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ebeam Engines  
**Modules for inline  
electron beam processing**

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ebeam

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# ebeam Lamps

## The heart of the ebeam renaissance

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Compact, high longevity, and zero maintenance. Beam energy from 80 to 300 keV. Due to its small dimensions, ebeam Lamps can be integrated into every production line. The robust, sealed design means long life and no maintenance.

### **A 300 keV electron accelerator in such a small space – how is this possible?**

COMET has more than 65 years experience in high voltage and high vacuum. The new EBA series ebeam Lamps use the same metal-ceramic technology as used in the tens of thousands of COMET X-Ray tubes in the field.

### **From recycling to upcycling.**

Using computing as an analogy, electron beam technology has made the jump from the mainframe to the mini with the development of the COMET ebeam Lamp. This great leap forward in terms of price/performance and miniaturization opens up a long list of new, game-changing applications which will feed, detox, and energize our planet as well as enable the synthesis of new materials.



#### **Long service life**

- typically >8,000 hours

#### **High efficiency**

- thanks to optimized electron optics and window transparency



#### **Stability**

- high stability of dose rate and voltage
- low arcing rate

#### **High precision**

- thanks to optional sensors for beam monitoring





#### **Robust design**

- thanks to the proven COMET metal ceramic vacuum tube technology

#### **Longevity even in harsh environments**

- thanks to its special anticorrosion coating

#### **Maintenance-free**

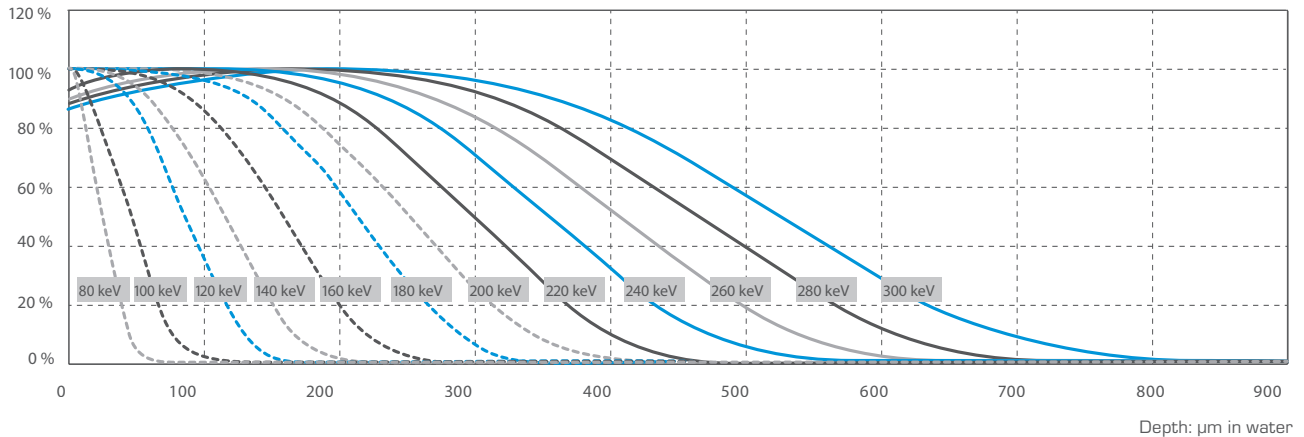
- no vacuum pump; no need to change foils, cathodes, or cables

In 2009, ebeam received the Swiss Technology Award – the country's most important innovation and technology prize.



## Electron penetration

Dose % of maximum dose



## Technical specifications

Type	EBE-80/270 EBE-80/400	EBE-200/270 EBE-200/400	EBE-300/270 EBE-300/400
<b>Electrical data</b>			
Accelerating voltage range	70 kV to 80 kV	80 kV to 200 kV	100 kV to 300 kV
Max. power at max. high voltage	1.8 kW (270 version) 2.7 kW (400 version)	4.0 kW	4.5 kW
<b>Performance data (17 mm air gap)</b>			
Surface dose uniformity	< ±10% over beam width at 80 kV	< ±10% over beam width at 90 kV	< ±10% over beam width at 100 kV
Beam width <sup>(1)</sup>	230 mm (270 version) 340 mm (400 version)	230 mm (270 version) 340 mm (400 version)	230 mm (270 version) 340 mm (400 version)
Surface dose rate <sup>(2)</sup> at max. voltage and max. power [dose × web speed]	1788 kGy × m/min (270 version) 1811 kGy × m/min (400 version)	1942 kGy × m/min (270 version) 1311 kGy × m/min (400 version)	1157 kGy × m/min (270 version) 779 kGy × m/min (400 version)
Depth dose rate <sup>(2)</sup> at max. voltage and max. power (200 μm penetration)	0 kGy × m/min	1372 kGy × m/min (270 version) 926 kGy × m/min (400 version)	1323 kGy × m/min (270 version) 893 kGy × m/min (400 version)
<b>Dimensions and mass</b>			
ebeam Lamp	Weight: 12.3 kg (270 version) Weight: 13.2 kg (400 version)	Weight: 12.3 kg (270 version) Weight: 13.2 kg (400 version)	Weight: 15.3 kg (270 version) Weight: 17.8 kg (400 version)
High voltage power supply	L × W × H: 607 × 430 × 421 mm <sup>3</sup> Weight: 70 kg	L × W × H: 695 × 578 × 657 mm <sup>3</sup> Weight: 198 kg	L × W × H: 950 × 557 × 579 mm <sup>3</sup> Weight: 244 kg
High voltage cable	Length: 5.5 m and 10 m Weight: 6.3 kg and 7.6 kg	Length: 5.5 m and 10 m Weight: 18.9 kg and 26.5 kg	Length: 5.5 m Weight: 24.7 kg
Cooler	optional	optional	optional
<b>Environmental data</b>			
Operating temperature	4 °C to 70 °C (ebeam Lamp), 0 to 40 °C (Power Supply)		
Storage temperature	-20 °C to 60 °C		
<b>Water cooling</b>			
Flow rate	min. 3 l/min (at 4 to 6 bars)		
Water inlet temperature range <sup>(3)</sup>	20 °C to 40 °C		
<b>Miscellaneous</b>			
Expected Lifetime <sup>(4)</sup>	> 8,000 hours operation		

<sup>(1)</sup> The maximum usable beam width depends on the chosen distance to the window and the dose uniformity requirements of the application.

<sup>(2)</sup> Dose distribution is a complex function of electron energy, distance to window, surrounding media, characteristics of treated material, and others. Furthermore, the desired distribution of dose [surface vs. depth dose] will vary in each application. Hence, the tabulated values are given only as a first impression, based on a model system (dose deposited in the first μm and in 200 μm depth of water in 17 mm distance from the window).

<sup>(3)</sup> Water temperature must be chosen to avoid condensation.

<sup>(4)</sup> Depends on the environmental and operational conditions.

Please consult an ebeam Technologies applications engineer for further information. All data are indicative and may be subject to alteration.

**ebeam Technologies**  
COMET AG  
Herrngasse 10  
3175 Flamatt  
Switzerland  
T +41 31 744 9810

**ebeam Systems**  
COMET Technologies USA, Inc.  
8700 Hillandale Rd  
Davenport, IA 52806  
USA  
T +1 563 285 7411

**ebeam Technologies**  
COMET Mechanical Equipment  
(Shanghai) Co., Ltd.  
1st Floor, Bldg 10, 1201 Guiqiao Road  
Pudong, Shanghai 201206, P.R. China  
T +86 21 6879 9000

**ebeam Technologies**  
YXLON International KK  
a company of COMET Group  
1-1-32 Shin-Urashima-cho, Kanagawa-ku  
Yokohama, Kanagawa, Japan 221-0031  
T +81 90 8726 6021