

**PHILIPS**

Lighting

Tunnels

Ryfylke, Norway



# Lighting the **longest** **under-sea tunnel in** **the world**

Keeping Norway's road-users safe with  
high-quality lighting

## Background

Norway's largest tunnel building project is under way in Ryfylke, Rogaland. Once completed, the Solbakk tunnel alone will be over 14 kilometres long, making it the world's longest and deepest under-sea road tunnel.

The volume of traffic flowing from Jæren in the west, across central Stavanger and through to Ryfylke in the east has presented this part of Norway with traffic challenges for many years. But thanks to the new tunnel, road-users will experience a much smoother journey.

## The project

A lot of existing tunnels in Norway have been installed with outdated lighting. These lighting systems don't provide optimal safety conditions for the many road users, resulting in high energy consumption and limited opportunities for control.

But this is changing, and now specifications for new tunnel projects say that they should have high-quality, energy-efficient LED lighting that lasts longer and requires minimal maintenance. However, for this new project, delivering a suitable system was a challenge.

Designed to support 8,000 vehicles per day and constructed with two carriageways and four lanes, the pressure was on to find a suitable lighting solution for the new tunnel.



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**The tunnel is much better lit compared to older tunnels.**

A Constant Lumen Output (CLO) function means the light fittings work just as well when they're dirty or when nearing the end of their life.”

**Christoffer Wilhelm Pedersen**

Project Design Manager/Engineering Lead,  
Roxel Infra AS



## Lighting the way

We installed Philips TubePoint luminaires directly into the tunnel ceiling, with each one containing a ‘flying-lead’ cable to enable quick and easy replacements. In addition to this, each luminaire has its own junction box that features an inbuilt switch, allowing for it to be de-energized on site if necessary.

Our lighting system offers a greater output than is usually needed, meaning when the tunnel is in operation, light levels can be set to around 40%. They are then increased to compensate if the space becomes dusty or dirty, before being dimmed again once the tunnel has been cleaned. This was a crucial deliverable in this project, as dimmable lighting is required by the Norwegian Public Roads Administration.

## Getting in the zone

There are three zones within the tunnel: entrance, inner zone and exit. Everything in the tunnel is controlled automatically, but can also be monitored by road watchers at the local road traffic center. Lux meters have been installed to measure and monitor light levels at either end of the tunnel. Plus, there’s a radar system that indicates whether a driver has stopped, meaning the evacuation lights can then be activated.

At the island Hidle, approximately mid-way through the tunnel, a large vault has been built into the rocks where the road goes over a bridge. Enhanced by the fact there are no cables on the ceiling, we installed Color Kinetics Grazer Powercore luminaires into the bridge railings, illuminating the space with ethereal light.

## Safety at the forefront

As well as aesthetic benefits, our lighting system ensures safety at all times. In the event of a power cut or failure, some of the luminaires will remain switched on. This is because the system is installed in four wiring sections, each with its own emergency lighting setting. For example, if one section goes down, the tunnel only loses every fourth luminaire; offering sufficient lighting to guide road-users safely and smoothly.

On top of this, the high-quality optics provide a superior spread of light. This allows for greater distance between the fittings, leading to a reduction in investment costs.



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The lighting fully complies with the Norwegian Public Roads Administration’s manuals, which contain criteria for quality and implementation. **Moreover, Signify was very competitive on the price.**”

**Christoffer Wilhelm Pedersen,**  
Project Design Manager/Engineering  
Lead, Roxel Infra AS





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