蔚華科技
SPIROX

Spirox Group

Professional Semiconductor Equipment Provider

Delivering Smarter Solutions

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- This presentation contains "forward-looking statements" and based on our own information and information from other sources we believe to be reliable. Our actual results of operations, financial condition or business prospects may differ materially from those expressed or implied in these forward-looking statements for a variety of risk factors which are beyond our control.
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Agenda

- Company Profile & Product Portfolio
- Financial Review
- Q&A

Overview

Hsinchu, Taiwan | HQ

蔚華科技 SPIROX

- Own Products
- Semiconductor Equipment Distribution
- Optical Technology Research and Development Center
- Board Repair Service

Subsidiary

Jetek Technology Corp.
- System Integration Services
- Customized Test Solutions

Spirox Technology Shanghai
- Semiconductor Equipment Distribution
- Board Repair Service

Southport Corporation
- Advanced Optics Technologies
- SiC Inspection System
- Confocal Measurement Development Platform

Spirox Group

- Established in 1987
- TWSE: 3055, Listed in 2002
- Capital: 38.3M USD
- Market Cap: 240M USD (as of 28 Nov 2024)
- Employees: 180 (as of Dec-2024)
- Business Coverage: Semiconductor Test/Package/Inspection Equipment

Spirox Products

- SP2500 SoC Test System
- MA6503D Micro Inspection System
- SP3055B Non-destructive Inspection System
- SP8000A Laser Scanning Confocal Measurement Development Platform

Distribution Products

Core Competencies

Business Philosophy

Build a customer-oriented culture and set win-win goals with customers and partners.

Industry Experience

With over 30 years of experience in semiconductor industry, Spirox has a strong and stable customer base.

Professional Team

- **Years of service:**
  - 140 employees with 5Y+
  - 103 employees with 10Y+
  - 82 employees with 15Y+
  - 55 employees with 20Y+
- **Education:**
  - 137 employees have a college degree or higher (77%)
  - 40 employees have a master's degree (22%)
  - 3 employees have a PhD (1%)

R&D Capability

Test solution development and Investment on own-products.
Established Optical Technology Research and Development Center and own patents.

Strong FIN

Strong & health finance status

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Assembly and Test + Quality Assurance Solutions

Chip Probing → IC Package → IC Final Testing

IC Process & Quality Assurance




ATE

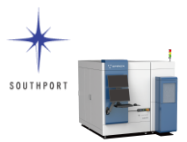


Handler


Prober


Chuck


Test Interface


MicroLED Inspection


TCB Bonder


Blade Dicing Saw


Vacuum Reflow


Reflow system


Plasma


Heat Sink Laminator


Measurement


Automatic Debond Warpage Adjustment


EFA


PFA


MA


ESD


Nanoprobes

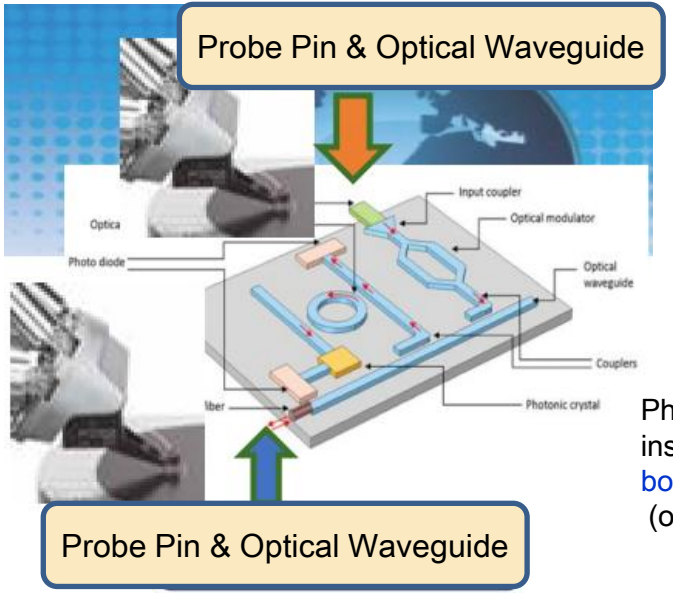


AOI(PKG)



AOI(Wafer)

Silicon Photonics On-Wafer Measurement

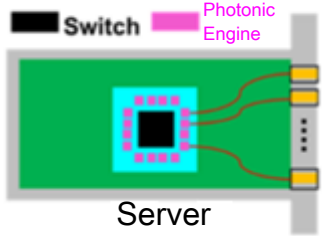


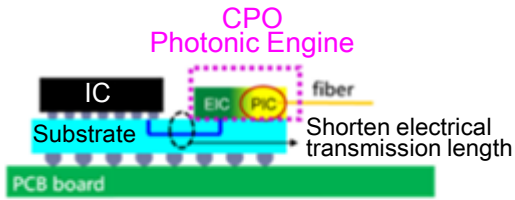
TSMC President C.C. Wei mentioned the development progress of silicon photonics technology at the North America Technology Symposium. He stated that by 2025, TSMC will complete COUPE validation to support small form-factor pluggable connectors. In 2026, TSMC plans to integrate CoWoS packaging to create co-packaged optics (CPO), directly incorporating optical connectivity into the packaging.

Source: Economic Daily News, 2024/4/26

➢ CPO Module Architecture

Photonic engine installed on the server board (on the CPO module)





	EIC (Electronic IC)	PIC (Photonic IC)
Semiconductor Device	Transistor (Electronic Signal)	Optical Waveguide (Optical Signal)
On-Wafer Measurement	Probe Card + Microscopy Positioning	Optical-coupled Alignment Equipment

Transforming Spirox

- Expand the development of Spirox own products to enter markets beyond the Greater China

- SP3055B Non-destructive Inspection System
- SP8000A Laser Scanning Confocal Measurement Development Platform

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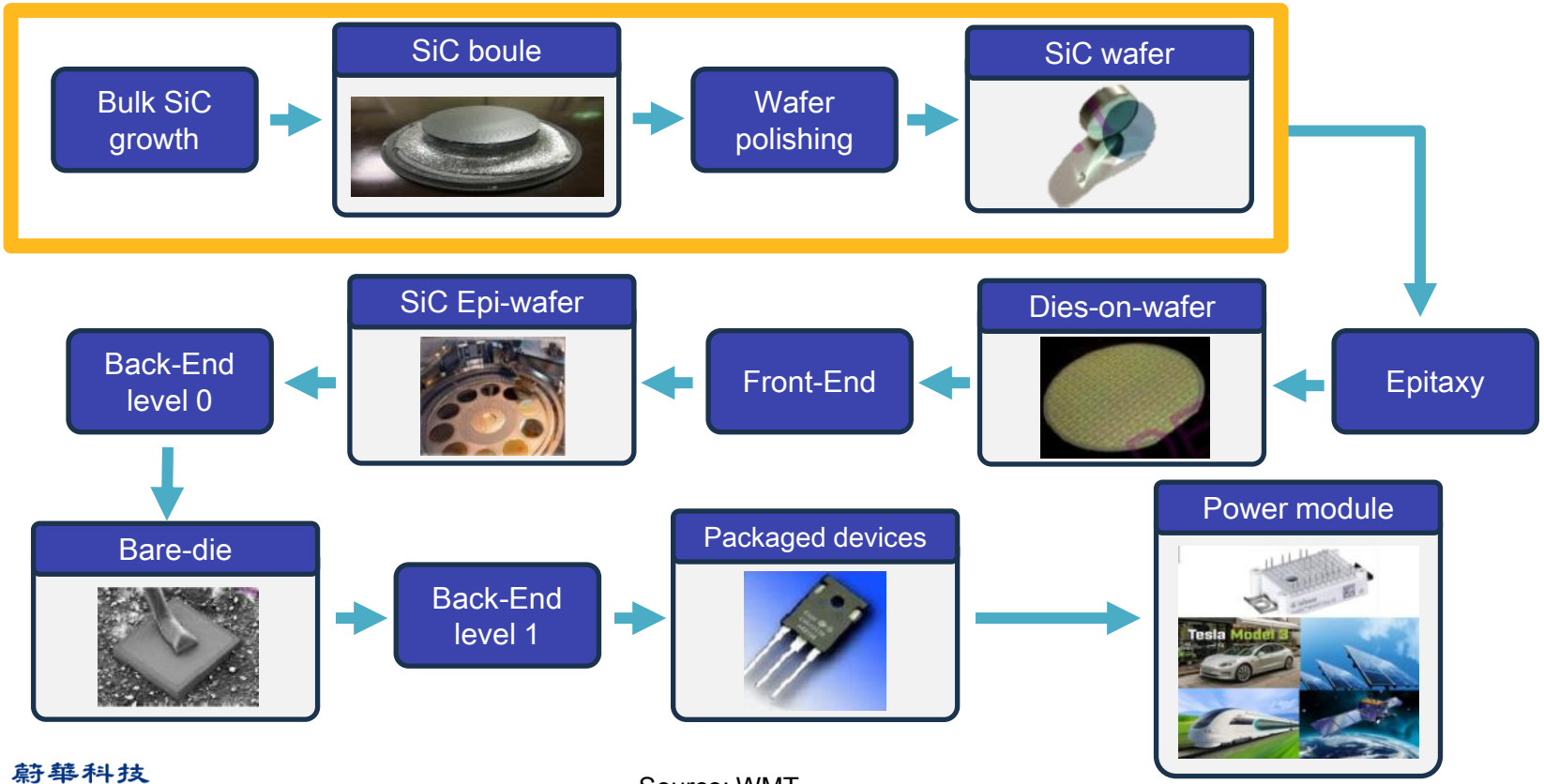
Distribution Products

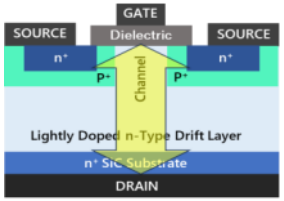
SiC Substrate: Crystal Growth, Cutting, Grinding and Polishing

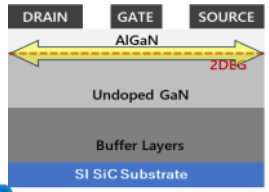


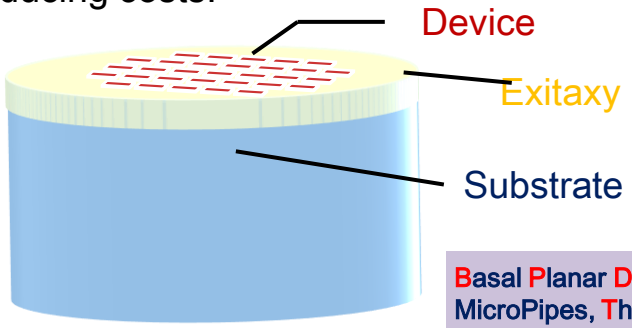
Source: WMT

Current SiC Substrate Challenges

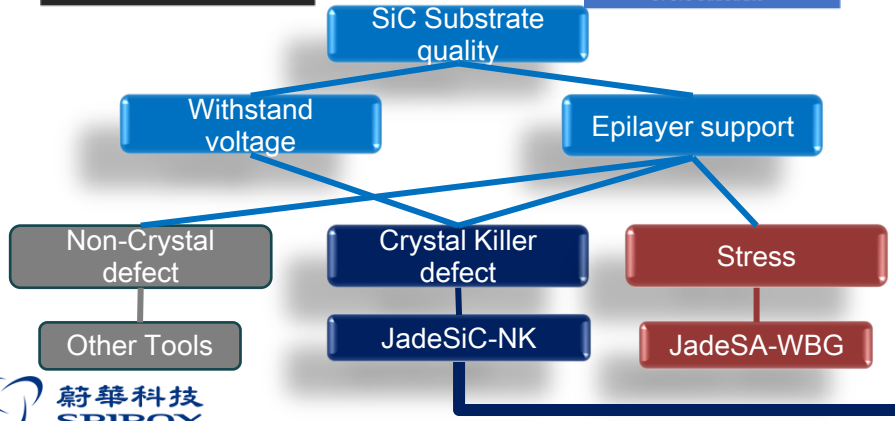
- The overall effective output of the industry is insufficient and imbalanced.
- Lack of control over the quality and defects of ingots and substrates (especially killing defects).
- No effective non-destructive inspection technology for killing defects in the substrate manufacturing process.
- Difficulties in consistently improving effective output and reducing costs.





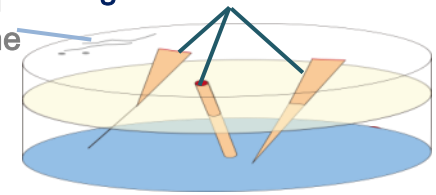


Basal Planar Dislocation, MicroPipes, Threading Screw Dislocations, Stacking Fault



Non-crystal defects on the surface

Killing defects under the surface



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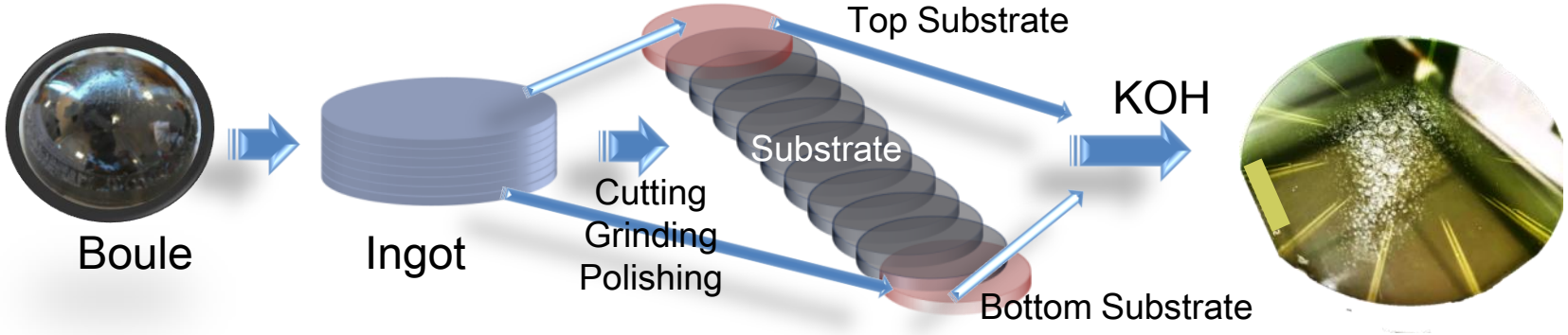
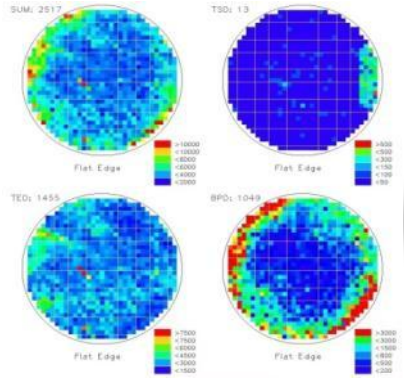
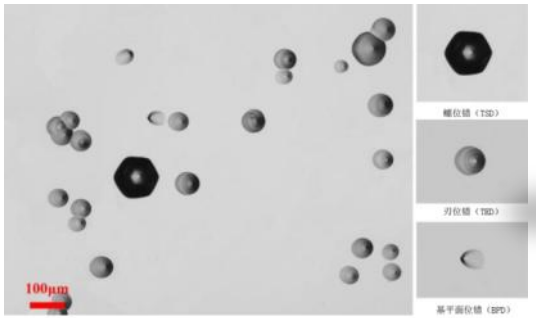
Destructive KOH Etching for SiC Substrate Inspection





Sampling of Substrate's surface after KOH etching.



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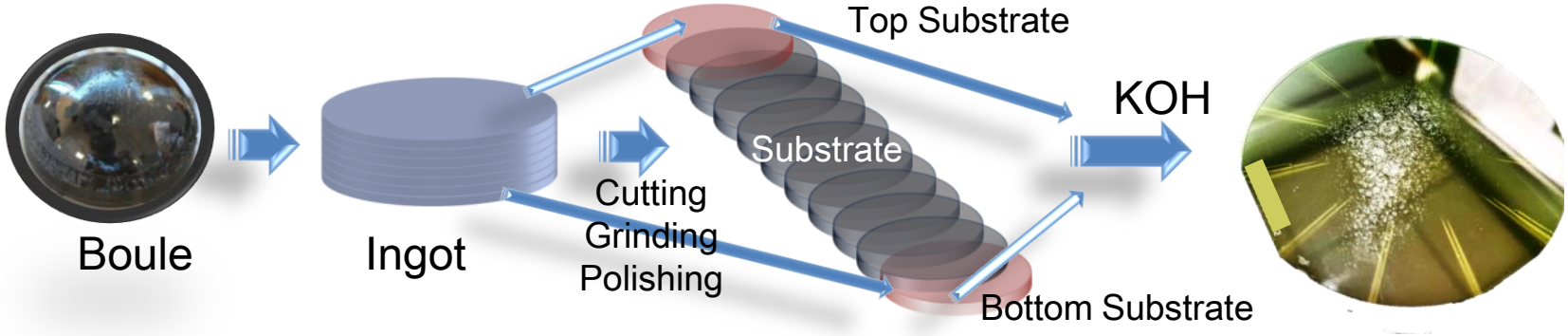
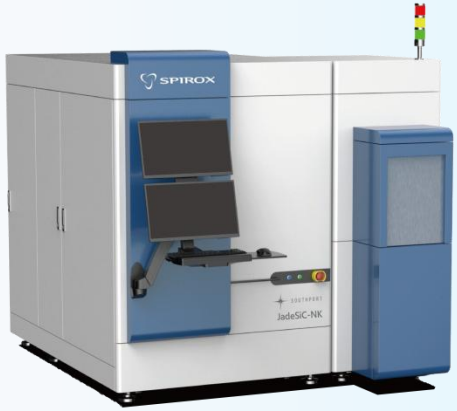


Issues with current KOH method:

1. Destructive inspection leads to waste of production capacity and costs. Consistency in chemical etching accuracy is difficult to achieve, and there are environmental concerns.
2. Only two substrates are inspected from each ingot, which cannot fully represent the quality of other substrates from the same ingot. The BPD defect density between the top and bottom substrates often varies significantly, and the defect density of other substrates is by estimation, making it difficult to accurately control the yield of future devices (Killing defects: BPD, TSD, TED).
3. Currently, ingot manufacturers generally do not provide crystal defect distribution maps, making it challenging for device manufacturers to adjust process parameters and identify methods to improve yield.

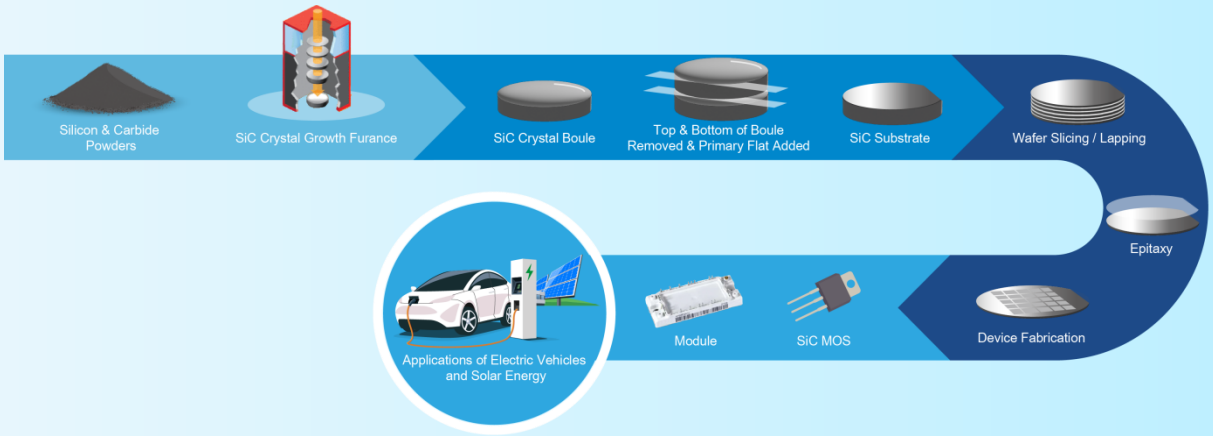
Compound Semiconductor Solutions



SP3055B Non-destructive Inspection System

Non-Destructive Inspection System

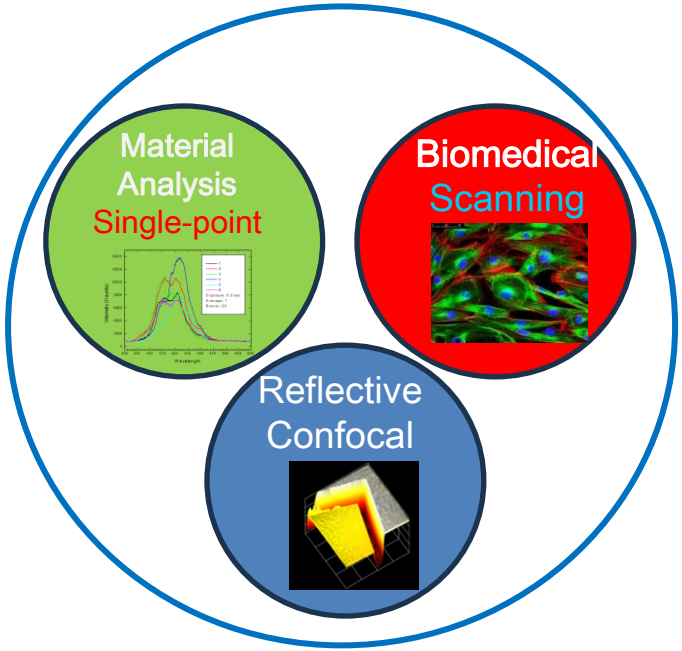
- Advanced **Harmonic Generation** technology of **NLO (non-linear optics)**
- **Non-destructive** inspection technology
- Capability of inspection multiple kinds of **killer defects** (BPD, TSD, MicroPipe, SF) inspection **on the surface** and **in the substrate**
- **MicroArea 3D scan** function available



A Development Platform That Does More

More than just a single-function instrument, SP8000A offers diverse and versatile measurement capabilities.

Traditional confocal microscopy is divided into two measurement modes: single-point mode (used for conventional material analysis) and scanning mode (used for biomedical imaging). SP8000A integrates both modes and supports modular expansion to unlock additional functionalities, such as surface topography inspection and spectral measurement. With different module configurations, SP8000A can deliver a wide range of variety measurement capabilities.



Functions and Applications: A Symphony of Acoustics, Optics, Electricity, Heat, and Magnetism

Magnetic Field

Laser

Low-temp Platform

Magnet field modulation

Temperature modulation

Optical Microscope Module

Scanning Laser Confocal Module

Signal Acquisition/Distribution Module

Power Meter

Solar Detection
Optical Communication
Silicon Photonics
MicroLED

Spectrometer

PMT

Picoquant

TCSPC
Time-resolved
FLIM

Raman/PL Spectroscopy

1. Jewelry authentication
2. Drug identification / forensic analysis
3. Environmental toxicology testing
4. Art and antiquities authentication / research
5. Environmental monitoring
6. Biomedical testing
7. Materials science research
8. Materials identification
9. Semiconductor research
10. MicroLED measurement
11. Microplastic detection
12. 2D materials

PL /Reflection Image

1. Surface topography inspection
2. Micro LED inspection
3. Single-molecule imaging
4. Biomedical imaging
5. Material surface distribution analysis
6. SiC/GaN inspection

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Patent

Updated: 2024/12/10

Category	Name	R&D Code	Type	Applicant	Inventor	Proposal Date	Application Date	Status	Applied Countries
Patent	Specular Reflection Stage	SP3055B	Utility Model Patent	Spirox	Paul Yang Bobo Chao Bradley Hsu	7/19	8/15 8/15 10/7	**Taiwan：Approved, waiting for certificate issuing** **China: Patent pending** **Japan：Priority date 8/15** **Japan：Patent pending** **USA: ：Priority date ~ 2025.8.14)**	Taiwan China Japan USA
Patent	PMT Patent	SP8000A	Patent		Paul Yang Jet Li Bobo Chao	9/26	11/14	Taiwan: Application submitted on 11/14	
Patent	TSV Patent		Patent		Paul Yang Jet Li Bobo Chao	9/26	11/14	Taiwan: Application submitted on 11/14	
Patent	TSV Patent	SP8000A	Patent		Paul Yang Jet Li Bobo Chao	12/9	12月	Application in process	
Patent	TSV Patent	SP8000A	Patent		Paul Yang Jet Li Bobo Chao	12/9	12月	Application in process	

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Financial Review

Summary of Consolidated Cash Flow Highlights & Financial Ratio

Summary of Consolidated Statements of Income (In NT$ Millions)

	2021	2022	2023	2024/~Q3
Operating Income (loss)	(354)	(416)	(191)	(147)
YoY	(175)	(63)	225	7
Non-Operating Revenue and Expenses	4	733	146	(55)
YoY	(105)	729	(587)	(165)
Net Income (loss)	(365)	257	(55)	(178)
YoY	(329)	621	(312)	(115)

Consolidated Statements of Cash Floows Summary (In NT$ Millions)

item	2021	2022	2023	2024/~Q3
		1,042	1,103	1,554
Net cash generated from (used in) Op. activities	(117)	253	138	(97)
Net cash used in investing activities	(119)	(245)	615	355
Net cash generated from financing activities	358	64	(396)	(526)
Cash and cash equivalents at the end of the year	1,042	1,103	1,554	1,306

cash+451M -248M

Financial Analysis Summary

item	2021	2022	2023	2024.9.30
Account Receivable turnover days	✗ 194	✓ 135	✓ 123	✗ 139
Inventory turnover days	✓ 48	✓ 51	✗ 74	✗ 68
Debts ratio%	✓ 59%	✓ 30%	✓ 28%	✓ 20%
Current ratio%	✓ 141%	✓ 403%	✗ 354%	✓ 477%
ROA%	-4.64%	5.44%	-1.22%	-1.86%
ROE%	-14.58%	9.63%	-2.03%	-2.47%

- In 2022, the operational structure was adjusted, resulting in an improvement in the gross profit margin.

Maintaining a stable and sound financial structure enables the company to adequately adjust its operational strategies.

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Summary of Statements of Consolidated Income (YoY & QoQ)

SPIROX CORPORATION and Subsidiaries

Summary of Consolidated Statements of Income (In NT$ Millions)

	2023/Q3	2023/Q4	2024/Q1	2024/Q2	2024/Q3	2023/~Q3	2024/~Q3
Net Revenue	312	308	223	166	221	1,035	610
YoY	(276)	(88)	(142)	(191)	(91)	(484)	(424)
YoY%	-47.0%	-22.1%	-39.0%	-53.5%	-29.2%	-31.9%	-41.0%
Gross Profit	69	71	47	46	30	167	123
YoY	22	72	22	(27)	(39)	(5)	(44)
YoY%	46.5%	7097.2%	87.4%	-37.2%	-56.4%	-3.2%	-26.3%
GP Margin %	22.1%	23.1%	21.2%	27.6%	13.6%	16.2%	20.2%
Operating Expenses	121	107	78	100	92	322	270
YoY	(28)	(49)	(30)	8	(29)	(112)	(52)
YoY%	-18.7%	-31.5%	-27.6%	8.2%	-24.3%	-25.9%	-16.1%
Operating Income (loss)	(52)	(37)	(31)	(54)	(62)	(154)	(147)
YoY	50	120	52	(35)	(9)	105	7
YoY%	48.7%	76.2%	62.7%	-180.5%	-18.0%	40.5%	4.7%
Op. Income(loss) margin%	-16.8%	-12.1%	-13.8%	-32.7%	-28.0%	-14.9%	-24.1%
Non-Operating Rev. and Exp.	(74)	37	(100)	39	6	109	(55)
YoY	(305)	(503)	(309)	64	80	(84)	(165)
YoY%	-132.0%	-93.2%	-148.2%	257.1%	108.0%	-43.4%	-150.4%
as % of revenue	-23.7%	12.0%	-45.0%	23.5%	2.7%	10.6%	-9.0%
Net Income (loss)	(118)	8	(112)	(14)	(52)	(63)	(178)
YoY	(228)	(325)	(215)	35	66	13	(115)
YoY%	-207.2%	-97.6%	-208.3%	71.1%	55.6%	17.4%	-181.6%
Net Income (loss) margin%	-37.8%	2.6%	-50.1%	-8.4%	-23.7%	-19.7%	-66.0%
Net Incom (loss) attributable to :							
Owners of the Parent	(118)	7	(105)	(10)	(48)	(63)	(163)
Non-controlling interests	0	1	(6)	(4)	(5)	(0)	(15)
EPS (NT Dollars)	(1.03)	0.06	(0.90)	(0.09)	(0.43)	(0.55)	(1.45)

1) A high proportion of revenue comes from Mainland China, making it significantly impacted by geopolitical factors. Business with caution, and clients are carefully selected in China.
2) Continuously implement comprehensive lean cost management..
3) Accounts receivable collection and inventory reduction.

Establish intellectual property and develop proprietary optical products to drive growth and transformation strategies.

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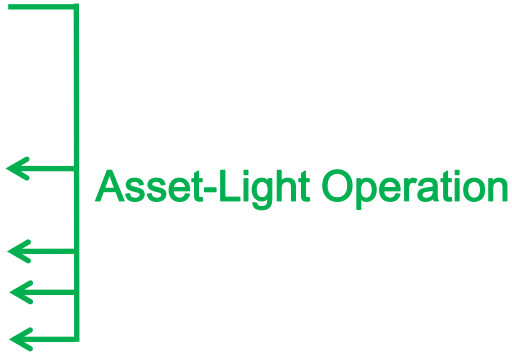
Summary of Consolidated Balance Sheet

SPIROX CORPORATION and Subsidiaries

Summary of Consolidated Balance Sheet (In NT$ Millions)

	2023.12.31	2024.9.30	change
Cash and time deposits(AC)	1,554	1,306	(248)
Accounts Receivable,net	337	223	(114)
Other receivable, net	53	14	(38)
Inventories, net	74	62	(12)
Financial Assets(except AC)	789	344	(446)
Property, plant and equipment	616	606	(9)
Other assets	202	212	11
Total Assets	3,624	2,767	(857)
Borrowings	421	117	(304)
Contract Liabilities	83	49	(35)
Account payable & other Liabilities	523	395	(127)
Total Liabilities	1,027	561	(466)
Common Stock	1,150	1,150	0
Additional Paid-In Capital	437	392	(45)
Retained Earnings	1,102	871	(232)
Other Equity+Treasury Stock	(171)	(270)	(99)
Minority Interest	79	64	(15)
Total equity	2,597	2,207	(391)



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Q & A

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Thank you.