

The image shows a large, modern building with a glass facade at night. The OSRAM logo is illuminated in orange on the glass. The building's interior lights are visible through the windows, and the sky is dark blue.

Growking Horticultural system estimation

01.03.2019 | SSL Application Service Europe & Emerging Markets

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Light is OSRAM



Growking Rail 40

Requirements and Boundary Conditions:

Photonic flux on surface: to be evaluated

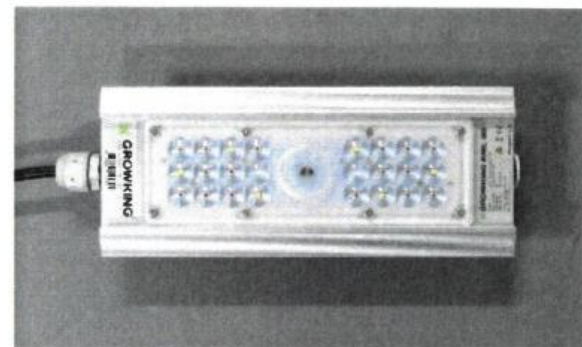
Distance to plant: 15cm, 30cm, 40cm, 50cm

Illuminated surface to be used for calculations: **50cm x 50cm**

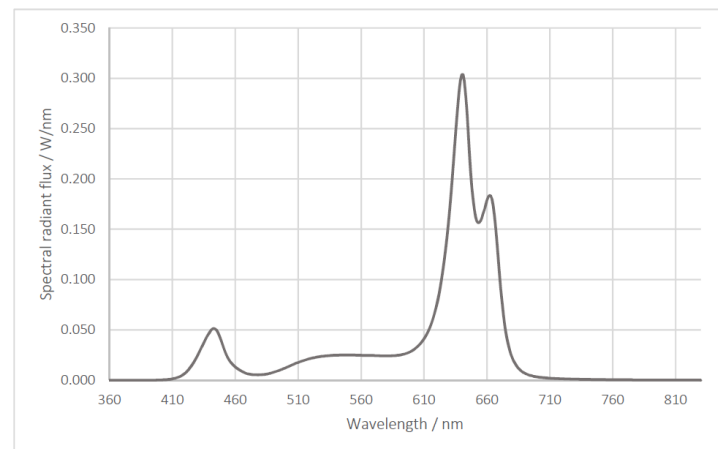
Total Photosynthetic Photon Flux (400nm – 700nm): 74.1 $\mu\text{mol/s}$

Only the light from the LED considered for simulation, no light from the sun!

Environment influence was not taken into account (maintenance factor = 1)



Dimensions [mm]:
210 x 90 x 43



System calculation Growking Rail 40

distance to plant 15 cm

Photosynthetic Photon Flux: **74.1** $\mu\text{mol/s}$

Result:

- Average **290** $\mu\text{mol/s/m}^2$
- Maximal **1274** $\mu\text{mol/s/m}^2$
- Minimal **3.54** $\mu\text{mol/s/m}^2$

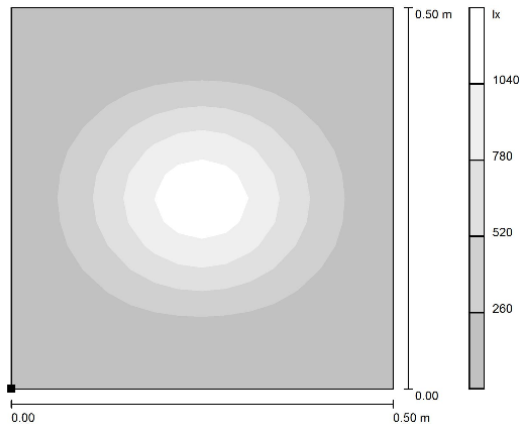
Raster: 16 x 16 Punkte

E_m [lx]
290

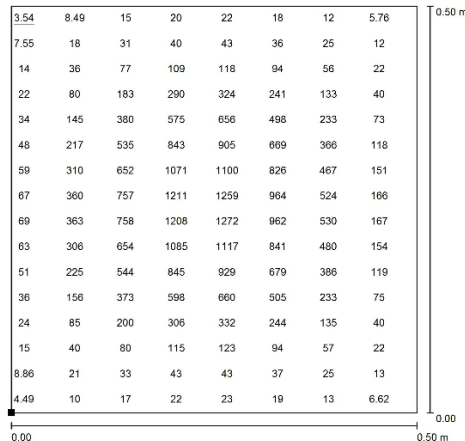
E_{\min} [lx]
3.54

E_{\max} [lx]
1274

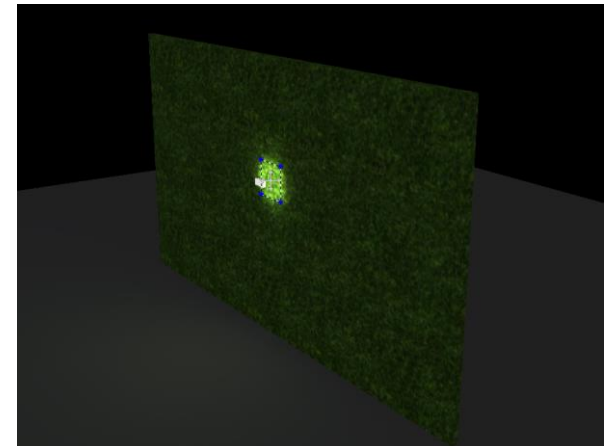
Grey rendering



Value mesh



3D rendering



System calculation Growking Rail 40

distance to plant 30 cm

Photosynthetic Photon Flux: **74.1** $\mu\text{mol/s}$

Result:

- Average **217** $\mu\text{mol/s/m}^2$
- Maximal **364** $\mu\text{mol/s/m}^2$
- Minimal **61** $\mu\text{mol/s/m}^2$

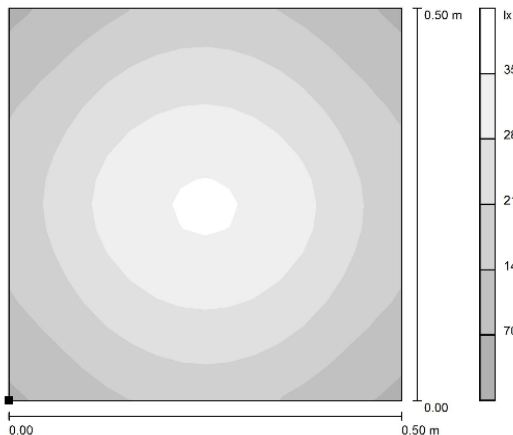
Raster: 16 x 16 Punkte

E_m [lx]
217

E_{\min} [lx]
61

E_{\max} [lx]
364

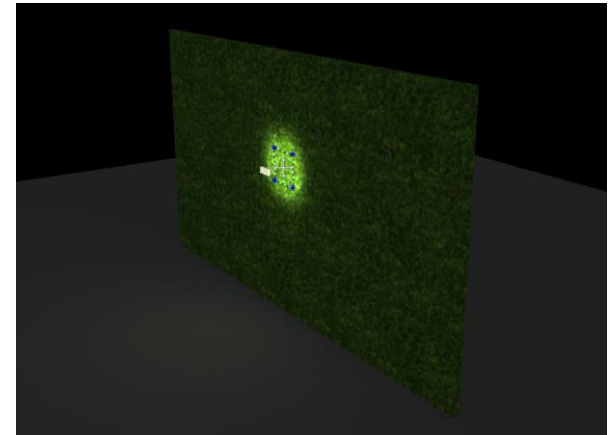
Grey rendering



Value mesh

81	81	100	117	134	151	163	168	167	160	148	134	117	99	80	62
85	109	130	154	178	195	207	213	212	205	191	173	151	128	105	81
109	133	157	185	209	226	235	241	241	234	222	203	179	153	130	103
129	153	182	212	237	255	263	269	270	262	251	231	205	175	149	124
145	170	207	238	263	281	292	299	299	290	276	257	232	199	165	141
158	188	229	261	285	305	319	327	326	316	301	280	255	220	181	152
168	202	248	279	304	326	342	349	349	340	323	300	275	241	195	162
174	211	257	290	315	338	355	<u>364</u>	<u>364</u>	355	338	315	288	253	204	168
173	211	258	290	315	338	355	<u>364</u>	<u>364</u>	355	337	315	288	253	204	169
166	201	246	279	304	327	345	353	354	345	327	304	279	245	198	165
156	188	227	261	287	308	324	332	333	324	308	285	261	226	184	155
144	172	205	238	265	284	298	305	306	298	285	264	238	205	168	144
129	155	183	212	239	258	269	276	275	269	259	238	212	180	152	129
107	135	160	185	211	229	241	247	246	240	230	210	184	156	133	108
86	109	133	156	177	194	208	215	215	209	196	178	153	129	110	81
66	84	103	122	138	152	163	169	169	162	149	134	117	100	80	61

3D rendering



System calculation Growking Rail 40

distance to plant 40 cm

Photosynthetic Photon Flux: **74.1** $\mu\text{mol/s}$

Result:

- Average **154** $\mu\text{mol/s/m}^2$
- Maximal **209** $\mu\text{mol/s/m}^2$
- Minimal **83** $\mu\text{mol/s/m}^2$

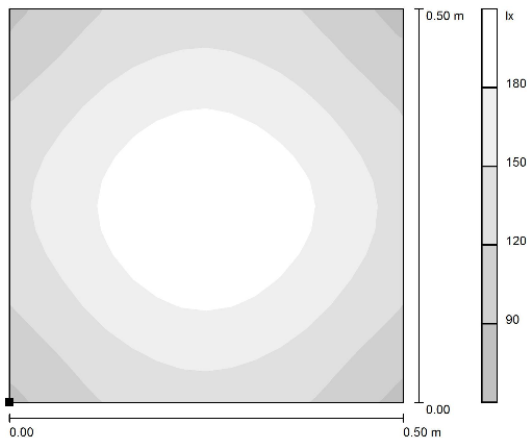
Raster: 16 x 16 Punkte

E_m [lx]
154

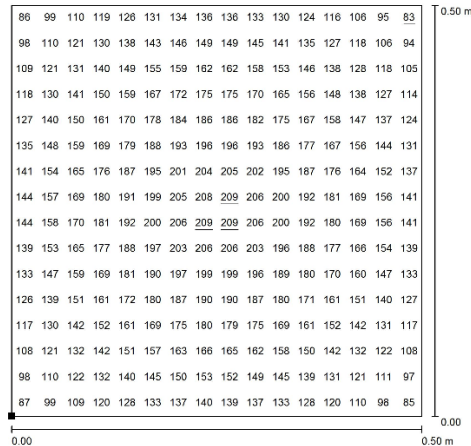
E_{\min} [lx]
83

E_{\max} [lx]
209

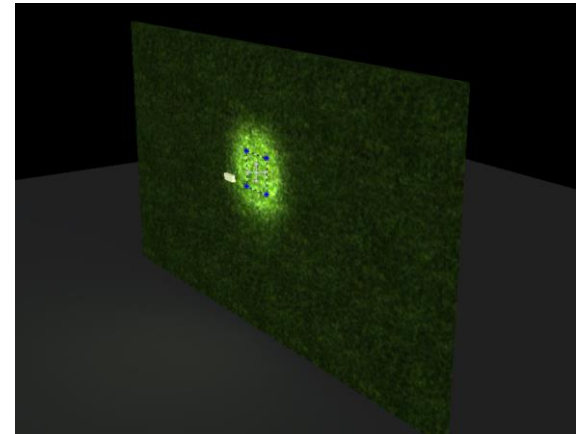
Grey rendering



Value mesh



3D rendering



System calculation Growking Rail 40

distance to plant 50 cm

Photosynthetic Photon Flux: **74.1** $\mu\text{mol/s}$

Result:

- Average **110** $\mu\text{mol/s/m}^2$
- Maximal **135** $\mu\text{mol/s/m}^2$
- Minimal **76** $\mu\text{mol/s/m}^2$

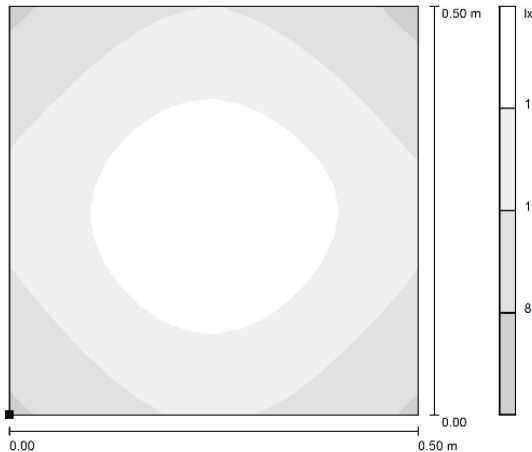
Raster: 16 x 16 Punkte

E_m [lx]
110

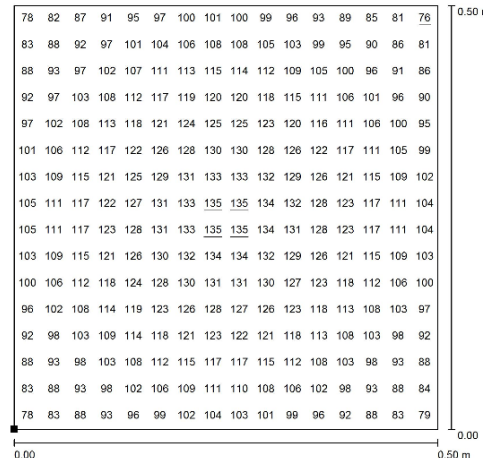
E_{\min} [lx]
76

E_{\max} [lx]
135

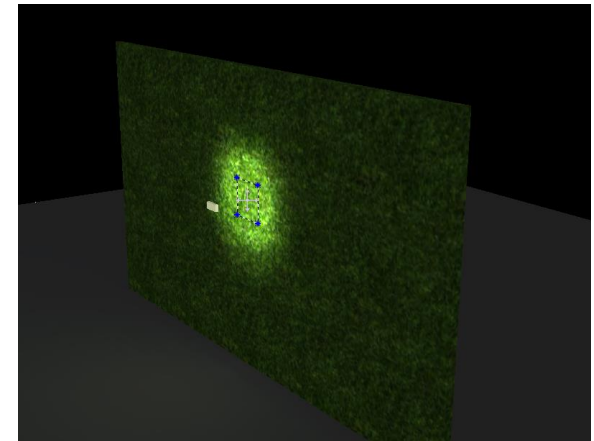
Grey rendering



Value mesh



3D rendering



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Thank you.