

# China Steel Chemical Corp.

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March, 2020



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# The Brief Introduction to CSCC

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## Chronology of Major Events

- 1.CSCC established in February 1989.
- 2.Plants completed during 1991~1993.
- 3.CSCC IPO listed in Taiwan in November, 1998
- 4.CSCC was awarded “Industrial Excellence Award “ and “National Outstanding SMES Award” in 2000 and 2001.
- 5.CSCC achieved OHSAS 18001 certification during 2001~2008.
- 6.CSCC achieved CNLA in April, 2002. And granted authentication in April 2005 and November, 2008.
- 7.Refined Naphthalene Unit expansion completed in April 2009.
8. The capacity 1,400 MT/YR of Green Mesophase Powder Plant completed in January 2010.
- 9.The Light Oil Distillation plant phase 2 completed in April 2010.
- 10.The line G5/G6 of Green Mesophase Powder Plant reaching capacity to 2,600 MT/YR completed during the third quarter 2011.
- 11.The line G1N/G2N of Green Mesophase Powder Plant reaching capacity to 5,000 MT/YR completed by the end of 2012.



# The Brief Introduction to CSCC

## The Structure of Shareholder

unit : per thousand stocks

<b>Major shareholder</b>	<b>Shares</b>	<b>Percentages</b>
China Steel Corp.	68,787	29.04%
HSBC Hosts Matthews Asia Dividend Fund Investment Account	15,589	6.58%
International CSRC Investment Holdings Co., Ltd.	11,759	4.96%
Fubon Life Insurance Co., Ltd.	12,159	5.13%
Ever Wealthy International Corp.	4,754	2.10%

As of : Apr., 2019



# The Brief Introduction to CSCC

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Table of academic degree in CSCC's employees

Academic Degree	No.	Percentages
Ph.D.	8	3%
Master's Degree	84	28%
Bachelor's Degree	143	47%
Junior College and Senior High School	67	22%
Total	302	100%

As of : Mar., 2020



# The Brief Introduction to CSCC

Unit: NT\$ thousands

<b>2018</b>	<b>01</b>	<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>07</b>	<b>08</b>	<b>09</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>Total</b>
Revenue	708,454	583,994	720,069	675,634	678,831	664,972	743,662	779,066	793,703	754,445	768,359	688,930	8,559,970
Operating Income	156,645	111,915	152,960	139,986	145,933	133,353	169,181	174,206	157,365	135,629	156,050	143,032	1,776,255
Net income before tax	149,252	133,860	135,791	146,578	169,513	150,865	163,175	184,811	192,252	160,260	147,542	151,768	1,885,667
WTI Oil Price	64	62	63	66	70	67	71	68	70	71	56	49	65
<b>2019</b>	<b>01</b>	<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>07</b>	<b>08</b>	<b>09</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>Total</b>
Revenue	689,967	584,475	744,685	631,257	648,487	586,009	758,858	712,468	687,702	607,351	377,379	513,352	7,541,990
Operating Income	154,816	117,582	157,996	137,680	122,028	106,951	154,404	146,911	145,296	116,123	26,297	56,309	1,442,393
Net income before tax	167,368	126,085	184,027	147,816	141,191	117,374	164,915	156,459	180,478	106,054	31,554	72,004	1,595,325
WTI Oil Price	51	55	58	64	61	55	57	55	57	54	57	60	57
<b>2020</b>	<b>01</b>	<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>07</b>	<b>08</b>	<b>09</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>Total</b>
Revenue	554,160	518,292											1,072,452
Operating Income	101,421	69,825											171,246
Net income before tax	109,439	73,576											183,015
WTI Oil Price	58	51											54

\* The announcement of 2020 is based on self-reported consolidated net income before tax.



# The Brief Introduction to CSCC

Unit: NT\$ millions

	2015	2016	2017	2018	2019	2020/ 1~2
Revenue	5,737	5,143	6,242	8,560	7,542	1,072*
Net income after tax	1,239	1,038	1,207	1,516	1,595	183*
EPS(NT\$)	5.37	4.45	5.00	6.50	5.57	

\* The announcement is based on self-reported consolidated net income before tax.

EPS	2016				2017				2018				2019			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
	1.02	1.04	1.10	1.29	1.14	1.16	1.31	1.39	1.40	1.63	1.92	1.55	1.68	1.45	1.78	0.66



# The Brief Introduction to CSCC

unit : metric tons

Period Input	2015	2016	2017	2018	2019	2020/1~2
<b>Coal Tar</b>	257,506	258,193	253,172	257,637	255,066	44,529
<b>Light Oil</b>	100,219	94,834	100,590	117,102	124,062	20,686





# Dividend Payout

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	2013	2014	2015	2016	2017	2018	2019
EPS	9.6	9.5	5.37	4.45	5.0	6.5	5.57
Cash Div.	8.3	8.3	4.5	4.5	4.6	5.3	5.0
Stock Div.	0	0	0	0	0	0	0

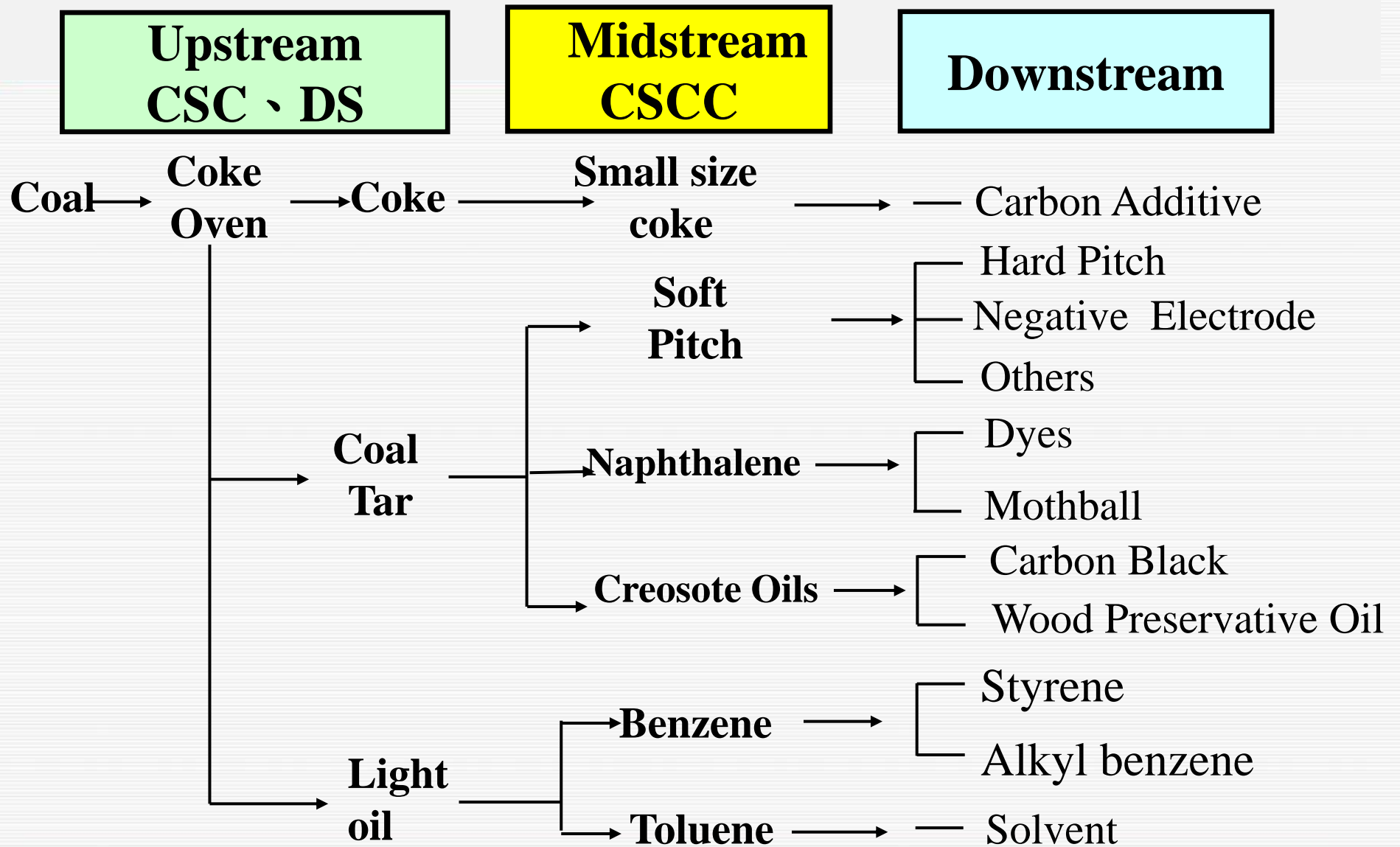


# Sales Revenue breakdown by products

	2018	2019/1Q	2019/2Q	2019/3Q	2019/4Q	2019	2020/1~2
<b>Light Oil</b>	29%	26%	29%	30%	33%	29%	36%
<b>Benzene</b>	25%	21%	24%	25%	28%	24%	30%
<b>Coal Tar</b>	44%	50%	44%	48%	39%	47%	43%
<b>Creosote Oils</b>	21%	28%	29%	25%	25%	26%	28%
<b>Soft Pitch</b>	15%	13%	6%	17%	7%	12%	9%
<b>Naphthalene</b>	7%	7%	7%	5%	6%	7%	6%
<b>Carbon Material</b>	8%	6%	6%	6%	3%	5%	4%
<b>Coke Breeze</b>	8%	6%	8%	6%	8%	7%	7%
<b>Trading</b>	9%	11%	14%	9%	14%	11%	9%

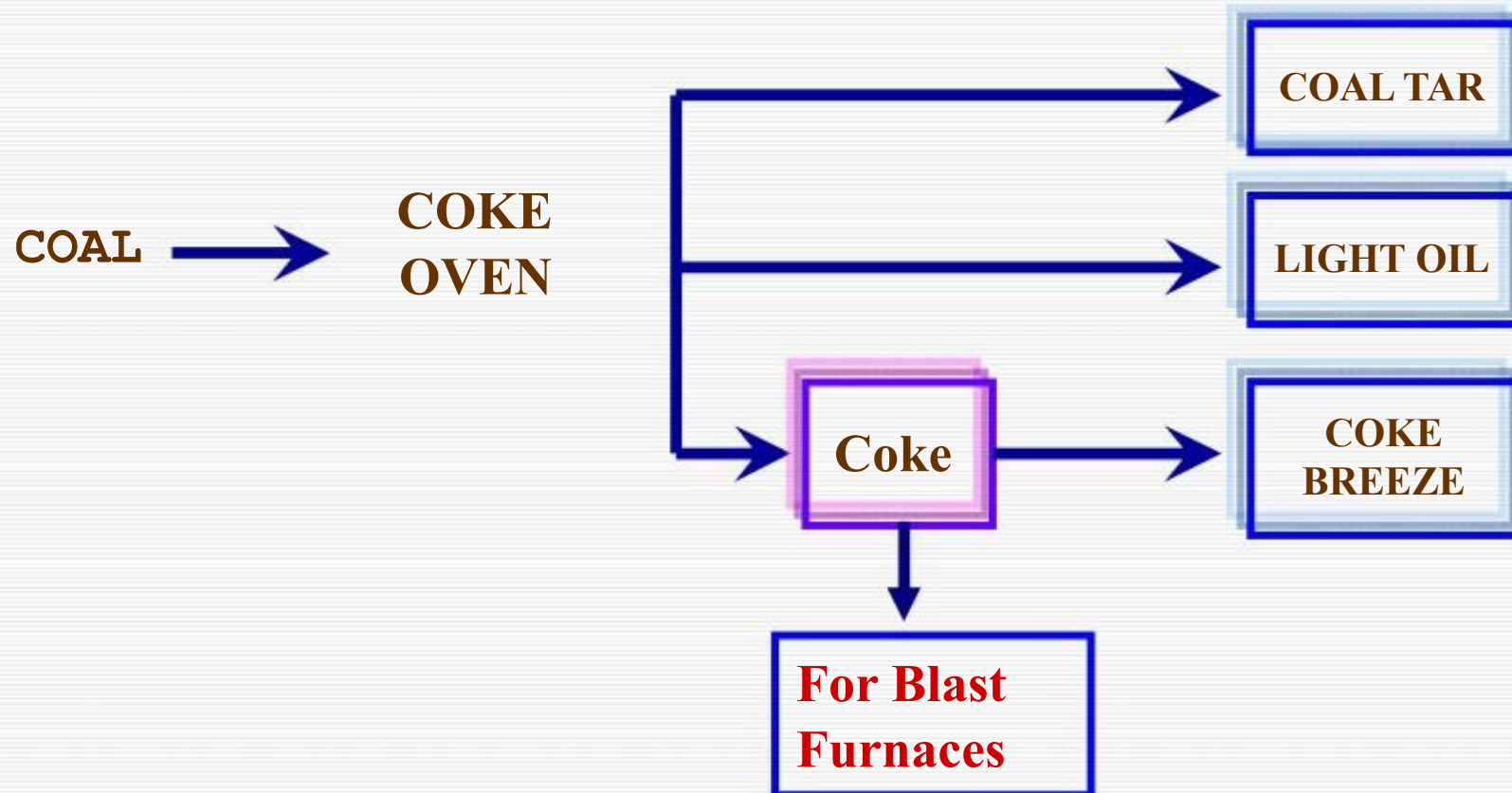


# The Relating Product Map of Coal Chemical Industries



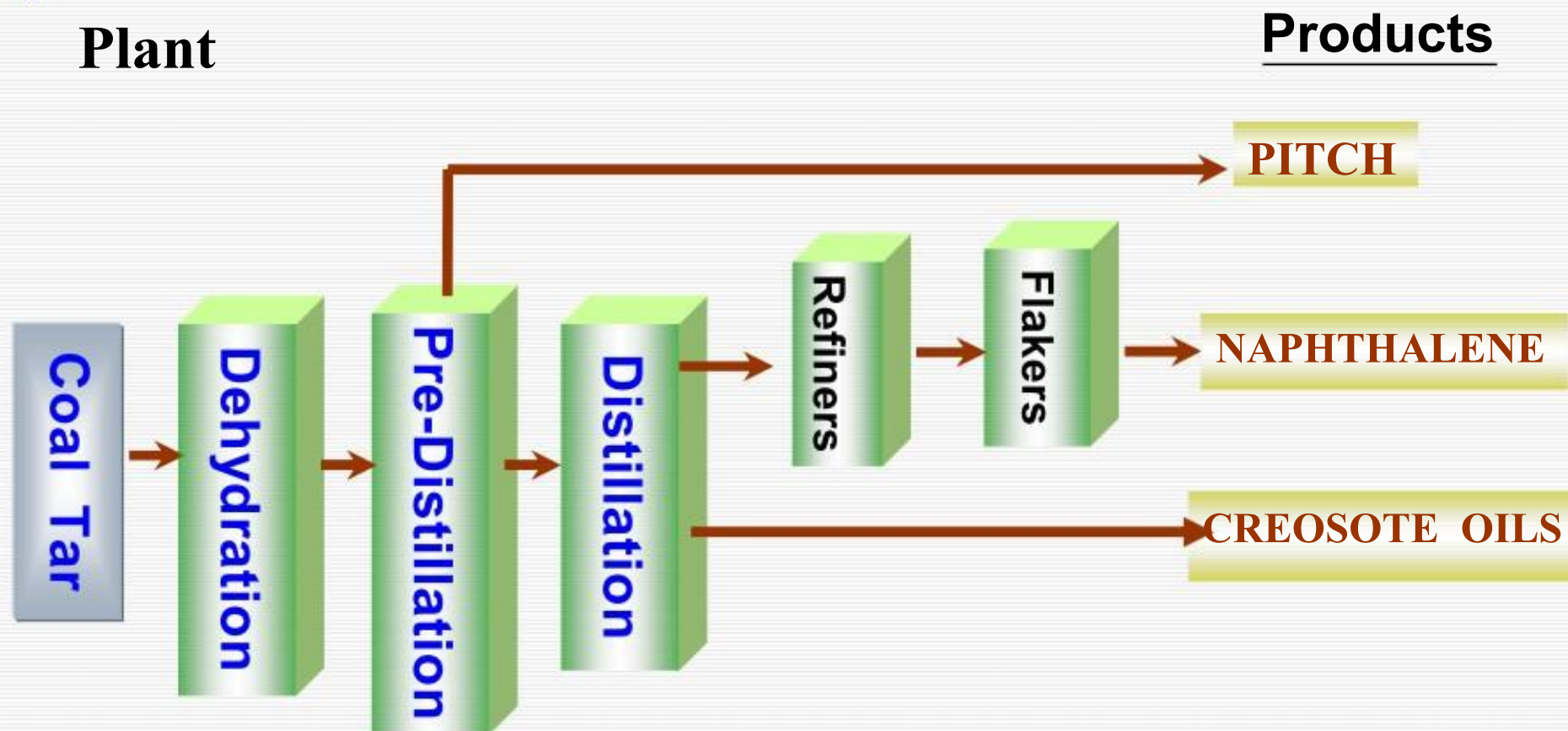
# The Relating Product Map of Coal Chemical Industries

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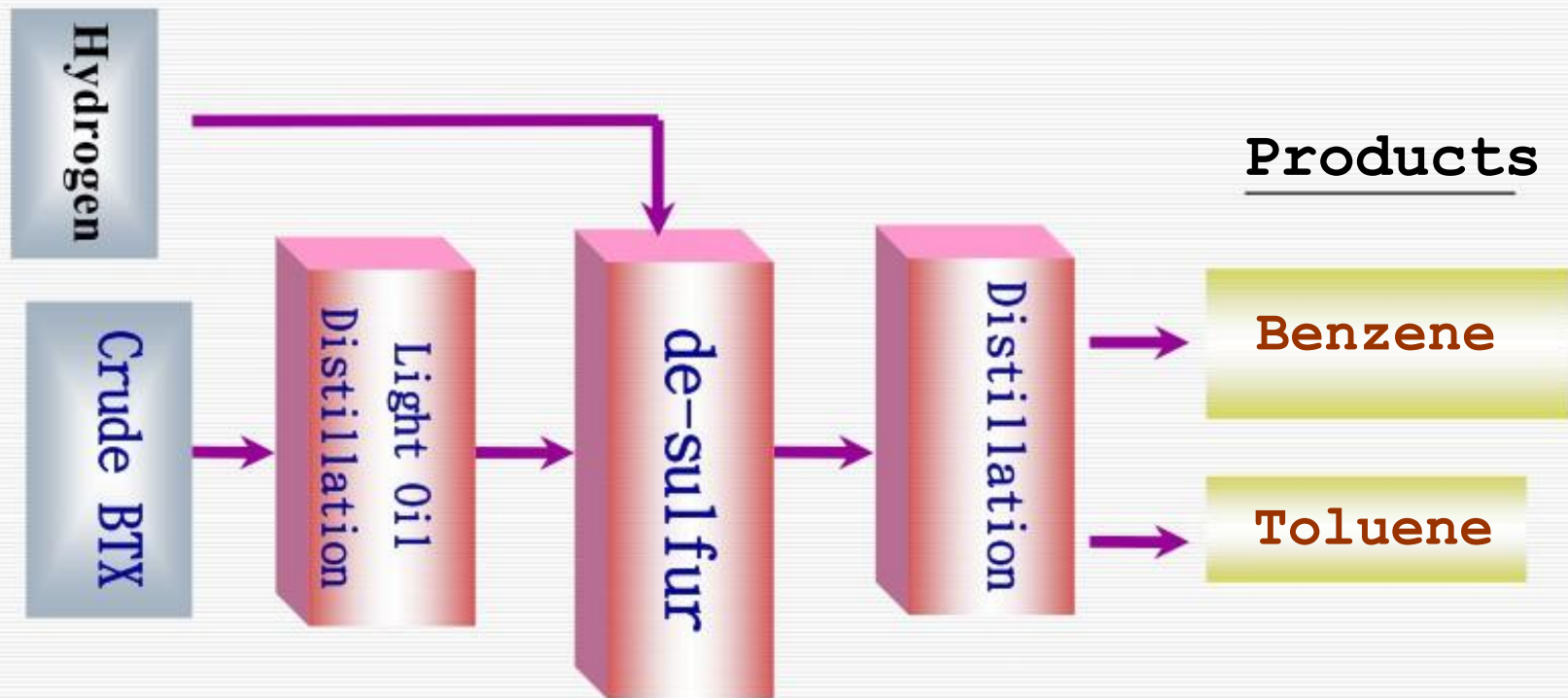
# The Relating Product Map of Coal Chemical Industries

## The Process of the Coal Tar Distillation Plant



# The Relating Product Map of Coal Chemical Industries

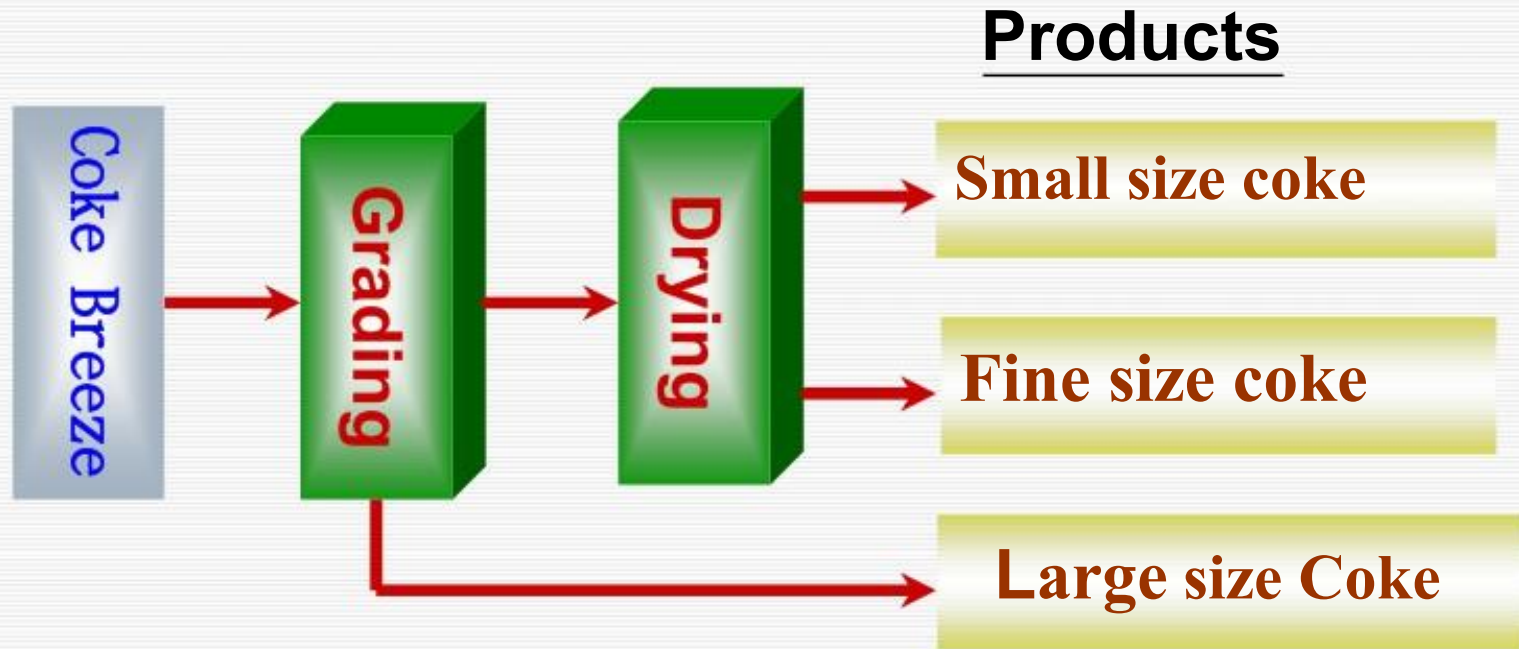
## The Process of the Light Oil Distillation Plant



# The Relating Product Map of Coal Chemical Industries

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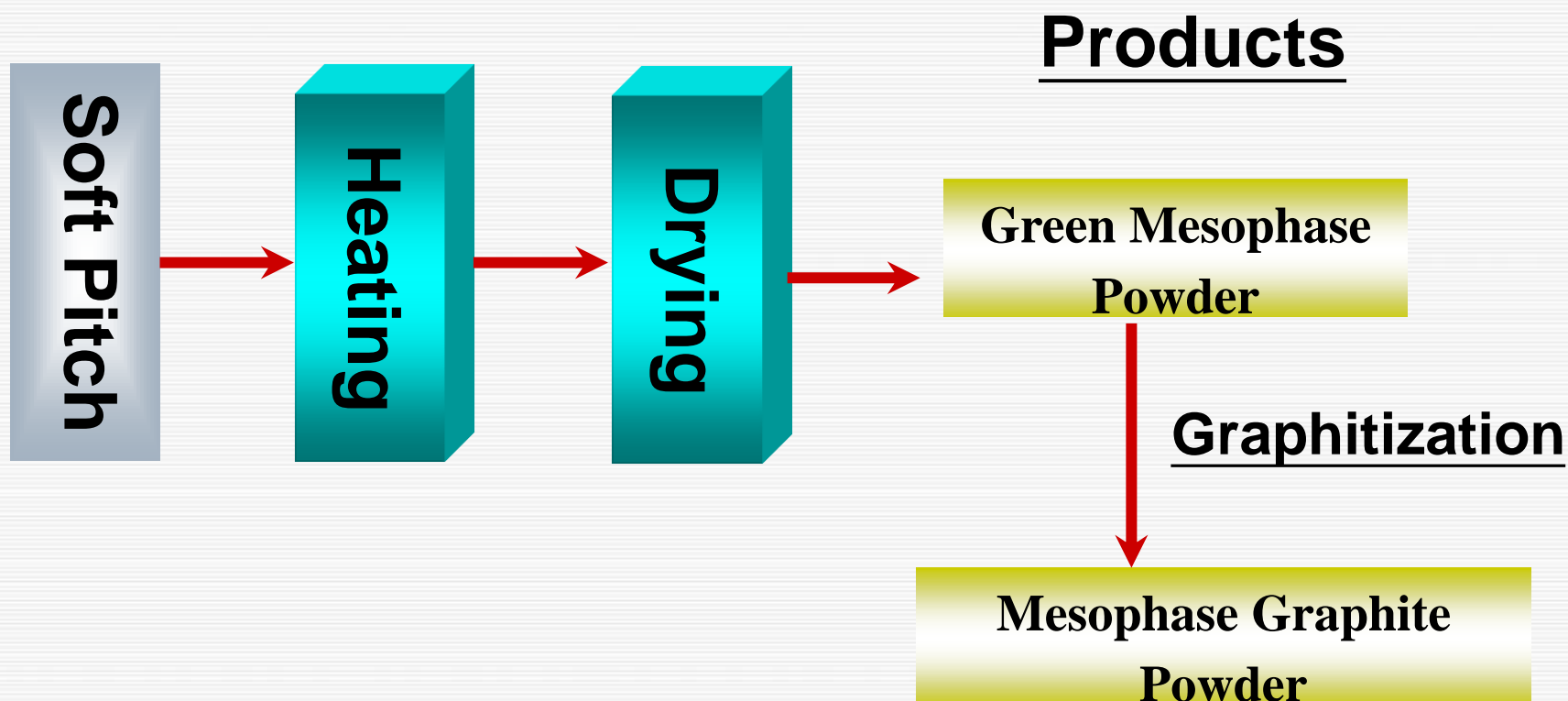
## The Process of the Coke Breeze Plant



# The Relating Product Map of Coal Chemical Industries

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✚ The Process of the Green Mesophase Powder plant





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# The Industrial Use for CSCC



# The Appliance of Soft Pitch

## Soft Pitch

Primary  
electrode rod



Water and rust  
proofing materials



Green Mesophase  
Powder

Mesophase  
Graphite Powder

Active Carbon for  
Supercapacitor

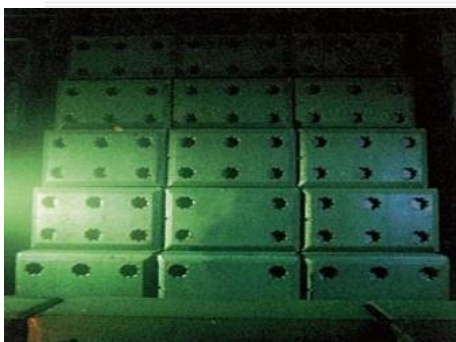


Lithium Ion  
Battery



Hard Pitch

Electrode binder



Roofing Pitch



# The Appliance of Naphthalene

## Naphthalene

Sulfonated naphthalene formaldehyde condensates

B-naphthol, Tobias acid, J-acid

Mothballs

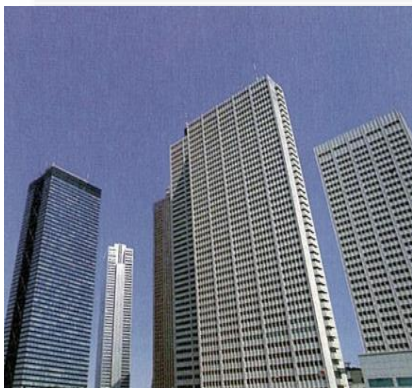
Phthalic anhydride (PA)

PEN resin BON-6

Water-reducing admixture

Dyestuffs pigment

Plasticizer



# The Appliance of Creosote oils

## Creosote oils

**Carbon  
black**



Wood preservative oil



Wash oil



# The Appliance of Benzene

## Benzene

### Styrene

External shell for 3C's product and sport materials



### Phenol

Epoxy resin paint



### Caprolactam

Nylon 6



### Alkyl-benzene

detergents



# New Products Development

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- ✦ High Soft Point Pitch (HSP):utilized as wrapping materials to cover carbon for Li-ion Batteries anode or as binder material for fireproofing material.
- ✦ High Soft Point Pitch is a special pitch which possesses a soft point higher than 260°C and have high fixed carbon ratio (ca. 80-85%). It is also utilized as carbon fiber precursor, because the production procedure of HSP is similar to the one of carbon fiber procedure.
- ✦ Nowadays, the pre-launch sample is provided to customers for testing as wrapping material for Li-ion batteries anode and fireproofing material. Mass production process design had been completed and evaluation of mass product line will be made after market expands.



# New Products Development

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- ✦ The quality of AC is great as Japan leading brand. The AC has already been sold worldwide.
- ✦ Due to the expansion of Li-ion batteries anode material, establishing graphitizing factory is planning. Studying abroad techniques of graphitization, evaluation of inductive graphitizing furnace and mass production plan are progressing.



# CSCC's Meso-Graphite

■ Application: High Energy & Power density in LIB

Energy Density(Wh/Kg): Low  High

Power Density(W/Kg): Strong  Low

**MG10**  
**MG08**

**MG11**  
**FMGP**

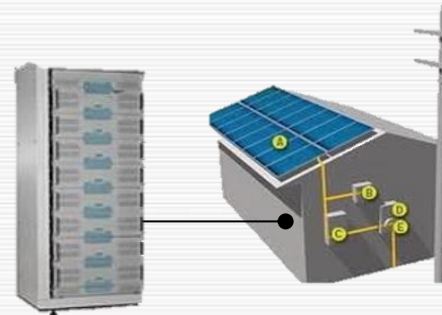
**MG12**  
**MGP**

**MG13**

*PT/HEV*

*EV/ESS*

*Tablets/3C*

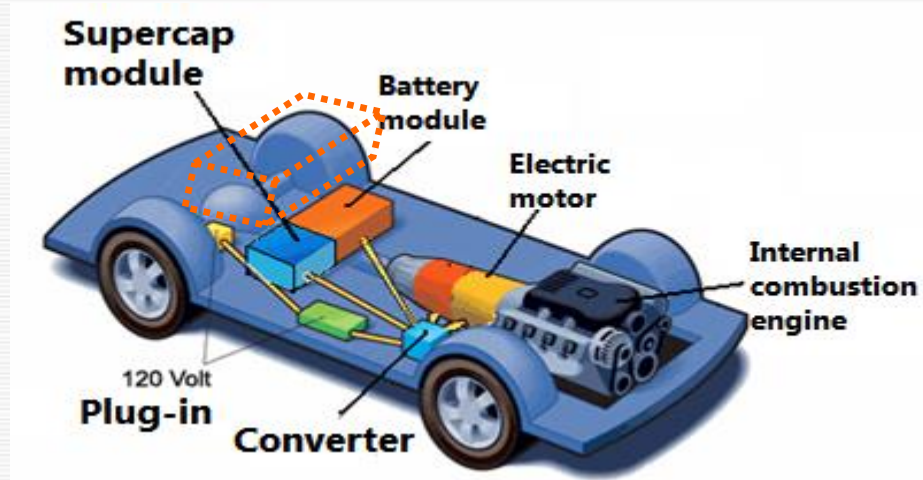
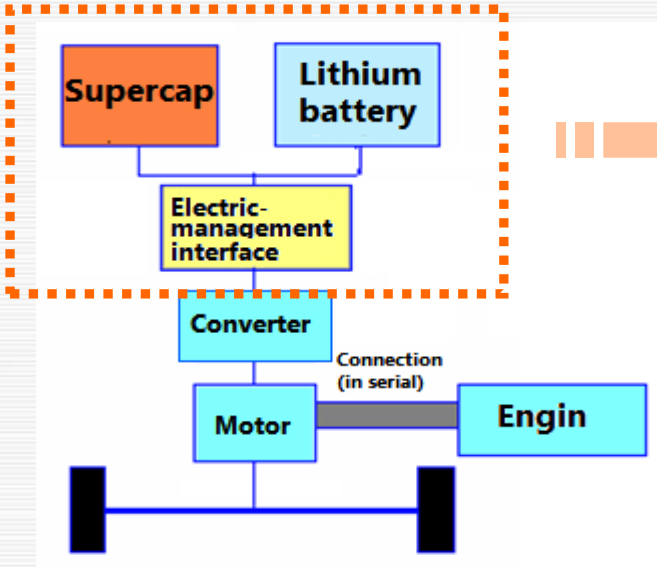




# Applications of Supercapacitors

## PHEV

(Plug in hybrid electric vehicles)



Also in..



E-Bus



Light Rail Transit



Wind turbine



# Introduction of Advanced Lead-Acid Battery

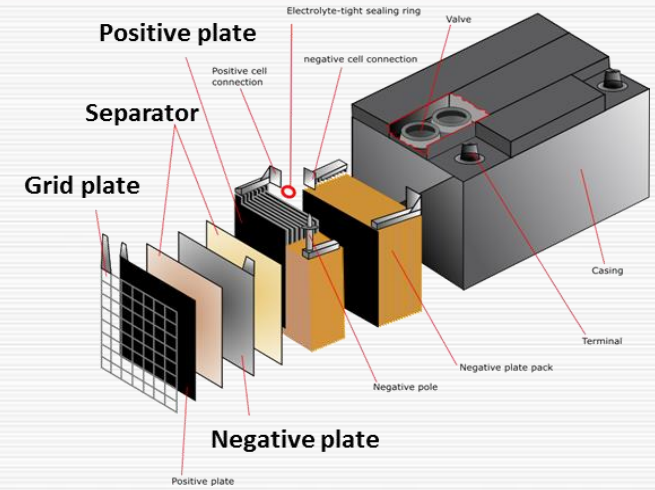
## Advanced Lead-Acid Battery

### Advantages

- Lower costs
- High battery recycling
- High ambient tolerance
- Low amount of maintenance
- Extending the life of LAB
- Large current capability

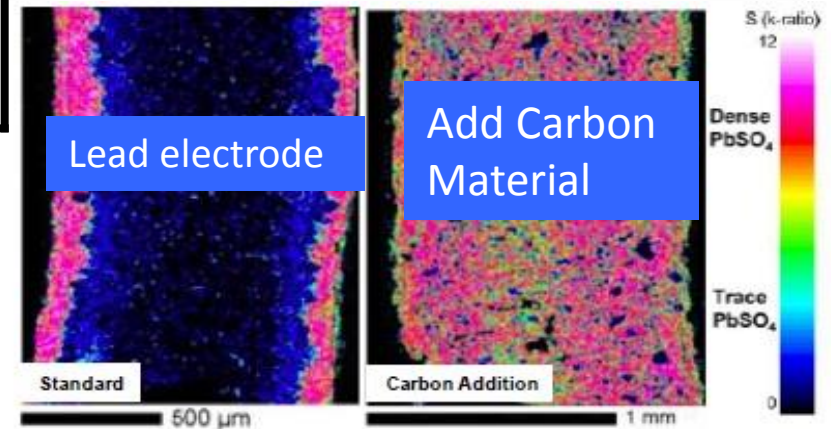
### Disadvantages

- Unfriendly environmental materials (Pb, Acid)
- Typical charging efficiency only around 70%



Advantages of addition activated carbon into LAB

1. Increasing conductivity
2. Improving the uniformity of Pb/PbSO<sub>4</sub>
3. Capacitance effect
4. Adsorption of sulfuric acid, supplying of electrolyte in the plate nearly.



Elimination of hard sulfation by carbon additions, allowing more complete usage of the battery (both images are from cells at end of life). Fernandez et al., 2010.

Source: Pavlov D., Lead-acid Batteries: Science and Technology. Elsevier, 2011.





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**Thank You**

