



## Interview: Entegris to create its largest manufacturing and R&D hubs in Taiwan CEO of a top-tier global semiconductor materials provider: Advanced technologies will come from Taiwan within 2–3 years

Interview conducted by Wen-Yee Lee and Chung-Chieh Wu



Bertrand Loy, President and Chief Executive Officer of Entegris and chairman of SEMI (photo courtesy of Entegris)

Imagine a place with a surface area as big as Taiwan that does not allow even a penny-sized contaminant—this is what Entegris does. The company is a tier-1 global provider of semiconductor materials worth NT\$480 billion, even more than ASE, and a major supplier to TSMC. Entegris products, ranging from filtration and chemistries to wafer handling solutions, ensure purity in the semiconductor manufacturing process.

Headquartered in the US state of Massachusetts, Entegris says it used to be “very American-centric”. While the company has a presence in the US, Korea, and Japan, it is set to make Taiwan its largest manufacturing and R&D hub in the world, with more than half of this year’s capital expenditure invested in Taiwan.

What is the rationale behind this decision and what is pushing the company to work with the Taiwanese supply chain? The following is Business Weekly’s interview with Bertrand Loy, CEO of Entegris. It has been edited for length.

**Business Weekly:** What made you decide to build your largest R&D and manufacturing hub in Taiwan? What made Taiwan stand out?

**Taiwan occupies an increasingly important position in the semiconductor landscape.**

**“The world can’t get enough of smart everything.”**

*Bertrand Loy: U.S. market is the largest market for us, but we already have very significant manufacturing capacity there. The second largest market is Taiwan. And we didn’t have enough manufacturing capability there, so it’s a very natural decision for us to invest in Taiwan. But the other reason, obviously, is that Taiwan is becoming increasingly important to the technology roadmap, for foundry in particular. This is where we expect the leading process technology to be developed. And if we want to continue to be a leader in what we do, we have to continue to partner effectively with the leading Taiwanese semiconductor companies.*

**Q: At the end of 2020, you made a decision to invest US \$200 million in Taiwan. But at the end of 2021, you decided to increase the number to US\$500 million. What prompted you to make that change in just a year?**

A: First, it has to do with the growing conviction that the semiconductor industry will enjoy very strong secular growth for the years to come. The world has an insatiable appetite for smart everything. We grew actually very rapidly in 2020 and then another very strong year of growth in 2021. This made us realize that we needed to leapfrog our capacity needs. The other thing is that when we made the first investment in Taiwan, we were not sure, we had not had full visibility about the sites, which we like. I think the more we engaged with the Taiwanese local authorities, the more we started to work on the project, the clearer it became that the site will be actually a very attractive location.

**Q: TSMC continues to lead the way in advanced technology nodes. Does this mean that your latest and best technologies will be from Taiwan?**

A: We will need to double our capacity in the next ten years, so it's true that our investment in Taiwan is indeed very significant. But I would tell you it's not going to be sufficient. We will not have enough capacity with that investment to double the size of the company in the next ten years. So I would envision a scenario where we have to add capacity in other countries, whether that's in Korea or elsewhere. We have to discuss and decide in the years to come. And that's a good problem to have, right?

In terms of where the leading technology would come, it's fair to say that probably for the next two or three years, or maybe three to five years, it's going to be, for some products like filtration, it will be coming from Taiwan for sure.

**Q: Now the US government is trying to push and develop a stronger local semiconductor supply chain. Has this become some kind of "pressure" for you since you are putting more of your efforts in a totally opposite direction?**

**Value and mindset make Taiwanese suppliers stand out.**

***"If the industry only seeks to maximize subsidies, all that follows will be bubbles."***

A: No, look, we should think about our value proposition. It's really about helping our customers advance their technology roadmap. We need to engage from the technology development and for the manufacturing standpoint in order to effectively collaborate with our customers.

So for us, we invest next to our customers. So if our customers are investing massively in Taiwan, we'll be investing massively in Taiwan. If they are investing massively in the U.S., we would have to actually do something similar. And the same in true in Korea. So that's really how you should think about it.

**Q: If the U.S. government provides you more subsidies, would Taiwan's status as your biggest R&D and manufacturing sites be reversed after three or five years?**

A: It's not an either-or, you would be able to do both to invest here and there, because we expect to grow very rapidly. Frankly, I think that if the industry is only thinking about maximizing access to funding, I think we are going to see a bubble because we will see a lot of overcapacities being built.

**Q: As Entegris continues to invest in Taiwan, and you are also expanding your cooperation with Taiwanese suppliers. Why is it significant to have a localized supply chain?**

A: The goal is to shorten the manufacturing cycle time, so to the extent we can rely more on local suppliers. We will shorten the supply lines and therefore be in a better position to shorten cycle times. Today, we use about 40 Taiwan suppliers, and we do expect that number to be much greater going forward.

**Q: What advantages do Taiwanese suppliers have?**

A: I think the one reason why we like investing in Taiwan is that our teams in Taiwan and the suppliers understand the demands of companies like TSMC. They understand that the standards are very high, and they understand that the standards of today will not be enough to be successful tomorrow. So, you have this relentless pursuit of excellence and the ability to continuously invest in continuous improvement and just to get better. That's something that I think exists in Taiwan. And this is a mindset that is very rare and very precious.

**Q: So you mean that the experiences working with TSMC is a quite important quality for these local suppliers to be able to work with you?**

A: Exactly, semiconductor industry is very demanding, a very unique industry, but it's a very small industry as well. In Taiwan, everybody understands what it takes to be successful serving the semiconductor industry. And as I said, it's very rare. And that's the type of mindset, that is the type of talent that we hope to get access to when we invest here in Taiwan. The supply chain in Taiwan, too. Everyone has the same mindset. It's really valuable.