PHILIPS

Lighting

PerfectFit

Copenhagen, Denmark

Copenhagen Airport is energy renovating

with 3D-printed lighting solution

Background

Copenhagen Airport (hereinafter CPH) has the ambition of becoming emission-free by 2050. This involves air traffic as well as operations, and it was therefore also with sustainability in mind that they in the Spring of 2020 had to renovate a number of offices in the airport's terminal 3.

When it comes to energy renovation, price and savings are in focus. It was therefore important for CPH that the solution should provide significant energy savings while having a short payback time.

Solution

In collaboration with Signify CPH chose to replace 250 conventional downlights with the tailormade and 3D-printed GreenSpace Downlights with PerfectFit from Philips.

GreenSpace Downlight is a 3D-printed downlight with LED technology that supports CPH's sustainability targets in several ways. The downlight is printed from recycled polycarbonate, which reduces CO_2 emissions by 76%. At the same time, the lighting technology in the downlight consists of an LED board, which significantly reduces energy consumption compared to similar, conventional downlights. In an office like this, with need for light 24 hours a day, this is of great importance. PIR sensors were installed in the toilets for extra savings when no presence was detected.

PerfectFit has made it much easier to renovate. With PerfectFit, the downlight is printed based on specific measurements, so that there is no need for extra trims, to adapt the downlight to the cut-out.

Learn more ›

Especially when renovating recessed lighting solutions, it is a challenge to find luminaires that fits the cut out 1:1. With Philips' PerfectFit solution, however, it was possible for CPH to get a tailormade solution that would fit directly into the existing cut outs. Thus, it was not necessary to replace the ceiling, which kept the project budget down.

The mounting of the 250 downlights was made by the installer Kemp & Lauritzen. Kemp & Lauritzen's electricity chairman at the airport, Henrik Nielsen, points out how the installation was easy and straightforward, due to the matching cut outs. The project was finished over 14 days and with a positive collaboration with Signify's Key Account Manager Lars Goos.

The result

CPH wanted an energy-efficient and sustainable lighting solution in the energy renovation of their offices in Terminal 3. By replacing the conventional downlights with an energy consumption of 39.6W per piece, with the sustainable LED downlights with an energy consumption of 12.5W, they have reduced the total energy consumption of the office by 68%. This corresponds to 60,000 kWh per year.

At the same time, the 3D-printed solution meant that the budget for the project could be kept to a minimum, as the 3D-printed downlights could be mounted directly in the existing installation.

The team

Customer
Mathias Jensen, Junior Energy Engineer, Copenhagen Airport

Installer
Peter Wulff, Department Manager, Kemp & Lauritzen

Henrik Nielsen, Electricity Chairman, Kemp & Lauritzen

Supplier
Lars Goos, Project Key Account Manager, Signify

Benefits:

Sustainable solution

With 3D print technology, GreenSpace Downlight is designed for the circular economy. The downlight is printed with recycled polycarbonate that can be recycled over and over again to further CO_2 reductions.

Great energy savings

In an office with activity around the clock, the conversion to LED is noticeable. By switching from conventional downlights to LED, Copenhagen Airport saves 60,000 kWh annually.

Easy installation with PerfectFit

The 3D-printed downlights are easy to mount in the existing installation, as they with PerfectFit are specially designed for the specific cut-out.

3D-printed downlights' contribution **to your sustainability goals**

Reduce CO_2 emissions

Material supply and production

3D-printed downlights have 76% lower CO_2 emissions.

Transport

-28%

28% reduction in CO_2 emissions, due to the lower weight of the 3D-printed luminaire.

In use**

3D-printed luminaires are among the most energy-efficient (due to the LED).

Disposal

-27%

Lightweight 3D-printed downlights mean 27% lower CO_2 emissions when discarded.

Recycling

When polycarbonate is recycled, CO_2 emissions are further reduced.

-75%*

Reduced CO_2 emissions in material supply and production, transport and disposal together.

Designed for a circular economy.

100%

*Impact Assessment Carbon footprint IPCC 2013 GWP 100
** The usage phase, although having the highest impact over its lifetime, is excluded as it is the same for the two combined products.
Data based on comparison of traditionally produced downlight using die casting with 3D printed downlight in polycarbonate. Data for other products will vary.

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