

# Increasing complexity?

DEKRA Certification B.V., Meander 1051, 6825 MJ Arnhem  
The Netherlands  
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**LED EVENT 2017**

Design en engineering trends voor LED-applicaties

BE **WOENSDAG 29 NOVEMBER 2017**  
TECHNOPOLIS, MECHELEN  
NL **DONDERDAG 30 NOVEMBER 2017**  
CONGRESCENTRUM 1931  
BRABANTHALLEN, DEN BOSCH

Broad portfolio of testing services

Present in over 50 countries

Founded 1925

Strong brands; ENEC, KEMA-KEUR, GS, MET, DEKRA-LED Performance

2016 => 38.000 employees

Turnover 2015 => 2,7 billion

KEMA Quality part of DEKRA since 2009

7 DEKRA Lighting Technology Centers  
4 Europe 3 Asia

# Lighting has changed

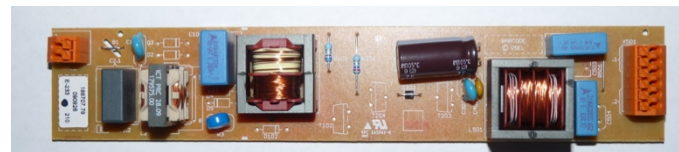


# Lighting has changed



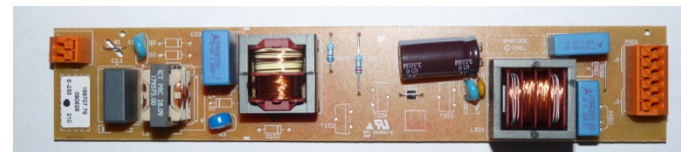
Powered by DEKRA

# Lighting has changed

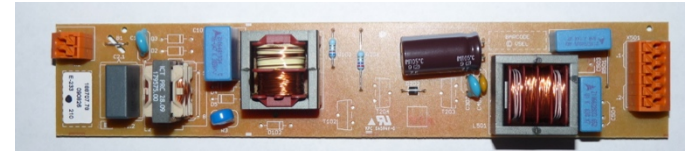


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# Lighting has changed

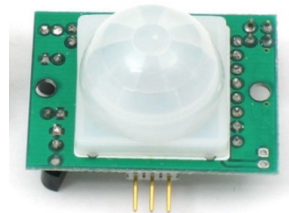
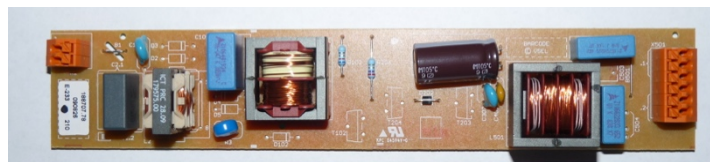


# Lighting has changed





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# Factors reducing complexity



- Standardized modules
- Safety low voltage supply
- Electronics easier to design
- Functions controlled by software



# Factors increasing complexity



- New / additional legislation
  - Low Voltage Directive, EMC Directive
  - RoHS Directive, ErP Directive, RED Directive
  - WEEE, Packaging, REACH, Energy labeling
  - Cyber safety, data protection => future (2018)



# Factors increasing complexity



- Product standards falling short to new functionality
- Grey area's (risks)
  - Electromagnetic fields
  - Flicker
  - Functional safety
  - Cyber safety



# Factors increasing complexity



- Product standards falling short to new functionality
- Grey area's (performance)
  - Photometric
  - Life expectancy
  - Update / upgradeability
  - Reliability



# Challenges

- Design specification
  - Decide target countries
  - Determine applicable legislation and mandatory third party approvals
  - Decide on standards to use
  - Voluntary standards to follow

# Challenges

- **Involve quality and legal department during design**
  - **Regular meetings**
  - **Design validation**
  - **Critical design decisions**

# Conclusion

- Is lighting becoming increasingly complex?
  - No, from the simplicity of building a fixture
  - Yes, from the applicable regulations and software
- Challenge to the component manufactures
  - Design intrinsically compliant electronics



# Need help

- How can a third party test house like DEKRA help
  - Provide input on mandatory certification
  - Provide input on legislation to take into account
  - Provide design reviews
  - Provide input on critical issues
  - Provide test, inspection and certification services

# Thank you for your attention



- Questions?



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