蔚華科技
SPIROX

# Spirox Group

Professional Semiconductor Equipment Provider

*Delivering Smarter Solutions*

# Safe Harbor Notice

- 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.
- The forward-looking statements in this presentation reflect our current expectations. About these forward-looking statements, we undertake no obligation to update any forward-looking statement, whether as a result of new information, future events, or otherwise.
- We didn’t expressed or implied any statement or promise, you should not place undue reliance on this presentation. The presentation does not constitute an offer of securities issuance.

# Agenda

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

蔚華科技
SPIROX

# Spirox Group

Professional Semiconductor Equipment Provider

*Delivering Smarter Solutions*

# Overview

## Hsinchu, Taiwan | HQ

蔚華科技 SPIROX

- Own Products
- Semiconductor Equipment Distribution
- Optical Technology R&D 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
- Compound Semiconductor Inspection System
- Confocal Measurement Development Platform

## Spirox Group

- Established in 1987
- TWSE: 3055, Listed in 2002
- Capital: 38.3M USD
- Market Cap: 294M USD (as of 2025/02/20)
- Employees: 161 (as of 2025/02)
- Business Coverage: Semiconductor Test / Package / Inspection Equipment

## Spirox Products

- **SP2500** SoC Test System
- **MA6503D** Micro Inspection System
- **SP8000G/S** Non-Destructive Laser Modification / TGV / TSV Inspection System
- **SP8000A** Laser Scanning Confocal Measurement Development Platform
- **SP3055B** Non-Destructive SiC Defects Inspection System

## Distribution Products

ni

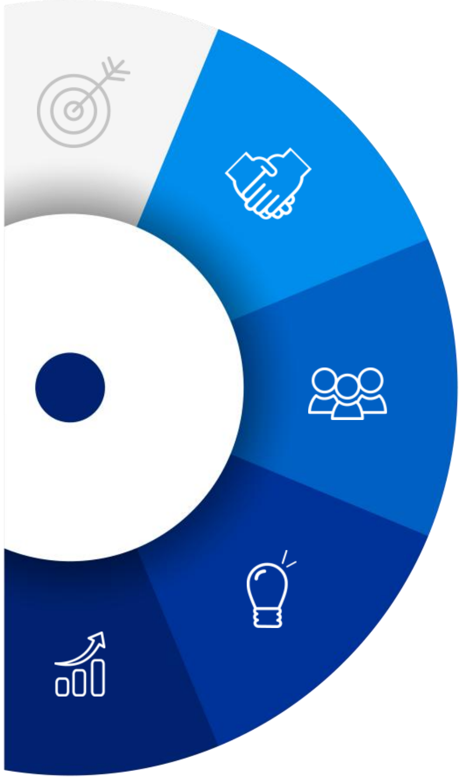
AEM Wafer Test Solutions

Osai automation systems

HAMAMATSU PHOTON IS OUR BUSINESS

TORAY Toray Engineering Co.,Ltd.

# 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

R&D team as a percentage of total employees: 25%
R&D team educational background: 55% hold a master's degree or higher

## R&D Capability

Invested in in-house R&D with test solution development capability
Established an Optical Technology R&D Center
34 patent applications and 3 trademark registrations to date

## Strong FIN

Strong & health finance status

# Product Categories and Applications

| | | | | | | |
|---|---|---|---|---|---|---|
| **Test** | ATE | Handler | Prober | Interface | Board Repair | |
| **Packaging** | Reflow Oven | Plasma Cleaner | TCB Bonder | Wirebonding Measurement | Warpage Adjustment | Thermal Debonding |
| **Wafer / Chip Inspection** | AOI | Defect Inspection | Confocal Microscopy | FA | ESD | Stress Analysis |
| **Accessories** | Chuck | Probe Pin | Automation Equipment | Silicon Materials & Wafers | | |

### RF FEM

- PA
- LNA
- RF Switch
- RF Filter
- RF FEM
- Sub-6
- mmWave

### RF & Wireless

- MEMS & Sensors Connectivity

### Digital & Mixed Signals

- MCU
- AD/DAC
- Audio/Video

### MEMS Sensor Device

- Magnetometer
- Accelerometer
- MEMS Microphone
- Gyroscope
- Pressure Sensor

### Power Semiconductor Test

- KGD
- DBC
- Device/Module
- Reliability Test
- Module Packaging
- Module Pin Insertion

### Compound Semiconductor

- Defect Inspection
- Stress Analysis
- MA
- KGD Test
- DBC
- Power Device
- Power Module
- Power Device/Module Reliability Test
- Power Module Packaging
- Power Module Pin Insertion

### FA

- EFA
- ESD

### Advanced Packaging

- CoWoS
- Hybrid Bonding
- Reflow

### Packaging

- Reflow
- Vacuum Reflow
- Plasma Cleaning
- TCB Bonder
- Wire Bond Measurement
- Multi-Layer Thickness Measurement
- eWLB Warpage Adjustment
- eWLB Thermal Debonding

### Raman, PL Spectroscopy, Photoluminescenc

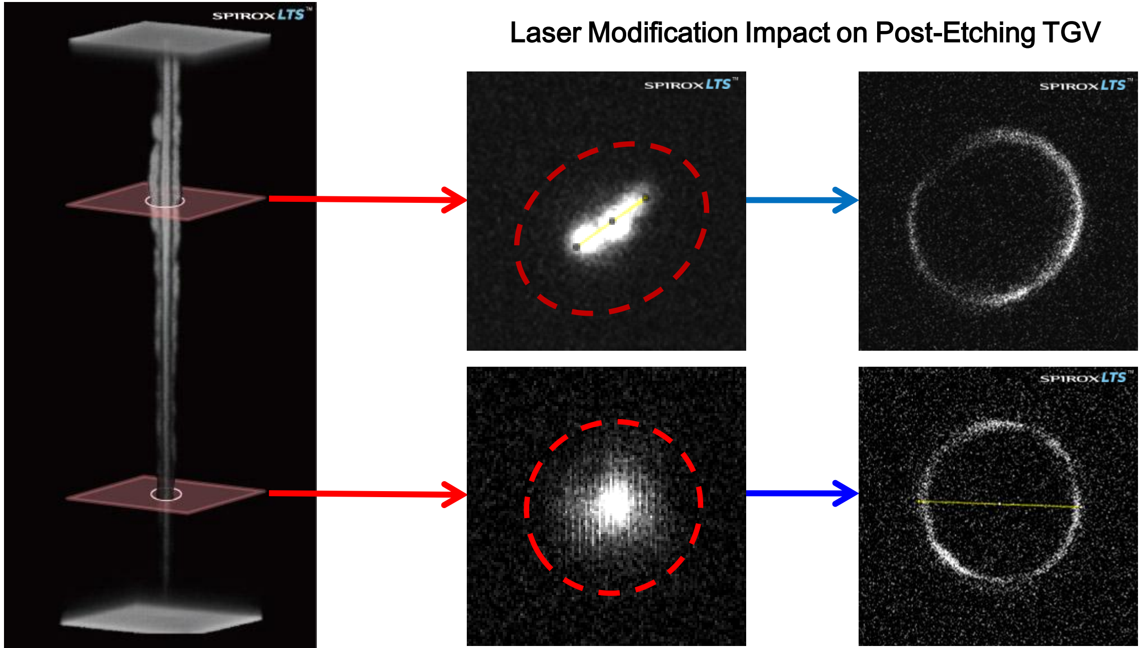
- Jewelry, Antiques, & MA
- Semiconductor & MicroLED
- Toxicology & Environmental Testing
- Biomedical
- Surface Topography Inspection
- Single-Molecule Imaging
- SiC/GaN Inspection

# Own Technology and Own Products

# Spirox Laser Tomography Scan

Advanced Nonlinear Optical Measurement: SpiroxLTS technology precisely controls laser modification and glass compatibility!

Patent Pending

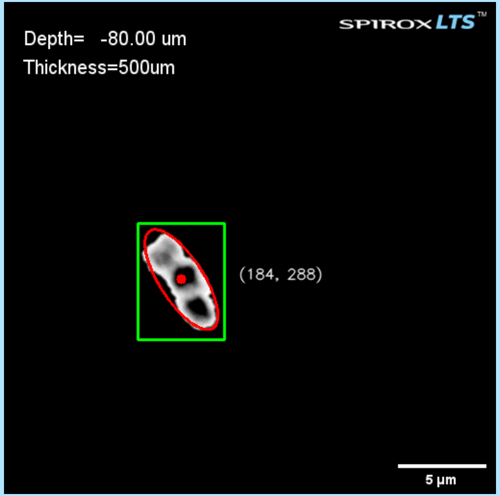


Laser Modification Impact on Post-Etching TGV

TLM

TGV
Inspection Image

## Dynamic Tomogram of Laser Modification Tracking

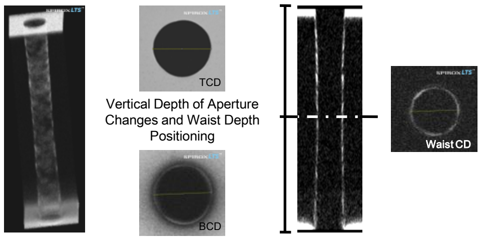


# Non-Destructive Laser Modification / TGV / TSV Inspection System

## SP8000G

### TGV (Through Glass Via)

- Exclusive optical scanning technology with patented non-destructive defect inspection enables real-time analysis without making physical cross sections.
- AI-assisted precision inspection of TSV side walls ensures accurate defect detection, supporting both blind and through vias.
- TSV quality assessment across the entire functional die on the wafer enables precise quantified evaluation for the die qualification and classification.



Vertical Depth of Aperture Changes and Waist Depth Positioning

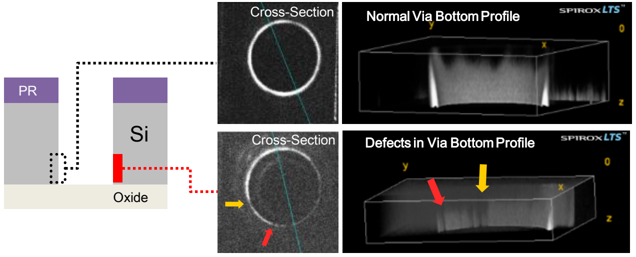
3D Imaging to TGV Profile

Non-Destructive Vertical Cross-Section Imaging

## SP8000S

### TSV (Through Silicon Via)

- Exclusive optical scanning technology with patented SpiroxLTS technology enables real-time analysis without slicing.
- AI-assisted precision inspection of TSV walls ensures accurate defect detection, supporting both blind and through vias.
- TSV quality assessment across the entire die functional area on the wafer enables precise quantification to evaluate die yield and assist in classification.



*Slicing*

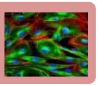
*3D Stacking*

# SP8000A : A Development Platform That Does More

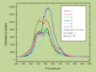
南方科技
SOUTHPORT

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

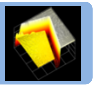
Biomedical
Scanning



Material Analysis
Single-point



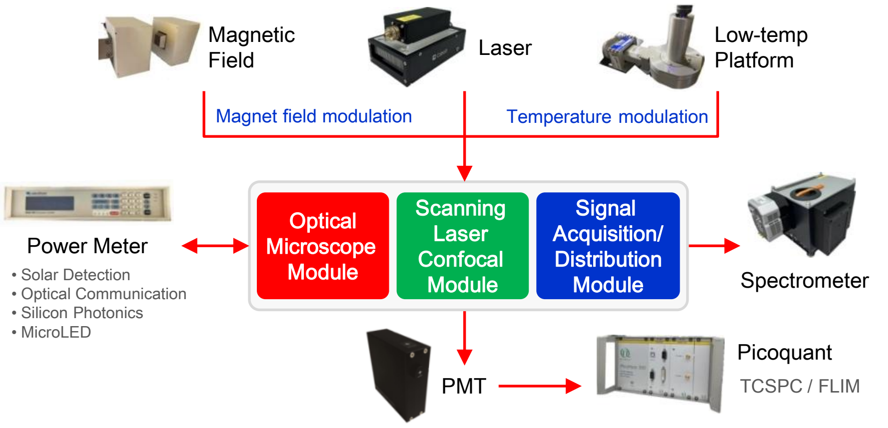
Reflective
Confocal



## SP8000A

| | |
|---|---|
| **Function** | Single-point Mode + Scanning Mode |
| **Expandability** | Modular and Expandable, Unlocking More Functions (e.g., Surface Topography and Spectral Measurements) |
| **Application** | Flexible Expansion, Exploring Diverse Measurement Possibilities |

## A Symphony of Acoustics, Optics, Electricity, Heat, & Magnetism



- Solar Detection
- Optical Communication
- Silicon Photonics
- MicroLED

### Raman / PL Spectroscopy Applications

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 identification
8. Semiconductor research
9. MicroLED measurement
10. Microplastic detection
11. 2D materials

### PL / Reflection Image Applications

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

蔚華科技
SPIROX
Delivering Smarter Solutions™

蔚華科技
SPIROX

# Other Products and Services

Delivering Smarter Solutions

# Semiconductor IC Testing Equipment

## ATE


NI
STS


Spirox
SP2500


ShibaSoku
IGBT


NI
DGS


NI
Dynamic H3TRB & DRB


NI
IOL & Power Cycling

## Handler


AFORE(AEM)
KRONOS


AFORE(AEM)
AIOLOS


OSAI
NeoKGD


OSAI
PMTH


OSAI
Neo Handler

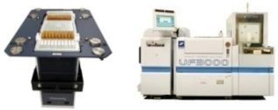
## Prober


AFORE(AEM)
MPP

## Interface


Turbodynamics
ATE Docking Systems

## Board Repair


Spirox
ATE/Prober Board Repair

- Applications：

**RF**

**MCU**

**MEMS**

**Power**

**Power Reliability Testing**

AEM Wafer Test Solutions

ShibaSoku

Osai automation systems

# Semiconductor Packaging Equipment

## Bonding

TORAY
Toray Engineering Co.,Ltd.

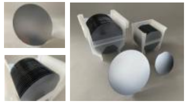
**Thermal Compression Bonding (TCB)**

## Metrology

Multi function
measurement system

## Material

D&X



Bare Si Wafer

## Automatic

CASTEC INTERNATIONAL

Mobile Robot

## Process

ERS

eWLB wafer de-bonding
Warpage Adjustment

廣化科技
3S Silicon Tech Inc.

Vacuum Reflow
System

STi

Reflow system

宝丰堂
boffotto

Plasma

# Wafer/Chip Inspection Equipment

蔚華科技
SPIROX

**High Reliability**

Litho · Etch · CMP · OQA · Bump · CP · Sawn · PKG

## EFA

HAMAMATSU
PHOTON IS OUR BUSINESS

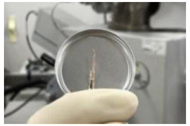
- Front side/Back side EFA
- Static/Dyanmic EFA
- Magnetic Optical Current Imaging

## ESD

HANWA

- HBM/CDM/TLP ESD
- Lactch Up
- Wafer Level ESD

## Nano Probes



埃爾思科技
ALES TECH
Atomic Level Emission Sources

- Meet the demands for failure analysis in 3 nm process

## AOI (Wafer)

TORAY
TASMIT, Inc.

- Whole Wafer/Sawn Wafer
- Thin Wafer
- Color Camera Inspection

蔚華科技
SPIROX

- Replace QC visual inspection on surface defects
- Auto-storing Defects Image
- Position Coordinate Records

## AOI (PKG)

蔚華科技
SPIROX

- Auto-pitch adjustment of sealing blade for efficiency
- Post-sealing inspection ensures quality service
- Friendly user-interface

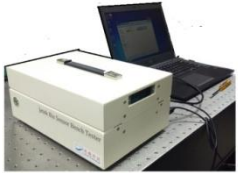
蔚華科技
SPIROX

- Replace manual IQC incoming inspection
- Replace manual FT first tray inspection and IPQC
- Provide tray maps for data comparison and tracking

# Jetek Technology

# Customization Test Solutions

| | |
|---|---|
| ✓ System Integration | Flexibility: Fast function expansion<br>Friendly: One Human-Computer Interface |
| ✓ Test Module Board Design | Develop cost-effective and precise measure module to fulfill customer demands |
| ✓ Software Development | Customized developing environment and analysis tools for more effective engineering process |
| ✓ Highly Customized | Close team work with customers to achieve win-win goal |


Bio-Sensor


CIS


MEMS (MIC,TPMS)

# Silicon Photonics Test Solution

思衛科技 Jetek Technology

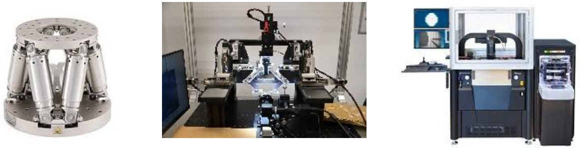
Automation Test Recipe Maintain + Data Analysis & Operation + Datalog Store & Management

**Support Instruments**

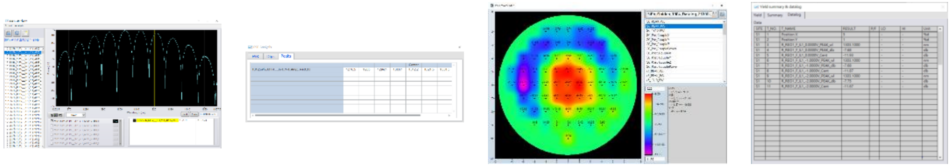
- Laser & Power meter: EXFO, Santec, Keysight
- OFDR: Luna, Santec
- Network Analyzer: Anritsu, R&S
- SMU: NI, Keithley

**Test Stage**

- Probe Station: FormFactor, MPI
- Mechanical Arm: PI, SURUGA



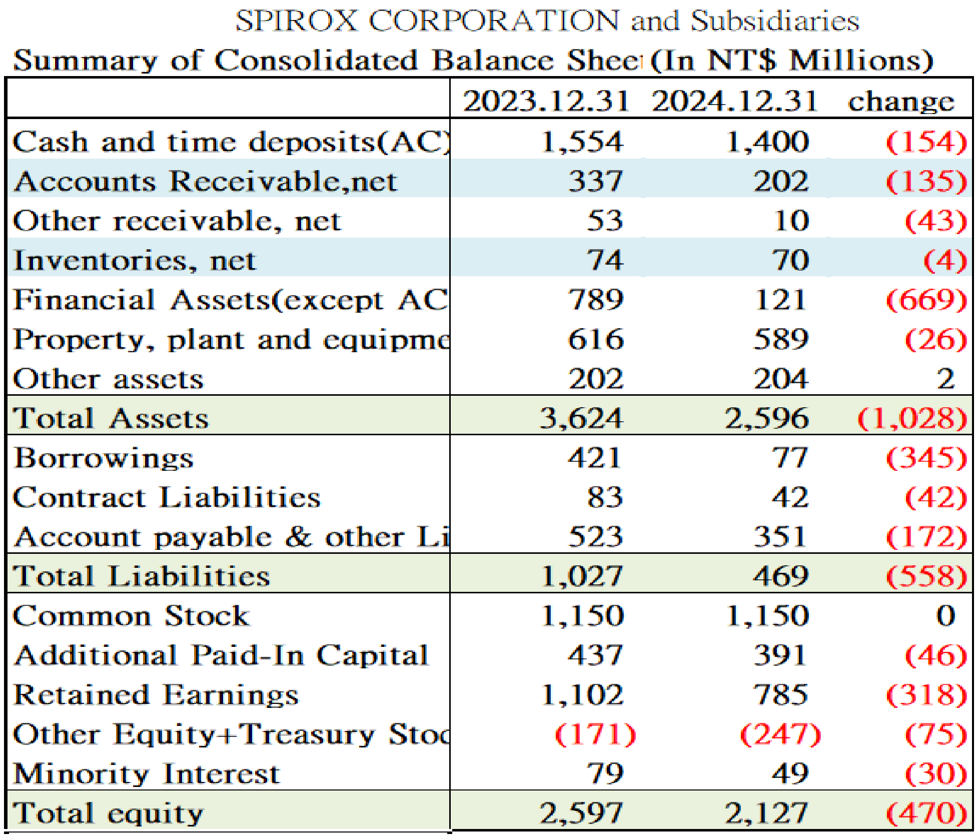
**Diverse and Scalable Data Analytics Platform**



蔚華科技 SPIROX
Delivering Smarter Solutions™

# Financial Review

# Summary of Consolidated Balance Sheet



SPIROX CORPORATION and Subsidiaries

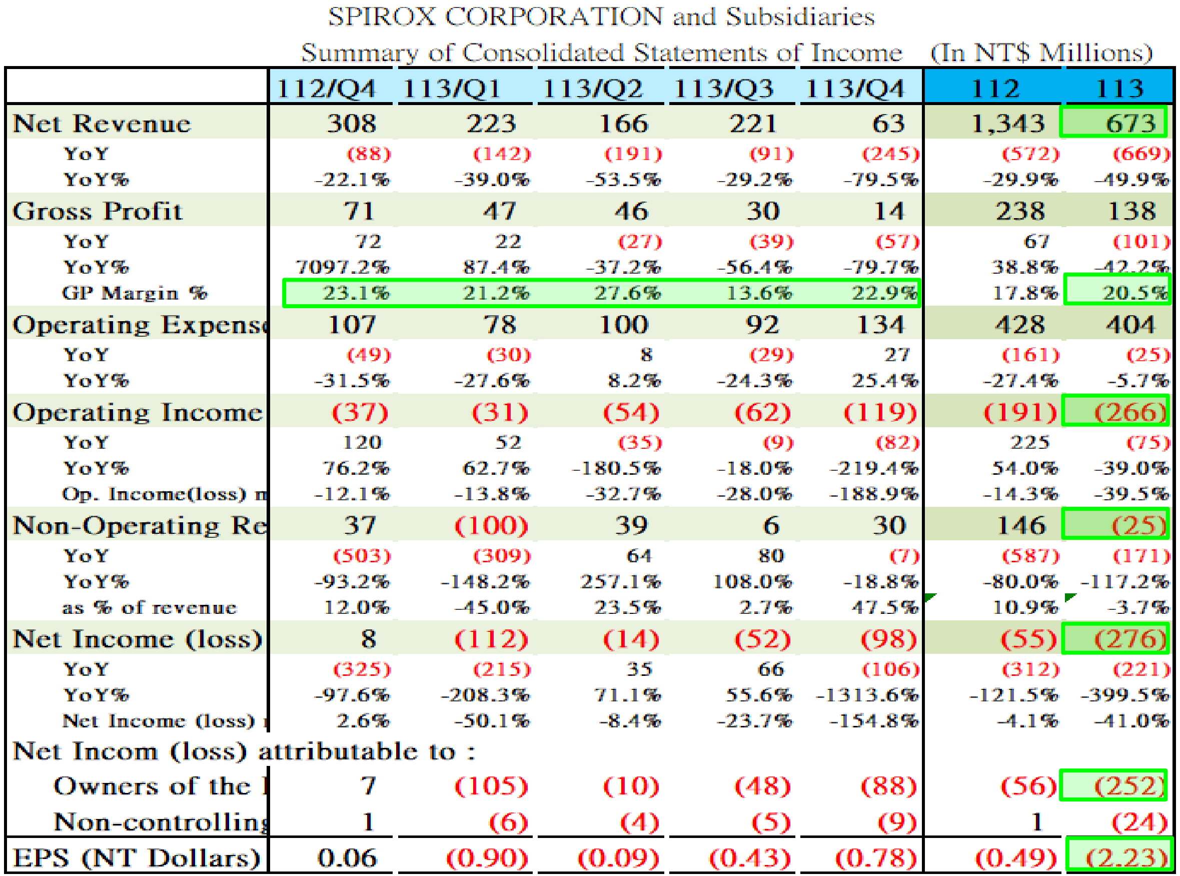
Summary of Consolidated Balance Shee (In NT$ Millions)

| | 2023.12.31 | 2024.12.31 | change |
|---|---|---|---|
| Cash and time deposits(AC) | 1,554 | 1,400 | (154) |
| Accounts Receivable,net | 337 | 202 | (135) |
| Other receivable, net | 53 | 10 | (43) |
| Inventories, net | 74 | 70 | (4) |
| Financial Assets(except AC | 789 | 121 | (669) |
| Property, plant and equipme | 616 | 589 | (26) |
| Other assets | 202 | 204 | 2 |
| Total Assets | 3,624 | 2,596 | (1,028) |
| Borrowings | 421 | 77 | (345) |
| Contract Liabilities | 83 | 42 | (42) |
| Account payable & other Li | 523 | 351 | (172) |
| Total Liabilities | 1,027 | 469 | (558) |
| Common Stock | 1,150 | 1,150 | 0 |
| Additional Paid-In Capital | 437 | 391 | (46) |
| Retained Earnings | 1,102 | 785 | (318) |
| Other Equity+Treasury Stoc | (171) | (247) | (75) |
| Minority Interest | 79 | 49 | (30) |
| Total equity | 2,597 | 2,127 | (470) |

**Consolidated total assets decreased by NT$1.028 billion, mainly due to:**

* A decrease in consolidated liabilities and payables by NT$558 million, Net cash outflow from operating activities during the period of NT$211 million,
* Repurchase of company shares amounting to NT$112 million,
* Cash dividends distributed totaling NT$114 million.

# Summary of Statements of Consolidated Income (YoY & QoQ)



SPIROX CORPORATION and Subsidiaries

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

| | 112/Q4 | 113/Q1 | 113/Q2 | 113/Q3 | 113/Q4 | 112 | 113 |
|---|---|---|---|---|---|---|---|
| **Net Revenue** | 308 | 223 | 166 | 221 | 63 | 1,343 | 673 |
| YoY | (88) | (142) | (191) | (91) | (245) | (572) | (669) |
| YoY% | -22.1% | -39.0% | -53.5% | -29.2% | -79.5% | -29.9% | -49.9% |
| **Gross Profit** | 71 | 47 | 46 | 30 | 14 | 238 | 138 |
| YoY | 72 | 22 | (27) | (39) | (57) | 67 | (101) |
| YoY% | 7097.2% | 87.4% | -37.2% | -56.4% | -79.7% | 38.8% | -42.2% |
| GP Margin % | 23.1% | 21.2% | 27.6% | 13.6% | 22.9% | 17.8% | 20.5% |
| **Operating Expens** | 107 | 78 | 100 | 92 | 134 | 428 | 404 |
| YoY | (49) | (30) | 8 | (29) | 27 | (161) | (25) |
| YoY% | -31.5% | -27.6% | 8.2% | -24.3% | 25.4% | -27.4% | -5.7% |
| **Operating Income** | (37) | (31) | (54) | (62) | (119) | (191) | (266) |
| YoY | 120 | 52 | (35) | (9) | (82) | 225 | (75) |
| YoY% | 76.2% | 62.7% | -180.5% | -18.0% | -219.4% | 54.0% | -39.0% |
| Op. Income(loss) m | -12.1% | -13.8% | -32.7% | -28.0% | -188.9% | -14.3% | -39.5% |
| **Non-Operating Re** | 37 | (100) | 39 | 6 | 30 | 146 | (25) |
| YoY | (503) | (309) | 64 | 80 | (7) | (587) | (171) |
| YoY% | -93.2% | -148.2% | 257.1% | 108.0% | -18.8% | -80.0% | -117.2% |
| as % of revenue | 12.0% | -45.0% | 23.5% | 2.7% | 47.5% | 10.9% | -3.7% |
| **Net Income (loss)** | 8 | (112) | (14) | (52) | (98) | (55) | (276) |
| YoY | (325) | (215) | 35 | 66 | (106) | (312) | (221) |
| YoY% | -97.6% | -208.3% | 71.1% | 55.6% | -1313.6% | -121.5% | -399.5% |
| Net Income (loss) | 2.6% | -50.1% | -8.4% | -23.7% | -154.8% | -4.1% | -41.0% |
| **Net Incom (loss) attributable to :** | | | | | | | |
| Owners of the | 7 | (105) | (10) | (48) | (88) | (56) | (252) |
| Non-controllin | 1 | (6) | (4) | (5) | (9) | 1 | (24) |
| **EPS (NT Dollars)** | 0.06 | (0.90) | (0.09) | (0.43) | (0.78) | (0.49) | (2.23) |

# Summary of Consolidated Cash Flow Highlights & Financial Ratio

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

| item | 2022 | 2023 | 2024 |
|---|---|---|---|
| Net cash generated from (used in) Op. activities | 253 | 138 | (211) |
| Net cash used in investing activities | (245) | 615 | 577 |
| Net cash generated from financing activities | 64 | (396) | (564) |
| Cash and cash equivalents at the end of the year | 1,103 | 1,554 | 1,400 |

cash+451M

-154M

Financial Analysis Summary

| item | 2022 | 2023 | 2024 |
|---|---|---|---|
| Account Receivable turnover days | ✓ 135 | ✓ 123 | ✗ 165 |
| Inventory turnover days | ✓ 51 | ✗ 74 | ✗ 128 |
| Debts ratio% | ✓ 30% | ✓ 28% | ✓ 18% |
| Current ratio% | ✓ 403% | ✗ 354% | ✓ 555% |
| ROA% | 🟢 5.44% | 🔴 -1.22% | ⚫ -8.73% |
| ROE% | 🟢 9.63% | 🔴 -2.03% | ⚫ -11.68% |

舒華科技
SPIROX
Delivering Smarter Solutions™

Q & A

*Delivering Smarter Solutions*

蔚華科技
SPIROX

Thank you.