

Signify
NatureConnect

NatureConnect supports staff to stay alert in control rooms

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Study performed at Stolt Lind, a chemical tanker with support from Signify Research, based in Eindhoven.

Introduction

Control rooms are critical environments with alertness as top priority. Nevertheless, they have the typical characteristic of being completely closed in spaces where highly focused tasks need to be done. The lack of daylight results in the need for high-quality lighting to support the performance of the staff.

This was also recognized by Stolt Tankers, a global leader in deep-sea and regional chemical tanker operations, transporting millions of tons of cargo annually across Europe and worldwide. With a strong commitment to innovation, they consistently strive to stay at the forefront of the maritime industry. In collaboration with Signify NatureConnect, Stolt Tankers enhanced the working environment in the ship's control rooms by introducing daylight simulation and a sky-light effect. This innovative solution improves the crew's perceived alertness, helping them stay focused and energized during their time onboard.



Customer challenge

Control rooms are found in multiple applications. Think about manufacturing and industrial plants, mining, nuclear plants, shipping, and logistics. These highly focused facilities face increasing pressure to improve staff performance and mental health. Therefore, innovative solutions like NatureConnect are helping to bridge the gap since high impact is achieved with low effort.

NatureConnect mimics daylight and replicates a view to the sky using light scenes that boost energy levels and the instant upgrade for a pleasant space. NatureConnect skylights are indistinguishable from a real window by providing a daylight effect and a view to the sky, increasing the feeling of spaciousness.

As a leader in sustainability within the maritime industry, Stolt Tankers sought an innovative solution to enhance their onboard workspaces, creating a more sustainable and supportive operating environment for their crew.

Field study done at Stolt Tanker Lind

A study was performed at Stolt Lind, a chemical tanker sailing around the world. Signify Research, based in Eindhoven, supported to ensure valuable and independent feedback was collected. Three NatureConnect skylight panels, evenly distributed, are placed in the ceiling of both the Engine Control Room and the Cargo Control room.

The engine control room and surrounding work area, has typically no windows, while crew members spend the majority of the working day here for monitoring, controlling and maintaining the ship systems. The control room acts as a hub, and from the survey it is found that 13 crew members spend at least 1 hour in the control room.

In the cargo control room, the skylight panels complement the natural daylight, which is often blinded for operational reasons. Due to the function and location on board the ship, these skylight panels reaches many crew members.

The control rooms are manned in shifts as needed. Crew members typically spend several months on board, after which a reliever takes over. In total, 21 participants attended this study, where participants worked in the same room under different lighting solutions.

In the Before situation, the installed light system offers 4000K with 300 lux, while in the After situation, the NatureConnect Skylights offers up to 700lux with a day rhythm. At the end of their shift, the participants filled in a questionnaire for alertness and fatigue. Moreover, a questionnaire on appreciation of the room/luminaire was conducted on the participants.



Figure 1. Room with standard lighting

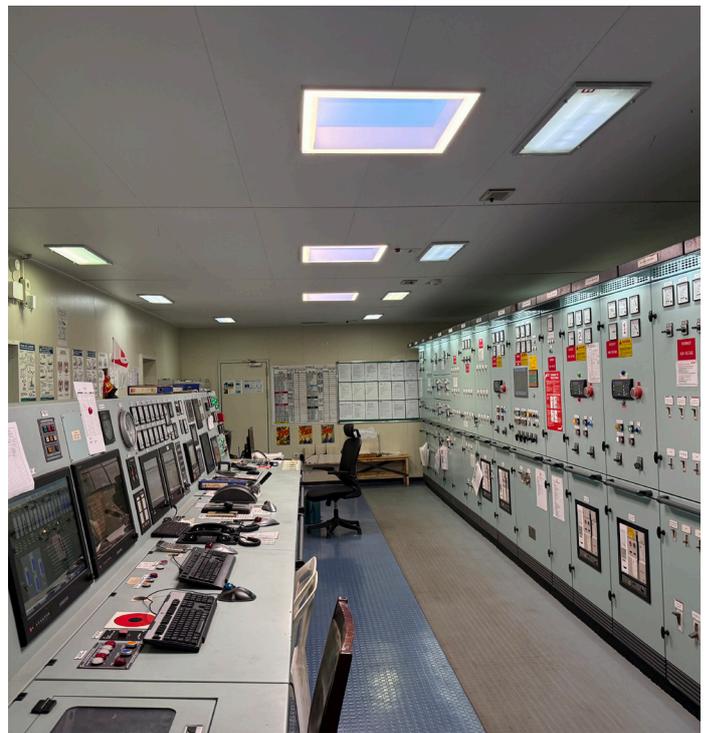
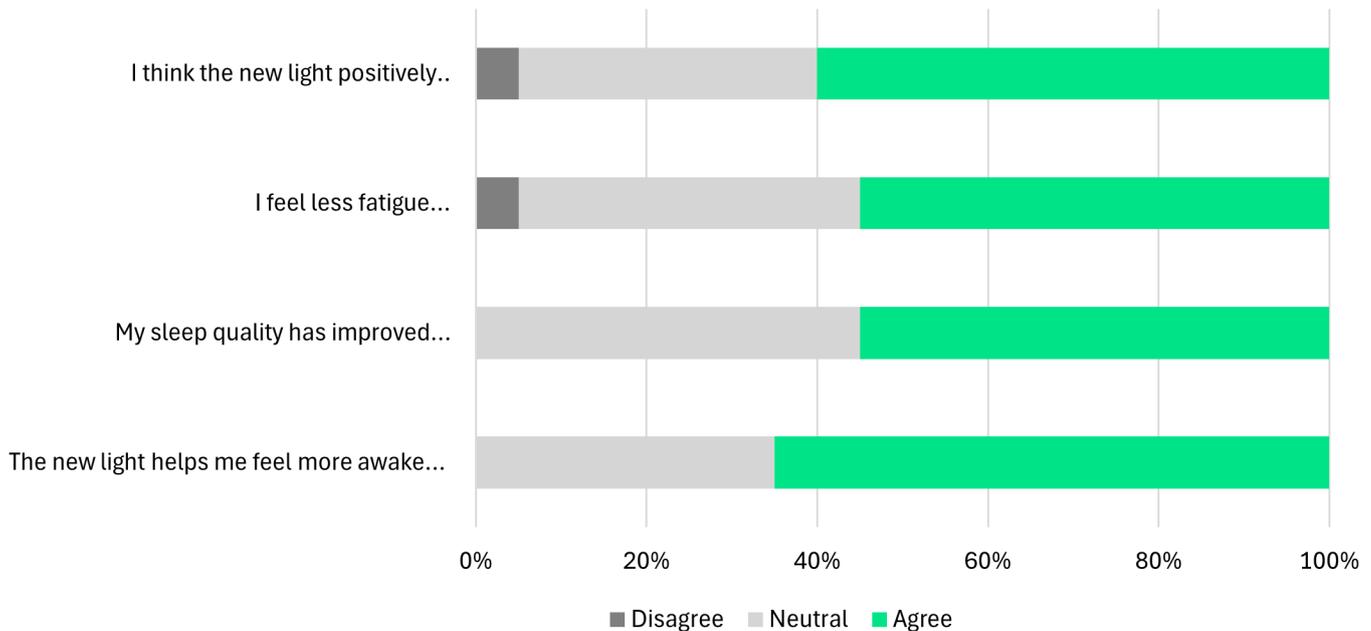


Figure 2. Room with NatureConnect

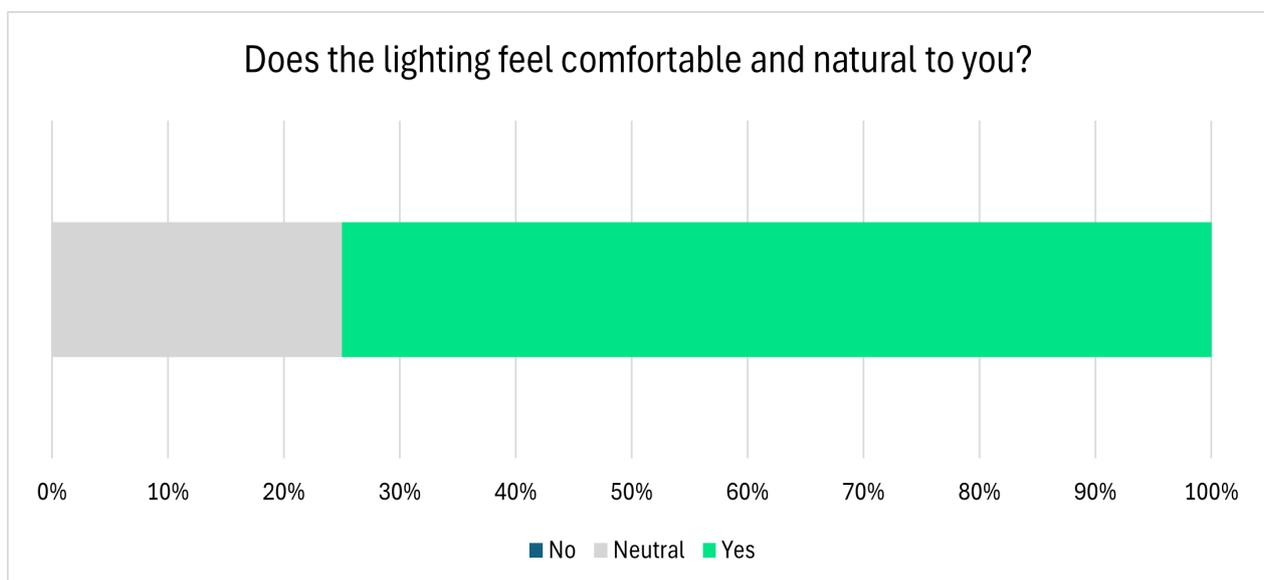
Results show improved sleep and more awake operators

According to the study results, the trend clearly indicates a strongly positive effect. More than 50% of the participants agree that they feel less fatigued at the end of their shift, experience improved sleep quality, and feel more awake during the shift.

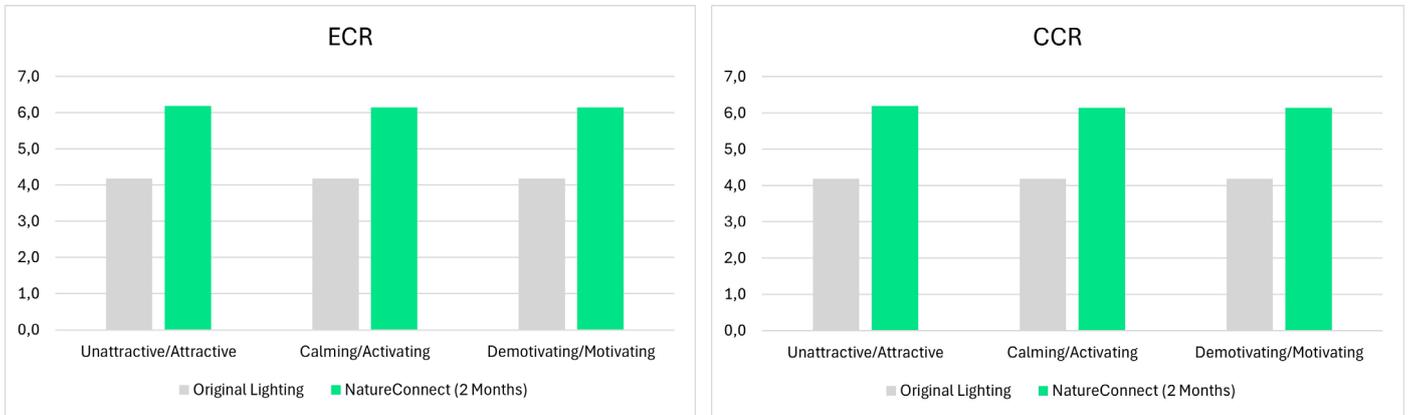
60% of the participants (strongly) agree that NatureConnect positively impacts on their overall well-being. Disagreement is rare (0-5%). The remaining 35-45% is neutral, which suggests respondents are not strongly endorsing the improvements or do not spend enough time in the control room.



All participants agree that NatureConnect lighting feels comfortable and neutral. A clear majority selected the strong endorsement - 75% of the participants; 25% were neutral.



Study results find significant differences between the 'Before' and NatureConnect for perceived attractiveness, activation, and motivation. In both control rooms attractiveness, activation, and motivation for NatureConnect were higher than for the Before setup (Mann-Whitney U tests, all three $p < .001$; large effects).



Supporting Study Alertness and Vitality

Another study for NatureConnect conducted by researchers at Signify, Samantha Peeters & Dzmitry Aliakseyeu on office workers also provided similar results on the positive impact of NatureConnect on the alertness and well-being of office workers. In this study, participants likewise were exposed to both NatureConnect lighting and standard office lighting. At the end of the study answering of the questionnaire is evaluated by the researchers.

According to the study results, participants evaluated the NatureConnect as more activating when compared to standard office lighting. 90% of the study participants were positive about NatureConnect where 48% perceived the skylight product as a window and 31% of the participants perceived it as the sun. Another finding was on the increasing alertness of the workers exposed to NatureConnect Skylight. The study output showed that 52% of the participants mentioned terms associated with alertness.



Quote

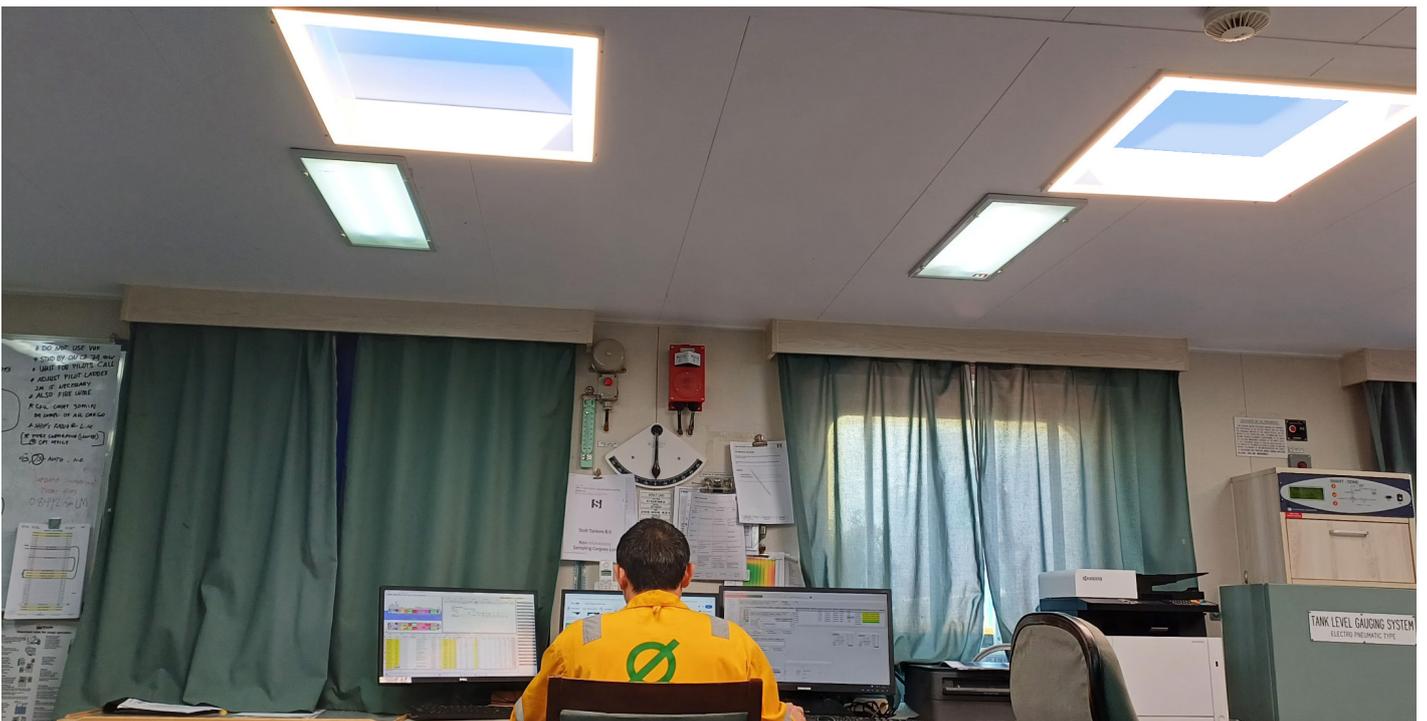
Robert Zwart, Project Engineer at Stolt Tankers – “As part of our sustainability strategy, our goal is supporting employee development and wellbeing. We want to achieve an energizing and attractive work environment, also in areas on-board the ship where natural daylight is limited. Therefore, we chose to test NatureConnect in two control rooms.



Conclusion

In the Engine Control Room aboard the Stolt chemical tanker, alertness and wellbeing of the operators is top priority. Since it is an environment with limited to none natural daylight, Signify NatureConnect introduced a solution that simulates natural daylight and incorporates a blue skylight, helping the crew stay alert and improving their overall work experience.

The study performed among 21 participants, confirms the positive impact of the NatureConnect lighting on alertness. More than 50% of the operators agree that they feel more awake during their shift and feel less fatigued at the end of the shift. According to the study results, the trend clearly indicates a strongly positive effect.



Bibliography

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NatureConnect by Signify studies

Increased alertness of employees:



Increasing occupancy of spaces:

