

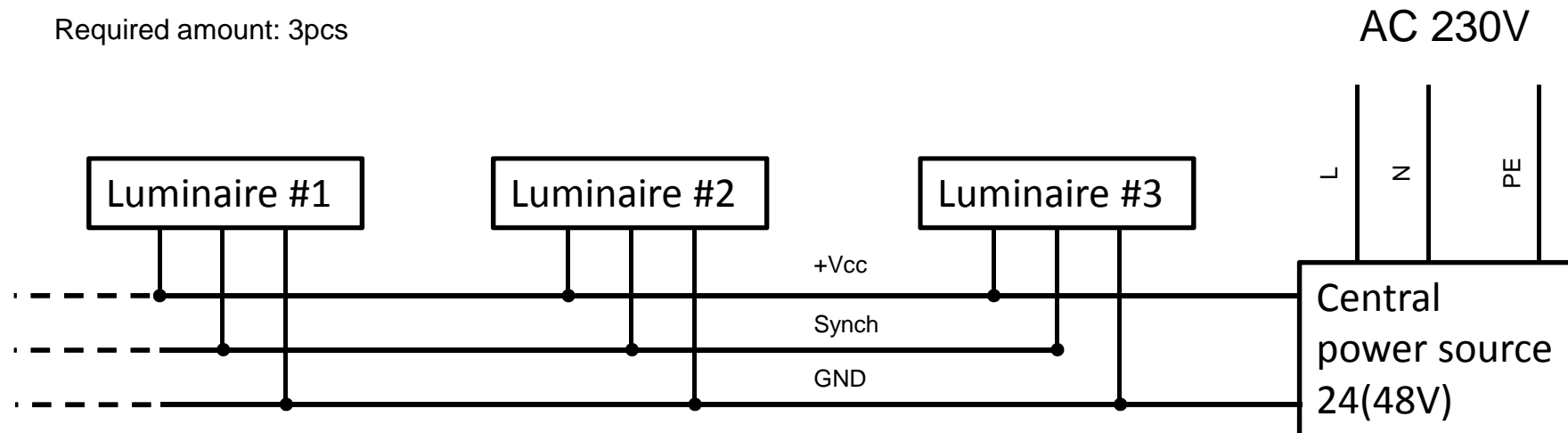
Green Eye

LED Luminaire development for
ON semiconductor

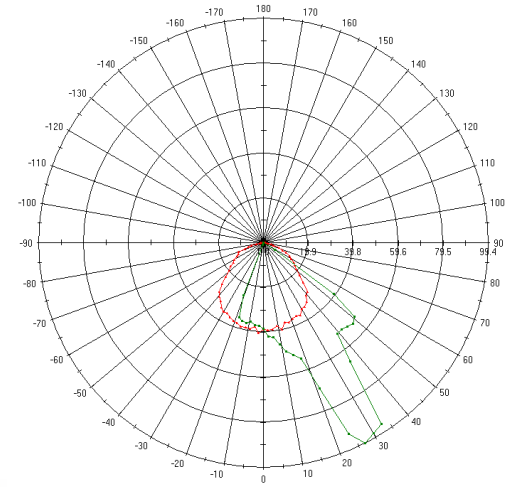
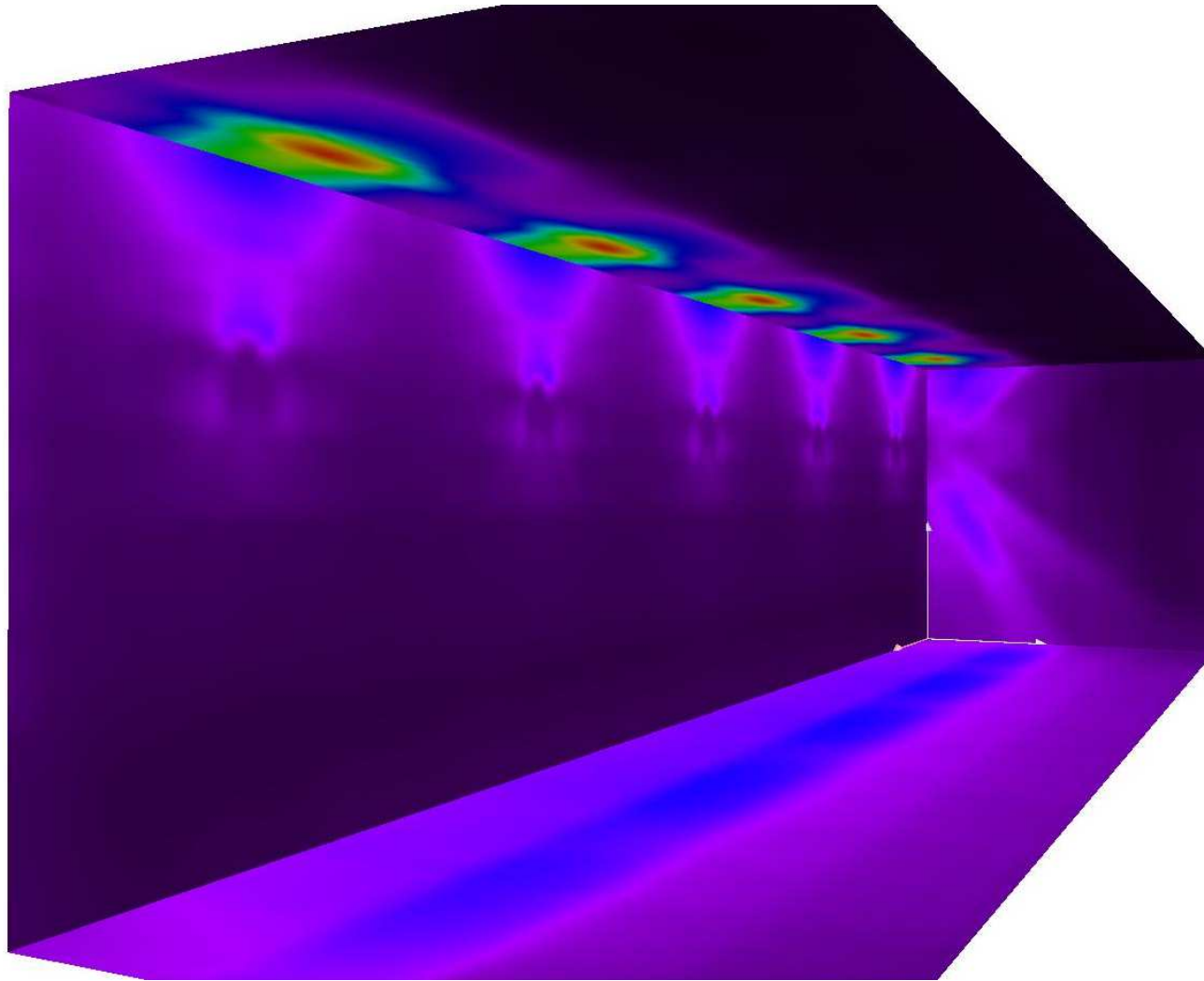
Definition and requirements

- Replacement for traditional 60W lamp (600 Lumen)
- Indirect illumination top, button
- Top green, bottom white Neutral (~4000K) illumination
- Orienting green front and side illumination with ON Symbol
Active under defined ambient light condition (dark)
- PIR (Pyroelectric) motion detection range 6m min.
- Corridor delay 20-40 seconds
- Ambient light detection and settings
- Upgradable through ICSP interface
- Synchronized switching through single line (one detects movement illuminates all connected to synchrony line)
- Implementing Fade in and Fade out intensity control
- Low voltage operation 24 or 48V

Required amount: 3pcs

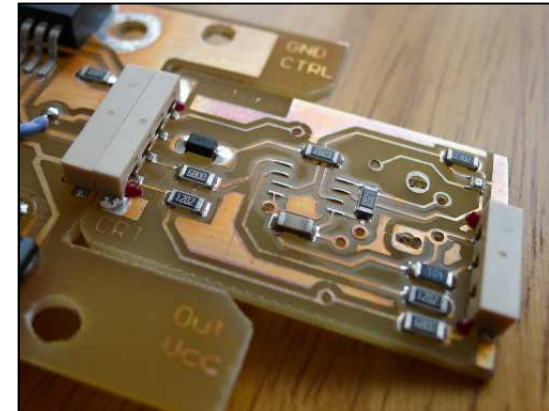


Simulation (Lighttools and Dialux, provided by RU)



Design notes and results

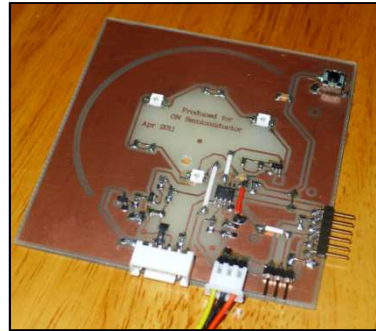
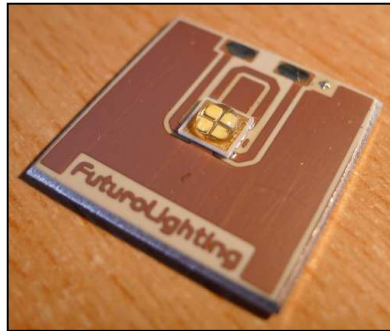
- Involved most recent LED diodes from Cree and OSRAM
Lumen flux above 700lm
- Orienting illumination programmed to be active whole time when ambient gets under defined value
(ON during whole night, OFF during a day). Power consumption 1.4W
- MCU controlled Luminaire with gamma correction for dimming visual comfort
- Used ON semi parts (LDO, CCR, Diodes)



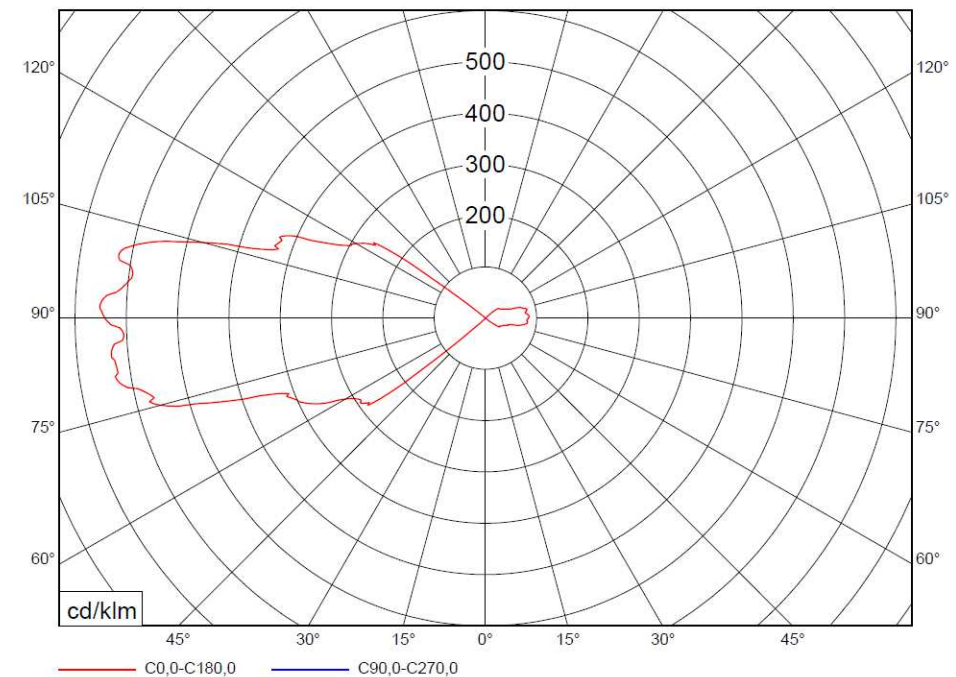
Note: Product based on Aurora Concept (www.futurolighting.eu)

Achieved Parameters:

Autonomous operation, no switch, sensoric
Supply voltage: 24V \pm 10%
Power consumption: 19W max
Standby consumption (detection mode): 0.08W
Orienting mode power consumption: 1.4W max
Ambient temperature < 26°C
Working Temperature < 70°C (housing)
Lumen output: >750lm
Implemented ICSP service connector for Flash update



intensity distribution / polar



Payback estimation

Luminaire details	Units	Bulb 100W	LED 20W
Light source		E27 Bulb	LED
power consumption	Watt	100	20
life of lamp	hour	1000	50000
luminous flux	lm	700	700
Light Output Ratio (efficiency of the optical system)	%	70	80
luminaire light output	lm	490	560
purchase price of luminaire	€	25	70

Electrical consumption	Units	Ziarovka 100W	LED 20W
price for electrical energy	€/kW/hour	0.15	0.15
Total power consumption (all installed Luminaries)	Watt	300.00	60.00
Electrical energy consumption per year	kWh	234.64	46.93
Electrical energy costs per year	€	35.20	7.04

Installation details	Units	Ziarovka 100W	LED 20W
Number of luminaires	pc	3	3
Average time when luminaire switch on	hour	3	3
Number of active days during a week (luminaire switch on)	day	5	5
Installation costs for Luminaries only	€	75	210

Summary	Units	
Input costs difference	€	135.00
Energy saving difference per year	€	-28.16
CO ₂ saving per year	kg	-120.14
PAYBACK (including maintenance costs)	Years	3.0
Energy saving efficiency	%	80.0%
Lumen per Watt	Lumen/W	35.0
Estimated LED20W lifetime	Years	>10

LED advantages comparing to CFLs (Compact Fluorescent lamps)

CFL Light Bulb



LED Light Bulb

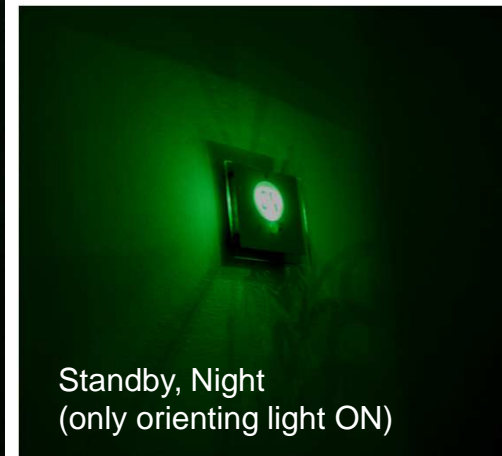


VS

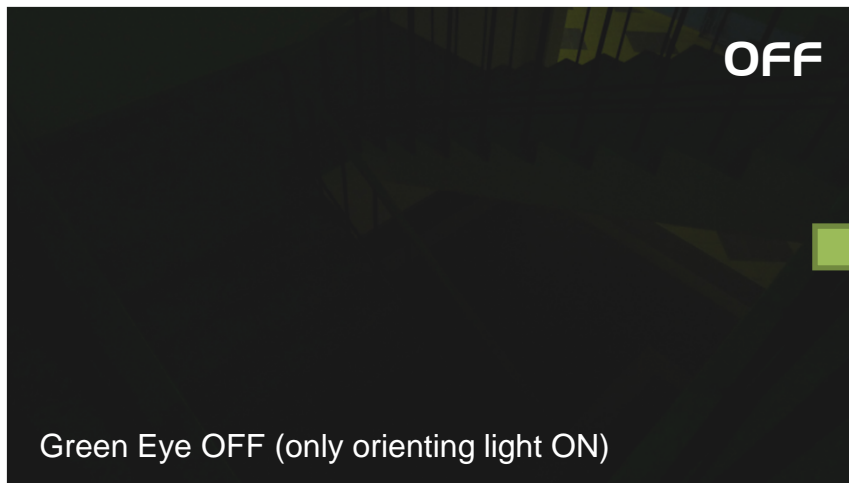
- LED life 10 times as long as a CFL counterpart
- LED - 100% light output right after switching ON (CFLs takes time to get full power out)
- CFLs not recommended for sensor switched light
- Unlimited switching (CFLs weakness)
- LED not recommended for sensor switched light because of marginally decreased life time
- LED No Mercury content, Environmental Friendly

Source: http://www.greenzer.com/face-off_5

Achieved results



Green Eye during the night (just single Luminaire, initial installation)



Staircase In the night (All luminaries activated)

