



TOWARDS PERFECTION IN ADVANCED PACKAGING WITH THE NEW HEXAGON

Building on the success of the existing system, the new HEXAGON maintains the existing strengths of proven and reliable processes, high throughput and then offers significant improvements and innovations in the areas of process capabilities, throughput, uptime, accessibility and serviceability. Product Marketing Manager *Markus Frei* tells us more.

Why did Evatec launch a new HEXAGON?

The existing tool concept with its Indexing system was well qualified and considered by many as the benchmark in the Advanced Packaging industry for seed layer processes, but we recognised that market requirements were changing.

We wanted to deliver a platform that could address both the need for more ambitious R_c requirements and the continuous push to lower Cost of Ownership (CoO). We also wanted to implement improvements based on customer feedback and provide the most robust platform in the industry.

Our goal was to bring the HEXAGON platform to the latest state of the art technology level and provide a sound solution to our customers that meets their long term process roadmap requirements.

What are the main benefits of the new system?

The new generation tool offers a number of benefits for our customers:

- Best R_c in industry
- More uptime, lower scheduled maintenance time
- More reliability and extremely safe wafer handling
- More throughput
- More process flexibility
- More possibilities
- More accessibility

Bringing all these things together results in higher efficiency and overall CoO.

What system aspects were essential to keep?

The handling performance and speed at the heart of the existing tool was something we very much wanted to keep. HEXAGON handles Si, EMC and Glass substrates of different sizes with ease. That also meant keeping the right degassing method.

Our second generation atmospheric high pressure degasser provides excellent degassing performance without cross contamination.

The proven indexer concept then transfers the substrate through the individual process stations with unbeatable speed to improved process modules delivering best process performance at lowest cost.

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About the author: Markus Frei originally trained as an engineer and has over 20 years experience in vacuum and thin film technology. As product manager he gained 10 years know-how working with the unique indexing system at the heart of HEXAGON before he joined the Advanced Packaging group as Product Marketing Manager in 2021.

What are the biggest changes?

Here are some of the biggest changes that we have made:

New Transfer Chamber (VIN6)

The new VIN6 comes with a new indexer drive. Although new to HEXAGON, it is already field proven in more than 2000 systems. The improved "on the fly" function brings even more wafer transport safety to the already existing excellent handling performance. The VIN6 accepts 5 process chambers tailored to the needs of Advanced Packaging with an optimized load lock which provides a fast wafer exchange.

New Atmospheric Front End Module (AFEM)

We have integrated new wafer mapping and automatic home position detection that detect critical situations in the AFEM such as cross-slotted wafers, excessive wafer bow on FanOut, and double-loaded wafers. In combination with the new AWC (automatic wafer centering) function the wafer will be brought safely to the load lock.

Enhanced process technology

Degas: Atmospheric degas is key! Giving enough time at moderate temperature without any cross contamination is a must for processing of wafers with high organic load and especially for FanOut. Degassing at a temperature of around 120°C with a good temperature uniformity ensures even and proper degassing independent of the emissivity mix on the substrate.

ICP: The proven SEQ 300 etch cathode offers improved uniformity with a newly designed chuck. Evatec's patented insitu pasting solution is also available as an option. Adding in a new etch chamber design and the longest "Kit life" in the industry results in the best etch performance ever.

PVD: Our well known ARQ 310 provides efficient deposition. Using only 400mm diameter long-life targets together with our uniformity compensation over target life we reach a new benchmark for target lifetimes but also for CoO.

New services system

The media distribution system is designed into the base pedestal, resulting in easy installation, good access, and easy maintenance.

New control system

A new control system comes with the proven Siemens TIA portal and state of the art GUI giving you direct access to your hardware components like drivers for maintenance and service. No additional software or devices are needed.

For those already familiar with Evatec's latest CLUSTERLINE® generation which uses the same software platform, minimum cross training will be required for operation, maintenance and service. New features eliminate or reduces complex tasks like teaching and calibration and other improvements make the system easier to work with.

Unified platform concept

The approach taken in the newly designed HEXAGON and CLUSTERLINE® platforms brings benefits for long term field support too. Modular and standardized design leads to fewer individual parts, the smart modules use distributed I/O functions, and a powerful Profinet bus simplifies the system, increasing uptime and productivity. Optimised architecture of the system results in faster manufacturing times and reduced ramp up-time to production. Footprint of the system is reduced taking up less costly cleanroom space and the system is designed to meet the newest ISO 14001 environmental standards, conserving water usage and energy.

Welcome to the new HEXAGON

We are excited to see the performance of our system with an even safer level of wafer handling to protect the high value of our customers' wafers.

Combined with the benefits from higher productivity, higher throughput, reduced maintenance time and easier support during its working life, the new HEXAGON system really does set new standards for Advanced Packaging applications. ●



The new HEXAGON improvements at a glance

- New direct servo drive system
- New standardized 3 wide AFEM
- New control system
- Improved throughput
- Insitu pasting available
- Improved etch uniformity
- Modified Atmospheric Batch Degasser
- Optimized Loadlock
- Incorporating automatic wafer centering, reduced volume
- New process modules
- Higher pumping speed
- Improved system service and maintainability

Facts and figures

2000

The new VIN6 Transfer Chamber comes with a new indexer drive already field proven in more than 2000 systems.

100

Enjoy throughputs of >100 wafers per hour according to process.

5

Configure up to 5 process modules for etch and deposition processes.



Find out more information at evatecnet.com/products/hexagon