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29 November 2021

## Taiwan Technology

**Powerchip** 6770 TT  
Rec N-R  
Market cap US\$9bn  
Price NT\$74.5

**Wah Lee** 3010 TT  
Rec N-R  
Market cap US\$0.7bn  
Price NT\$86.7

**TSMC** 2330 TT  
Rec BUY  
Market cap US\$555bn  
3M ADV US\$580m  
Price NT\$593  
Target NT\$825  
Up/downside +39%

**Quanta** 2382 TT  
Rec BUY  
Market cap US\$12bn  
3M ADV US\$18m  
Price NT\$86.6  
Target NT\$110  
Up/downside +27%

**Elite Material** 2383 TT  
Rec BUY  
Market cap US\$3.3bn  
3M ADV US\$28m  
Price NT\$280  
Target NT\$320  
Up/downside +14%

## Taiwan Market Mover takeaways

### 5G, AIoT, cloud remain long-term demand drivers

At the Taiwan Market Mover 2022 Access Day, both Wah Lee Industrial and Powerchip gave positive outlooks for next year, with Wah Lee seeing strong demand from AIoT, 5G deployment, and HPCs, and Powerchip arranging long-term agreements (LTA) for the bulk of its driver IC and memory customers with fixed price/volume for the next 2-3 years. We came away comfortable with the overall tech demand outlook, particularly for new energy related applications, datacentre, and 5G network proliferation. We reiterate BUY ratings on TSMC, Quanta and Elite Material on the back of the aforementioned megatrends.

### Wah Lee sees strong demand for semi, specialty display, and new energies

- Wah Lee, as the exclusive distributor of specialty semiconductor/PCB, FPD, and ICT product raw materials, saw strong growth in 2021 driven by robust demand across the board, and it expects 5G, AIoT, and HPC to continue to drive growth into 2022.
- The company supplies leading foundries with photoresist products and optical film in LCD processes and has benefited from semi capacity expansions and IoT applications for flat panel displays in educational and commercial applications.
- Looking into 2022, the company expects 5G, AIoT, and HPCs to continue to drive growth while seeing continued strong demand from PCB customers.

### Powerchip committed to long-term capacity expansion with secured margins

- The third-largest Taiwan-based foundry, Powerchip focuses on niche memory and logic IC including driver IC and CMOS image sensor foundry business, with new capacity expansion of up to US\$10bn in the next 10 years for logic IC customers.
- The company has arranged LTA with the bulk of its logic and memory clients to have some assurance on pricing and volume for driver ICs, and specialty memory products in the next 2-3 years, which suggests clients' conviction level on end demand.
- For the nearer-term margin outlook, Powerchip indicates price hikes into 4Q21/1Q22 to enable sequential gross margin improvement into 1Q22.

### Positive read to foundry, datacentre, AIoT and selected fabless names

- We believe the pricing and margin outlook commentaries from Powerchip bode well for the margin outlook of leading foundries given their ability to pass on wafer costs and incremental D&As to their customers. Meanwhile, we continue to favour fabless companies with better bargaining power or tapping into growth areas that could absorb the increasing foundry costs ahead.
- Meanwhile, we continue to expect strong datacentre Capex growth to facilitate a more seamless 5G ecosystem in the near term and lead towards a metaverse ideology in the long run, which should continue to favour supply chain companies.
- Lastly, with foundries still able to hike prices to their customers, we believe end demand thus far remains healthy enough to absorb the price increase on end products. Meanwhile, supply chain challenges remain the key bottleneck hindering companies' near-term revenue outlooks.

### Reiterate BUY on TSMC, Quanta and Elite Material

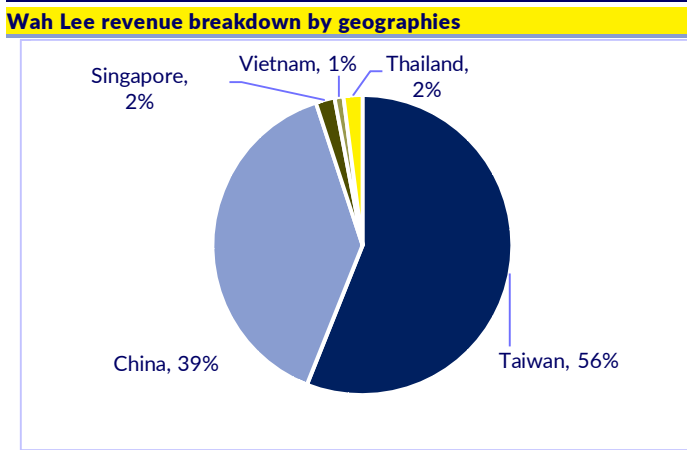
- In light of positive growth prospects from Wah Lee and firm pricing outlook from Powerchip, we remain comfortable with the end demand outlook, with little risk of sharp downward order revisions in the near term.
- Meanwhile, secular growth trends in AIoT, cloud computing, green energy, and electric vehicles remain intact, which should continue to fuel the growth of respective supply chain names, in our view.
- We reiterate BUY on TSMC, Quanta and Elite Material.

**Wah Lee Industrial Corp (3010 TT, N-R)**  
**An integrated material/equipment distributor**  
**Company background**

Founded in 1968, Wah Lee Industrial Corp (Wah Lee) positions itself to introduce and develop advanced materials, equipment, technologies, as well as value-added services to provide complete sets of material/equipment for composite material, engineering plastic, PCB, semiconductor, flat panel displays (FPD), touch panels, optoelectronics, and green energy industries.

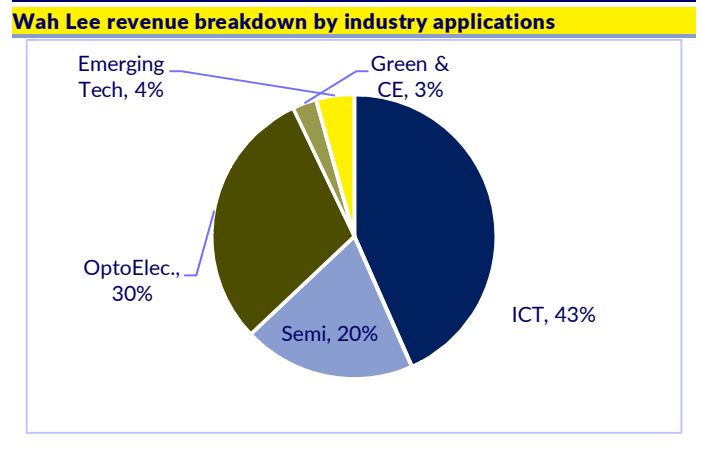
In addition to distribution business, it is also involved in joint ventures for manufacturing upstream materials, equipment, and products related to its core businesses. Headquartered in Kaohsiung Taiwan, Wah Lee maintains operations in China, Japan, South Korea, Singapore, Thailand, Malaysia, Vietnam, Indonesia, Philippines, and the US to serve its clients locally.

Figure 1



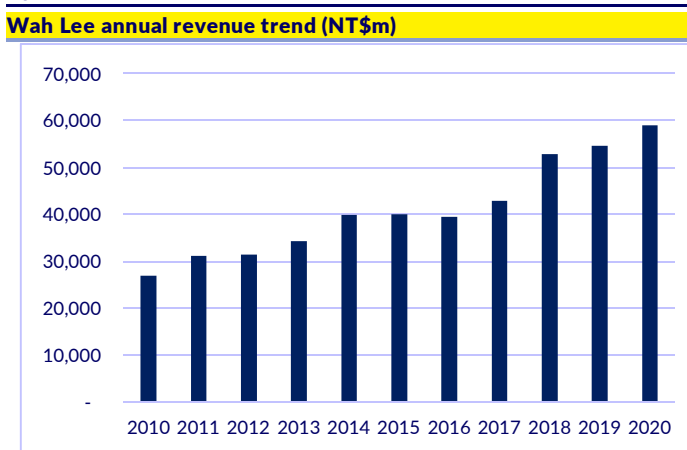
Source: CLST, Wah Lee

Figure 2



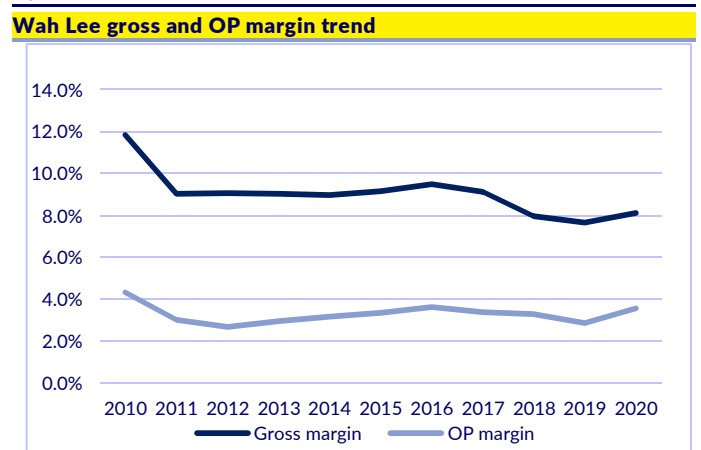
Source: CLST, Wah Lee

Figure 3



Source: CLST, Wah Lee

Figure 4



Source: CLST, Wah Lee

**Exclusive distributor of specialty chemicals/materials from Japanese vendors**

- ❑ Wah Lee focuses on the Greater China area and is the exclusive distributor for many Japanese suppliers. It has strong R&D and manufacturing capabilities in upstream materials for various industries.
- ❑ The company represents JSR in photo resist to Taiwanese foundry and DRAM makers, and also chemicals to mainland Chinese semi manufacturers.

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- ❑ Semiconductor is only one of the various application fields, other than raw material in ICT industries like high-end engineering plastic to Hon Hai for all kinds of components and chassis for various ICT products like PC, servers, switches and basestations.
- ❑ The company also distributes PCB dry film, a high-resolution raw material for very precise PCB board making, to PCB substrate makers Kinsus and Nan Ya PCB to make the circuitry on the PCB, requiring high-end dry film. From Japanese vendor Asahi Kasei.
- ❑ Wah Lee also sells CCL for 5G antenna modules requiring low Dk low Df performance.
- ❑ Applications include 5G, also engineering plastics for EV components.

#### **Benefiting from foundry capacity expansion**

- ❑ Semiconductor raw materials also for foundry capacity expansion. TSMC is one of Wah Lee's largest customers.
- ❑ Upstream chemicals for LCD panel production. Optical films and sheets for LCMs. Company witnessed strong growth in finished products (Next Gen electronics products). Electronics whiteboard a sophisticated LCD panel with touch modules for application in educational purposes.
- ❑ Schools are procuring electronics whiteboards and companies are also buying these displays with touch functions for commercial use.

#### **Solar and battery materials for green energies**

- ❑ Green Energy (subsidiary called Kingstone Technology) starting 3-4 years ago the subsidiary has been building solar power plants in Taiwan to echo the government's ambition to build 20GW solar based power. Company has already built 40MW solar power plants.
- ❑ Wah Lee also distributes some raw material sales like rechargeable batteries, anode and cathode material for lithium batteries, and electrolytes and chemical solution and separator films for lithium batteries. In rechargeable batteries mainly Japanese material vendors and sold to Taiwanese and Chinese battery makers.
- ❑ Wah Lee supplies composite material for Tien Lie power blades which is an exclusive licensee of a Danish wind power generator maker.

#### **Financial summary**

- ❑ Top line grew around 20% in 2021, with record-high 3Q sales. GM was 8.7% in 9M21, and the company attributed it to various industry sectors with price increases, including ICT for engineering plastics and semiconductor companies.
- ❑ Sales per capita have increased significantly in 2021 for Opex ratio to maintain at 4.3% and Op margin at 4.4%, with 42% YoY Op profit growth in 9M21.

#### **Powerchip (6770 TT, N-R) meeting takeaways**

##### **Company background**

- ❑ PSMC is in foundry business with around 7,300 employees, majority of whom hold bachelor degrees and above.
- ❑ Two BU: specialty logic and memory.
- ❑ Set up as a DRAM JV with Mitsubishi in Japan, so manufactured DRAM in the first two decades, and around 10 years ago with vendors exiting, started to transform and change into foundry business model.
- ❑ LCD drivers and CMOS image sensor products starting from 8-inch. Memory BUs for DRAM and flash, logic for driver ICs, CMOS sensors and PMIC products.

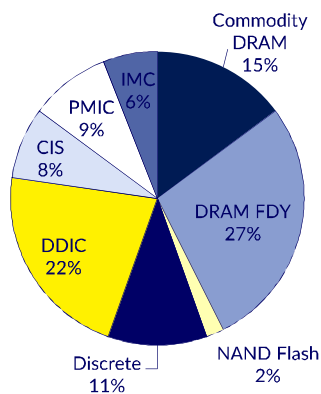
- ❑ Currently PSMC is the third-largest foundry in Taiwan after TSMC and UMC.
- ❑ The company has two 8-inch fabs, 8A and 8B, in Hsinchu, and three 12-inch fabs, P1-3. P1 and P2 with 70k/month and P3 with 35k/month capacity. 8A with 75k/month and 8B with currently 40k/month and could expand to 60k/month two years from now.
- ❑ 110nm and 180nm for 8-inch, P3 for DRAM with 21-30nm technologies; P1/2 older fabs with 28-180nm technologies mainly for logic foundry.

**New fab**

- ❑ The company is building a new fab in Miaoli with a total investment of US\$10bn over 10 years for 100k/month capacity, with phase 1 construction underway and by the end of 2022 will start to move in equipment for 1H23 pilot run for 4Q23 some output.
- ❑ 35k to begin with in 2024, and maybe gradually load up to 50k by 2025 and start phase 2 at the same time.
- ❑ 50nm to start with up to 20nm mainly for logic customers, and memory foundry will stay at the Hsinchu site.
- ❑ Not pursuing mainstream logic process. Will focus on niche processes.
- ❑ To reach economy of scale: breakeven or slightly profitable upon 35k wpm.
- ❑ New capacity of 12" 11k wpm from old fabs will offset margin dilution from 35k wpm capacity addition from Tongluo in 2024.
- ❑ GPM: Relatively OK margins thanks to LTA protection.
- ❑ 2023, 1H24 GPM will see margin dilution.
- ❑ Hopes GPM for new fab will be under control by 2025 and will not become a burden.

Figure 5

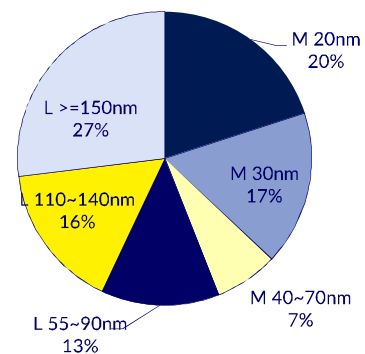
**Revenue mix by product**



Source: CLST, PSMC

Figure 6

**Revenue mix by process node**



Source: CLST, PSMC

**Operation guidance**

- ❑ Open foundry model to integrate special device and process required by customer into PSMC process platform.
- ❑ 8-inch fab focuses on power discretives to meet future EV demand.
- ❑ 12-inch fab focuses on specialty logic ICs: not good at advanced sub-10, 1x or 2x processes, so focuses more on LCD drivers, PMIC and CMOS image sensors.
- ❑ Memory foundry focuses on mid-low density niche products for network and IoT applications, known-good-die in nature: PSMC may be the only memory foundry as others are mostly IDMs.

- ❑ Promote wafer-on-wafer technology aiming at high-bandwidth/low-energy-loss applications.
- ❑ Currently display IC represents the biggest part of logic IC business, but power discretés and PMIC present much stronger growth potential.
- ❑ 90% of memory foundry business is for DRAM, and for flash percentage is small due to capacity constraints. NOR flash could be another growth engine with client engagement underway.
- ❑ Company is also building some AI features into DRAM products, alongside wafer-on-wafer offerings, which could turn into another growth engine for memory BU.
- ❑ ASP keeps increasing every quarter after reviewing with customers, so revenue and gross margin expanded every quarter, and the company expects this trend to continue into 4Q.
- ❑ 4Q financial performance could improve QoQ based on management's assessment, and ASP trend will remain the same into 1Q, with price hikes into the quarter. The company is also working on LTA with customers, which have been settled with 70% of logic foundry capacities already signed with customers under LTAs. Margins for LTAs a bit better than implied level of 1Q22, and 3-year LTAs should secure margin level for logic foundry for the foreseeable future.
- ❑ Memory BU also signed around 80% of capacity with LTA customers, and ASP will be roughly the same as current price levels, which implies a stable ASP and margin level as the 4Q level for the duration of 2 years.

**Market status**

- ❑ PSMC currently ranks No. 6 among pure play foundries, and the company expects to move up a place this year.
- ❑ The company positions itself as a niche foundry service provider focusing on different applications.

**Competitiveness**

- ❑ Strengthen ties with Japanese IDMs to increase market share in auto, industrial areas.
- ❑ Take advantage of 8" production in power discrete area, which has been dominated by 6" fabs.
- ❑ Take advantage of 12" aluminium process line for ASIC foundry, which has been dominated by 8" fabs.
- ❑ Integrate logic and memory technologies for high-bandwidth, low-energy-loss data transmission application needs.



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## Companies mentioned

Asahi Kasei (N-R)  
 Elite Material (2383 TT - NT\$280.0 - BUY)<sup>1</sup>  
 Hon Hai (2317 TT - NT\$103.5 - BUY)<sup>1</sup>  
 JSR (4185 JP - ¥4,180 - U-PF)<sup>2</sup>  
 Kingstone Technology (N-R)  
 Kinsus (N-R)  
 Mitsubishi Corp (N-R)  
 Nan Ya PCB (8046 TT - NT\$584.0 - BUY)<sup>1</sup>  
 Powerchip (N-R)  
 Quanta (2382 TT - NT\$86.6 - BUY)<sup>1</sup>  
 Tien Lie (N-R)  
 TSMC (2330 TT - NT\$593.0 - BUY)<sup>1</sup>  
 UMC (2303 TT - NT\$62.4 - O-PF)<sup>1</sup>  
 Wah Lee Industrial (N-R)

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