

3-D printed component makes snorkel mask useful for medics

March 30 2020



Credit: Delft University of Technology

IDE researchers, in collaboration with physicians and industry, designed a unique 3-D printed connector to connect an ordinary snorkel mask to a filter system. This makes the snorkel mask usable as a protective mask for medical personnel. The design has been made available worldwide on [Thingiverse](#).

The COVID Lifesaver Mask and the Air-Wave Protector

There is a worldwide shortage of personal protective materials for healthcare professionals due to the COVID-19 pandemic. Two new reusable face masks for medical staff who are caring for and treating COVID-19 patients have been developed in the Netherlands by teams of anesthesiologists, universities and a consortium of companies, all supporting on a not-for-profit basis.

These designs may help solve the global shortage of face masks and improve safety for healthcare professionals, especially during intubation and intensive care procedures where the risk of infection is highest. Both masks use a unique 3-D printed connector to link a popular snorkel mask to a filter system. The COVID Lifesaver Mask uses a high-performance filter used in anesthetic equipment to create a low-cost, easy to use system for short duration use. The Air-Wave Protector solution uses an industrial fan & filter unit to create a personal protection unit for use of longer duration.

COVID Lifesaver Mask

Combining a popular full-face snorkel mask with a high-performance filter used in anesthetic equipment and ventilators made it possible to develop a reusable face mask for healthcare workers that is safer than the commonly used FFP2 mask. The anesthetic filter used has already

been validated to have a capacity to block 99.999% of viruses and bacteria. This prototype has undergone clinical testing to rule out carbon dioxide intoxication. Further testing is ongoing.

Air-Wave Protector

The Air-Wave Protector is a combination of the same snorkel mask connected with a custom 3-D printed connector to a medical-grade filter and an air pump used in the welding industry for personal protection. The air pump creates a positive pressure in the mask, potentially reducing air leakage and promoting the ease of breathing. Preliminary testing indicates that the solution provides better protection than the commonly used FFP2 [masks](#).

Safety and comfort

A team of healthcare professionals tested the snorkel mask used in both solutions and found it to work well. Glasses can be worn and the mask allows for communication with patients and co-workers. The reusable mask can be decontaminated using readily available cleaning methods.

Availability

The designs of the solutions are open source, which means they can be freely copied and used to support [healthcare professionals](#) worldwide. The design of the 3-D-printed connectors created by the TU Delft will be available through thingiverse.com, a global website to share 3-D print designs. While some aspects of the solutions are still in development and testing continues, the groups have decided to share their designs and progress widely. Royal Dutch Shell has already started printing COVID Lifesaver connectors in its Technology Center in Amsterdam and offered its full cooperation to contribute to the solutions that are being

developed.

More information: www.covidlifesavermask.com/

www.air-wave.org/

Provided by Delft University of Technology

Citation: 3-D printed component makes snorkel mask useful for medics (2020, March 30)

retrieved 27 April 2024 from

<https://medicalxpress.com/news/2020-03-d-component-snorkel-mask-medics.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.