FXE microfocus X-ray tubes from YXLON are powerful instruments for non-destructive 2D- and 3D-material testing. Due to the modular construction and a wide variety of options, the 160 kV and 225 kV microfocus X-ray systems can be adapted to nearly any inspection task. Transmission tubes – utilizing the High-Power Target – accomplish even in-depth inspections of weak-contrasting or very absorbent materials. Directional tubes are characterized by a high powered performance while maintaining a high resolution. Advantages of both technologies are combined in the TwinHead microfocus X-ray tubes. Due to the open design, systems are easy to maintain and feature a nearly unlimited lifetime. Besides, the unique TXI technology and the automatic tube calibration ensure high long-term stability. FXE tubes form the heart of every efficient X-ray solution – from the compact YXLON X-ray self-contained cabinets to X-ray bunkers and rooms. YXLON. The reason why.

- intelligent technology for high-quality images
- high contrast and detailed images
- high magnification while high performance at the same time
- easy to maintain and user-friendly
- high long-term stability
Electronic applications:
- Soldering joints of printed circuit boards (PCB)
- Ball grid arrays (BGA), integrated circuits (IC) and bonding wires
- Semiconductor packages and interconnects
- Active and passive electronic assemblies
- Hybrid arrays
- Wafer-level chip scale packages (WL CSP)
Example: Printed circuit board, surface mount technology

Aerospace & aircraft applications:
- Welds in pipes and ducts
- Blades and vanes
- Electronic assemblies
- Small Titanium and Aluminum castings
Example: Turbine blade with cooling channels

**Microfocus X-ray inspections for versatile applications**

**Hardware Options**
- Control unit: 19" rack unit
- Cable set: 3 m, 5 m, others on request

**X-Ray Tube Options**
- Transmission targets: High-Power Target, High Resolution Target, Conical Target
- Others: Standard collimator, Collimator for conical target, Additional cathode units

**Image Processing Options**
- Additional operator PC: Windows® XP
- Y.FGUI Basic: Contrast, smoothing, average, date & time etc.
- Y.FGUI Extended: BGA, Void Calculation, AVI rec.

**Environmental Conditions**
- Ambient conditions: 15° to 25° C
- Relative humidity: max. 80%, non condensing

**Intelligent microfocus tube technology – the Feinfocus solution for high magnifications and brilliant details**

**FXE Modules include**
- Easy to use open and demountable microfocus x-ray tube
- High voltage generator
- Vacuum system (prevacuum and high vacuum pump)
- Control unit on mounting plates
- FXE Control software
- Cable and hose set

**X-Ray Tube Details**
- TXI: True X-ray intensity control for long term intensity stability
- Easy exchange of various optional target solutions
- DLL for remote tube control or embedding into customer software
- Automatic and manual centering of electron beam
- Warm-up function for continuous ramping of high voltage
- Start-up centering, filament adjust and optimized working points

**X-Ray Tube Modes**
- µ-focus tube: Microfocus mode
- Multifocus Tube (MFT): Nanofocus mode (transmission only), Microfocus mode, High-Power mode

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**YXLON.Products**

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Automotive applications:
- Sensors, relays, fuses, coils
- Micro-systems and encapsulated components
- Micro-electro-mechanical Systems (MEMS, MOEMS)
- Cables, harnesses, plastics, plugs, and connectors
- Aluminum castings
Example: Lambda probe

Computed tomography applications:
- Inspections of any material like plastic, ceramic, steel, light metal, and many more
- Electronic components
- Castings
- Biological objects
- Medical devices
- Photonics assemblies
Example: Small plastic casting and coil

True X-ray Intensity (TXI) Control
- Immediate and steady X-ray stability after auto-start
- Long-term stability of X-ray intensity
- Constant image quality
TwinHead tubes offer the advantages of both technologies – directional and transmission tubes – and can by screwing and tilting easily be reconfigure from transmission to directional tube heads.

<table>
<thead>
<tr>
<th>Type</th>
<th>Transmission</th>
<th>Directional</th>
<th>Microfocus / Multifocus</th>
<th>TXI</th>
<th>max. kV</th>
<th>max. mA</th>
<th>max. Tube Power</th>
<th>max. Target Power</th>
<th>min. FOD</th>
<th>min. Focal Spot</th>
<th>min. Detail</th>
<th>Detectability</th>
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</thead>
<tbody>
<tr>
<td>FXE-160.45</td>
<td>Directional</td>
<td>*</td>
<td>•</td>
<td>160</td>
<td>1.0</td>
<td>160 W</td>
<td>100 W</td>
<td>6.75 mm</td>
<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
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<tr>
<td>FXE-160.48</td>
<td>Directional</td>
<td>*</td>
<td>•</td>
<td>160</td>
<td>3.0</td>
<td>320 W</td>
<td>280 W</td>
<td>6.75 mm</td>
<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
</tr>
<tr>
<td>FXE-160.50</td>
<td>Transmission</td>
<td>*</td>
<td>•</td>
<td>160</td>
<td>1.0</td>
<td>64 W</td>
<td>10 W</td>
<td>0.25 mm</td>
<td>&lt; 4 µm</td>
<td>&lt; 1 µm</td>
<td>&lt; 4 µm</td>
<td>&lt; 1 µm</td>
</tr>
<tr>
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<td>*</td>
<td>•</td>
<td>160</td>
<td>1.0</td>
<td>64 W</td>
<td>10 W</td>
<td>0.25 mm</td>
<td>&lt; 2 µm</td>
<td>&lt; 500 nm</td>
<td>&lt; 2 µm</td>
<td>&lt; 500 nm</td>
</tr>
<tr>
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<td>Transmission</td>
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<td>•</td>
<td>160</td>
<td>1.0</td>
<td>64 W</td>
<td>10 W**</td>
<td>250 µm</td>
<td>&lt; 2 µm</td>
<td>&lt; 500 nm</td>
<td>&lt; 2 µm</td>
<td>&lt; 500 nm</td>
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<tr>
<td>TwinHead</td>
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<td>•</td>
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<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
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<td>•</td>
<td>225</td>
<td>1.0</td>
<td>225 W</td>
<td>100 W</td>
<td>6.75 mm</td>
<td>&lt; 6 µm</td>
<td>&lt; 3 µm</td>
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<td>64 W</td>
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<td>0.25 mm</td>
<td>&lt; 4 µm</td>
<td>&lt; 1 µm</td>
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<td>•</td>
<td>225</td>
<td>1.0</td>
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<td>10 W</td>
<td>0.25 mm</td>
<td>&lt; 2 µm</td>
<td>&lt; 500 nm</td>
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<td>&lt; 6 µm</td>
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</tbody>
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* MFT with three operational modes for transmission tubes and with two operational modes for directional tubes

** 15 W with optional High-Power Target switchable