Congratulations — after years of hard study, you’re ready to use that engineering know-how in the field. With this in mind, we’d like to give you a deeper look into TSMC and what’s ahead in Arizona.
Getting to Know TSMC

It’s quite possible that you haven’t heard of us.

Or maybe you have, but you’re not exactly sure what we do.

Here’s the TSMC story – not just the facts, figures and history, but what matters to us; what drives us as a company.

Of course, we have an agenda. We’d like you to apply for a job, but only if you decide that TSMC fits your interests and aspirations.

Our Business: Making Chips

Companies that design semiconductors come to us to manufacture their chips. We’re the largest independent maker of chips in the world. Why would they turn to a third party to manufacture their products? We’ll answer that question in a minute.

First, let’s take a look at the state of the semiconductor industry. Arguably, no other technology is as important to the innovation we see happening around us today. Artificial intelligence. 5G. Autonomous Driving. The Internet of Things. Machine Learning. Semiconductors underpin all of these, which puts TSMC at the center of the action.

We’re the company that’s continually shrinking the transistors, which allows more functionality on the chip. This increased density makes the technologies listed above possible. You’ve likely heard of Moore’s Law, which predicted that the number of transistors on a chip would double roughly every two years. Electronics Magazine wrote about this back in 1965 (apparently when pipes were a thing).

Lately, there’s been talk that Moore’s Law is running out of steam. Our Chairman Dr. Mark Liu doesn’t think so.

“People have asked: Will semiconductors evolve for another 60 years? I’m optimistic about this. To TSMC, Moore’s Law is still alive and well,” Liu said.
We keep inventing ways to make chips denser. One way is to refine production to make smaller transistors.

Another is to create 3D structures. Most recently, we’ve been experimenting with a technology called DTCO (Design Technology Co-Optimization) to make transistors below 7 nanometers (nm).

Among the most promising technologies are new techniques that let us integrate multi-chip packages. We’re raiding the periodic table for two-dimensional materials to use instead of silicon. By turning to these new substances, we’re testing the stacking of multiple layers of transistors as yet another way of increasing density.

As regular people, we see and feel the impact of this kind of innovation daily. Take 5G, which has implications for everything from your handset to transportation and healthcare. Our ability to cram more transistors onto a chip is key to enabling this increased bandwidth and lower latency.

Context on the Foundry Business

Back to the question of why a semiconductor company would depend on us to make its products. The short answer is cost and expertise. Operating a fab for chip manufacturing requires billions of dollars of investment as well as extraordinary talent — which is where you come in.

Our founder, Dr. Morris Chang, had the idea of creating an independent fab in 1985 after working in semiconductors for more than 30 years. Back then, companies that designed silicon chips all had their own manufacturing facilities. It was hard for them to imagine another way of doing things, much less picture a “fabless”
industry. Dr. Chang’s vision transformed the whole sector. As The Economist later noted, “TSMC was the first pure foundry, making chips for designers with no factories, or ‘fabs,’ of their own. The doubts of others suited TSMC nicely.”

Today, fabless semiconductors represent 30% of the overall $433 billion semiconductor business. And TSMC enjoys over 50% of the fabless semiconductor market.

**TSMC’s Position Today**

This leading share of the fabless market makes TSMC not just the world’s most valuable chipmaker, but one of the world’s most valuable companies. Our 2020 financial performance set a new high, generating $47.78 billion in revenue and record profits. This year, we expect to grow between 13% and 16%, which would outpace the industry at large.

*It’s our engineers and their ability to solve hard problems that make this sort of growth possible.*

Last year, we reached the milestone of having produced over a billion 7nm chips — the equivalent of 13 Manhattan city blocks.

We’ve also started production on our smallest chips yet, at just 5 nanometers. These will power everything from AI to 5G base stations to planes. They’re made using EUV (extreme ultraviolet) lithography.

Our chips are everywhere. As one industry executive put it:

“This pretty much everyone has a TSMC-made product in their pocket right now; they just might not know it.”
Of course, getting to this point has taken time and a commitment to R&D. We think long-term. The innovations that drove 2020 performance started as explorations in our labs years ago.

As engineers, we gravitate to the scientific. Yet, in a year that saw a pandemic become such a destructive force, our values that emphasize integrity, care for each other and simply being a good global citizen showed the way. Each one of our 55,000 employees around the world deserves to take a bow. Their resilience was a difference maker in a year like no other.

**The Importance of the Arizona Fab**

The U.S. semiconductor industry is vast, making up almost half the global market. Most of our customers are here; 60% of TSMC’s revenue comes from North America. It’s also worth noting that there is a U.S. semiconductor renaissance underway, with the country ramping up efforts to bolster manufacturing capabilities.

That’s what brings us to Arizona, to be closer to our customers and the long-term opportunity.

We expect our 5nm fab in Arizona to be up and running by 2024, pumping out 20,000 wafers per month. As a member of the team,
you'll be part of history, helping to launch the most advanced fab in the country.

**Sustainability is in Our Nature**

We'd like to share a story about fireflies at one of our fabs.

Back in 2015, at our facility in Tainan, Taiwan, we were examining the water that we recycle from the manufacturing process for our pond and plants. We realized that our pond was rich in natural forest vegetation, creating the perfect habitat for fireflies. When we discovered these creatures, we knew we had to protect them. We began habitat restoration work by reducing light pollution and using environmentally friendly approaches to manage the growth of the aquatic plants at our fab. Every night in spring at our Tainan site, these lightning bugs now display their magic.

The point is, sustainability is a mentality at TSMC that takes a variety of forms. We're the world's first semiconductor firm to join the RE100 — a global effort that unites the world's most influential businesses committed to 100% renewable electricity.

We strive to do the right thing for the planet, embracing green manufacturing and building a responsible supply chain that prioritizes ethical labor practices and environmental protection. The fact that we've been on the Dow Jones Sustainability Index for 20 straight years is testament to the work we've done to raise the bar for ourselves and for the industry.

Last year, we launched our own CSR Award as a way of encouraging TSMC employees to propose ideas as to how the company can innovate in this area. In the space of six months, we received 785 proposals from people excited to contribute to TSMC's culture of sustainability.
Teamwork = Execution

We have a few more things to say about our culture and workplace.

Andrew Feldman, a TSMC customer and Silicon Valley veteran, said in The New York Times that TSMC “executes like crazy.”

We like that phrase, “executes like crazy.”

It talks to teamwork, because no individual can make it happen by themselves. Expanding on that thought, we believe that diversity in our workforce makes us even stronger.

Execution also means doing everything possible to support our customers. That’s how we build lasting customer relationships based on trust.

What’s Next?

Niels Bohr, a Nobel laureate in physics, famously said: “Prediction is very difficult, especially if it’s about the future.”

There’s certainly truth in that. We don’t know what digital device will emerge as the next must-have. We don’t know how technology will reshape society and business.

Here’s what we do know. TSMC will be at the heart of these advances because tomorrow’s inventors will always benefit from better performing chips.

That’s your opportunity with TSMC and our Arizona fab. That’s your opportunity to shape the future. Apply Here.
TSMC HEADQUARTERS
8, Li-Hsin Rd. 6, Hsinchu Science Park, Hsinchu 300-78, Taiwan, R.O.C.

NORTH AMERICA LOCATIONS

OFFICES

TSMC North America
2851 Junction Avenue
San Jose, CA 95134, U.S.A.

Austin Office
2705 Bee Cave Road, Suite 180
Austin, TX 78746, U.S.A.

Boston Office
35 Corporate Drive, Suite 160
Burlington, MA 01803, U.S.A.

San Diego Office
5355 Mira Sorrento Place, Suite 680
San Diego, CA 92121, U.S.A.

Washington, DC Office
700 K Street NW, Suite 610
Washington, DC 20001, U.S.A.

FABS

WaferTech L.L.C., Fab 11
5509 N.W. Parker Street
Camas, WA 98607-9299, U.S.A.

TSMC Arizona Corporation
2510 W. Dunlap Avenue, #600
Phoenix, AZ 85021, U.S.A.
(Temporary Facility)

DESIGN CENTERS

TSMC Technology, Inc
2851 Junction Avenue
San Jose, CA 95134, U.S.A.

San Diego Design Center
5355 Mira Sorrento Place, Suite 690
San Diego, CA 92121, U.S.A.

Austin Design Center
11921 North MoPac Expressway, Suite 340
Austin, TX 78759, U.S.A.

TSMC Design Technology Canada Inc
535 Legget Dr., Suite 600
Kanata, ON K2K 3B8, Canada