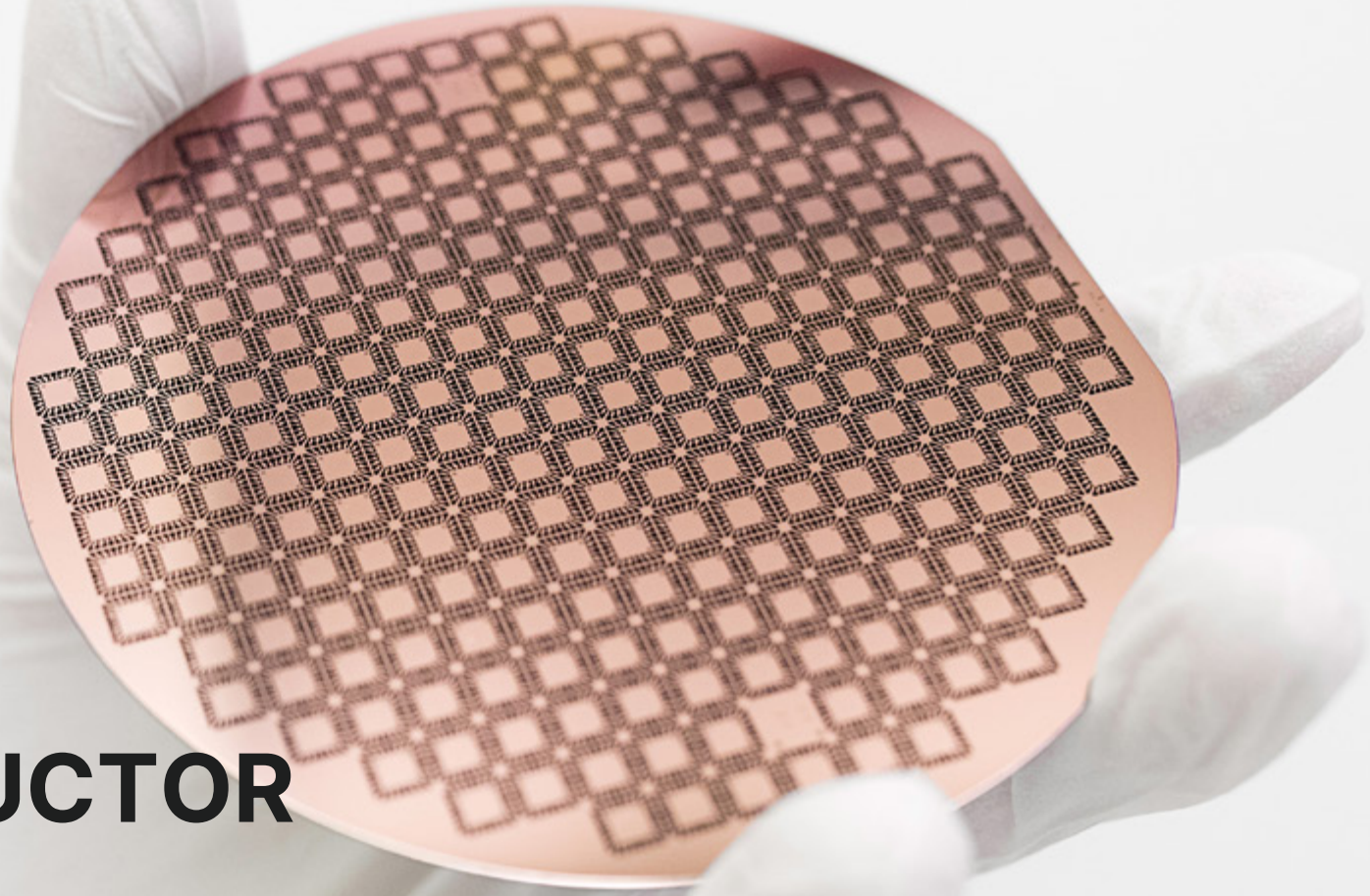
SMOLTEK

UNLEASHING PERFORMANCE FOR SEMICONDUCTOR



SMOLTEK SEMI AB | Strategic update | June 2025

Executive Summary

The exponential growth in computing power driving AI and mobile technology now faces a critical barrier: stable power delivery. As transistors become more densely packed, existing capacitor technologies have reached their fundamental limits – just when the market needs a breakthrough solution the most.

Smoltek Semi is addressing this challenge with our CNF-MIM technology – ultra-thin carbon nanofiber capacitors that have the potential to deliver unprecedented capacitance density. This could enable up to 50% higher capacitance compared to DTC approaches within the same volume. We've completed proof-of-concept of our new capacitor manufacturing model and are now developing Gen-One, the next generation of CNF-MIM capacitors, with validation expected in Q4 2025.

Our roadmap focuses on three critical milestones: completing technology validation, creating market pull by engaging end users, and closing our first license agreement, which we target in late 2025 or early 2026. We expect this first licensing deal to generate upfront payments and additional development fees prior to the partner's commercial product launch. Thereafter, our capital-efficient licensing model is designed to provide sustainable royalty streams based on industry standards.

The timing presents a compelling opportunity: investing now through Smoltek Nanotech Holding AB positions you before significant value inflection points, with a planned future Smoltek Semi spin-out offering clear liquidity pathways. By investing in the holding company, you gain exposure to Smoltek Semi, one of its primary value drivers, while maintaining potential upside from the broader technology portfolio. This limited window provides access to a key enabling technology for next generation computing – addressing a fundamental industry challenge with a solution that no competitor can match.

Paving the way for future advances – from smartphones to AI data centers

The exponential growth in computing power that has brought us personal computers, smartphones, cloud computing and artificial intelligence is threatened by increasing problems with interference, power surges, overheating and mechanically fragile interconnects as more transistors are packed into a smaller space. Smoltek Semi will use carbon nano-technology to push this limit and ensure continued performance improvements for the benefit of society.

The most pressing problem is interference and power surges from billions of fast-switching transistors. The solution is to place capacitors – small energy reservoirs – directly under the chips between interconnect points. This requires ultra-thin capacitors with minimal footprint that can still achieve high capacitance, allowing them to store sufficient energy despite their small size. Conventional capacitor technology has reached its miniaturization limits, while attempted solutions are prohibitively expensive and still face physical constraints. Smoltek Semi has developed a much more cost effective solution without such limitations: CNF-MIM capacitors, which use precisely grown carbon nanofibers to create unprecedented capacitance per unit volume.

CNF-MIM capacitors revolutionize power delivery for advanced electronics by creating arrays of vertical carbon nanofibers coated with metal-insulator-metal layers.

These capacitors deliver higher energy storage in ultra-thin packages while requiring fewer manufacturing steps than competing technologies.

For global manufacturers of advanced electronic systems spanning consumer devices, computing infrastructure, and specialized industrial applications who need to place decoupling capacitors directly on the underside of chips between their interconnects to maximize chip performance while maintaining stable power delivery, CNF-MIM capacitors are ultra-thin capacitors that provide extremely high capacitance in relation to their volume. Unlike deep trench capacitors (DTC), which face physical limitations in their subtractive manufacturing process, CNF-MIM technology uses an additive approach requiring fewer production steps, resulting in both cost savings and greater design flexibility for next-generation electronics.

Pushing the limits of Moore's Law

Moore's Law has driven exponential growth in computing power for decades, doubling transistor density approximately every two years. This remarkable progression has enabled transformative advances from personal computers and smartphones to cloud computing and artificial intelligence. However, this continued advancement now faces a critical barrier: stable power delivery.

As transistors become more densely packed and switch at faster rates in today's advanced processors, voltage fluctuations in the power supply create increasing interference problems. These fluctuations, known as transients, can cause serious errors in chip operation and have emerged as the primary obstacle to further performance gains in AI, high-performance computing, and mobile applications.

The solution to this challenge requires energy reservoirs – capacitors – positioned as close as possible to the transistors to smooth out these power fluctuations. For the most advanced chips, these capacitors must be mounted directly underneath the processor package in the extremely limited space between the chip and the circuit board. This placement is not optional but essential, as it's the closest possible position without integrating capacitors into the chip itself.

This necessity creates specific and demanding technical requirements:

- **Ultra-thin profile:** The capacitors must be no higher than the solder balls or bumps connecting the chip to the circuit board – typically just tens of microns thick.
- **Minimal footprint:** They must fit between the increasingly dense interconnects on the underside of the chip package.
- **High capacitance:** Despite these size constraints, they must store sufficient energy to effectively stabilize the power supply.

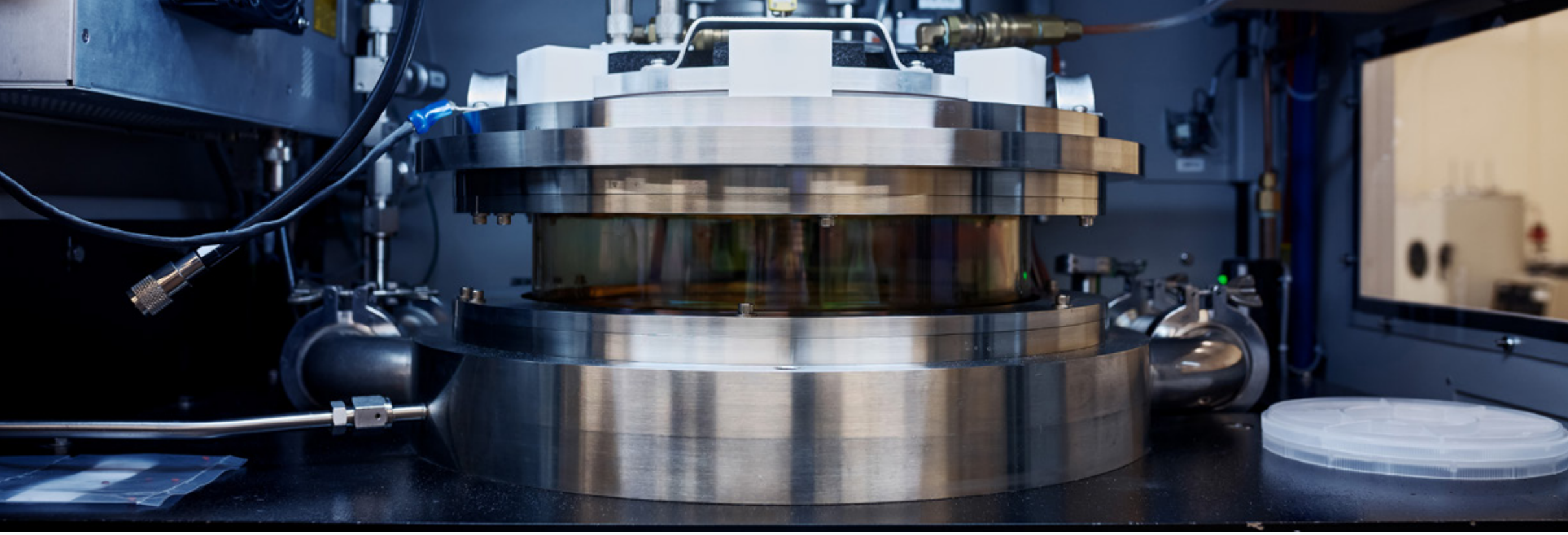
Critically, existing technologies are failing to meet these combined requirements cost-effectively:

- Multilayer ceramic capacitors (MLCCs) have reached their fundamental miniaturization limits.
- Deep trench capacitors (DTCs) face prohibitive manufacturing costs and inherent physical limitations in their subtractive manufacturing approach.

This creates both a significant market gap and an exceptional opportunity for innovation.

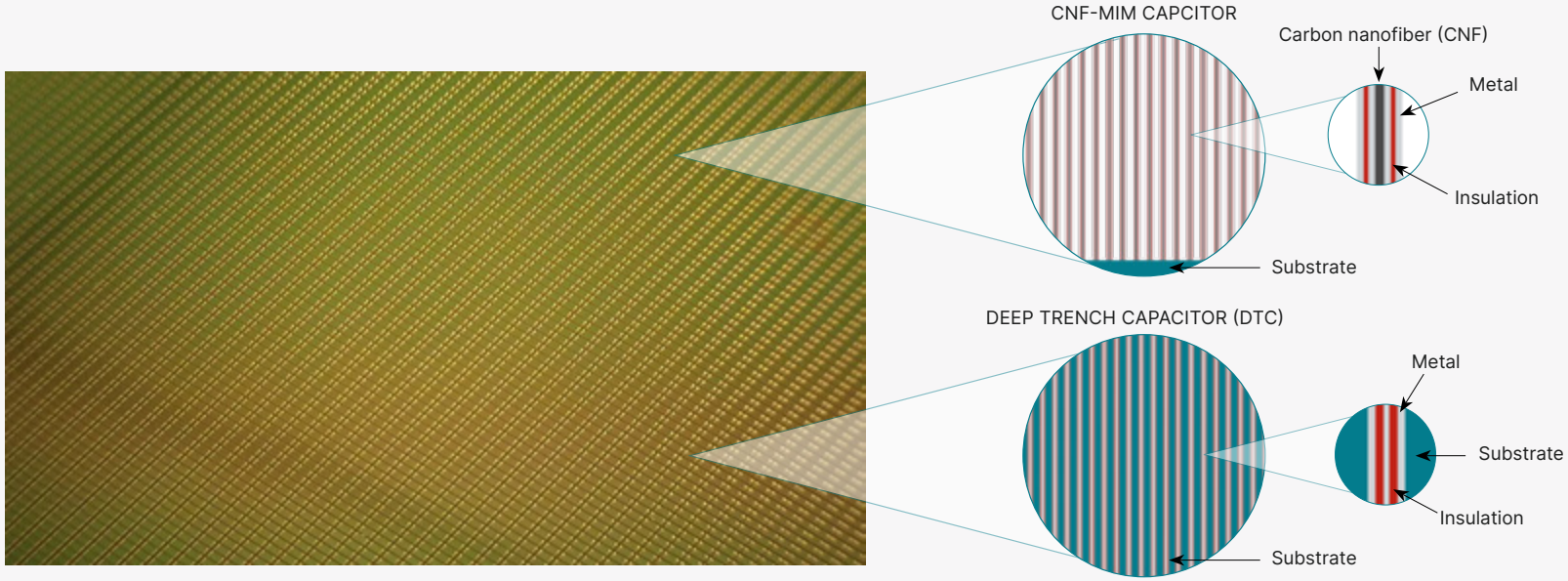
Smoltek Semi directly addresses this unmet need with our CNF-MIM technology. By utilizing carbon nanofibers in an additive manufacturing process, we create capacitors that deliver the necessary capacitance within these extreme physical constraints – and at a lower production cost than competing approaches. This allows us to enable the continued scaling that next-generation electronics require, effectively pushing back the limits that threaten Moore's Law.

By solving this critical power delivery challenge, Smoltek Semi enables the continued advancement of electronic performance for smartphones, high-performance computing systems, and AI servers that will drive the next wave of technological innovation.



The Carbon Nanofiber Solution

Standard Multilayer Ceramic Capacitors (MLCCs), long the industry workhorse, have reached their fundamental miniaturization limits, falling short of the demands for next-generation electronics. Deep Trench Capacitors (DTCs) emerged as an alternative, fabricated using a subtractive process – etching deep, narrow trenches into silicon wafers, which are then filled with complex layers of metal and insulating materials.



However, this subtractive approach faces inherent physical barriers. Uniformly coating these extremely deep and narrow trenches becomes progressively difficult and costly, akin to trying to paint the inside of a very long, thin straw. These manufacturing complexities make DTCs prohibitively expensive for many applications and limit their future scalability, representing a technological dead end.

Smoltek's CNF-MIM technology represents a paradigm shift, moving from the micrometer-scale challenges of conventional methods to precision engineering at the **nanometer scale**. Instead of carving material away, we employ a fundamentally different **additive** manufacturing process.

We precisely grow dense arrays of vertically aligned carbon nanofibers (CNFs) – typically tens of nanometers in diameter but micrometers tall – directly onto the substrate. Each fiber acts as a scaffold for the subsequent conformal coating of a Metal-Insulator-Metal (MIM) stack. The crucial advantage lies in the geometry: the combined surface area provided by this dense "forest" of nanoscale fibers increases the effective surface area by up to 100× compared to the flat footprint they occupy. This massively multiplies the effective electrode surface area, enabling dramatically higher capacitance within an ultra-thin profile.

Critically, this additive nano-scaffolding approach significantly simplifies the manufacturing process compared to the complex multi-step etching and filling required for DTCs. Notably, our process necessitates fewer cycles of expensive and time-consuming Atomic Layer Deposition (ALD) – typically just one ALD step compared to the three or four often needed for DTCs. This inherent process efficiency is expected to significantly **reduce front-end production costs** compared to DTC technology, offering a compelling economic advantage alongside superior performance potential.

CNF-MIM: The Future of Ultra-Thin Capacitors

By creating an array of vertical and free-standing carbon nanofibers (CNF) and using them as a scaffold for metal-insulator-metal (MIM) layers, Smoltek Semi creates CNF-MIM capacitors that can be placed directly under processors while taking up minimal space. These CNF-MIM capacitors deliver more energy storage capacity closer to where it's needed most, while requiring fewer manufacturing steps than competing technologies. The result is a capacitor that not only performs better but also costs less to produce – addressing both the technical and economic challenges of powering tomorrow's electronics.

A Clear Technology Roadmap

Parameter	Gen-One (2025)	Gen-Two (2026)	Gen-Three (2027)
Capacitance density	745 nF/mm²	1,704 nF/mm²	3,097 nF/mm²
Equivalent Series Resistance (ESR)	50 mΩ	20 mΩ	10 mΩ
Die Thickness (before casing)	100 µm	80 µm	60 µm

Our development follows a structured generational pathway, with each milestone bringing significant performance improvements:

- **Gen-Zero (Completed 2024):** Our initial proof-of-concept, executed in collaboration with Yageo Group, has successfully demonstrated functional capacitors with proper coating of high-aspect-ratio carbon nanofibers without creating short circuits or leakage paths.
- **Gen-One (Underway 2025):** Initial technology validation shows promising results with longer carbon nanofibers maintaining the same device footprint. We're targeting nearly tripled volumetric capacitance density while reducing ESR by a factor of 30. Test units will be available for customer evaluation during Q4 2025, providing crucial real-world performance data.
- **Gen-Two (Target 2026):** Moving toward volume production, we'll maintain the same device area while making capacitors 20% thinner. The 1,704 nF/mm² capacitance density will enable applications in advanced mobile processors where space constraints are critical, while the 20 mΩ ESR meets requirements for higher-frequency filtering in modern computing architectures.
- **Gen-Three (Target 2027):** Our most advanced target aims to be 40% thinner than Gen-Zero while delivering over 12 times more capacitance. The projected 10 mΩ ESR will enable direct chip integration for AI accelerators and high-performance computing, where ultra-low power delivery impedance is essential for stable operation under variable workloads.

Strategic Advantages Over Competing Technologies

Smoltek Semi's CNF-MIM technology provides distinct, quantifiable advantages over established capacitor solutions:

1. **Significant Cost Reduction:** Our additive process requires only one complex Atomic Layer Deposition **(ALD)** cycle, compared to 3–4 cycles needed for silicon Deep Trench Capacitors **(DTCs)**. This fundamental process efficiency directly translates to **a significantly lower front-end production cost** and faster manufacturing throughput, offering a compelling economic advantage.
2. **Superior Capacitance Density & Scalability:** Unlike the subtractive etching of DTCs, our additive approach grows high-aspect-ratio carbon nanofibers (e.g., 50 nm diameter, up to 15 µm high). This could enable up to **50% higher capacitance** compared to DTC approaches within the same volume.
3. **Future-Proof Technology Roadmap**: While MLCCs are mature and DTCs face scaling limits, **CNF-MIM** offers a long runway for future performance enhancement (e.g., longer fibers, denser packing). Furthermore, the technology roadmap includes migration paths from discrete components to embedded and ultimately on-chip integration, extending its relevance for years.
4. **Substrate Versatility:** Unlike silicon-locked competitors, CNF-MIM capacitors can be manufactured on various substrates, including **glass, aluminum, and potentially flexible materials**. This versatility is strategically important as industry leaders actively pursue glass interposers for next-generation packaging, positioning Smoltek favorably for future integration trends.
5. **Strong, Global IP Protection:** Our technology is underpinned by a comprehensive intellectual property portfolio comprising over **110 patents granted or pending across 21 patent families.** This protection covers core CNF synthesis, device structures, and manufacturing processes, creating a significant barrier to entry with strategic coverage in key semiconductor markets including **Europe (EPO), USA, China, Taiwan, South Korea, Japan, and India**, among others.

Competitor Comparison Summary

	CNF-MIM	DTC	MLCC
Core Technology	Additive (Carbon nanofiber scaffolds)	Subtractive (Etched trenches in silicon)	Multi-layer (Stacked ceramic and metal layers)
Max Capacitance Density	Very High (Potentially much greater than DTC)	High	Limited
Relative Production Cost	Moderate (Estimated 30-40% less than DTC due to only one ALD step)	High	Low to Moderate
Min Thickness Achievable	~50–100 μm	~50–100 μm	≳ 100 μm
Equivalent Series Resistance (ESR)	Very Low (Targets less than 10 mΩ in Gen-Three)	Low	Moderate
Substrate Flexibility	High (Silicon, glass, metal, etc.)	Silicon only	Limited (Ceramic)
Future Scaling Potential	High (Fiber geometry, integration)	Limited (Physical/cost barriers)	Limited (Physical barriers)

Market Potential

The market for ultra-thin, high-performance capacitors is facing unprecedented demand, fueled by the explosive growth of AI and the relentless miniaturization of mobile devices. This surge comes just as conventional technologies are reaching fundamental limits. The global market for advanced capacitors, estimated at approximately $2B in 2025 and growing 5–8% annually,* is in dire need of a breakthrough. Smoltek Semi's CNF-MIM technology – offering superior capacitance density at predicted lower manufacturing costs – arrives at this perfect inflection point.

*Source: Silicon Capacitor Market - Global Industry Analysis, Size, Share, Growth, Trends, and Forecast 2032, Fairfield Market Research

Meeting the Most Demanding Requirements

Our technology has been developed to solve the toughest power delivery challenges in electronics. In premium smartphones, where space constraints are extreme, approximately 6 billion ultra-thin capacitors are required annually. With existing solutions struggling to meet increasing performance demands in shrinking spaces, this segment alone represents a substantial opportunity for capacitor manufacturers.

Similarly, the AI and High-Performance Computing (HPC) sector demonstrates the need for advanced capacitor technology. As computing architectures evolve to support AI workloads, capacitor requirements increase dramatically – often eight times higher in AI servers compared to traditional servers. With hyperscalers like Google, Microsoft, and Amazon projected to spend $500 billion on AI servers by 2028,* this represents another significant opportunity for manufacturers who can deliver next-generation capacitor performance.

Enabling Multiple Market Applications

By engineering our CNF-MIM technology to meet these extreme requirements, we've created a solution that capacitor manufacturers can deploy across numerous markets according to their strategic priorities. Our approach is to provide the core technology and expertise, while our licensing partners determine which segments to address first.

The versatility of our solution makes it relevant for:

- **Premium smartphones:** Ultra-thin profiles with maximum capacitance
- **AI & HPC:** Stable power delivery for high-performance computing
- **Wearables:** Enabling slimmer designs with longer battery life
- **Telecom:** Enhanced stability for high-frequency communication
- **Defense & Aerospace:** As a dual-use technology, offering military-grade performance
- **Automotive:** Supporting advanced driver assistance and EV electronics
- **Consumer Electronics:** Powering smaller, more capable devices

Strategic Imperative & Investment Case

This technology shift creates an urgent strategic imperative for established capacitor manufacturers such as Murata, TDK, Taiyo Yuden, AVX, Samsung, and Yageo. Continued reliance on performance-limited MLCCs or costly, complex DTCs risks eroding market share. Without a solution that delivers higher capacitance in ultra-thin profiles at competitive costs, these manufacturers risk losing position in high-growth segments to companies with proprietary solutions, such as TSMC's capacitors exclusive to Apple.

Meanwhile, demand is accelerating from chip manufacturers and product companies like NVIDIA, Google, QUALCOMM, MediaTek, Samsung and Apple as Moore's Law continues to drive needs for more efficient power delivery to ever-denser transistor arrays.

Smoltek's CNF-MIM technology provides a critical path forward: a validated, cost-effective route to next-generation performance. For industry leaders, licensing our technology is not only an opportunity for growth, but a strategic necessity to remain competitive. This underscores the timely and compelling nature of investing in Smoltek now to position yourself ahead of significant industry adoption and capture the potential of a key enabling technology.

*Source: AMD (NASDAQ:AMD): Is This AI-Powered Stock Worth the $500 Billion Opportunity?, TradingNEWS.com

CNF-MIM Evolution and Beyond

While our strategic priority is delivering market-leading discrete CNF-MIM capacitors, our carbon nanofiber technology platform offers pathways to address critical semiconductor advancement bottlenecks, creating substantial long-term value beyond the initial capacitor market.

Capacitor Integration Roadmap

Our capacitor technology evolution extends naturally beyond today's discrete components:

- **Embedded Capacitors:** Embedding CNF-MIM structures directly within chip packaging layers or interposer substrates brings energy storage closer to processors, enhancing performance and efficiency.
- **On-Chip Integration:** Our ultimate goal is integrating CNF structures directly onto silicon dies during fabrication, placing capacitance micrometers from transistors to virtually eliminate power delivery bottlenecks – crucial for future AI and HPC processors.

Beyond Capacitors: Leveraging Core CNF Properties

Our precisely engineered carbon nanofibers' unique properties address other pressing Moore's Law challenges:

- **Thermal Management:** CNFs' exceptional thermal conductivity (approaching diamond's) enables advanced thermal interface materials (SmolTIM) to improve heat dissipation for densely packed components in mobile devices and AI servers.
- **Advanced Interconnects:** CNFs' nanoscale geometry suits ultra-fine pitch electrical connections between chips/chiplets (SmolINCO), potentially enabling higher interconnect density and bandwidth for next-generation packaging while reducing power consumption.

Disciplined Strategic Execution

Our commercialization strategy remains methodical and focused. Our absolute priority is the successful validation and market introduction of discrete CNF-MIM capacitors in the near term. This core business establishes technology validation, manufacturing processes, and our business model before strategic expansion into adjacent high-value applications.

Manufacturing & Scale-Up Strategy

Smoltek Semi uses a fabless manufacturing model – meaning we design the technology and our licensee partners with specialized manufacturers rather than owning the production facilities themselves. This approach balances capital efficiency with rapid scaling capabilities by leveraging the expertise and infrastructure of established semiconductor industry leaders.

Our strategy follows three distinct phases:

Phase 1 (2025): Validated Manufacturing Ecosystem

We've established key partnerships with industry leaders to create a complete manufacturing ecosystem.

ITRI (Industrial Technology Research Institute), Taiwan's premier research organization with over 6,000 researchers and 35,000+ patents, is our partner for front-end manufacturing processes. Founded in 1973, ITRI has pioneered semiconductor breakthroughs used by giants like TSMC and UMC. For Smoltek, we plan for them to operate a pilot production line, giving us access to advanced facilities without massive capital investment. Their deep knowledge of semiconductor scaling significantly reduces our technical risk while accelerating our path to validated manufacturing.

Tong Hsing, established in 1975 and now a $500M+ revenue leader in advanced semiconductor packaging, is our partner for back-end manufacturing needs. They specialize in high-reliability components for communications, computing, and automotive applications, with ISO-certified quality systems that meet strict industry standards. For our CNF-MIM technology, Tong Hsing will develop and refine the packaging specifications for each evolving generation, ensuring our capacitors can be seamlessly integrated into commercial applications while maintaining optimal electrical performance and reliability.

This ecosystem is now operational and producing our Gen-One capacitors for technology validation and customer sampling in 2025.

Phase 2 (2026): Production Partnerships

Once licensing agreements are secured, partners gain access to Smoltek's manufacturing expertise and process specifications. They can integrate our technology by leveraging their existing semiconductor fabrication infrastructure, or alternatively, by using our process specifications with contract manufacturers in a fabless model. This allows them to integrate our technology into their production flows, accelerating market adoption while maintaining our capital-light approach. Our technology transfer team will provide dedicated engineering support during this integration phase to ensure consistent quality and performance.

Significant advantages

This approach provides four significant advantages:

- **Capital Efficiency:** We avoid billions in fabrication facility investments while maintaining high margins on our intellectual property.
- **Accelerated Market Penetration:** Multiple partners can simultaneously implement our technology in different market segments.
- **Diversified Manufacturing Risk:** We're not dependent on a single production facility or supply chain.
- **Focused Innovation:** Our team concentrates on R&D and process improvements rather than manufacturing operations.

Phase 3 (2027+): Volume Scaling

The fabless model proves its value in this phase, as our technology can be implemented across multiple manufacturers' facilities simultaneously. Because our capacity isn't limited by our own production capabilities, we can serve global demand through multiple licensees, with each partner optimizing the process for their specific product needs and market segments.

Managing Partner Relationships

While utilizing partners brings clear advantages, we actively mitigate risks through structured technology transfers, early capacity planning, and robust IP protection measures. Our partnerships are built on rigorous agreements that safeguard our technology while enabling seamless integration into existing manufacturing flows.

Value Creation Roadmap

Our structured value creation roadmap provides clear visibility into how Smoltek Semi will unlock significant returns for investors. We've established precise milestones that systematically de-risk the technology while capturing increasing value at each stage. Executing this plan requires completion of technology validation, intensified customer engagement, optimized foundry processes, and secured commercial agreements through 2025.

H1 2025: Technology Validation (Current Focus)

Key Performance Indicators:

- Complete Gen-One capacitor fabrication with capacitance density 745 nF/mm²
- Achieve ESR reduction to ≤ 50 mΩ, a 30× improvement over Gen-Zero
- Pass temperature cycling reliability tests
- Successfully demonstrate 1000-hour high-temperature operating life test

These milestones transform our technology from promising to proven, establishing Smoltek Semi as a credible solution provider. This phase will qualify us for discussions and negotiations with potential licensees.

H2 2025: Customer Development

Key Performance Indicators:

- Negotiate and potentially close first licensing agreement, early adopter
- Providing engineering samples for customer evaluation
- Deliver 100+ sample units for customer evaluation
- Achieve system/subsystem prototype demonstration

With our validated technology, we'll expand customer engagements to include joint development projects and pilot implementations with key players in mobile and AI computing segments. Licensing discussions will begin during this period.

H1 2026: License Agreements – Major Value Inflection

Key Performance Indicators:

- Sign one or more licensing agreements
- Secure significant upfront fees per license
- Establish high-margin royalty rates in all agreements
- Complete technology transfer packages for manufacturing partners

This represents our most significant near-term value creation point, delivering substantial upfront fees that justify this funding round.

H2 2026 Onward: Royalty Streams and Scalable Growth

Key Performance Indicators:

- First customer shipments for design-in purposes
- Establish consistent yield >75% at partner facilities
- Support production ramp up, starting in 2027
- Initiate Gen-Two development for enhanced performance

As partners integrate CNF-MIM technology into their product roadmaps, we'll over time transition to recurring, high-margin royalty income based on commercial production volumes.


Business Model

Smoltek Semi operates a highly capital-efficient IP licensing business model. We focus on enabling established capacitor manufacturers to produce and sell cutting-edge CNF-MIM components, leveraging their manufacturing scale and market access.

Three Revenue Pillars

Our business model combines near-term returns with long-term scalable income:

1. **Upfront Fees**: Fee size will depend on whether there are one or more licensees, granting a licensee rights to our validated, patent-protected CNF-MIM technology platform. This structure is consistent with semiconductor industry standards for disruptive technologies, while providing significant value: immediate access to a unique, low-cost solution for a critical market gap. For capacitor manufacturers, our technology represents the only economically viable option to compete in the rapidly growing market for ultra-thin capacitors as conventional technologies reach their limits. Our extensive patent portfolio ensures that alternative approaches cannot replicate our performance advantages, making our licensing model essentially mandatory for manufacturers who wish to remain competitive beyond the current limits.
2. **Non-Recurring Engineering / Development Revenue:** Fees are charged for dedicated engineering services and technical support during the crucial technology transfer, process integration, and product qualification phases, to ensure a smooth, accelerated ramp-up to production.
3. **Recurring Royalty Income:** An ongoing recurring royalty, consistent with industry practice, based on the licensee's net sales of products incorporating Smoltek's CNF-MIM technology. Recurring royalty rates confirmed by survey show a typical range of 3–7% for semiconductor component technologies that enable significant performance advantages. The rate also reflects the high-value enhancement our technology brings to end products, allowing licensees to command premium prices and capture margin in competitive markets.

Value Proposition for Licensees

Smoltek Semi creates extraordinary value for capacitor manufacturers through our CNF-MIM technology. Our business model is strictly focused on licensing our technology and know-how rather than manufacturing or selling capacitors ourselves.

Target Market Segments

Potential licensees fall into two strategic categories:

- Established high-end market players like Yageo, AVX, Murata, and Samsung who need next-generation technology to defend their position against TSMC and Apple
- Manufacturers such as TDK, Taiyo Yuden, Empower, JDI, and Vishay seeking technology that unlocks access to the premium capacitor market

Strategic Competitive Advantage

These financial outcomes stem from our technology's core advantages – superior performance at 30–40% lower manufacturing costs – addressing the critical bottleneck in next-generation electronics. For capacitor manufacturers, partnering with Smoltek represents not just an opportunity but a strategic necessity as conventional technologies reach their physical limits.

Compelling Partner Economics

For licensees, our business calculations show that our technology delivers compelling financial potential:

- Positive cash flow within 36 months of production start
- Expanding gross margins from approximately 20% initially to above 40% at mature production

The calculation example is based on the assumption that production will start in 2028 and scale to approximately 550 million capacitors by 2031, with an expected gross margin of 20%. Assuming operating expenses equivalent to 9% of gross revenue, this would result in a positive cash flow of USD 3.6 million in 2031.

The unit manufacturing cost is projected to decrease from USD 0.42 in 2031 to USD 0.21 by 2040, supporting an increase in gross margin as production reaches maturity.

Implementation Support & Future Roadmap

Our technology transfer package includes comprehensive process knowledge and dedicated engineering support, dramatically reducing implementation risk and accelerating time-to-market. With multiple potential applications beyond initial discrete capacitors – including embedded and on-chip integration – licensees gain both immediate competitive differentiation and a long-term technology roadmap.

Financial Value Assessment

Our calculation example shows that the net present value (NPV) of CNF-MIM technology for a typical licensee is estimated to reach approximately USD 350–400 million in cumulative discounted cash flow, including terminal value, through 2040. This estimate is calculated based on using a 12% discount rate representing the weighted average cost of capital. Industry standard licensing arrangements typically allocate 20–25% of this value to the technology provider, indicating Smoltek Semi's potential value approaches USD 100 million per license agreement.

Sensitivity Analysis

We've conducted comprehensive sensitivity analyses to assess how variations in key drivers affect projected returns. These drivers include license timing and number, royalty rates, volume ramp-up speed, market pricing, and cost controls. This analysis confirms the critical importance of securing the initial license agreements as planned.

This compelling value proposition, protected by our extensive patent portfolio covering 21 patent families in all key markets, positions Smoltek Semi to capture significant upfront fees and establish long-term royalty streams at the standard 3–7% rate – creating substantial returns for early investors who recognize this transformative opportunity.

Risk Analysis and Mitigation

Innovation at technology's frontier involves risks that we proactively identify and manage:

Technical Risks

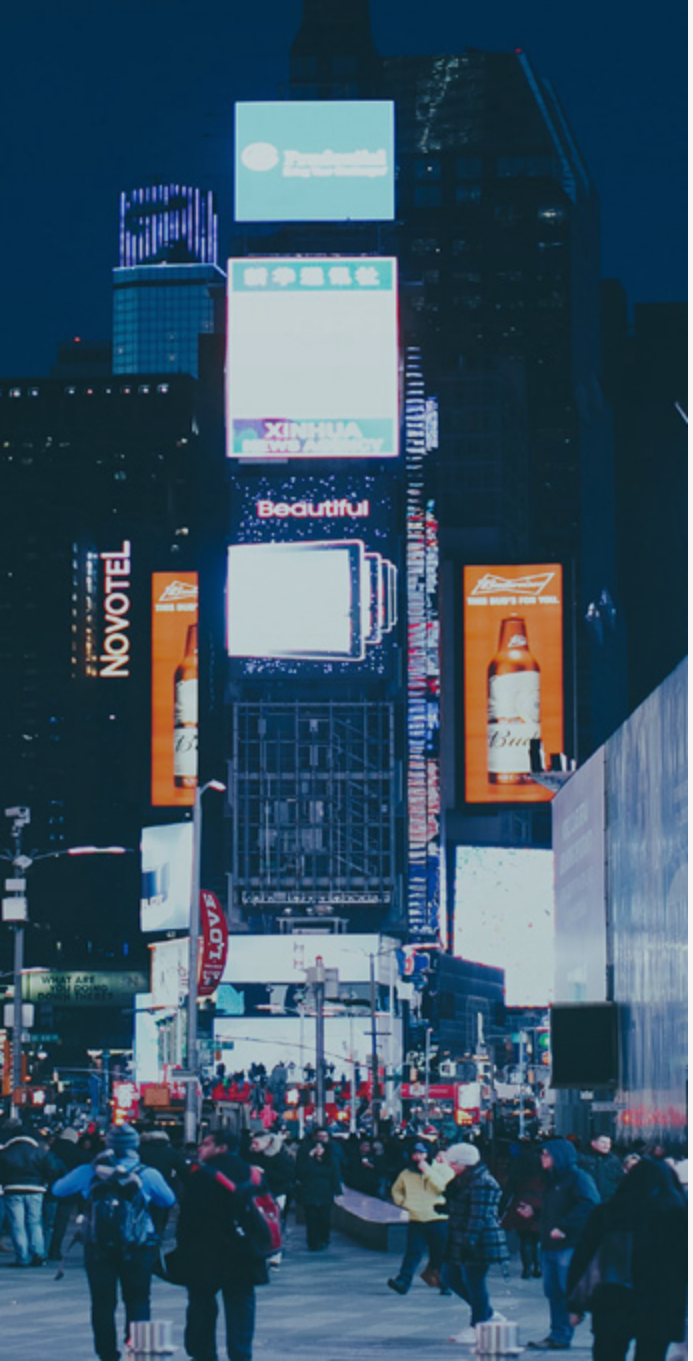
Risk: Challenges in achieving performance and reliability targets for Generations 1–3 or issues when scaling to high-volume production.

Mitigation: Our phased development model (Gen-Zero proven, Gen-One under validation) methodically reduces risk. A primary focus of the current Gen-One validation phase is to improve process consistency (reproducibility) and demonstrate long-term operational reliability. This includes rigorous testing to JEDEC standards and dedicated projects to evaluate performance under various conditions. The collaboration with the Yageo Group provides critical external validation, and their feedback is actively incorporated into our continuous development cycle to ensure that our technology meets stringent market requirements as we move toward Gen-Two and Gen-Three.

Manufacturing Risks

Risk: Difficulties in technology transfer to licensees' facilities or lower manufacturing yields than anticipated.

Mitigation: Our established partners (ITRI, Tong Hsing) provide critical manufacturing expertise. A key element of our scale-up strategy is dedicated work to optimize the microfabrication process to ensure high yield and cost effectiveness as we move towards volume production. This focus on manufacturability is critical for licensees to successfully integrate and scale CNF-MIM technology. While our additive CNF-MIM process inherently requires fewer critical steps than competing technologies, reducing complexity, we proactively address potential scaling challenges through careful process control and partner collaboration. Multi-licensing strategy further diversifies manufacturing risk.



Market Risks

Risk: Slower customer acceptance or less favorable license terms than forecasted.

Mitigation: We address an acute and growing need driven by irreversible industry trends. Our value proposition combines superior performance with 30–40% lower front-end costs. The funding enables customer-specific development projects that accelerate market penetration.

Financial Risks

Risk: Insufficient funding to reach license agreements or slower royalty growth than expected.

Mitigation: Our capital-efficient IP model requires substantially less investment than in-house manufacturing. Funding is strictly tied to value-creating milestones, focusing on securing significant license advances during H1 2026.

IP Risks

Risk: Patent challenges or competitors designing around our IP.

Mitigation: Our comprehensive IP portfolio (110+ patents in 21 families) covers core technology, structures, and methods in all key markets. Continuous patent strategy ensures long-term protection.

Summary

Our systematic risk management through strategic partnerships, phased development, capital-efficient business model, and strong IP position enables us to navigate challenges and deliver the significant commercial potential that CNF-MIM technology offers.

Investment Opportunity

Following our demonstration of substantial market potential, clear technological advantages, and a defined financial outlook, Smoltek Semi represents a compelling investment opportunity at a key inflection point.

Conclusion for Investors

For investors, this represents a timely opportunity to invest early in a capital-efficient semiconductor technology addressing a critical, high-growth market gap. By participating now, investors gain exposure ahead of key de-risking and commercial milestones at an attractive valuation point. The investment offers significant upside potential driven by near-term licensing catalysts and long-term scalable royalties, coupled with defined potential exit pathways focused on the Smoltek Semi business.

Investment Structure and Future Pathway

Investment in this round is made into the parent company, Smoltek Nanotech Holding AB, providing exposure to Smoltek Semi as its primary near-term value driver within a diversified technology portfolio. Looking forward, we anticipate a potential future corporate structure involving direct capital injection into Smoltek Semi AB followed by its potential spin-out. This structure creates a pathway toward more direct exposure and focused liquidity options for investors specifically interested in our high-growth semiconductor business.

Why Invest Now? Capturing Value Before Inflection Points

This funding round presents a strategic window to invest before major near-term catalysts unlock significant valuation increases:

- **Imminent Technical De-risking:** Gen-One validation results, proving our technology's robustness, are anticipated in H1/H2 2025.
- **Pre-Commercial Traction:** Funding enables securing vital customer discussions and license negotiations during H2 2025/H1 2026, demonstrating market acceptance ahead of broad licensing.

Attractive Valuation Entry Point: This round occurs at a pre-money valuation strategically positioned prior to the major valuation step-up, which is anticipated when signing the first license agreements (projected H1 2026) with their associated upfront fees.

Return Profile: Near-Term Catalysts, Long-Term Growth

Investment returns are driven by clear, staged milestones:

- **Near-Term (12–48 months):** The primary driver is the successful execution of our licensing strategy by H1 2026, targeting upfront fees.
- **Mid-to-Long Term (2029+):** Returns will be fueled by scalable, high-margin royalty streams as partners ramp volume production into billions of units annually, plus potential upside from additional license agreements.

Exit Strategy Options

The potential future spin-out structure provides clear exit options specifically for Smoltek Semi, potentially through:

- A strategic acquisition by a major semiconductor or passive component player seeking proprietary technology access.
- A future Initial Public Offering (IPO) of the standalone Smoltek Semi entity.

Meet the Team

Behind Smoltek Semi's technology stands scientists, engineers and business strategists with proven track records in semiconductor innovation. This team brings complementary skills in nanotechnology, materials science and high-volume manufacturing – essential for both perfecting carbon nanofiber technology and bringing it successfully to market.

LEADERSHIP TEAM

Magnus Andersson, MSc – interim CEO

Magnus Andersson brings over 25 years of international experience in M&A, business development, and leadership within technology-driven growth companies. His significant expertise in capital markets and strategic finance provides Smoltek Semi with crucial capabilities during this pivotal commercialization phase. Magnus has already been deeply involved with Smoltek as an advisor on strategy and financing, ensuring continuity while positioning the company for success in securing partnerships and licensing agreements with industry leaders.

Pia Tegborg, MSc – CFO

Pia Tegborg has extensive experience running finance and treasury functions in high-growth companies through previous management positions. She brings valuable expertise in strategic communications to the team. Pia holds an MSc in Business Administration from School of Business, Economics and Law at the University of Gothenburg.

Farzan Ghavanini, PhD – CTO

Farzan Ghavanini holds a PhD in Nanotechnology with specific expertise in vertically aligned carbon nanofibers – the exact technology at the heart of our CNF-MIM capacitors. His academic foundation combined with industry experience at Fingerprint Cards, where he expanded their technology portfolio from capacitive to optical and ultrasonic sensors, provides the technical leadership driving our product development. Under Farzan's guidance, we've shortened development cycles significantly, accelerating our path to commercialization.

TECHNICAL EXPERTS

Qi Li, PhD – Project Manager

Qi Li manages our critical development projects with precision and technical insight. His scientific background combined with project management expertise ensures our technical milestones align with business objectives while maintaining the agility needed in a rapidly evolving field.

Amin Saleem, PhD – Nanotechnology Engineer

Amin Saleem, utilizing his specialized expertise in carbon nanostructures, optimizes our CNF growth processes to achieve maximum performance with consistent reliability. His work directly impacts our capacitance density improvements between product generations.

Elin Grånäs, PhD – Nanotechnology Engineer

Elin Grånäs focuses on material interfaces and dielectric stack optimization, critical elements that determine both capacitor performance and reliability. Her expertise ensures our capacitors maintain electrical stability under various environmental conditions.

Andreas Westlund, PhD – Design Engineer

Andreas Westlund leads the efforts in designing the capacitor and the testing efforts we need to understand our research and production results. With his background in microwave design, Andreas engages in how the trade-offs in price and performance may affect customer's applications.

Anders Lundgren, MSc – Project Manager

Anders Lundgren coordinates our crucial industry partnerships, ensuring seamless integration between internal development efforts and external manufacturing capabilities. His work is essential to our fabless manufacturing strategy.

Chin Jung Kuo, MSc – Process Engineer

Chin Jung Kuo specializes in translating laboratory processes to industrial-scale production, working closely with our foundry partners to ensure manufacturing viability while maintaining performance standards.

Vir Mahn, MSc – Design Engineer

Vir Mahn focuses on capacitor design optimization, balancing technical performance with manufacturability to create products that deliver exceptional capacitance density while remaining cost-effective to produce.

SMOLTEK

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