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TekSiC Reaches Key Milestones Toward Europe's First Domestic commercially available Semi-Insulating SiC Wafer Supply for Space, Defence and RF Applications

Linköping, Sweden 2026-08-10, TekSiC AB, a Swedish deep-tech company building on more than 30 years of silicon carbide (SiC) crystal growth research from Linköping University, today announced significant progress in the development of semi-insulating silicon carbide (SI-SiC) a material Europe currently lacks the domestic capability to manufacture commercially, and one that underpins some of the most demanding RF and power electronics used in space, defence, and next-generation communications. SI-SiC has also recently been identified as critical for next-generation AI-chip, AI-data centers and AR-glasses.

Semi-insulating SiC, a critical material

Unlike the electrically conductive n-type SiC widely used in automotive power electronics, SI-SiC is a high-resistivity substrate material critical for GaN HEMT transistors, RF amplifiers, satellite communications, radar, electronic warfare systems, and advanced sensors. It enables components to operate at very high power, very high frequencies with low noise and low loss. SI-SiC properties make it the chosen substrate for GaN-based RF components across ESA programs, defence systems, satellite platforms, 5G/6G base stations, and radar.

Building full control of the value chain

Founded in 2021, TekSiC set out to secure full control of the SI-SiC supply chain and process optimization from the start, beginning with the development of its own Physical Vapor Transport (PVT) growth reactor, Xforge — now industrialized and sold to customers globally. That same principle of vertical control now extends to wafer manufacturing itself, with the aim of securing full European independence in SI-SiC production.

TekSiC has established an in-house wafer pilot lab covering slicing, polishing, and characterization, alongside its crystal growth process. This allows the company to iterate its growth process, from graphite machining through to wafer characterization, entirely in-house, accelerating process optimization from simulation and modelling through to finished wafers.

Government-backed consortium and recent milestones

TekSiC's SI-SiC development is backed by Swedish government funding through the "Semiconductor, A Swedish Value Chain" project, launched in March 2025 to demonstrate a full domestic value chain from powder to device based on SI-SiC and GaN. Within the consortium, TekSiC is responsible for demonstrating SI-SiC wafers, which are then processed with GaN epitaxy by SweGaN, further developed into Power and RF HEMT devices by Chalmers University of Technology. The SiC/GaN wafers will also be validated and used for micro-LED devices by Polar Light Technologies.

Web link: https://innovativematerials.se/project/halvledare-en-svensk-vardekedja/

Earlier this year, TekSiC demonstrated high-resistivity properties in its SI-SiC wafers. Project partner SweGaN has since successfully grown GaN epitaxial layers on TekSiC’s wafers, a key milestone that enabled Chalmers University of Technology to begin processing the Epi wafers into RF and Power HEMT device structures. Initial development is focused on 100mm SiC substrates, with the growth process already prepared to scale to 150mm.

Technology and roadmap

The next milestone on TekSiC's roadmap is the demonstration of Power and RF HEMT structures based on TekSiC substrates. In parallel the process optimization work continues toward production-grade quality and yield. TekSiC's will gradually implement their proprietary “AHM technology” to enable higher-quality crystal growth, lower wafer cost, and a significantly reduced CO2 footprint per wafer.

TekSiC aims to become Europe's first major supplier of semi-insulating SiC, with a primary focus on securing supply for the space, defence, and aerospace industries, alongside emerging industries adopting semi-insulating

SiC. Wafers for customer validation are planned to be available by mid-2027, with industrialization and production scale-up planned to begin at the end of 2027, targeting a production capacity of 50,000 SI-SiC wafers by 2030.

TekSiC recently closed its first investment round led by Turbine Capital, bringing in new shareholders with relevant industry competences and connections. The funding accelerates the company's ongoing development and validation work. A second investment round, planned for mid-2027, will fund industrialization of TekSiC's value-chain-controlled wafer manufacturing.

Quote

"Our approach, full control of the consumable value chain, including our own developed and industrialized PVT growth reactors, gives us a unique position to secure critical semiconductor materials for Europe," said Joachim Tollstoy, CEO, TekSiC. "We want to do this with our new technology that gives us an edge at a global level, and not just being a regional supplier."

About TekSiC AB

TekSiC AB is a Swedish deep-tech company headquartered in Linköping, building on more than 30 years of world-recognized SiC crystal growth research from Linköping University. TekSiC develops and manufactures equipment for third-generation semiconductor materials, including its Xforge PVT crystal growth systems, and is now extending its value-chain control into semi-insulating SiC wafer manufacturing to secure European independence for space, defence, and RF applications.

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