Common Applications

Materials Science
Materials characterization of metals, ceramics, polymers, semiconductors, nanomaterials, metalurgy, fracture analysis, degradation processes, morphological analysis, wear characteristics analysis, microanalysis, texture analysis, thermographic materials, etc.

Research
Mineralogy, paleontology, archaeology, chemistry, environmental studies, particle analysis, applied physics, nanotechnology, neurotechnology, etc.

Life Sciences
Biology, pharmacology, DSM research, genomics, etc.

Forensic Investigations
Bullets and cartridge investigation, tool-mark comparison, analysis of fibers, textiles, papers, paint, ink, and print character analysis, investigation of counterfeit banknotes, etc.

Electrotechnical Engineering
Solar cell inspection, PN junction visualization, lithography, etc.

Quality control of nano-fibrous textiles
Colonial corals skeleton, high depth of focus in Field Mode

VEGA3

<table>
<thead>
<tr>
<th>Feature</th>
<th>SBH</th>
<th>SBU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resolution</strong></td>
<td>3.0 nm at 30 kV</td>
<td>3.0 nm at 30 kV</td>
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<tr>
<td><strong>Working vacuum</strong></td>
<td>Low-vacuum mode</td>
<td>Medium-vacuum mode</td>
</tr>
<tr>
<td><strong>Image size</strong></td>
<td>3.5 nm at 30 kV</td>
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</tr>
<tr>
<td><strong>Focus window</strong></td>
<td>CH: 2.5 x 250 nm²</td>
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<td><strong>Scanning features</strong></td>
<td>Dynamic focus, Point &amp; Linescan, Tilt correction, 3D Beam, various shapes configurable via optional DrawBeam Software Tool</td>
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<tr>
<td><strong>Microscope control</strong></td>
<td>Remote control</td>
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</tr>
<tr>
<td><strong>Software tools</strong></td>
<td>Upto 8,192x8,192 pixels in 16-bit quality, size is adjustable separately for live images (in 3 steps) and for saved images (in 10 steps), for square and rectangular 4:3 or 2:1 aspect ratios.</td>
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<td><strong>All microscope functions are PC-controlled using the trackball, mouse and keyboard via the program VegaTC using Windows TM platforms. Control panel and touchscreen optionally available.</strong></td>
<td>Via TCP/IP</td>
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<tr>
<td><strong>Automatic procedures</strong></td>
<td>In-Flight Beam Tracing™ beam optimization, BIOptiMag (SpotSize optimization for Magnification), WD (Focus &amp; Stigmator), Contrast &amp; Brightness, Scanning Speed (according to Signal-Noise Ratio), Gun Heating, Gun Centering, Column Centering, Vacuum Control, Compensation for V, LookUpTable, Auto-diagnostics</td>
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Installation requirements

- Power: 230 V/50 Hz or 120 V/60 Hz, 1300 VA
- Nowatercooling
- Compressed dry nitrogen is recommended: 150—500 kPa

Environmental requirements

- Temperature of environment: 17—28°C
- Relative humidity: <80%
- Vibrations: mechanical suspension (option) <4 µm/s below 30 Hz <8 µm/s above 30 Hz
- Background magnetic field: synchronous <3x10⁻⁷ T asynchronous <1x10⁻⁷ T
- System dimensions: 1665 x 950 mm
- Room for installation: min. 2.5 m x 2.5 m

We are constantly improving the performance of our products, so all specifications and external designsof instruments are subject to change without notice.

WideFieldOptics™, In-flightBeamTracing™ and EasySEM™ are trademarks of TESCAN, a.s.

Windows™ is a trademark of the Microsoft Corporation.

For non-vacuum pump
- forevacuum pump (with silencer box)
- Operator’s table
- Microscope
- Column
- Remote control
- Via TCP/IP

Also check Safety in TESCAN's Safety Data Sheets and RiskAssessments on the TESCAN website.

For more information, please contact TESCAN, a.s. at

- TESCAN, a.s.
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  - tel.: +420 547 130 414, fax: +420 547 130 415
  - e-mail: info@tescan.cz
- www.tescan.com
Modern Optics
- A unique true-lens Wide Field Optics™ design offering a variety of viewing and displaying modes.
- The proprietary International Semi (ISI) lens that acts as an ‘aperture changer’ changes the effective final aperture sizes in real time.
- The use of premium materials for the lenses and cell enables an air-free tube integrity down to 0.2 µm with minimal distortion.
- New, improved In-Fight Beam Staying™ for high precision real-time computation of optical parameters.
- The column construction, being without any mechanical centering elements, enables fully automated column set-up and alignment.
- Unique base stereoscopic imaging using advanced 3D Beam Technology, opens up the micro and nano-world for small details and 3D navigation.

Analytical Potential
- The SB chamber is equipped with a 3-axis microscop stage.
- For-class FESEM and laser-based detectors.
- 10 chamber interface ports with optimized analytical geometry for e.g. EDS, EDS, EBC.
- Selection of optional detectors and accessories.
- Full operating vacuum can be reached within a few minutes with powerful turbo-molecular and rotary 3-kW vacuum pumps.
- Investigation of non-conductive samples in the variable pressure mode.
- 1D measurements on a reconstructed surface utilizing 3D-stereo software.

Fast and Easy to Results
- Intuitive EasySEM touch screen control interface enables rapid sample commination within minutes.
- High level of system automation and self-diagnosis, running in the background, ensure usable results even for inexperienced users.
- Optionally integrated EasySEM microanalyses brings quantitative elemental analysis directly onto the line SEM image with just one touch. Print and analysis as well as quantitation line profiles and area distributions mapping functions are available.

User-Friendly Software
- Multi-use environment is localized in many languages.
- Three levels of user expertises, including an EasySEM™ mode for routine applications.
- Image management and report creation.
- Built-in software for system readiness checks.
- Network operations and remote access/diagnostics.

Software Tools
- Modular software architecture enables several extensions to be attached.
- Base set of plug-ins, such as Measurement, Image Processing, Object Area, are available as standard.
- Several optional modules or dedicated plug-ins are provided for automatic sample examination procedures, such as automatic morphology and particle analysis or 3D surface reconstruction, etc.

Rapid Maintenance
- Keeping the microscope in peak condition is now easy and requires a minimum of microscope downtime. Every detail has been carefully designed to maximize the microscope performance and minimize operator effort.

Automated Procedures
- Automated heating and alignment of the gun for optimal beam performance is done automatically with just one click. There are many others which reduce the operator’s turn-up time significantly.

VEGA3 SB
- A high vacuum model of SEM with 3-axis microscop stage for imaging of solid condensate samples.
- A variable pressure SEM that supplements all the advantages of the high vacuum model with the extended facility for low-vacuum applications, enabling the investigation of non-conductive specimens in their natural uncoated state.
- The EasyProbe is a favorable package of a scanning electron microscope fully integrated with a selected EDX microanalyser. EasyProbe, is available in both high vacuum and variable pressure variant. The system is delivered with a touch screen.

VEGA3 SB Configurations
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Selected EasySEM Specifications
- EasySEM™ In-Fight Beam Staying™
- Detection type: Field-emission, e-gun, SBSE
- Detection: Porier, Jeol, E-Plus
- Mass: Input unit: Volt
- Detector range: TE / BSE

Vegeto SEM
- A unique true-lens Wide Field Optics™ design offering a variety of viewing and displaying modes.
- The proprietary International Semi (ISI) lens that acts as an ‘aperture changer’ changes the effective final aperture sizes in real time.
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