



Beneq Transform® Qualified for GaN Power Device Production by Tier 1 Asian Manufacturer

Beneq expands global footprint in GaN device manufacturing with ALD tool qualification at leading Asian semiconductor manufacturer



Espoo, Finland, 1 May 2025 – Beneq announces that its Transform ALD cluster tool has been qualified for volume production of GaN-based power devices on 8” GaN-on-Si wafers by a Tier 1 GaN power device manufacturer in Asia. This milestone confirms the relevance of Beneq’s ALD technology in enabling scalable, high-reliability GaN applications.

Gallium nitride (GaN) semiconductors are central to improving efficiency and performance of power electronics and RF devices across consumer, automotive, datacenters, and other industrial markets. The qualification of the Beneq Transform platform by another leading GaN power device manufacturer highlights its capability to meet stringent performance and reliability demands in commercial production.

The system enables a proprietary three-step process - plasma-based surface pre-cleaning, plasma-enhanced ALD (PEALD) of interfacial layers, and thermal ALD of dielectric films—

executed under continuous vacuum. This architecture ensures high-quality interface engineering and process reliability, which is critical for wide-bandgap materials such as GaN and SiC. Additional capabilities include nitride film deposition (e.g., AlN, SiN) and thermal ALD of films such as Al₂O₃, AlN, SiO₂, and HfO₂, offering flexibility across GaN HEMTs, ICs, and vertical devices.

The vacuum-integrated cluster tool design features high throughput and best-in-class cost-of-ownership while supporting demanding process requirements. Seventeen Beneq Transform tools are now in operation globally for GaN device production and technology development.

“Qualification by a Tier 1 GaN power device manufacturer underscores the strength of our Transform platform and its leading role in GaN manufacturing,” said Pasi Meriläinen, Vice President, Semiconductor ALD at Beneq. “We remain focused on enabling our customers’ production goals through robust, application-driven ALD solutions.”

Beneq further advances GaN process capabilities through collaboration with imec as a member of its Industrial Affiliation Program (IIAP). A recently commissioned Transform® tool at imec expands the joint R&D in GaN surface treatments and dielectric integration started two years ago.

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About Beneq

Beneq pioneered industrial Atomic Layer Deposition (ALD) with the introduction of the first commercial ALD equipment in 1984. Today, Beneq advances ALD technology adoption and validation with a portfolio that includes Transform®, Transform® 300, and Prodigy™ for specialty semiconductor device fabrication; TFS 200 and TFS 500 for R&D; innovative spatial ALD platforms such as the C2R™, and Genesis for roll-to-roll processing. Beneq’s products support process innovation from lab to fab, enabling integration of ALD in high volume manufacturing. Headquartered in Espoo, Finland, Beneq operates globally to help customers scale ALD solutions for the future of semiconductors, optics, and functional coatings.