

# Design of a Cable Sealing Solution for an Outdoor Camera

**Outdoor environment can be a tough environment for a camera. Rain, wind and dust contribute to hazardous surroundings from which the camera needs to be protected.**

Cameras are used for surveillance to increase the security for people and properties. These cameras are often installed outdoors to monitor streets and buildings.

In this project, we have designed and manufactured two gaskets that will seal between a cable, going into a camera, and the camera chassis. One gasket is placed in a hole in the chassis, and the other one in a U-shaped profile. These gaskets protect the camera from water and dust from entering. The two new gaskets are small and intuitive, meaning that they work for small cameras as well.

In order to find the best solution for the problem, a lot of ideas were sketched out. Material options were explored and silicone was deemed to be the most suitable. The four best ideas were then prototyped in silicone and tested. The tests investigated if the gasket was water and dust proof and if it was easy to install. Different parameters were also systematically investigated, such as material hardness and hole dimensions.

From the tests, two ideas came out as winning concepts!

We discovered that by using a slit in the gasket, the gasket could be made smaller and still withstand both water and dust. The slit also allowed for a cable with an attached connector to be easily installed.

Camera cables have different diameters and they are often bent. Therefore, the gaskets were tested with multiple cable sizes and with cables being bent. Both developed gaskets were waterproof with smaller and bigger cables. The gasket designed to be placed in a hole, performed excellent with a bent cable.

A camera that is water and dust resistant, increases its value and makes it hotter on the camera market. Being fast and easy to install, the gasket can save money, and it also decreases the risk of an incorrect installation.

Our gasket solution can be used in future cameras as well as other equipment for both indoor and outdoor usage. Our solution can also be used if a connector at the front of the cable needs to be attached to the cable when installed in the camera.