BAK
EVAPORATOR
FAMILY
THE BAK
A NEW GENERATION

TAKING THE BEST FROM
THE PAST, EXPANDING YOUR
HORIZONS FOR THE FUTURE!

The BAV 2000 - a production giant

“2000 BAK SYSTEMS
DELIVERED
WORLDWIDE”
Welcome to the new generation BAK evaporator - a whole family of platform sizes and geometries taking all the best from the tried and tested BAK generations before, and extending your capabilities with new sources, new process control options and new handling concepts.
Substrate capacity by machine type (with calotte)

<table>
<thead>
<tr>
<th>BAK</th>
<th>501</th>
<th>641</th>
<th>701</th>
<th>761</th>
<th>901</th>
<th>1101</th>
<th>1401</th>
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<tr>
<td>2&quot;</td>
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<td>95</td>
<td>106</td>
<td>152</td>
<td>186</td>
<td>216</td>
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<td>64</td>
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<td>114</td>
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<td>3*</td>
<td>6</td>
<td>7</td>
<td>9</td>
<td>10</td>
<td>16</td>
<td>28</td>
<td>65</td>
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</tbody>
</table>

The BAK batch coater delivers thin film deposition and etch capabilities for precision optics, optoelectronics and semiconductor applications to customers around the globe. From deposition of multilayer dielectrics and metals, to TCOs or whole range of compounds, it can be configured just the way you need for directional coating, enhanced thickness uniformities and the tightest optical, mechanical and environmental specifications.

Our applications specialists are here to help you identify just the right platform in our range between 0.5 metres and 2.0 metres according to your throughput and processes. The new generation BAK family brings you the complete solution including processes and substrate handling knowhow on a platform with proven production reliability for the best ever cost of ownership.

“FOR THE BEST COST OF OWNERSHIP”

*with planets
LEADING THE WAY WITH ADVANCED PROCESS CONTROL (APC)

Full automation through pump down, process and vent and full data logging functionality on Evatec’s “Khan” system and process controller make production and quality control easier than ever. Information is displayed according to SEMATECH standards and compliance to GEM, SECS-I and primary aspects of SECS-II standards protocols for host communications come as standard.

Advanced Process Control (APC) techniques like broadband optical monitoring with “real time in situ process reoptimisation” or “in situ” optical pyrometry tighten process repeatabilities and increase yields for the most demanding UV, VIS and IR optical stacks. Stress measurement during deposition enables tailoring of the process conditions for control of film stress in thick stacks or the avoidance of distortion in ultrathin optical components. Unicalc shaper optimisation solutions enable fast track development of efficient dielectric and metals deposition processes for optoelectronics and semiconductor applications, increase your throughputs and reduce your precious metals consumption costs.

“CUT YOUR MATERIALS COSTS AND IMPROVE PROCESS REPEATABILITIES”
THE BAK
JUST THE RIGHT GEOMETRY

“THE MOST FLEXIBLE BAK SERIES EVER BUILT”
The standard BAK chamber is just the starting point for a whole series of custom production solutions. Your BAK can also be delivered with “Lift Off” geometry where the source is lowered, and for the ultimate flexibility in deposition geometry we offer solutions for simple manual or motorized adaptation of geometry in the same chamber.

For handling of the most reactive coating materials or the very fastest cycle times, a “split chamber” variant enables the sources to be isolated in their own vacuum chamber and kept ready during main chamber vent, and for high uniformity “in-situ” dep & etch capability the chamber back can be extended to enable installation of movable ion sources.

Irrespective of the geometry, all our platform variants are engineered for rapid source access, replenishment and easy use with comfortable operator access for maintenance and repair.

### Platform geometry

<table>
<thead>
<tr>
<th>Platform geometry</th>
<th>Typical applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard throw</strong></td>
<td>— High rate metallisation</td>
</tr>
<tr>
<td></td>
<td>— Optical interference coatings</td>
</tr>
<tr>
<td></td>
<td>— TCO deposition e.g. ITO</td>
</tr>
<tr>
<td><strong>“Lift Off”</strong></td>
<td>— Extended throw optimised for “Lift Off” processes</td>
</tr>
<tr>
<td></td>
<td>— SAW/BAW/ Laser Bar devices</td>
</tr>
<tr>
<td><strong>Split chamber</strong></td>
<td>— “Reactive” coating materials</td>
</tr>
<tr>
<td></td>
<td>— Special doping processes</td>
</tr>
<tr>
<td><strong>Rear extension</strong></td>
<td>— Combined dep and etch</td>
</tr>
</tbody>
</table>

“OUR ENGINEERING TEAM HAS THE SOLUTION”
**Process chamber**
A tried and tested chamber design, extendable for different process geometries, flexible for different source configurations. Ready for whatever the future brings.

**Sources**
Choose from our biggest ever range of sources — from deposition to custom etch, e guns to effusion cells, barrel sources to boats. With closed loop process control to ensure the right thin film result every time.
**Pumping system**
Pumping configurations according to your preference. Turbomolecular, diffusion or cryopumping. Tailor-made to bring you the best process results and highest production throughputs.

**Custom tooling**
Custom tooling for optics, optoelectronic and semiconductor processes. Manual handling or cassette to cassette with automated robot handling. With the BAK there is always a solution.

**Process controller**
An integrated system and process controller built around a robust industrial server, SEMATECH compliant, with intuitive handling for operators, process engineers and maintenance. Fully prepared for whatever sources you introduce.
Your BAK is prepared for installation of a whole range of deposition and etch sources including accessories like front and backside heating systems. The chamber base plate and side walls come with a series of standard feedthroughs enabling installation of the combinations of deposition and etch sources required for layer processing. All our sources are engineered for 24/7 production, robust and easy to maintain, optimised for the lowest materials utilisation and the best repeatability. As process requirements change in the future, simply reconfigure your system by moving, exchanging or adding new ones, reconfigure your “Khan” control system in just a few minutes and you are ready to go.

Control rates and terminate your layers with Evatec’s QCM quartz monitoring technology at 5 or 6MHz featuring high sampling rates, high speed switch between crystals and simultaneous control of up to 4 quartz heads from a single controller. For real time direct measurement of optical layer performance during deposition choose monochromatic or broadband optical monitoring techniques for UV, VIS and IR.
Maximise your process performance by choosing from our widest ever range of sources. From simple thermal boats and high capacity barrel sources to effusion cells, E Guns and etch sources.

**Wire Feeder**
Two position wire feeder for source replenishment in thick layer deposition

**Barrel Source**
A range of source volumes for deposition of very thick layers

**PIAD**
Improved film qualities, lower process temperatures and shorter process times

**Effusion Cells**
Complex alloying processes and processing of very low vapour pressure materials at up to 2000°C

**Sputter**
Metals, dielectrics and TCOs. Closed loop reactive processes. Co-sputter for complex materials

**Glow Discharge**
700W or 2000W according to application

**Heating**
Combined front and /or backside heating for process temperatures up to 350°C

**Etch**
Round and moveable linear mills for high rate, accurate in situ dep and etch processes

**Quartz Monitoring**
Single, 6, or 12 way quartz with increased sampling rates for termination accuracy in single and co deposition processes

**Khan**
Khan process controller. Closed loop control with user defined parameter tracking and full run statistics logging

**Optical Monitoring**
UV to IR, monochromatic or broadband, test glasses or direct substrate measurement

**BAK EVAPORATOR FAMILY**
- From multilayer optical stacks with edge tolerances <1nm to ultrathin 1nm precious metal layers and co-evaporation of alloys there is a BAK process control solution that fits.
Evatec’s portfolio of tooling solutions is designed to maximise batch capacity for evaporation processes without compromise on film quality. Choose from single piece and segmented domes with standard or “lift off” geometries or flip systems for double sided processes. For high rate metallisation our range of planetary system designs enables larger batch sizes and lowest materials utilisation and for complex substrate geometries our engineering department offers a bespoke design service.

Where wall or door mounted large area rectangular sputter sources are specified, we offer proven rotary cage tooling designs for easy load / unload of carriers and maximum coating area per batch.

<table>
<thead>
<tr>
<th>Substrate Size</th>
<th>Substrate Handling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4 segments</td>
</tr>
<tr>
<td>3”</td>
<td>64</td>
</tr>
<tr>
<td>4”</td>
<td>40</td>
</tr>
<tr>
<td>6”</td>
<td>16</td>
</tr>
<tr>
<td>8”</td>
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Example of optimised capacity based on tooling choice for BAK761