LED Lighting Global Market Trends

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About Pennwell

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- Global circulation 63,800
- 9 issues annually including the Suppliers Directory

- Page views : 349,667
- Visits: 133,580
- Unique: 82,787
Outline

• Packaged LED market
• LED Lamp Market
  – Sizing and Forecast
  – Geographical Impacts
• LED Luminaire Market
  – Commercial
  – Industrial
  – Architectural
  – Outdoor
Revenues (Supply) for LEDs in Lighting
$4,470 (M) in 2013

- Japan: 31%
- Korea: 15%
- China: 18%
- Taiwan: 11%
- USA: 21%
- Europe: 4%
LED Lamps
Lamp Breakout

Replacement Lamps

- A-19
- MR-16
- Reflector
- T-Lamps
- Decorative/Other
LED Lamp Market Forecast

2013 $4.8 B
2018 $12.2 B
21% CAGR

Revenues ($M)

2012 2013 2014 2015 2016 2017 2018

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LED Lamp Market Forecast

2014: MR -16 = 36% by 2018 = 26%
A-19 by 2018 = 42% of market
MR 16 LED Lamp Forecast

- Revenues ($M)
  - 2012: $500
  - 2013: $1,700
  - 2014: $2,100
  - 2015: $2,500
  - 2016: $3,000
  - 2017: $3,200
  - 2018: $3,200 (with 13% CAGR)

Forecast: $3.2 B in 2018
A-19 LED Lamp Forecast

Revenues ($M)

2012 2013 2014 2015 2016 2017 2018

2013 $1 B

39% CAGR

2018 $5.2 B
Reflector LED Lamp Forecast

- **2013**: $0.7 B
- **2018**: $1.7 B

20% CAGR
LED T-lamps Forecast

- 2013: $1.2 B
- 2018: $1.9 B

9% CAGR
Incumbent Technologies Still Mater

• Global fluorescent lamps make up 25% of all lamp sales (4.5 billion) and 36% of IB
• Don’t get too excited
• Fluorescent
  – Long life
  – Cheap
  – Efficient
  – Known

Vs.
Not Just How Fast, But Where?
NA A-19 Lamp Forecast

- What to Look For
  - Application
  - Regulatory Environment

- Competing Technology
- Lighting Preferences

EISA 2007
Regional MR-16

What to Look For
- Application
- Regulatory Environment

Competing Technology
- Lighting Preferences

Europe MR-16

<table>
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<th>Year</th>
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LED Luminaires
Luminaire Breakout

Led Luminaires

- Architectural
- Entertainment
- Retail Display
- Residential
- Commercial
- Industrial
- Consumer Portable
- Emergency
- Outdoor
- Off Grid/Solar Powered
LED Luminaire Market

- Commercial, Industrial, Outdoor and Architectural > 60% market

2013: $11.7 B
2018: $21.3 B
12.3% CAGR
Luminaire Forecast CAGR/Application

CAGR 2013-2018

- Retail Display
- Residential
- Outdoor
- Off-Grid
- Industrial
- Entertainment
- Emergency
- Consumer Portable
- Commercial
- Architectural

Outdoor has the highest CAGR.
Commercial Forecast

- **2013**: $3.6 B
- **2018**: $6.8 B

14% CAGR


**Regions**:
- ROW
- NA
- Japan
- Europe
- China
Architectural Forecast

2013: $1.8 B
2018: $2.5 B

7% CAGR

Revenues ($M)

2012 2013 2014 2015 2016 2017 2018

ROW NA Japan Europe China

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Industrial Forecast

2013: $1.4 B
2018: $2.3 B

11% CAGR

Revenues ($M)

2012 2013 2014 2015 2016 2017 2018

ROW  NA  Japan  Europe  China

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Outdoor Forecast

2013 $0.7 B

2018 $2.3 B

26% CAGR

Revenues ($M)

2012 2013 2014 2015 2016 2017 2018

ROW
NA
Japan
Europe
China

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Conclusion

• LED lamps market forecasted to grow 21% to $12.2 Billion in 2018
• Competing technologies are still very important
• LED luminaire market forecasted to grow 12% to $21.3 Billion in 2018
• Commercial, industrial, outdoor and architectural will be leading the way
Thank You!

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