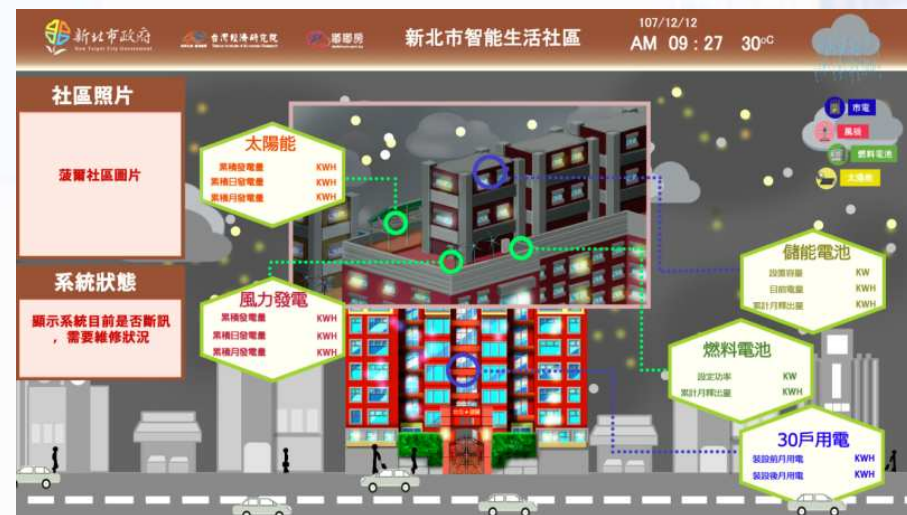
- Project for Residents with New Taipei City Government
- Green Energy Integrated for community recognition  
Solar Energy, Wind Power, Fuel Cell  
Smart-Generating, Smart-Storage and Smart-Feeding

## Community M-Grid System



## Win-Win Strategy

- ✓ Peak-shaving to avoid congestion
- ✓ Monitoring power usage for public facilities
- ✓ IoT integrated with visuals presented
- ✓ Residents involved for Power-Saving Actions





# City Use – Eco Park in Taipei

- **Green Energy Project for Residents with Taipei City Gov.**
  - Carbon Reduction, Educational Purpose and Back-up Power for Emergency Use
  - Solution integrated with Solar Power, Storage, Energy Management



- ✓ Storage System & Solar Power
- ✓ Panel on Lamps (4.68kWp)
- ✓ “smart-generation”
- ✓ “smart-storage”
- ✓ “smart-feeding/dispatching”





# Hybrid $\mu$ Grid – Hsio-Lin Village



- ✓ grid-tied & stand-alone mode
- ✓ “smart-generation”
- ✓ “smart-storage”
- ✓ “smart-feeding/dispatching”

Location : Jia-Shein, WuliPu and Hsio-lin Area in Kaohsiung, Southern Taiwan, from Dec. 2015 till now

- **Worries free from voltage drop of the feeder**
- **Stands as the regulator of power network with high efficiency**





# Product Certification – Micro Grid

**ETC** ELECTRONICS TESTING CENTER, TAIWAN  
NO.1, LAN-25, WEN-TE RD., GUEISHAN TWP., KUI-SHAN HSANG,  
TAOYUAN HSEH SHYI TAIWAN, R.O.C.  
TEL: (03)236-0208 FAX: (03)27-6179

**EC-Attestation**

**Applicant** : Chung Hsin Electric and Machinery Manufacturing Corp.  
No.25, Wen-Te Rd., Gueishan Township, Taoyuan County 33383, Taiwan

**Name of Object** : Grid-tied/Stand-alone Hybrid Inverter

**Model(s)** : CHGSC-10-T222

**Rating** : Input: 360-400 Vd.c., MAX. 30A  
Output: 230 Va.c., 50 Hz, MAX.15A (3 phase)

**Degree of Protection** : IP20

**Protection Class** : I

The attestation is based on an evaluation of a sample of above mentioned product and the above product has been tested with the listed standards and found in compliance with the European directive LVD 2014/35/EU

**Tested according to** : EN 50178: 1997

**Test Report No.** : 14-09-VAB-013-001

**Data** : 2014-10-01

*Daniel Yen* (Signature)  
DANIEL YEH / Manager of Products Safety Department  
ELECTRONICS TESTING CENTER, TAIWAN

**CE** After preparation of the necessary technical documentation as well as the conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

**ETC** ELECTRONICS TESTING CENTER, TAIWAN  
NO.1, LAN-25, WEN-TE RD., GUEISHAN TWP., KUI-SHAN HSANG,  
TAOYUAN HSEH SHYI TAIWAN, R.O.C.  
TEL: (03)236-0208 FAX: (03)27-6179

**ATTESTATION OF CONFORMITY**

**Applicant** : Chung Hsin Electric & Machinery Mfg. Corp. Ltd.  
No.25, Wen-Te Rd., Gueishan Township, Taoyuan County 33383,  
Taiwan (R.O.C.)

**Name of Object** : 10kW Smart Multi-function Bi-directional Inverter

**Model(s)** : CHGSC-10-T221

**Rating** : Input: 360-400 Vd.c., MAX. 30A  
Grid Output: 230 Va.c., 50 Hz, MAX.15A (3 phase)

**Degree of Protection** : IP20

**Protection Class** : I

The attestation is based on an evaluation of a sample of above mentioned product and the above product has been tested with the listed standards:

**Tested according to** : DIN V VDE V 0126-1-1: 2006

**Test Report No.** : 14-09-VAB-013-001

**Data** : 2014-10-03

*Daniel Yen* (Signature)  
DANIEL YEH / Manager of Products Safety Department  
ELECTRONICS TESTING CENTER, TAIWAN

**ETC** ELECTRONICS TESTING CENTER, TAIWAN  
NO.1, LAN-25, WEN-TE RD., GUEISHAN TWP., KUI-SHAN HSANG,  
TAOYUAN HSEH SHYI TAIWAN, R.O.C.  
TEL: (03)236-0208 FAX: (03)27-6179

**Attestation**  
No.: M00-CERT-1311080-02

**Holder of Certificate** : Chung Hsin Electric & Machinery Mfg. Corp. Ltd.  
No.25, Wen-Te Rd., Gueishan Township, Taoyuan  
County 333, Taiwan(R.O.C)

**Name of Object** : 10kW Smart Multi-Functional Bi-directional Inverter

**Model(s)** : CHGSC-10-T222

**Comment Issues** : CHGSC-10-T221

This certificate of conformity is based on evaluated sample(s) of product as below:

**Tested according to** : FCC 47 CFR, Part 15 Subpart B (2011) (Class A)  
CSA Standard C 108.8 / Interference-Causing  
Equipment Standard  
ICES-003 (2004) / ICES-003 (2004) / CAN/CSA-CEU/  
IEC CISPR 22: 02 (Class A)

**Test Report No.** : 13-11-MAS-080-02

**Date** : Nov. 26, 2013

*Jerry Huang* Nov. 26, 2013 (Signature)  
JERRY HUANG  
Section Manager of EMC Testing Department I  
ELECTRONICS TESTING CENTER, TAIWAN

**ETC** ELECTRONICS TESTING CENTER, TAIWAN  
NO.1, LAN-25, WEN-TE RD., GUEISHAN TWP., KUI-SHAN HSANG,  
TAOYUAN HSEH SHYI TAIWAN, R.O.C.  
TEL: (03)236-0208 FAX: (03)27-6179

**EC-Attestation**  
No.: M00-CERT-1311080-01

**Holder of Certificate** : Chung Hsin Electric & Machinery Mfg. Corp. Ltd.  
No.25, Wen-Te Rd., Gueishan Township, Taoyuan  
County 333, Taiwan(R.O.C)

**Name of Object** : 10kW Smart Multi-Functional Bi-directional Inverter

**Model(s)** : CHGSC-10-T222

**Comment Issues** : CHGSC-10-T221

This certificate of conformity is based on evaluated sample(s) of product as below:

**Tested according to** : IEC 61000-6-4:2006(EMI)  
CISPR16-2-1:2008  
CISPR16-1-2:2006  
CISPR16-2-3:2010  
IEC 61000-3-2:2005(A1):2008(A2):2009  
IEC 61000-3-3:2008  
IEC 61000-6-2:2005(EMS)  
IEC 61000-4-2:2008  
IEC 61000-4-3:2008(A2):2010  
IEC 61000-4-4:2012  
IEC 61000-4-5:2005  
IEC 61000-4-6:2008  
IEC 61000-4-8:2009  
IEC 61000-4-11:2004

**Test Report No.** : 13-11-MAS-080-01

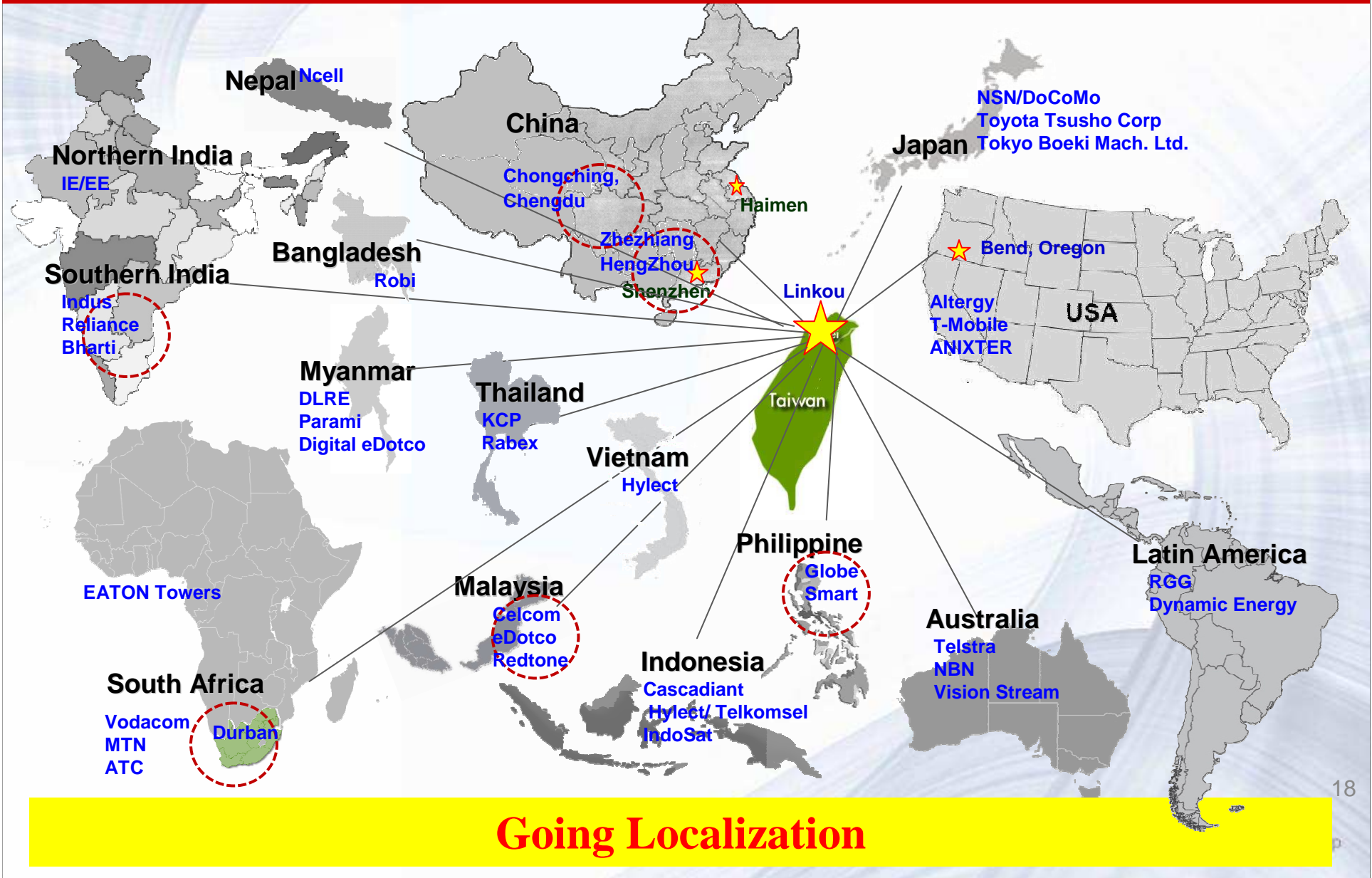
**Date** : Nov. 28, 2013

*Jerry Huang* Nov. 28, 2013 (Signature)  
JERRY HUANG  
Section Manager of EMC Testing Department I  
ELECTRONICS TESTING CENTER, TAIWAN

**CE** After preparation of the necessary technical documentation as well as the conformity declaration the required CE marking can be affixed on the product. Other relevant directives have to be observed.

**Certification Received for the IEC61000-6-4, CISPR16-2-1, CISPR16-1-2, CISPR16-2-3, IEC61000-3-2, IEC61000-3-3, IEC61000-6-2, IEC61000-4-2~6, IEC61000-4-8, IEC61000-4-11, IEC CISPR22:02(Class A)**

# Global Footprint



Going Localization



# CNC Group

## Aviation Structure Parts

Rear Spar

SPAR

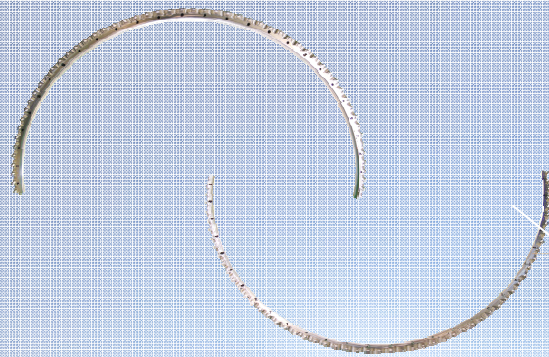


Gantry Type 5-Axis Machining Center  
( CHEM 4060 )



# CNC Group

## Aviation Engine Parts



Shroud



Combuster Case  
(Waspaloy)



CNC Vertical Lathes  
( O-M Vtlex 1250 )

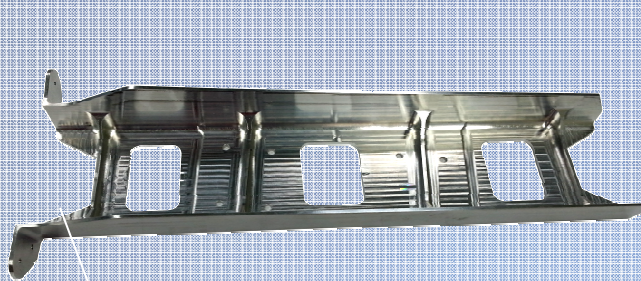


Vertical Multi-Tasking Turning  
Center ( 5 Axis )  
( Mazak e-1550 V/10 )

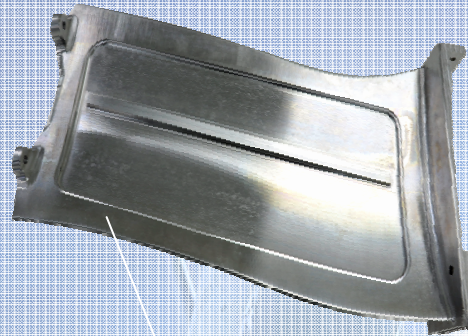


# CNC Group

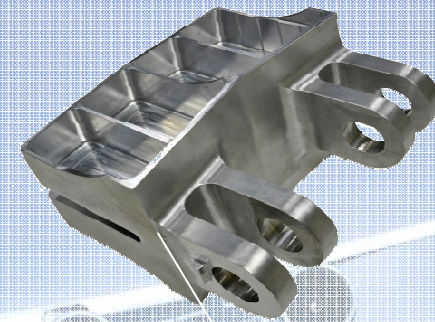
## Aviation Engine/Structure Parts



Support



Blade



Pivot Fitting



High Speed Vertical  
Machining Center ( 5 Axis )  
( Mazak VARIAXIS 730-5X )



Vertical Multi-Tasking Turning  
Center ( 5 Axis )  
( Mazak Integrex i-300s )



High-precision Horizontal  
Machining Center  
( Mazak HCN-8800μ )



# CNC Group

## Vacuum Chamber Parts



**Vertical Multi-Tasking  
Turning Center ( 5 Axis )  
( Mazak e-1550 V/10 )**

**Chamber**



**CNC Five-face  
machining center**



# CHEM in Nanke

## Tree Valley Tech. Park in Nanke Science Park, Tainan





# CNC Group

## Business for Vacuum Chamber



### ■ Linko

1. Completed Package for CNC solution & Management
2. Capability of Critical Components in Aerospace & Semi-Conductor

### ■ Tainan (Nanke)

1. Close Connection with AMAT Display
  2. Continuous Growth in OLED demand
- &  
Gen. 10.5 in Display Biz.

### ■ Jiangsu (Haimen)

1. Supplying Critical Component of Semi-Conductor for fast-growing demand in China

(LED, SOLAR, Display, & SEMI)

2. Main Customer Base:

AMEC/IdealEnergy+/Solibro/UCT 24





# Parking Management Group

## IoT + Smart Parking Solution



### Revenue

- NTD1.89 B for 2017
- NTD 1.9 B for 2018 (Estimated)

### Numbers of Car Park

- 294 Parks, >40K spaces
- SPIN-OFF expected after evaluation of 2018

### Integration of Online & Offline

- Parking Apps Ready
- Special Offers for Credit Card Users
- Insurance Companies Affiliations
- 192 car parks integrated
  
- Steady Growth for Num. of Users - 820K
- To reach 100K in Dec. 2018



# Urban Renovation Projects

Center of Taipei City Area - Dunwha S. Rd. & Civic Blvd. (敦南御所)





## 歷年現金股利& 經營參考數據

年份	現金股利(元)
93	1.3
94	1.5
95	1.4
96	1.4
97	0.88
98	1.0
99	1.0
100	1.0
101	1.0
102	0.8(現金股利) 1.25(減資退還股款)
103	1.2
104	1.0
105	1.0
106	1.0

財務比率	106年	105年	104年
ROE 股東權益報酬率 (稅後淨利/股東權益)	6.81%	6.61%	7.17%
ROA 資產報酬率 (稅後淨利/總資產)	3.46%	3.51%	3.92%
毛利率	16.01%	14.76%	20.25%
營業利益率	3.65%	3.47%	5.52%
淨利率	4.51%	3.95%	5.30%

- 107年前三季  
合併營收89.7億, YoY +15.42%  
淨利4.5億, YoY + 8.58%  
EPS稅前1.27元/股

- “數字、願景、夢想”





# Financial Highlights

Fiscal Year	Dividends
2004	1.3
2005	1.5
2006	1.4
2007	1.4
2008	0.88
2009	1.0
2010	1.0
2011	1.0
2012	1.0
2013	0.8 (cash dividends) 1.25 (cash capital reduction)
2014	1.2
2015	1.0
2016	1.0
2017	1.0

Profitability	2017	2016	2015
ROE	6.81%	6.61%	7.17%
ROA	3.46%	3.51%	3.92%
GPM	16.01%	14.76%	20.25%
OPM	3.65%	3.47%	5.52%
NIM	4.51%	3.95%	5.30%

## 2018 Q1-Q3

- Consolidated Revenue  
NTD 8.97B, YoY +15.42%;
- Net Profit NTD 450MM, YoY +8.58%
- EPS 1.27 before tax