How Light Source Innovations drive Application Break-Through
光源的创新推动应用的革新

Norbert Lesch

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Application benefits of High Luminance LED
高亮度LED助力车灯应用
Altilon Intense

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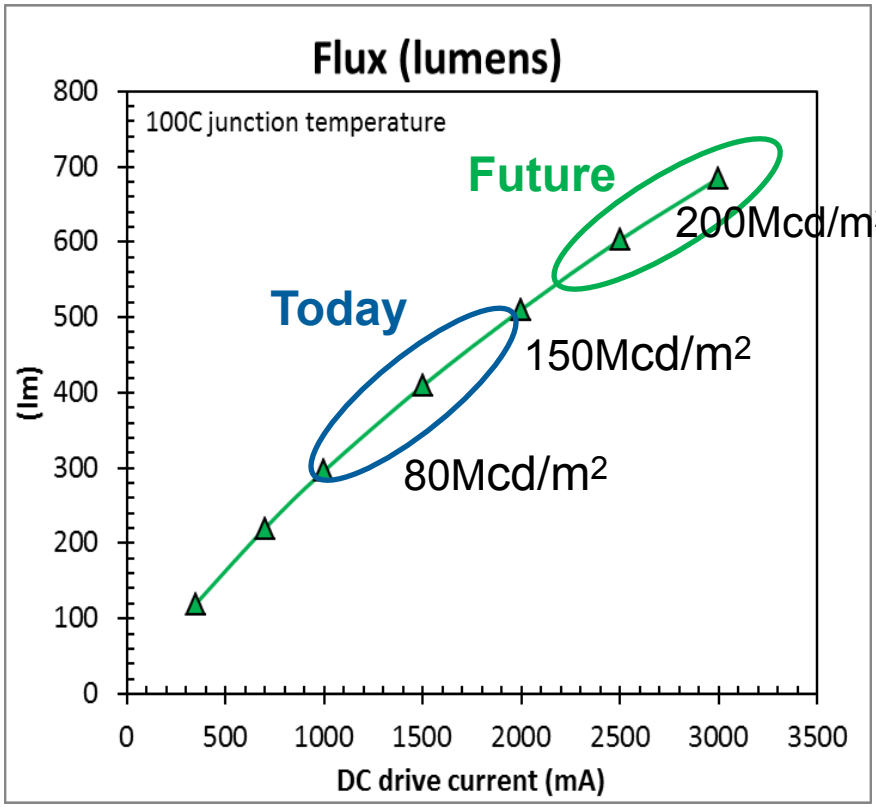
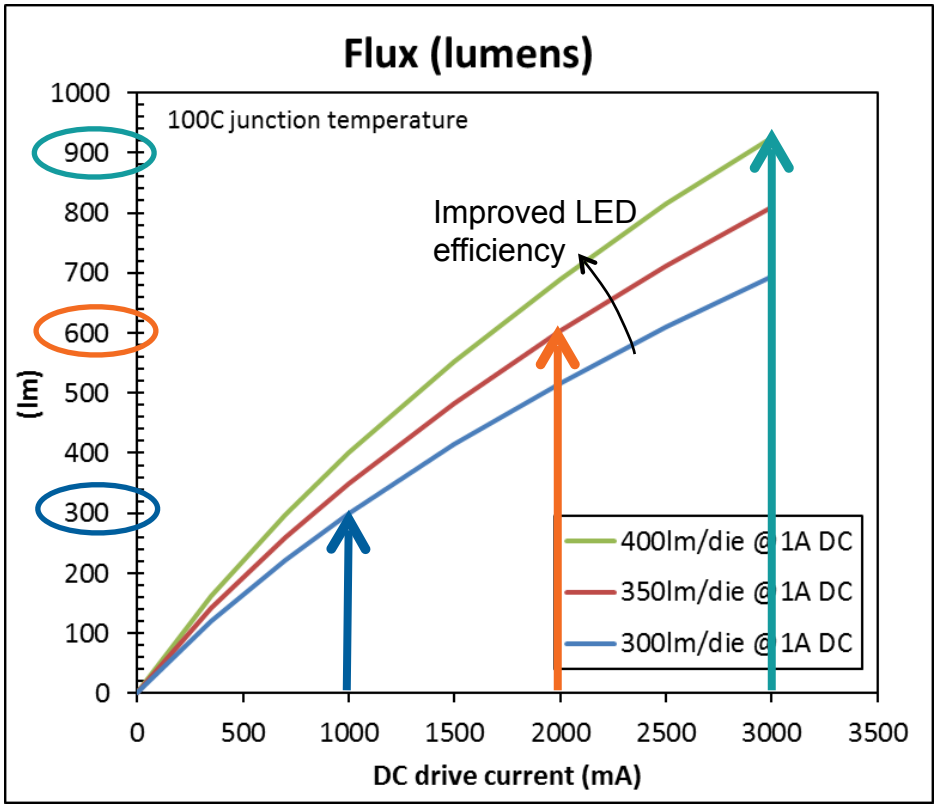
Enablers of high Luminance LED

High drive current performance 高驱动电流下的性能

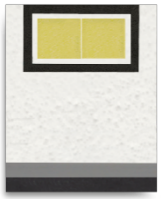
Measurement condition: 100C T_junction, DC current
1mm² WLP chip ; 1.1mm² Light Emitting Area





Second generation high Luminance LEDs: Altilon Intense G2

Key specifications (preliminary) 第二代高亮度LED产品的主要性能参数

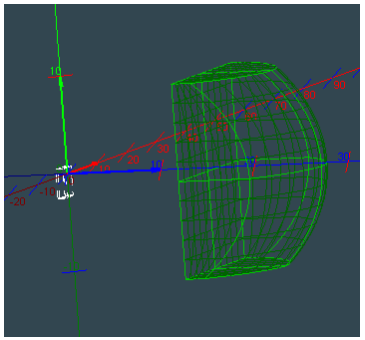



Metrics	Target Spec 1x1	Target Spec 1x2	Target Spec 1x3	Target Spec 1x4
DC Luminance @Tc=85°C, 1.5A	Typical: 180MNits	Typical: 180MNits	Typical: 180MNits	Typical: 180MNits
DC Flux @Tc=85°C, 1A	240lm MIN 250lm Typ	480lm MIN 500lm Typ	720lm MIN 750lm Typ	960lm MIN 1000lm Typ
DC Efficacy @ Tc=85°C, 1A	Typ. 75lm/W	Typ. 75lm/W	Typ. 75lm/W	Typ. 75lm/W
Light emitting area	~0.66x0.86 mm^2	~0.66x1.7 mm^2	~0.66x2.66 mm^2	~0.66x3.44mm^2
Contrast	Enhanced	Enhanced	Enhanced	Enhanced
LED Tolerances @ 5s	± 50μm	± 50μm	± 50μm	± 50μm
Reliability	AEC-Q102	AEC-Q102	AEC-Q102	AEC-Q102

Application benefits by contrast improvement

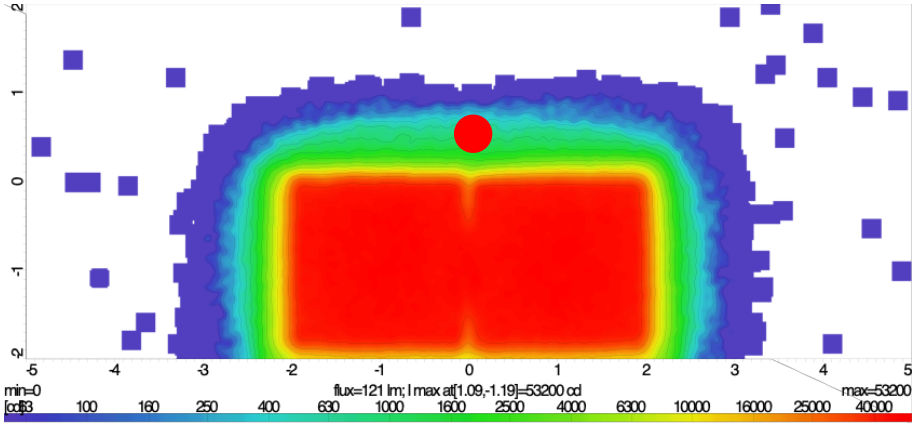
高对比度对应用带来的好处

- Setup: rectangular projection lens 20x20 mm² with 15 mm focal length
- Assessment 0.57° above cut-off



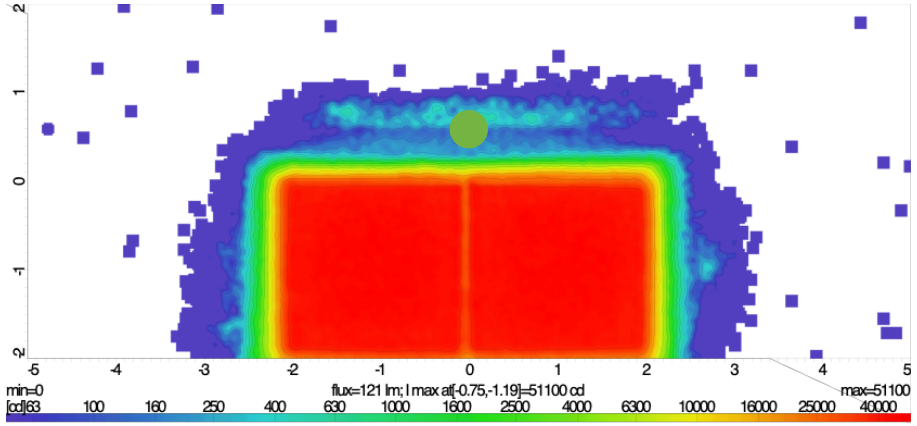
Without LED contrast enhancement

692cd

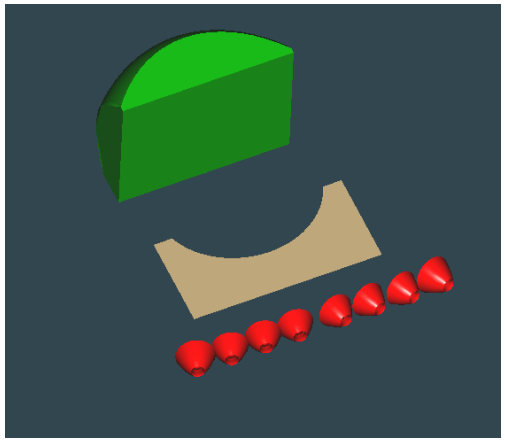


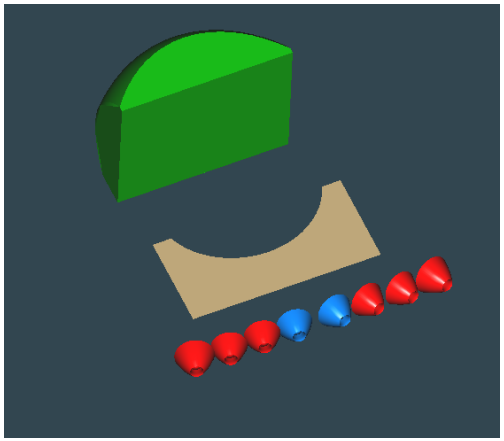
With LED contrast enhancement

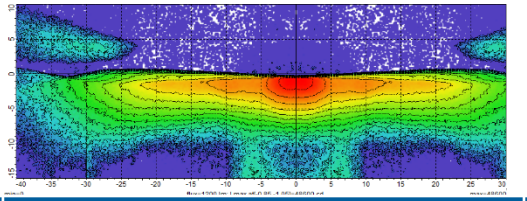
126cd

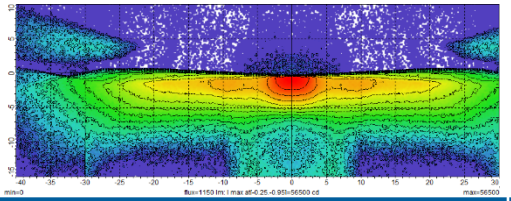


Performance boost by higher Luminance
高亮度芯片可显著提高性能







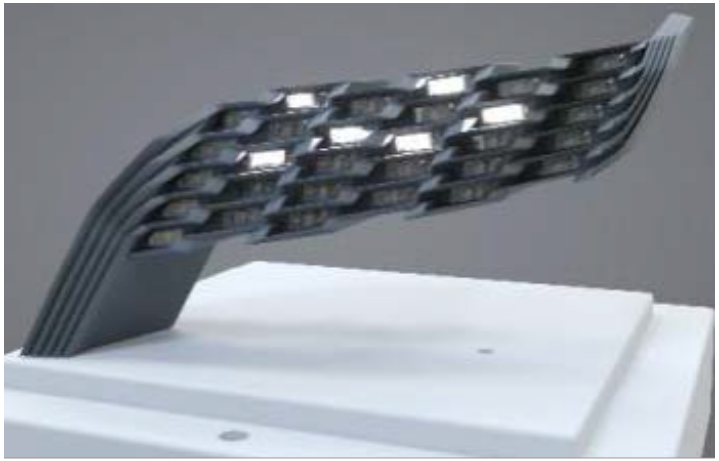


Configuration	8x LUXEON FX		2x Intense + 6x FX-HF		Performance
Input Flux	8 * 330 lm		2 * 250 lm	6 * 345 lm	
	2640 lm		2570lm		97%
Input power	24W		24W		100%
I max	53460 cd		59840 cd		**112%**
75R	47099 lm		51900 lm		**110%**

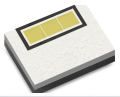
Multi-Cavity Slim LB with Altilon Intense including AFS

使用Altilon Intense 包含AFS功能的多腔紧凑近光设计

- Module height 模组高度**10**mm
- Total 6 cavities 一共六个小模组

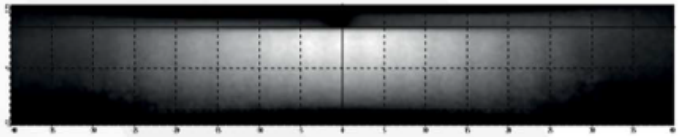


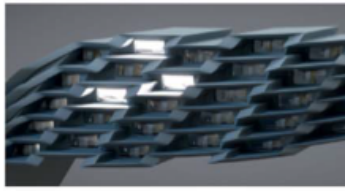
- High efficiency 38% to 55% depending on function
  (cover glass excluded)



City Light:
3 cavities, 4 LEDs, 2 1x3@0.7 A, 1x1@0.5 A, 1x2@0.25 A
1102 lm installed, 607 lm on road, 55 % efficiency*

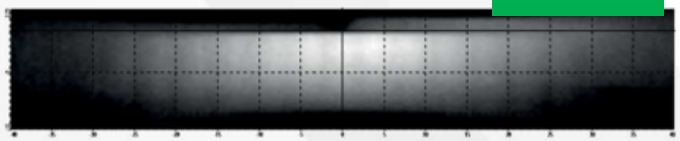
城市照明

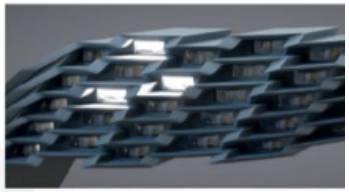




Country Light:
3 cavities, 4 LEDs, 2 1x3@1 A, 1x1@0.5 A, 1x2@1 A
802 lm installed, 943 lm on road, 53 % efficiency*

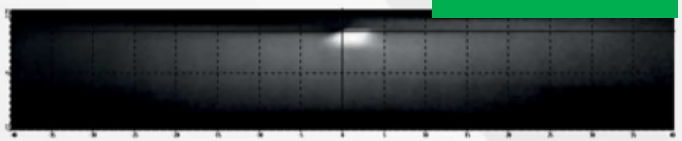
乡村照明

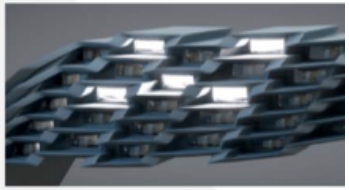




Bad-Weather Light:
5 cavities, 6 LEDs, 2 1x3@0.5 A, 1x1@0.8 A, 1x2@1
1760 lm installed, 681 lm on road, 38 % efficiency*

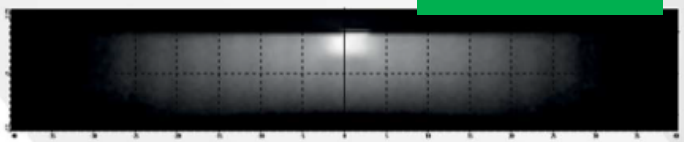
恶劣天气照明

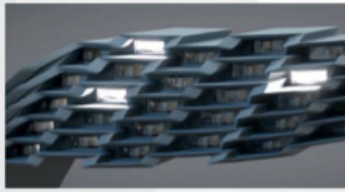




Motor Way Light:
3 cavities, 3 LEDs, 2 1x3@0.7 A, 1x1@1 A
1102 lm installed, 599 lm on road, 54 % efficienc

高速公路照明





*no cover glass considered

LUXEON NeoExact

Full freedom for matrix solutions

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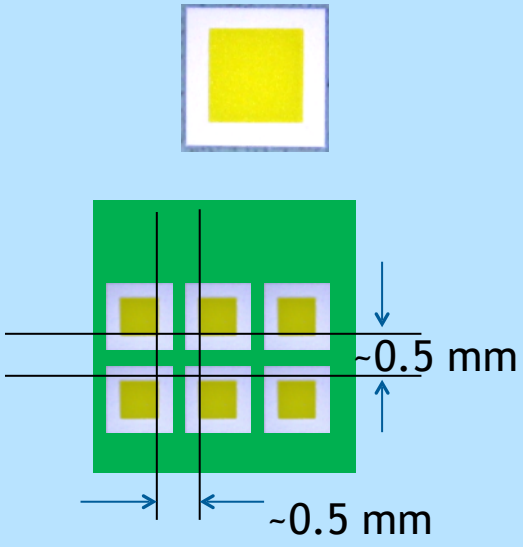
LED Matrix Head-Lighting Concepts – close die spacing 更紧凑的布局

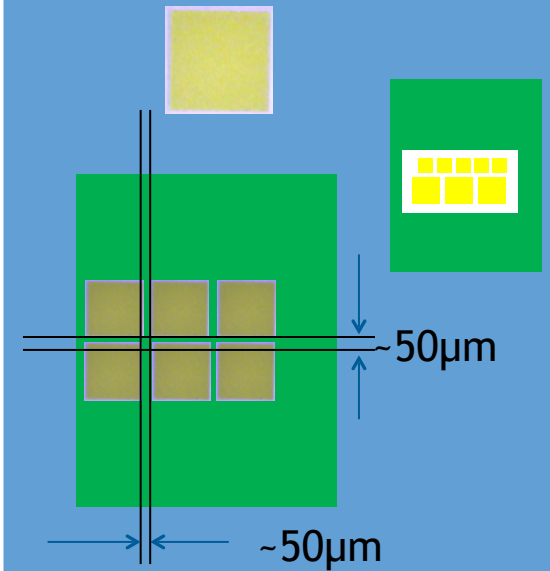
NeoExact technology will allow future options

LUXEON Neo matrix solution



Today

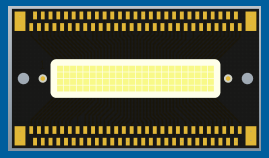
Close die spaced matrixes

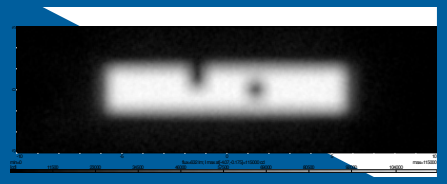


Future

Application Benefits

- Direct imaging
- Full customization flexibility
- Enhanced Resolution
- Beam shaping
- .....

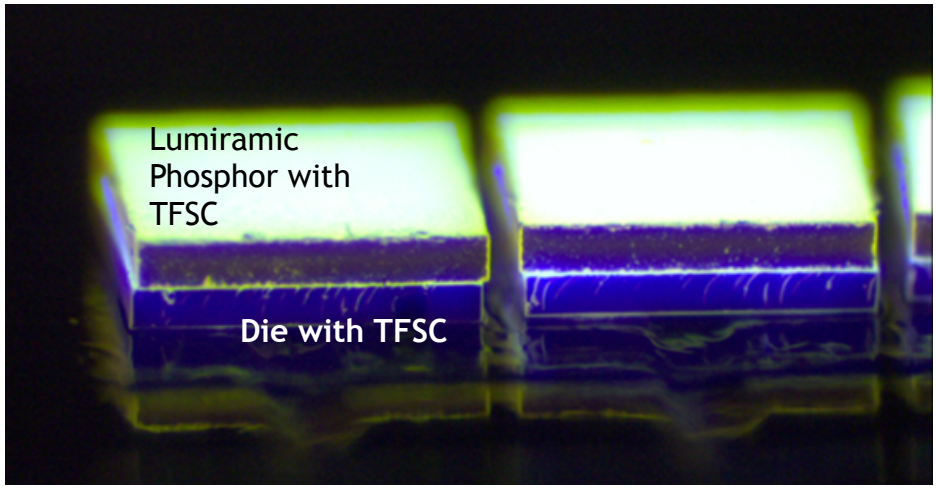


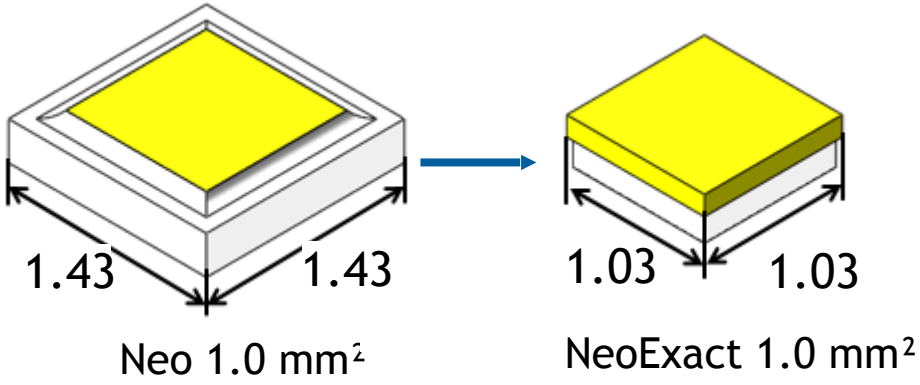


LUXEON NeoExact – breakthrough in LED packaging 封装技术的革新

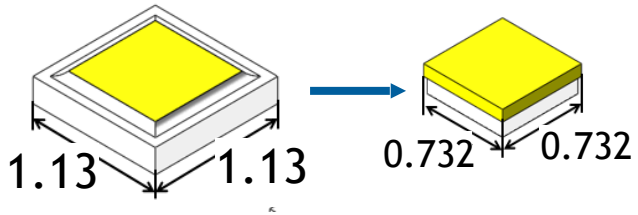
New packaging technology based on Thin-Film-Side-Coating (TFSC)

- Next generation LUXEON Neo enables
  - Smallest Package - Light emitting area and package about same as chip size
  - Improved contrast (> 1:250 acc. ECE)
  - Improved crosstalk (<1% at 50µm spacing)
  - High Luminance
  - Tighter Spacing of light emitting araes (50µm)





Neo 1.0 mm² NeoExact 1.0 mm²

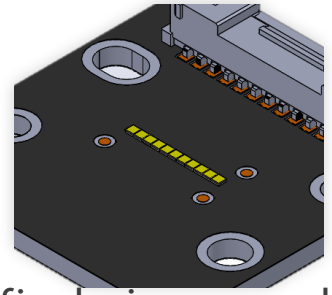


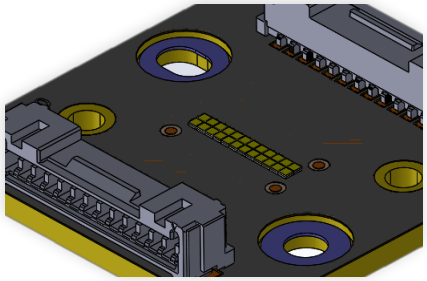
Neo 0.5 mm² NeoExact 0.5 mm²

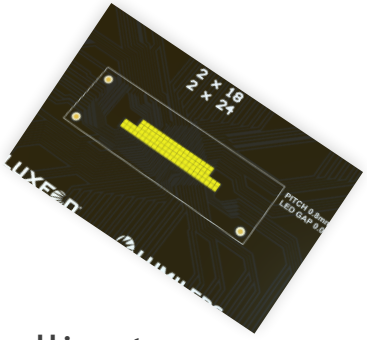
NeoExact system options: elimination of pre-collimator 省去一次透镜

Direct imaging without constraints

- Design options (up to four rows with close spacing)

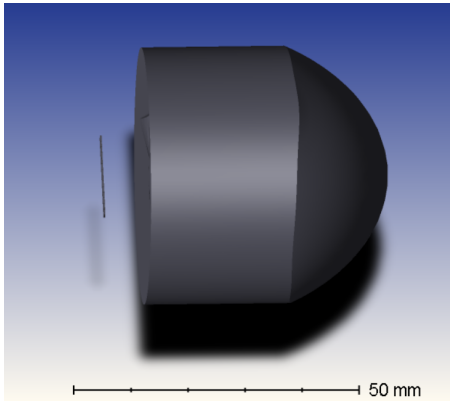


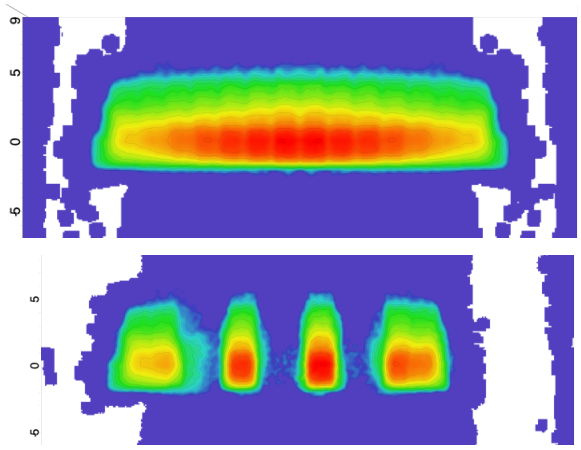




- Specific design example: 1x14 NeoExact 1mm² per side, no pre-collimator

  - Field size: >30° x 8° (two headlamps)
  - LED gap 50µm
  - PMMA lens Ø 45mm, 40mm thick
  - Max. intensity: ~64 kcd
  - Flux in beam: ~ 860 lm
  - Flux from LED: 2500lm
  - Efficiency: 34% (all losses included)
  - Position, pitch and count of LED per customer request possible

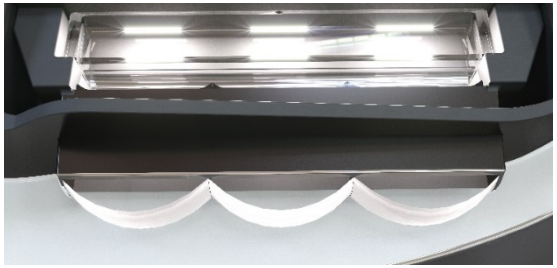




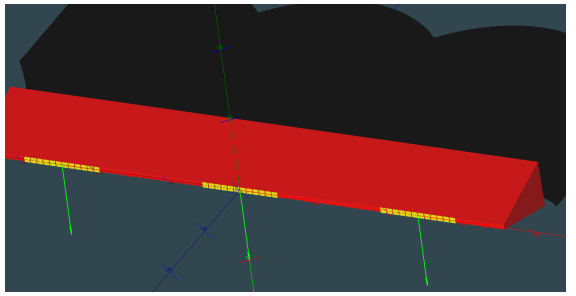
NeoExact system options: ADB optimized for slim lamp design

NeoExact 系统: 小尺寸ADB模组

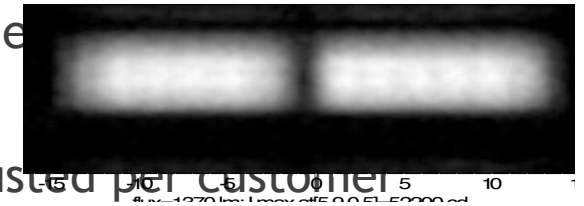
- Extremely thin lens: 72mm x **10mm**



- Simple monolithic collimator
- 3 groups of 12 LED NeoExact 0.5 mm^2
- Pitch 0.86mm (only possible with NeoExact)



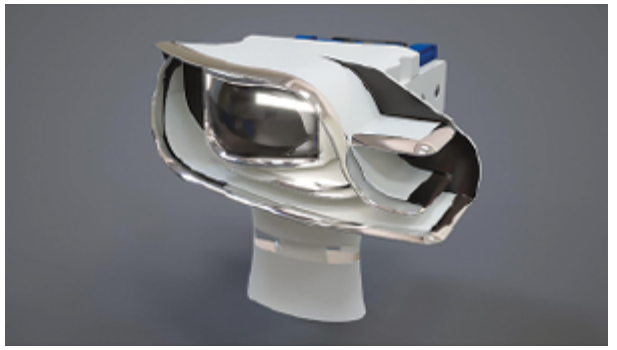
- Beam +/- 14° horizontally (0.8° resolution)
- 3x1740 lm installed → 1500 lm in beam (~29% efficie
- Imax 48000 cd (20% over legal limit)
- Beam width, pixel count and resolution can be adjusted per customer specification



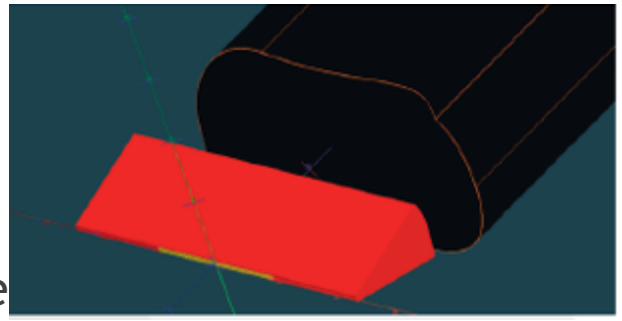
NeoExact system options: ADB optimized for efficiency

NeoExact 系统: 高效率ADB模组

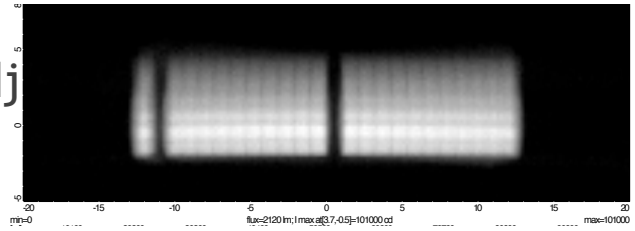
- Small outer lens: 48 mm x 28 mm



- Simple monolithic collimator
- 1 group of 24 LED NeoExact 0.5 mm²
- Pitch 0.86mm (only possible with NeoExact)



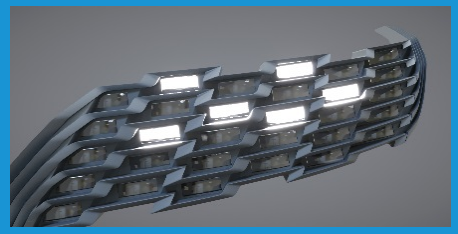
- Beam +/- 12° horizontally (1.0° resolution)
- 3480 lm installed → 1760 lm in beam (~50% efficie
- Imax 75000 cd
- Beam width, pixel count and resolution can be adj specification

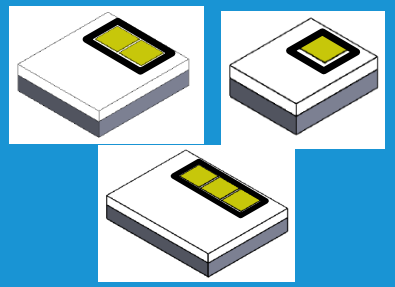


Light source innovations will bring great application benefit

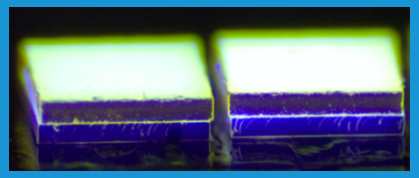
- Small Light Emitting area 小发光面
- High Luminance 高亮度
- High Contrast 高对比度
- Close die spacing (x,y) 芯片小间距
- LED position accuracy (x,y,z) LED位置精度
- LED Matrix customization flexibility定制芯片阵列灵活度

- Slim design with Alitlon Intense
  Alitlon Intense G2 小尺寸方案





- Matrix design with Neo Exact 矩阵远光解决方案

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