Excimer Lasers for Pulsed Laser Deposition

- Optimised lasers for PLD applications, based on LightMachinery’s best-selling Ipex Series industrial excimer lasers
- Excellent beam uniformity, pulse-to-pulse energy stability and short pulse duration
- Constant energy at all repetition rates
- ICON™ (Integrated Ceramic on Nickel) technology for ultimate gas lifetimes and lowest cost of operation
- EasyClean automated optics seals to retain gas fill and reduce downtime during optics maintenance
- High-stability optics mounts for ultimate beam pointing accuracy & high-brightness optics for low beam divergence
- Custom-designed beam delivery systems

LightMachinery
Excellence in lasers and optics
**IPEX™-840 / 860 Series Excimer Lasers for Pulsed Laser Deposition**

Originally developed by Lumonics, now offered by LightMachinery and incorporating ICON™ (Integrated-Ceramic-On-Nickel) technology, the **IPEX-840/ 860 Series** excimer lasers deliver the exceptional performance, lifetimes, reliability and ease-of-integration demanded by researchers and system builders in the field of Pulsed Laser Deposition (PLD).

### Constant Performance for Dependable PLD Results.

#### Constant Energy:
The specified pulse energy of IPEX-840/860 Series lasers is constant at all repetition rates from single-shot to the maximum repetition rate of the laser. This is in contrast to some competitive lasers where the specified energy can only be achieved at low repetition rates and the energy falls rapidly as the pulse rate is increased. The LightMachinery approach ensures constant PLD process parameters that are invariant with laser repetition rate.

#### Constant Pulse Stability:
Pulse energy is regulated by an advanced energy monitor that accurately adjusts the discharge voltage and gas mixture to maintain constant output energy under all operating conditions, including operation. Pulse-to-pulse stability is better than 1%.

#### Constant Pointing Stability:
High stability keyed optics mounts ensure 200 μ-radian pointing stability and no beam re-alignment is required after optics maintenance.

### Optical Beam Delivery Systems for PLD

LightMachinery is more than just a laser supplier. In combination with our in-house optical designers and with external integration partners, we can offer complete laser / beam delivery systems tailored to any specific PLD requirement.

### Specifications

<table>
<thead>
<tr>
<th>Wavelength (nm)</th>
<th>248 (KrF)</th>
<th>193 (ArF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilised Pulse Energy (mJ) at all repetition rates</td>
<td>IPEX-840 Series 400</td>
<td>IPEX-860 Series 150</td>
</tr>
<tr>
<td>Maximum Pulse Energy (mJ) at low repetition rates</td>
<td>IPEX-840 Series 450</td>
<td>IPEX-860 Series 230</td>
</tr>
<tr>
<td>Maximum Repetition Rate (pps)</td>
<td>IPEX-844 50</td>
<td>IPEX-842 25</td>
</tr>
<tr>
<td>Stabilised Average Power (W)</td>
<td>IPEX-844 20</td>
<td>IPEX-842 10</td>
</tr>
<tr>
<td>Pulse Duration (ns) (FWHM, nominal)</td>
<td>12 – 20 ns</td>
<td></td>
</tr>
<tr>
<td>Beam Dimensions (mm) (V x H, nominal)</td>
<td>IPEX-840 Series 12 x 26</td>
<td>IPEX-860 Series 12 x 28</td>
</tr>
<tr>
<td>Beam Divergence (mrad) (V x H, nominal)*</td>
<td>IPEX-840 Series 1 x 3</td>
<td>IPEX-860 Series 1 x 3</td>
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</tbody>
</table>

*With standard resonator optics. Can be reduced to ~250 μradian with High Brightness Unstable Resonator Optics

Specifications subject to change. Please consult LightMachinery for latest information.

### Facilities

**Electrical Power**
- Single-phase, 200 – 240 V
- 1.5 kW, 50 / 60 Hz

**Cooling**
- Water, 5 litres / minute
- 5-20 °C, 40-60 psig

**Laser Gas**
- Consult LightMachinery
- Can be operated on pre-mix gas

For further technical and sales information, please visit our website or contact:
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Printed in Canada. February 2014