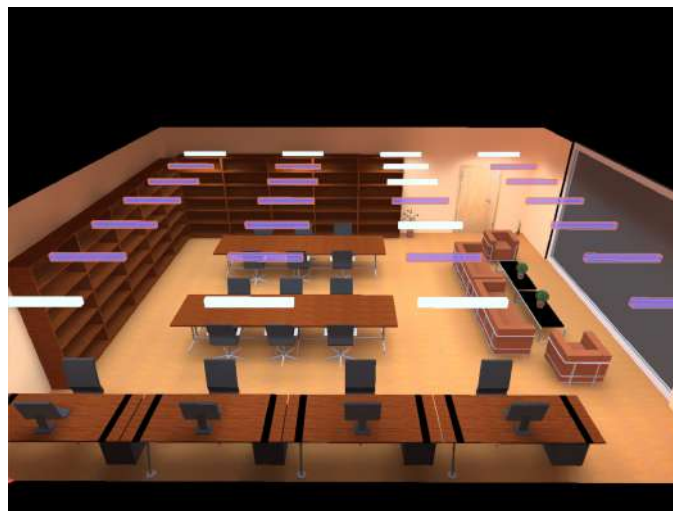
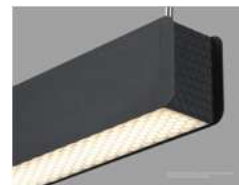


ARCHITECTURAL LINEAR LED LIGHT APPLICATION IN LIBRARY CASE STUDY

VISUAL RESULTS OF LIBRARY CASE STUDY

Architectural Linear LED light:

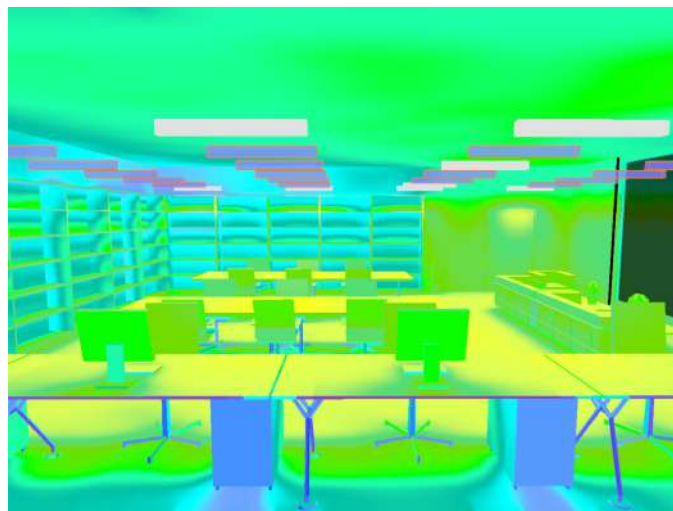
30W LED, 2250lm, 4000K, 1163x74x102mm



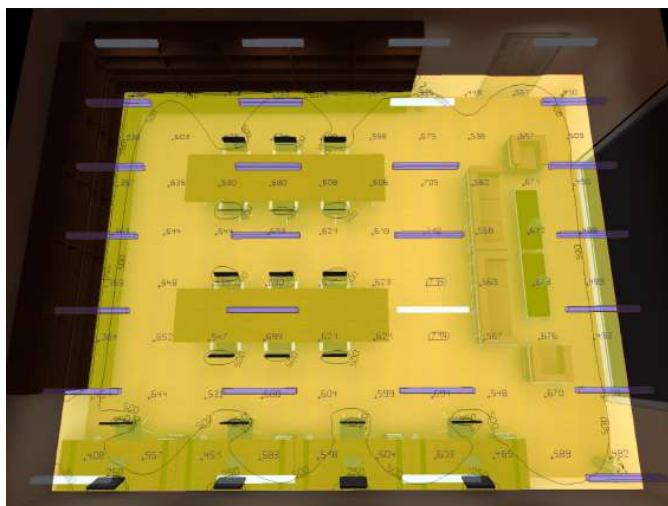
Library view with applying luminaires



Library view with light distribution curves



Library view with luminance color indications



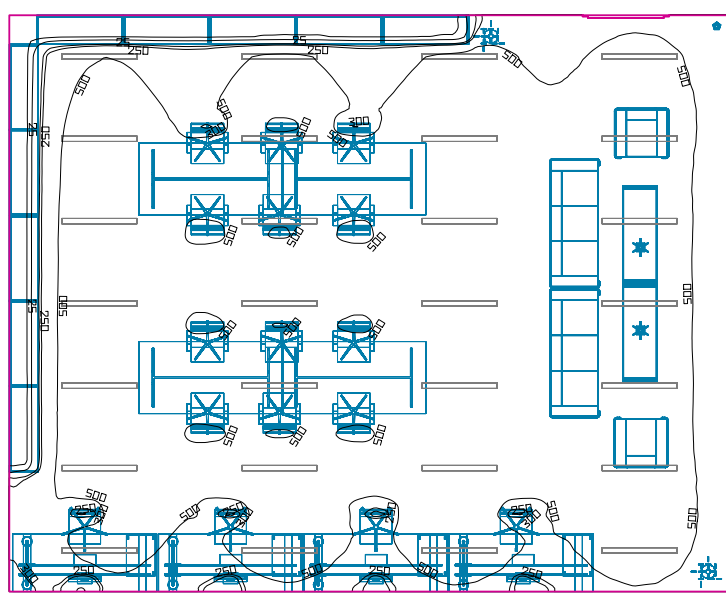
Mine view with luminance isolines

ARCHITECTURAL LINEAR LED LIGHT APPLICATION IN LIBRARY CASE STUDY

TECHNICAL ANALYSIS OF LIBRARY CASE STUDY

Architectural Linear LED light:

30W LED, 2250lm, 4000K, 1163x74x102mm



Height of room: 3.000 m, Reflection factors: Ceiling 70.0%, Walls 75.0%, Floor 25.6%, Light loss factor: 0.80

Workplane

Surface	Result
1 Workplane	Perpendicular illuminance [lx] Height: 0.800 m, Wall zone: 0.000 m
	Average (Target) Min Max Min/average Min/max
	533 (≥500) 1.86 735 0.00 0.00

No. 1 Quantity 28

30W Architectural Linear LED Light
 Light output ratio: 100%
 Lamp luminous flux: 2174 lm
 Luminaire luminous flux: 2174 lm
 Power: 29.2 W
 Luminous efficacy: 74.5 lm/W

Colorimetric data
 30W Architectural Linear LED Light:
 CCT 4000 K, CRI 80

Total lamp luminous flux: 60872 lm,

Total luminaire luminous flux: 60872 lm, Total Load: 817.6 W,

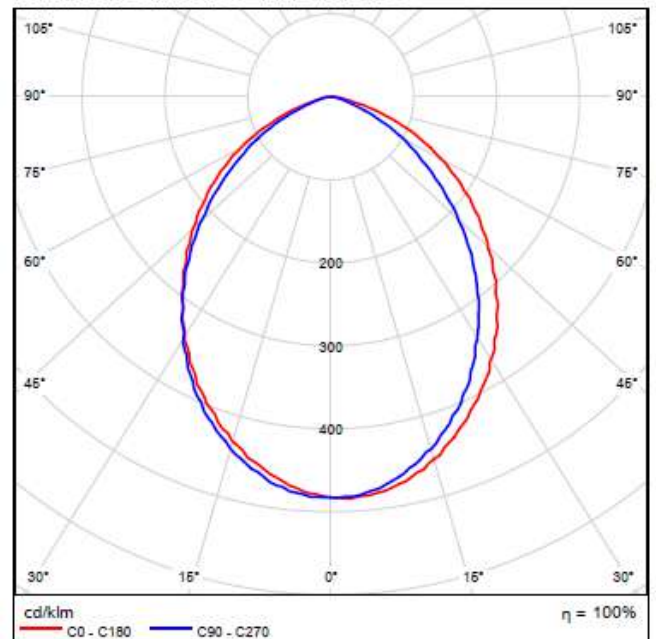
Luminous efficacy: 74.5 lm/W

Lighting power density: 10.22 W/m² = 1.92 W/m²/100 lx

(Ground area 80.00 m²)

Consumption: 2650 kWh/a of maximum 2850 kWh/a

Luminous emittance 1 / Polar LDC



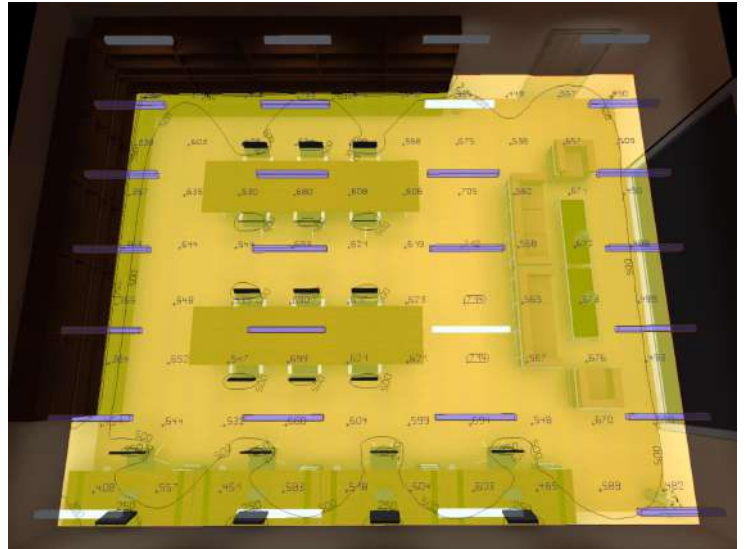
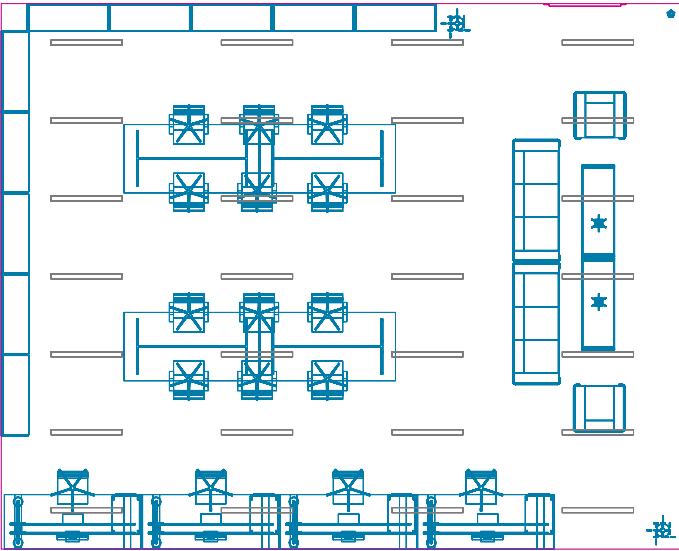
ARCHITECTURAL LINEAR LED LIGHT APPLICATION IN LIBRARY CASE STUDY

TECHNICAL ANALYSIS OF LIBRARY CASE STUDY

Architectural Linear LED light:

30W LED, 2250lm, 4000K, 1163x74x102mm

Workplane 1 / Perpendicular illuminance (adaptive)



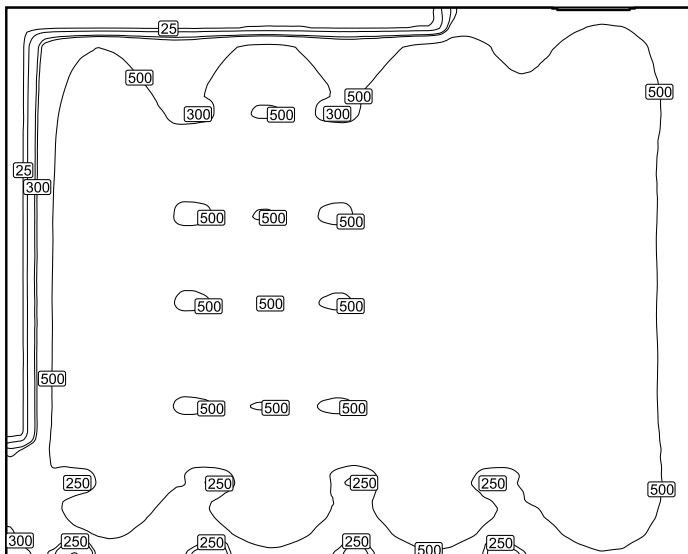
Workplane 1: Perpendicular illuminance (adaptive) (Surface)

Light scenes: Light scenes 1

Average: 533 lx (Target: ≥ 500 lx), Min: 1.86 lx, Max: 735 lx, Min/average: 0.00, Min/max: 0.00

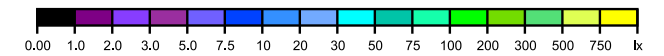
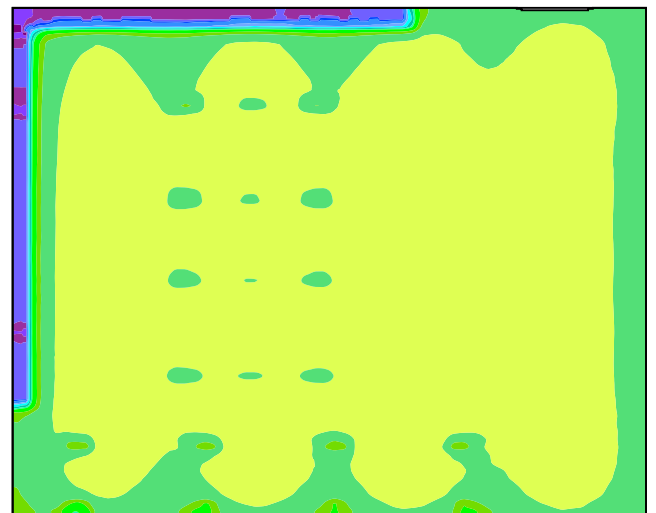
Height: 0.800 m, Wall zone: 0.000 m

Isolines [lx]



Scale: 1 : 75

False colors [lx]



Scale: 1 : 75

ARCHITECTURAL LINEAR LED LIGHT APPLICATION IN LIBRARY CASE STUDY

ENERGY CONSUMPTION AND COST ANALYSIS OF LIBRARY CASE STUDY

Architectural Linear LED light:

30W LED, 2250lm, 4000K, 1163x74x102mm

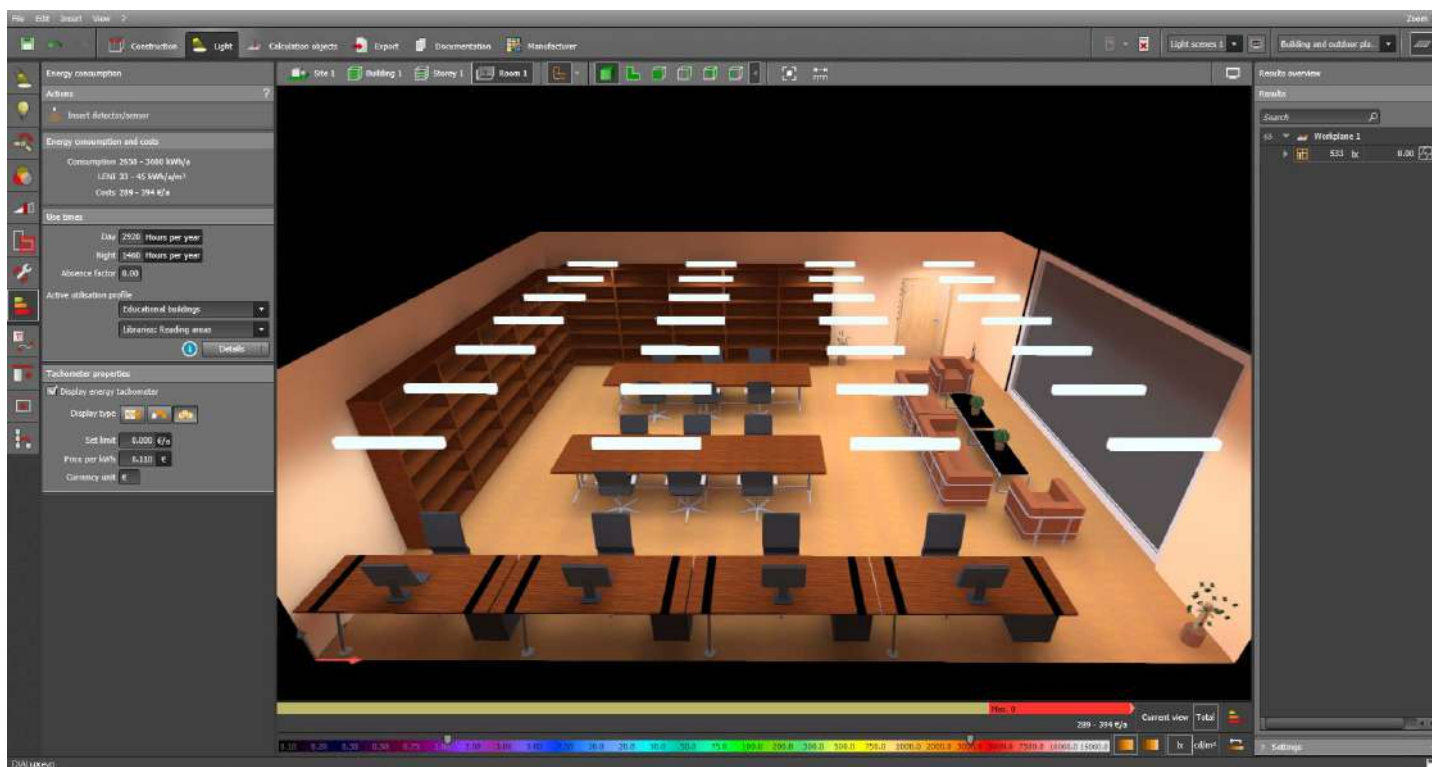


TABLE OF RESULTS FOR LIBRARY CASE STUDY

POWER	29.2 W
LAMP LUMINOUS FLUX	2174 lm
LUMINAIRE LUMINOUS FLUX	2174 lm
LUMINOUS EFFICACY	74.5 lm/W
LIGHT OUTPUT RATIO	100 %
TOTAL LAMP LUMINOUS FLUX	60872 lm
TOTAL LUMINAIRE LUMINOUS FLUX	60872 lm
TOTAL LOAD	817.6 W
ENERGY CONSUMPTION	2650-3600 kWh/a
COSTS	289-394 €/a
LUX MEAN VALUE (TARGET FOR LIBRARY=500lx)	533 lx

STUDY CONCLUSION:

This case provides an efficient solution, which leads to low energy consumption and thus low cost at an annual basis.

The Lux requirement for the reading area of a Library lighting application, is met by exceeding the limit of 500lx. In this case study, the light is evenly distributed on the working plane of the studying areas where shades and glare are avoided. In general, this requirement is set to ensure a better studying and reading environment by providing psychological comfort to the occupants.

The LED technology ensures lower consumption in principle, but the technical analysis provided is the clear proof that this case study is leading to a sustainable solution for the investment's finance as well as the environmental impact.

The costs are calculated by considering the operating time to be 2920 daily hours per annum and 1460 night hours per annum (8 daily hours per day and 4 night hours per day respectively). The cost was calculated with the Standard electricity rates of UK provided by SSE Southern Electric. That is currently set at 9.43p (GBP) per kWh, which is approximately 0.11€ per kWh.