

科技服務人群，知識創造財富

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高導熱人工石墨片

Intelligent Graphite Sheet, iGS

By

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1. Company profile

Main products:

1. Synthetic graphite sheets (iGS) for smart phones, tablets
2. Carbon fiber cloth & papers for fuel cells
3. Other carbon related products

Production capacity of iGS:

1. 120,000 m² per month
2. Expandable within 6 months

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Clean energy technology

Company history

- 2006.09 CeTech established
- 2007.07 Obtained NT\$6 million funding from the government SBIR program
“Carbon fiber paper applies to fuel cell manufacturing technology.”
- 2007.07 Reported from the Ministry of Economic Affairs, R.O.C. as “a
successful Incubated enterprise in 2007.”
- 2008.06 Mass production of natural graphite sheets
- 2009.09 Received funding from the government SBIR program, “Continuous
Carbon paper applies to fuel cell manufacturing technology.”
- 2009.12 ISO 9001 certified manufacturer
- 2011.07 Supplying natural graphite sheets to tablet producers**
- 2011.12 Sales of graphite sheets reach USD 2 million**
- 2012.02 Received funding from the government SBIR program, “Synthetic
graphite manufacturing technology.”
- 2012.10 Mass production of synthetic graphite sheet, iGS**
- 2013.03 Supplying iGS for HTC smartphones
- 2013.05 Supplying iGS for other smartphones and tablets

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Company outlook



Front view of CeTech Co., Ltd.



Main equipment



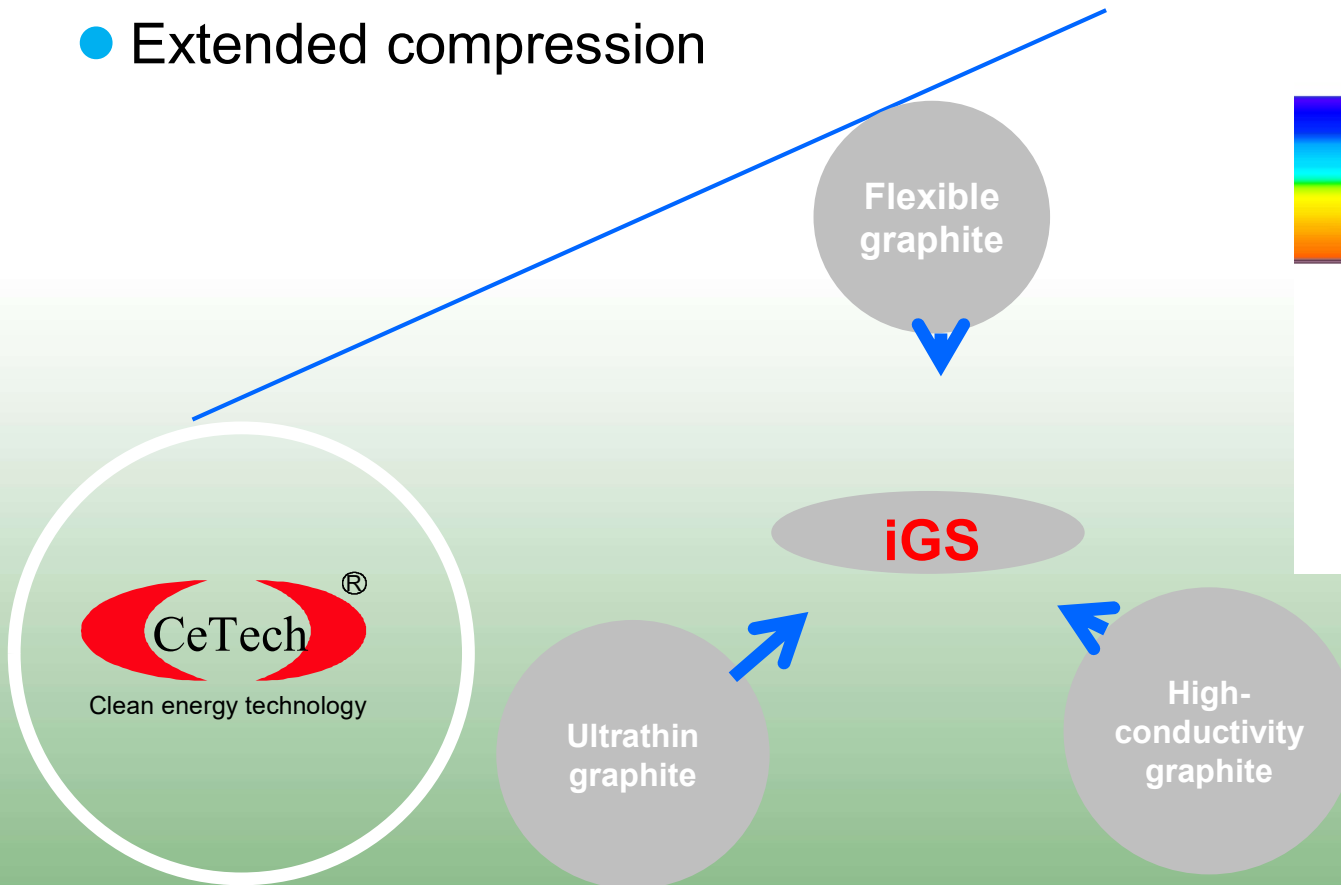
Patents

Date of application	Title	Country of Application
Nov. 2007	碳纖維導電片體及其製法 Manufacturing process of conductive carbon fiber	Germany, USA, Japan
Mar. 2008	奈米銀氧化纖維製品及奈米銀碳纖維製品之製作方法 Methods of production of nano-scale silver used in oxidized fiber and carbon fiber	Taiwan
Aug. 2008	摩擦材料及其製法 Methods of production of friction material	Taiwan
Mar. 2009	燃料電池之膜電極組 Membrane electrode assembly in fuel cell	Taiwan
May. 2009	熱傳基材 Substrate of thermal conductive material	Taiwan
Aug. 2009	ZL 200920175816.2 熱源之熱傳器 Conductive material of heat sources	China
Nov. 2011	I351917 具有各向異性的石墨導熱散熱片的製備方法 Preparation of conductive graphite sheet with anisotropic property	Taiwan

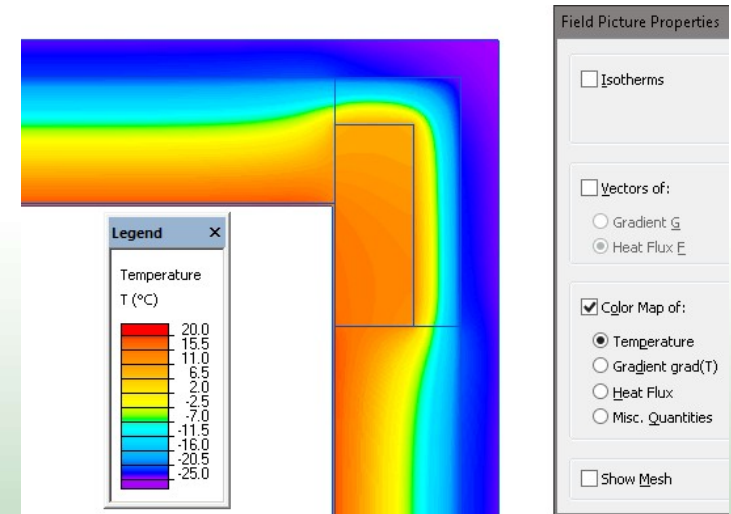


2 iGS introduction

- Graphite sintering
- Extended compression



The direction of thermal management





Clean energy technology

Technology and Production



Efficient production

- ✓ **2 slitting machines** for the raw materials
- ✓ **3 winding machines** shorten the waiting time for entering the furnace.



High production capacity

- ✓ 4 advanced graphite sintering furnaces
- ✓ 3 carbonization furnaces
- ✓ 3 high-precision artificial graphite calendaring machines
- ✓ Produce over 120,000²/month

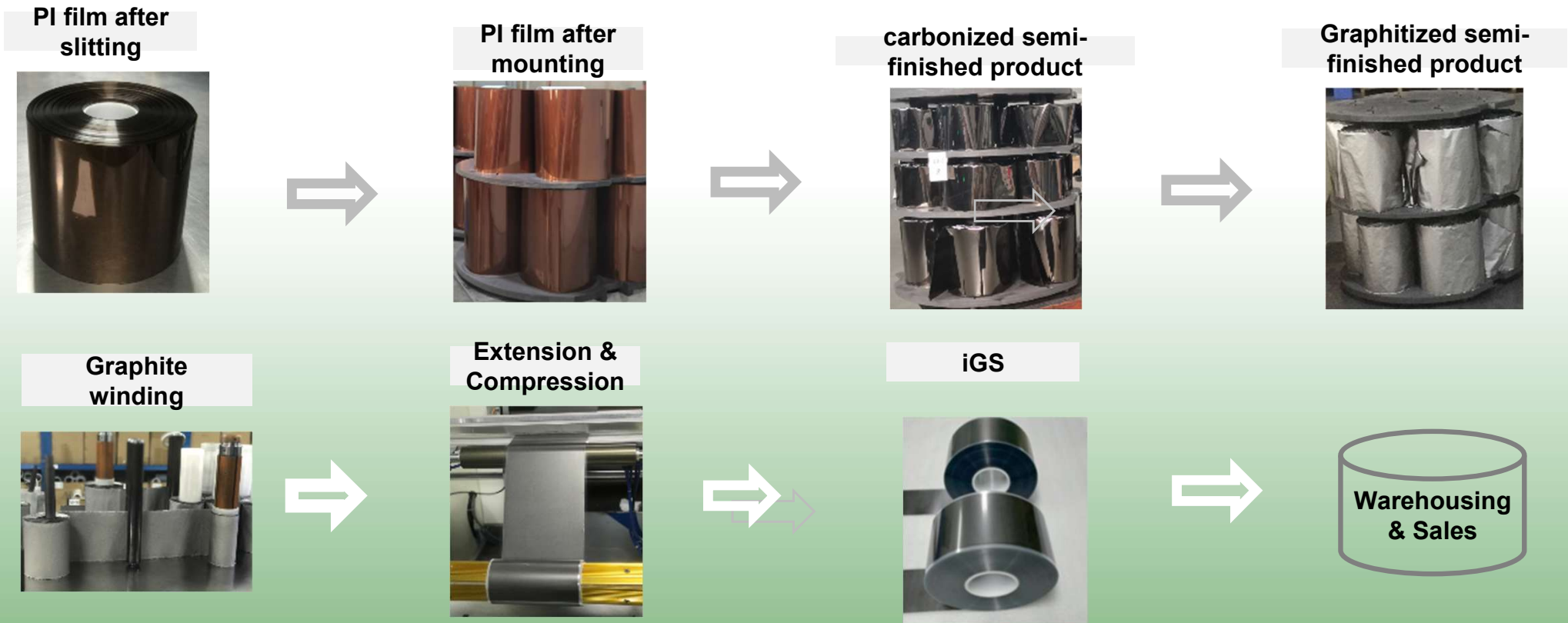


Systematic warehouse management

Every product can be precisely controlled from warehousing to outbound.



Sintering process From PI film to artificial graphite





Equipment & production capacity



Equip	Data	Q'ty	Capacity
Low-temperature carbonization furnace	1200 ~ 1500° C	3	120,000 m ² for 25μm iGS
High-temperature graphitization furnace	2500 ~ 3000° C	4	
Calender	± 2μm tolerance	3	250,000 m ² for 25μm iGS



3.1 iGS CEGS series



Model	Thickness (μm)	PI Thickness (μm)	Density (g/cm ³)	Thermal Conductivity (W/m.K)
CEGS17	17	38	1.85	1600
CEGS25	25	38/50	1.8	1500
CEGS32	32	62.5	1.8	1400
CEGS40	40	62/68	1.8	1300

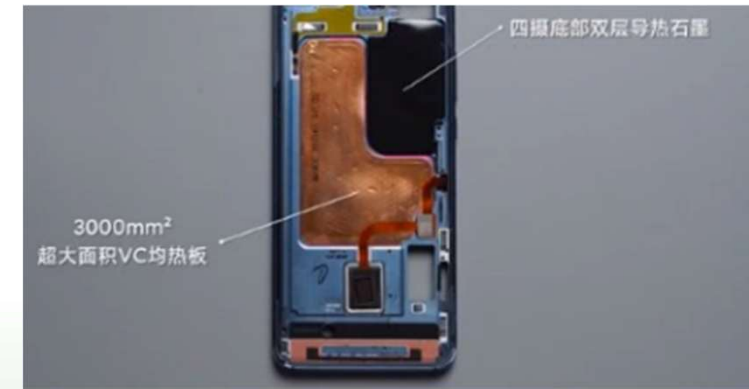
Core Advantages of iGS CEGS series

Using advanced synthetic graphite processes boasts excellent thermal conductivity and a slim profile, making it one of the most mainstream heat dissipation solutions in the consumer electronics field.



3.2 iGS CEGSH series High Thermal Conductivity

Model	Thickness (μm)	PI Thickness (μm)	Density (g/cm ³)	Thermal Conductivity (W/m.K)
CEGSH32	32	68	2.0	1600
CEGSH40	40	72	2.0	1600
CEGSH050	50	100	2.17	1776
CEGSH060	60	150	2.16	1761
CEGSH070	70	160	2.16	1774



Core Advantages of iGS CEGSH series

Through special processing, the graphite film in this series of products not only has an extremely high planar thermal conductivity but also excellent flexibility and aging resistance, making it an ideal choice for achieving efficient thermal management in scenarios such as 5G base stations and high-performance computing centers.



3.3 iGS CEGSX series Ultra-thick & thermal conductive

Model	Thickness (μm)	PI Thickness (μm)	Density (g/cm ³)	Thermal Conductivity (W/m.K)
CEGSX40	40±4	>700	>2.0	>1300
CEGSX70	70±8	>700	>2.0	>1300
CEGSX100	100±9	>700	>2.0	>1300
CEGSX150	150±10	>700	>2.0	>1300
CEGSX200	200±11	>700	>2.0	>1200



Core Advantages of iGS CEGSX series

High thermal conductivity, low thermal resistance, ultra-thick, and ultra-lightweight. It possesses good flexibility and thermal stability; sheet and roll products are available, with customizable specifications and thicknesses.



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Features of iGS

Characteristic	Core Features	Applications
Excellent bent performance	Excellent flexibility can adapt to complex bending structures without easily breaking.	The internal bending area of a smartphone, the connection part of a foldable screen device
Ultra-Thin	Ultra-Thin (0.012mm)	Ultra-thin laptops & smart wearable devices
Ultra-Thick	Ultra-Thick (0.1mm)	High-power supplies, localized heat dissipation for server CPUs, and onboard chargers

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4. Main Applications of iGS



Smart
Phone



Tablet



Ultrabook



LED TV



Pico projector