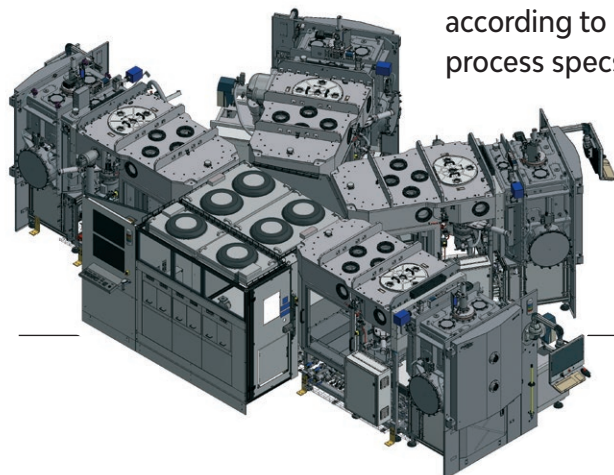


BAK 941 - TAKING THE "GREAT" AND MAKING IT EVEN BETTER

In LAYERS 3 at the end of 2017 we reported the drive to higher throughputs and larger 8 inch wafer sizes that had lead to a shift towards larger systems like the BAK 1401 handling 24 wafers in a single batch. Available in split chamber configuration with wire feeder technology for the e-gun sources, the so called BAK 1401 SC (split chamber) systems can deliver 10 to 20% higher throughputs according to processes. Just as importantly for the most demanding process specs however, the split chamber configuration where source chamber remains under vacuum constantly delivers improvements in process repeatability or the capability to handle sensitive coating materials which would not otherwise be possible. But now we can take the "great" and make it even better. Evatec's **Martin Kratzer** tells us how.



Pushing ahead with evaporation technology

Evaporation technology remains a hugely flexible, powerful technology for metallization and "lift off" processes in wireless communication. A huge installed base of BAK 761s, BAK 901s and BAK 1101s are in daily production around the world for the metallization and lift off processes used in production of today's SAW and BAW devices.

BAK 911 – Pushing the envelope

The BAK 911 E provides the next step in thin film production solutions for wireless applications building on the advantages of split chamber systems:

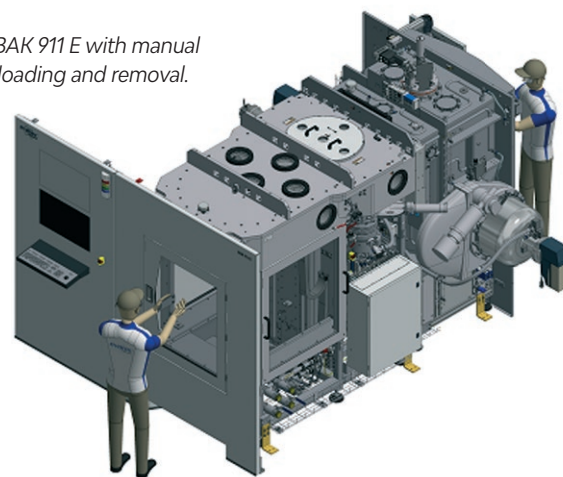
- Not just source chamber, but also the complete process chamber remains under vacuum continuously, delivering the most stable process environment possible for even greater levels of process repeatability when required.
- The only elements entering and leaving the process chamber during production are segments loaded with wafers. These enter and leave the process chamber via a load lock transfer module (LLTM). Rapid pump and transfer in this step offers a great opportunity to make additional overall gains in throughput.
- Just as in the MS Split system, sources replenished by wire feeder remain continuously under vacuum in a "ready state" for the highest stability. Opening of the process chamber itself is then limited to periodic maintenance such as shield change.
- An operator loads and unloads the uncoated and coated segments at the front-end.

Then take the next step – the BAK 941

For large volume manufacturing, integrating up to 4 tools in a cluster like the BAK 941 configuration offers even more:

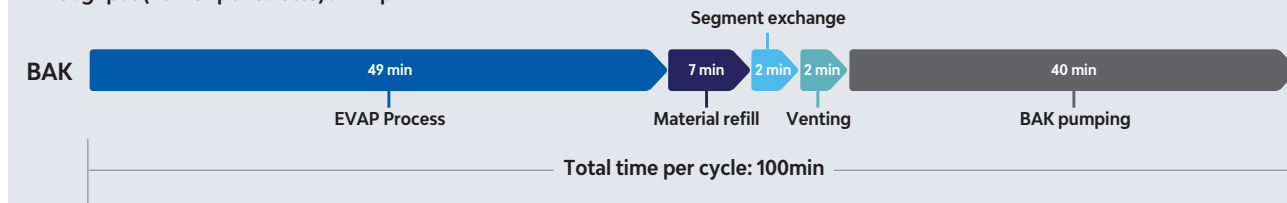
- Front-end automation of wafer loading, (4, 6 or 8 inch) direct from cassette to segment and then of segment to calotte in a controlled environment eliminating risk of operator errors and reducing risk of particles / wafer damage or breakage
- Automated management and tracking of substrate journey
 - Wafer ID reading on the fly
 - Tracking of each and every wafer to an individual location / segment / process batch
 - Automated management of return of wafer to same cassette and location within the cassette after processing
- Automated handling of the required 2 inch monitor wafers for each and every calotte segment. This includes placement of monitor wafers within the segment prior to coating plus retrieval and presentation of monitor wafers after coating to separate carriers alongside each cassette.

Figure 2: BAK 911 E with manual segment loading and removal.



BAK 901

Throughput (20 x 6" per calotte) : 12 wph



BAK 911E

Throughput (20 x 6" per calotte) : 20 wph

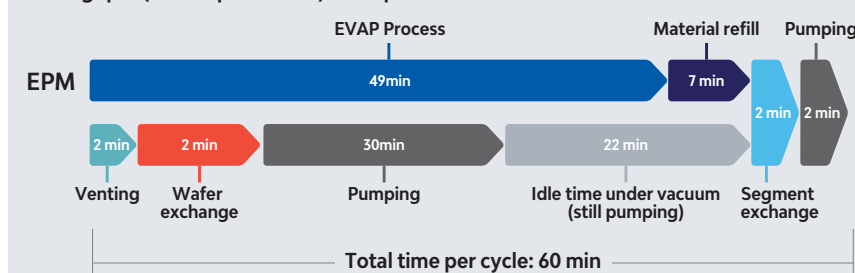


Figure 3: The flow of a typical metallization process in wireless applications where we see how throughput is increased by 70%.

Figure 4 illustrates the process flow for a BAK 941 chamber.

Enabling new thinking in fab utilization planning

Beyond the day to day advantages of enhanced throughput configuration like the BAK 941 open up other possibilities too:

Imagine being able to schedule planned maintenance for any tool within a BAK 941 cluster, automatically redirecting production to any one of the remaining tools without any interruption in work flow.

It's an exciting time for Wireless Communication

The continued impressive growth of the wireless market will continue to fuel demand for thin film production tools that increase throughput and lower cost of ownership. Emerging novel RF components enabling higher performance filters, featuring wider bandwidths and larger Q factors, will pave the way for new thin film processes too (see page 82). The thin film metallic interdigital transducer (IDT) structures required for the new so called high performance TF - SAW are just one example of where clustered configurations might just be the perfect solution.

Want to know more about the BAK 911 and 941?

If you would like to find out how these new BAK configurations could enhance your own production capabilities, why not contact your local Evatec sales and service organization.

Imagine increasing production output by 70% for a single tool

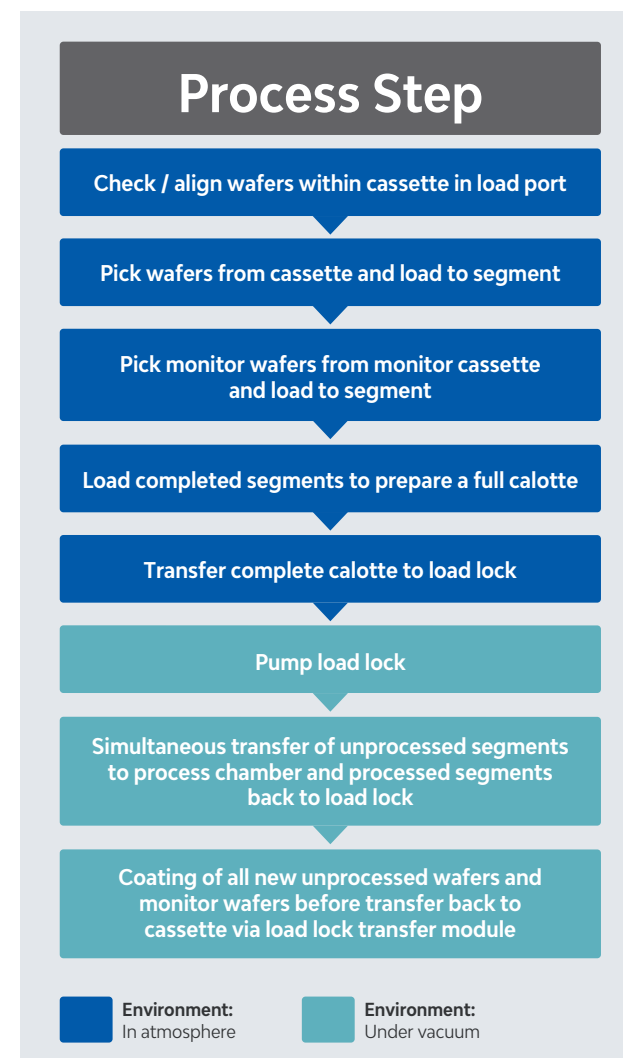


Figure 4: From cassette to coater in the BAK 941 in a few simple steps.