

NatureConnect

by ©signify



The positive impact of NatureConnect in
meeting rooms with no natural daylight

Edge West Amsterdam

Impact of NatureConnect in Edge West: Boosting occupancy rates in meeting rooms

Study performed by Samantha Peeters at Signify.

NatureConnect has been designed to mimic natural patterns of daylight in order to reconnect us to the outside world. The mimicking of the sky/daylight and receiving enough light especially becomes relevant when a room does not have daylight access, especially because it is known that receiving enough light during the day is important for our well-being [1-5].



Receiving enough light during the day is important for our well-being

Edge West Amsterdam Meeting Rooms

Edge West is designed to create a biophilic and sustainable office environment. Currently it is occupied by 7 tenants who all have their private areas. Moreover, there are also in total 22 meeting rooms that are shared between the tenants. Located on the ground floor, there are two identical large meeting rooms without daylight or a view outside. To potentially improve the conditions in the meeting room, NatureConnect was installed in one of the meeting rooms (Room 2) and compared to Room 1 which is compliant to regular office lighting standard of 500 lx on the horizontal plane.



Figure 1. Room 1 with original lighting



Figure 2. Room 2 with NatureConnect installed

For the comparison between the meeting rooms, the focus is on light at the eye (vertical exposure), since this is the most relevant measure when focusing on effects related to, for example, alertness and well-being.

Table 1. Light exposure at the eye on both meeting rooms 500 lx on the horizontal plane.

	Room 1	Room 2
Average light exposure at eye in lx	65 lx	536 lx
Average light exposure at eye in lx mEDI	40 lx m-EDI	505 lx m-EDI

When comparing the vertical light exposures between the two meeting rooms, it becomes clear there is quite a large difference. In Room 1 the average amount of light at the eye was 65 lx, while in the room with NatureConnect installed this was on average 536 lx. Important is also the differences between the meeting rooms in terms of melanopic lux (blue-enriched light), since this quantifies how light can potentially affect our biological clock and energy levels. In Room 1 the exposure at the eye is on average 40 lx mEDI, while in Room 2 with NatureConnect installed this became 505 lx mEDI on average, which is well above the tier 2 WELL standard of 250 lx mEDI for circadian lighting.

In order to measure the impact of NatureConnect on room occupancy, 16 weeks of meeting room data was analyzed (8 weeks before and 8 weeks after), which entails 333 meetings for both rooms combined. Table 1 gives an overview of this data.

Table 2. Average use per day expressed in hours in before and after situation.

Average use per day (hrs)	before	after
Room 1	4.67	4.46
Room 2	4.94	6.60

Visually inspecting Table 2 already gives indications that Room 2 was on average booked almost 2 hours more per day in the after situation (after installation of NatureConnect). Moreover, a Wilcoxon test confirmed that the difference between the usage of the rooms was indeed significant ($p < .01$), confirming that the room with NatureConnect was booked for more hours than the regular room. Furthermore, it was confirmed with the same test that before installation of NatureConnect there was no difference in number of booked hours between the rooms ($p < .01$). Comparing only the data of Room 2 in a before and after situation also confirms the room was used for more hours on average after installation of NatureConnect ($p < .01$). Additionally about 7 times more full day bookings were made for the room with NatureConnect.

Expectations based on earlier studies

Based on an earlier study performed by Signify using NatureConnect in a mock-up office setting, it was shown through post-study interviews that participants appreciated the biophilic aspects and viewed the energize setting as activating [6]. This was also backed up by statistical analyses which had shown that under NatureConnect they were better able to combat the natural decline in alertness, especially in the afternoon. Moreover certain participants (over the age of 41) felt more vital. If indeed this will also be the case for a meeting room, it will not only increase the usage of such a room, but employees will leave their meetings with an improved well-being.



Bibliography

1. T. Partonen and J. Lönnqvist, "Bright light improves vitality and alleviates distress in healthy people," *Journal of Affective Disorders*, vol. 57, no. 1-3, pp. 55-61, 2000.
2. K. C. H. J. Smolders, Y. A. W. de Kort, and P. J. M. Cluitmans, "A higher illuminance induces alertness even during office hours: Findings on subjective measures, task performance and heart rate measures," *Physiology & Behavior*, vol. 107, no. 1, pp. 7-16, 2012.
3. A. U. Viola, L. M. James, L. J. M. Schlangen, and D.-J. Dijk, "Blue-enriched white light in the workplace improves self-reported alertness, performance and sleep quality," *Scandinavian Journal of Work, Environment & Health*, vol. 34, no. 4, pp. 297-306, 2008.
4. Mills, P.R., Tomkins, S.C., and Schlangen, L.J.M. "The effect of high correlated colour temperature office lighting on employee wellbeing and work performance," *Journal of Circadian Rhythms*, vol. 5, p.2, 2007.
5. S. A. Rahman, E. E. Flynn-Evans, D. Aeschbach, G. C. Brainard, C. A. Czeisler, and S. W. Lockley, "Diurnal spectral sensitivity of the acute alerting effects of light," *Sleep*, vol. 37, no. 2, pp. 271-281, 2014.
6. S.T. Peeters, D. Aliakseyeu, "Bringing natural light into the office. The effect of NatureConnect versus standard office lighting on correlates of alertness and performance," Signify, unpublished, 2023.