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## **CSRC** Group Business Overview









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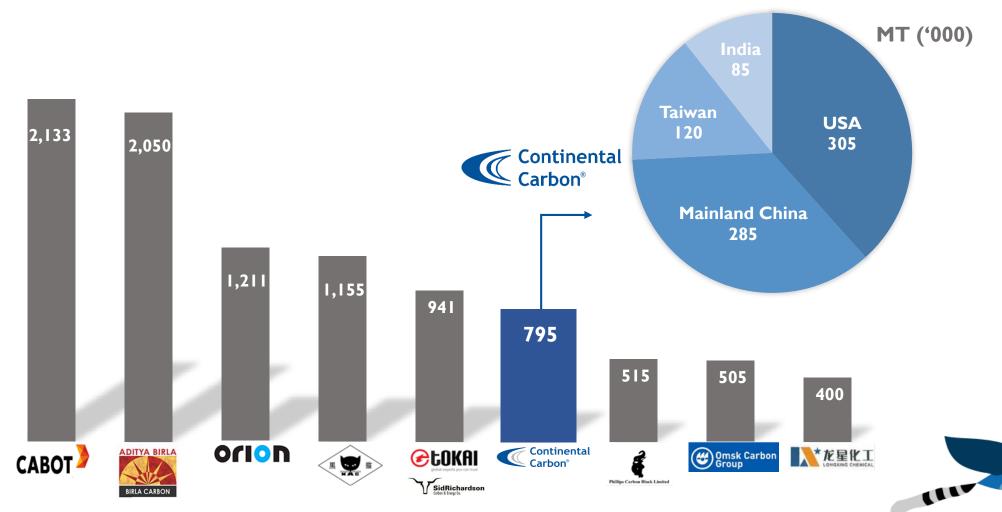
- 01 Carbon Black Segment
- 02 Battery Segment
- 03 IQ 2019 Operating Results





## Capacity of Major Carbon Black Makers





Tokai completed acquisition of Sid Richardson in Sept. 2018

**Source: Notch Consulting Inc., 2018** 

#### Worldwide Carbon Black Demand & Supply

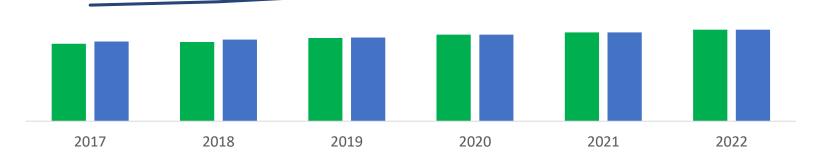






Demand CAGR = 2.8%





#### North America

Supply Demand —CAGR

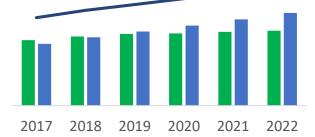
Mainland China

Supply Demand ——CAGR



Supply Demand ——CAGR

Demand CAGR = 3.1%







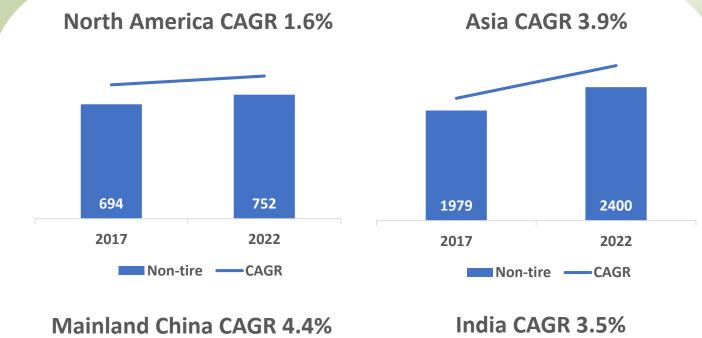
Source: Future Markets & Notch Consulting Inc., 2018

#### Worldwide CB Demand for Tire/Non-Tire Applications





Worldwide Demand	CAGR '14-'17	CAGR '17-'22
Tire	2.9%	2.7%
Non-Tire	2.3%	3.1%





Non-tire ——CAGR Non-tire ——CAGR Unit: MT ('000)

**Source: Notch Consulting Inc., 2018** 

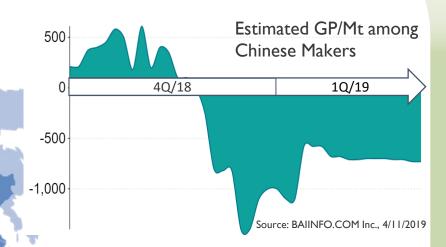
#### Overview and Outlook





#### Mainland China:

- Uncertainties are expected to continue into Q2.
- Weaker demand coming from tire market.



#### USA:

- Demand growth is expected to continue into 2019.
- Peers continue to announce price increase due to strong demand.

#### India:

- Market demand has been strong. Supply is catching up quickly.
- Selling price is impacted by imports from China.

#### Taiwan:

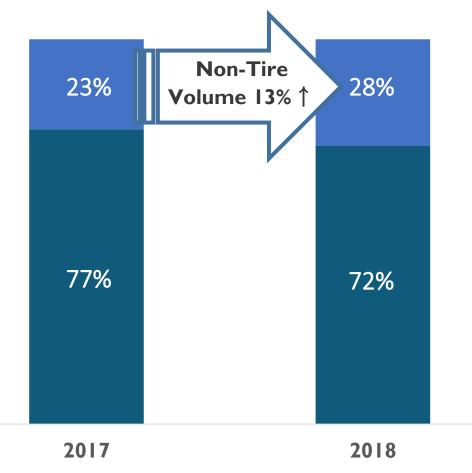
- Higher utilization rate with co-generator revamping.
- Carbon black production is expected to increase.



# **CSRC Non-Tire Business** Compounder **Mechanical** Rubber Goods **Plastics**







**■ Non-tire** 

**■** Tire

### Non-Commodity Product



## **R&D** Capabilities

Leverage R&D strength to develop a range of non-tire carbon black products.

#### **Demand Growth**

The demand growth of non-tire rubber is expected to be stronger than tire rubber.

Stronger Demand R&D Investment

Diversification

#### **Diversification**

Diversify applications, product portfolio, and clientele.

Niche Carbon Black

### Non-Commodity CB

Taking carbon black products to the next level.





#### Expansion in India

CSRC 1

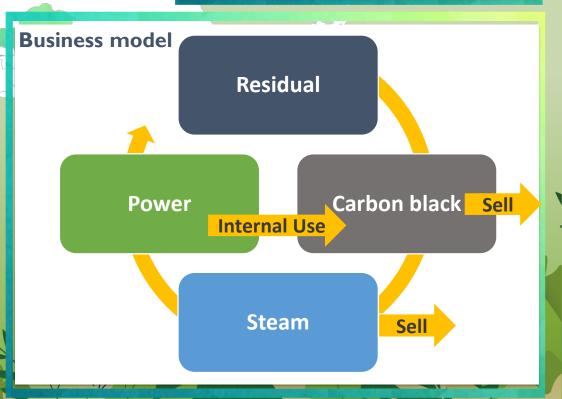
#### New plant CCET:

- Basic design accomplished
- Land acquired, preparation stage



- Advantageous geographical location
- Customers and feedstock cluster
- Well-developed infrastructure
- Higher economic growth
- Friendly investment environment





#### Reduction Rate



Anhui, Mainland China 1992-2019

SOx **96** % ↓

NOx **91** % ↓

Liaoning, Mainland China 2001-2019

SOx <u>70 % ↓</u> NOx <u>57 % ↓</u> Chongqing, Mainland China 2011-2019 SOx 91 %↓

NOx 34 % ↓

## AMERICA Sunray, TX

Ponca City, OK

Phenix City, AL

Ponca & Phenix City, USA 2022~

SOx <u>130 ppm ↓</u> NOx <u>38 ppm ↓</u> **EUROPE/MEA** 

**ASIA** 

Liaoning, Mainland China

Anhui, Mainland China

Chongqing, Mainland China

New Delhi, India 1986-2019

SOx <u>58 % ↓</u>

NOx **24** % ↓

Kaohsiung, Taiwan 1992-2019

SOx 99 % ↓ NOx 73 % ↓



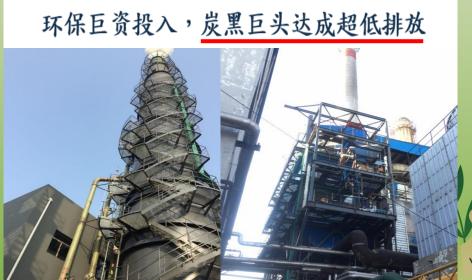
### Commitment to Sustainability



Top 23%
EcoVadis 2019 Ratings



















## NCA Cathode Material

## Fast Charging & Discharging

## **Energy Storage System**

#### **Energy Storage: Next Game** Changer

Panasonic considers producing 2170 cells in Japan 提供依賴 的选举于打造或数率电池使用槽

#### Global Energy Storage to Hit 158 Gigawatt-Hours by 2024, Led by US and China

Toyotato tie up with major Chinese automaker on fuel cell vehicles

電池儲能系統成本降,2050年全球線能發電占比將過半

SHARE STREET, SAN PERSON

可不可以。每力概念又高能又採的7

Global batter storage market to hit USD 13

#### 动力电池攻关300wh/kg! 国内NCA材料布局起底

2019-01-28 10:42:57 来源: 紀点锂电大数据

槽身洞院MCAFEB供應辦 中國MCAE海陽於TF框把

成熟的NCA电池,可能是中国动力电池市场的一片新蓝海 2419-10-24 21-01 HIRWADSTANK

中國NCA三元電池進入高能量密度3.0時代

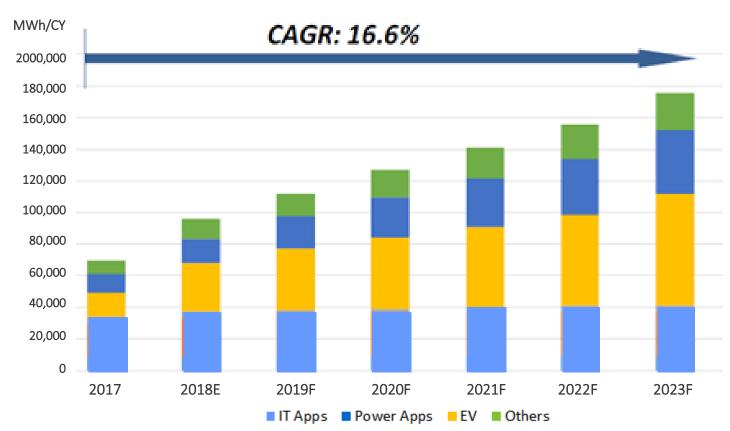
2018-06-12 or #EZW#############

NCM811与NCA, 谁将成为未来高密度电池的霸主?

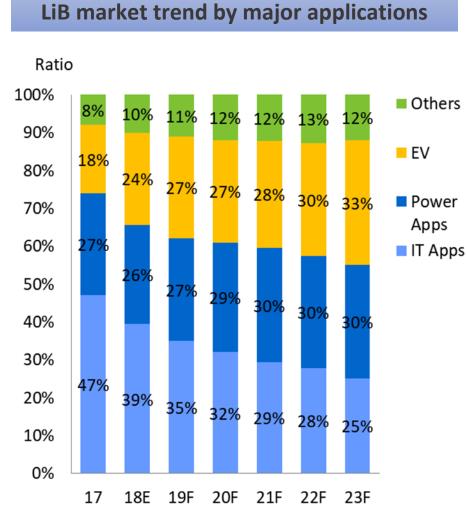
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## Lithium Battery Market Trend (MWh Capacity Basis)



Other portables: tablet, DSC, cam corder, PMP, game & peripherals Other power Apps: power tools, shaver & toothbrush, e-bicycle, cleaner Others: power banks, ESS, etc



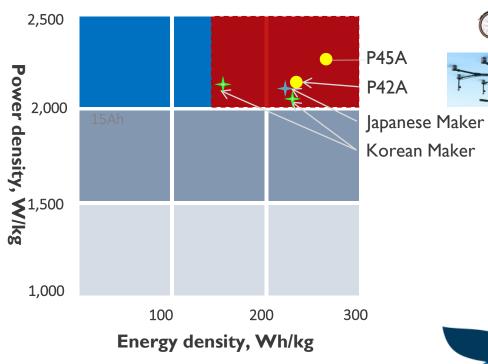


Source: TSR report, 2018Q4

#### Market Position and Application



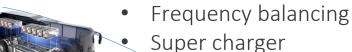




#### E-mobility

- EV
- E-bus/E-truck
- E-motorcycle
- E-scooter
- E-bike
- UAV/Drone
- E-boat
- Start-stop system





- Auxiliary service (1MW, discharge within 15min)
- Demand response
- BBU for data center



Base station energy storage



#### Home & personal device

- Shaver & T-brush
- Vacuum cleaner
- Patient monitoring



Backpack harness







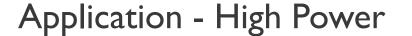
















E-Mobility



**Uber Jump** 



E-motorcycle



IMWh ESS (Longjing)



IMWh ESS (ITRI)



Drones



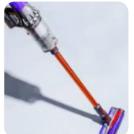
**Uber Elevate** 



Exo-skeleton technology



Life support system









Garden tools



## Continuing Momentum in 2019 and Beyond

#### The Cells Drive Great Power

Leveraging technology for

competitive advantage

- -Cathode: Ni rich NCA
- -Anode: C+Si/SiO
- -High Safety Separator
- -Functional E/L



- Cooperate with suppliers to develop next-generation materials
- > Enhance R&D capabilities & double R&D talents
- Advanced production lines provide accuracy & capacity



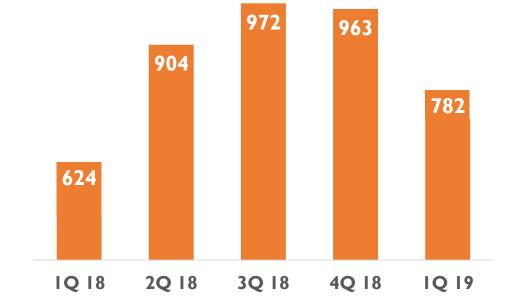


## Operating Results



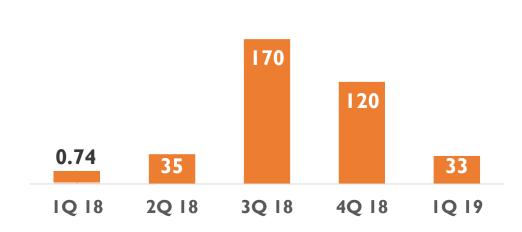


#### **NTD** million



#### **Net Income**

**NTD** million



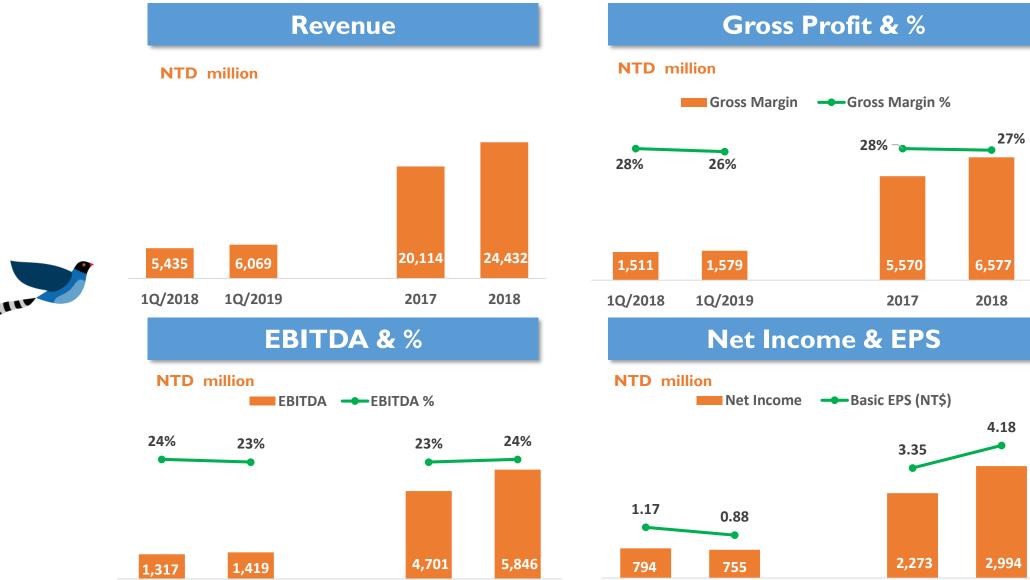


#### IQ 2019 Operating Results

1Q/2018

1Q/2019





2018

1Q/2018

1Q/2019

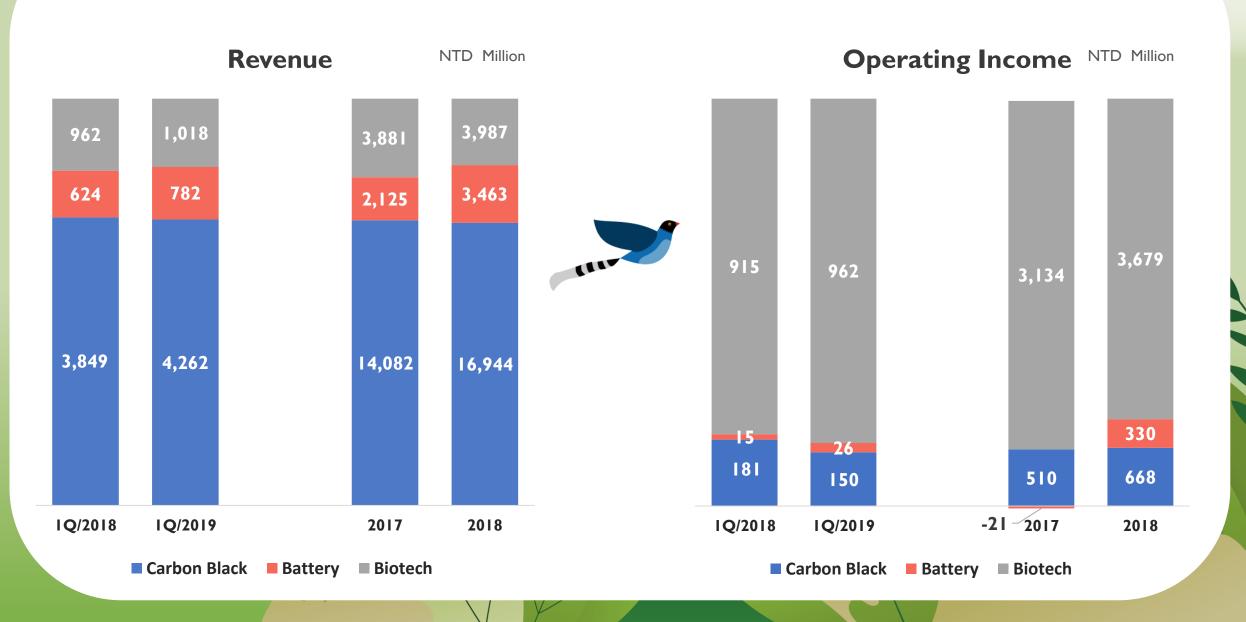
2017

2018

2017

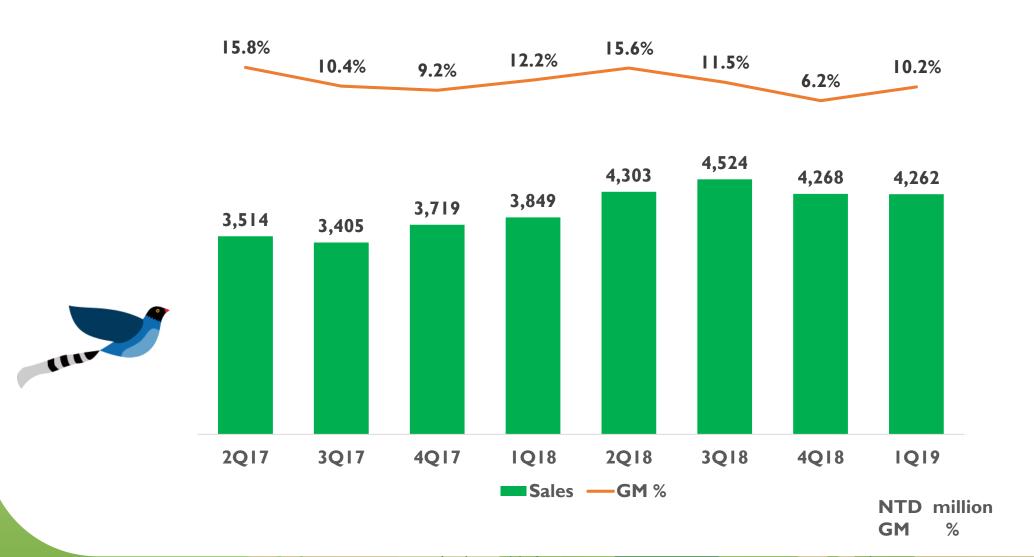
#### IQ 2019 Operating Results by Segments





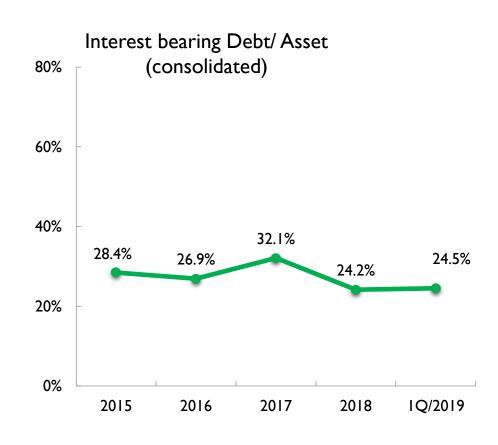
## Carbon Black Sales & Gross Profit Margin

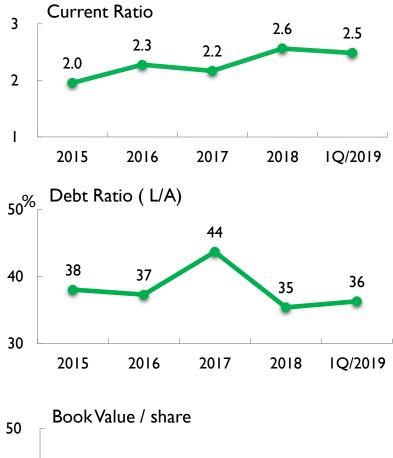


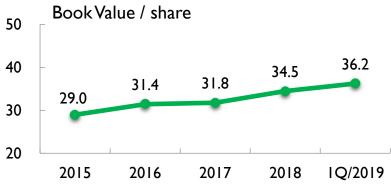


#### Financial Structure











We Appreciate Your Listening!

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