

PRESS RELEASE

OxyGEN a COVID-19 emergency respirator, undergoes final pre-certification testing before mass production

OxyGEN is a device that automates the process of manual ventilation to provide respiratory support to patients in emergency situations where there are not enough ventilators available.

OxyGEN passed most of the clinical tests carried out with experts at two leading Hospitals in Barcelona: Hospital Germans Trias i Pujol and Hospital Clínic. Necessary certification is pending.

OxyGEN was developed by a group of engineering and other professionals, led by the Barcelona based company [Protofy.xyz](https://protofy.xyz) which specializes in providing technological innovations and prototype development services.

Barcelona, March 31, 2020.- [Protofy.xyz](https://protofy.xyz), a company that assists organizations and research departments in the development of fast technological innovations and hardware prototypes, announces that the open hardware device [OxyGEN](#), which automates an AMBU type resuscitation bag, has passed most of the clinical testing and is waiting to obtain the necessary sanitary approvals to start mass production. The goal is to address the current lack of emergency ventilators in hospitals in order to treat people affected by COVID-19 by offering an affordable, safe, and fast alternative.

OxyGEN is a collaborative social innovation project that began in the midst of the global health crisis caused by the COVID-19 outbreak. One of the main challenges of the pandemic is ensuring correct treatment for all of the affected population; this is due to the lack of automatic ventilators. In response to this critical deficiency suffered by health systems around the world, the project focused on designing an open hardware device. Through their website, and free of charge, OxyGEN has made available the technical drawings of the device to facilitate its production anywhere in the world.

OxyGEN is an emergency device that allows AMBU type manual bag devices to be automated, mechanically and autonomously, in order to use them as a breathing support. Likewise, it allows respiratory monitoring, the current volume and the inspiration/expiration ratio constantly and objectively, thus providing the patient with support that they would not otherwise have. AMBU is a widely used medical device that is often used in ambulances.

The device has technical characteristics such as the possibility of easily changing the cams to configure volume and inspiration/expiration ratios so that they can be adapted to the different breathing of varying types of patients. In addition, the device integrates a *LED dimmer* that will allow the adjustment of the motor speed, thus not depending upon the parameters of each specific motor, and accommodating the needs of each specific patient.

The prototype will complete its validation process by professionals at the leading Barcelona Hospitals, Germans Trias i Pujol and Hospital Clínic this week, alongside the collaboration of specialists from other centers. At this point, the prototype will have passed all the necessary tests required by authorities. Said tests have been processed and carried out at the Center for Comparative Medicine and Bioimaging (CMCiB), pertaining to Germans Trias i Pujol and at the Hospital Clinic in Barcelona. Furthermore, the application for the certification by IDNEO and the AEMPS, the Spanish Agency for Medicines and Health

Products, has been submitted. Seat-Volkswagen and RecamLaser, a local Catalan company, are ready to start mass production as soon as possible.

Low tech technology for emergency situations and global lack of supplies

What differentiates OxyGEN from other initiatives is that it follows a *low-cost* and *low-tech* approach: simplicity of design, readily available and low-cost and simple technology (no electronics). This strategy aims at increasing reliability, facilitating maintenance, and allowing mass production (or any production), even in broken supply chain environments.

There are currently two versions of OxyGEN, one version for industrial scale production in stainless steel, OxyGEN-IP and another version that can be made by Makers in local FabLabs or small workshops, OxyGEN-Maker. The latter is designed for situations that do not have access to industrial production means, and is made with an acrylic structure and standard skateboard bearings. The two versions share the same mechanical operating principles, the same wiper motor, the same power supply found in a common PC, the same LED dimmer to regulate motor speed, the same AMBU and the same set of tubes between the AMBU and the mask.

The other differentiating aspect of this project is that the plans and assembly instructions are [openly available and free of charge worldwide](#). OxyGEN's self-defined mission is "to offer a chance of survival to those who are denied access to an artificial ventilator due to the shortage of supply in the current COVID-19 global health crisis". In order to do so, OxyGEN is giving assistance to inquiries and requests for projects from all over the world that are using the open hardware blueprints.

OxyGEN is the result of a networking process promoted by the company Protofy.xyz together with a community of professional volunteers who coordinate with each other through the internet. The team has received the support of a wide group of professionals and companies, as well public administrations. We already have an open hardware community of more than 5,500 members from 54 countries, which is growing every day.

"There were people working on very complex solutions, which require too much technology and engineering knowledge to carry them out. From the beginning, our idea has always been to think of a device that could easily be replicated anywhere in the world", explains Ignasi Plaza, co-founder of the company Protofy, together with Lluís Rovira and Joan Guasch. "We have developed a prototype so the AMBU ventilator can operate autonomously. This way, the healthcare professional that operates the AMBU can be free to attend several patients at the same time", explains Lluís Rovira. Adding that, "We wish we never would have had to use it. We wanted to help after seeing the needs that this pandemic generated. Our device is for the exclusive use of healthcare personnel. Thanks to networking and the collaboration of medical staff from renowned hospitals, manufacturers and health authorities, we have achieved our goal, and will now continue sharing our knowledge with projects in other countries."

OxyGEN is a project created by professionals from all over the world who are keen on solving and minimizing the impact of coronavirus in our society. It is only thanks to this collaborative approach, which has enabled the connection of people, hospitals and companies, that the project has not stopped moving forward frantically during the past couple of weeks, and, is about to complete the complex validation and approval phases required for medical devices in record time. Everyone's effort will have been worth it. Thank you!

For more up-to-date information, follow us on social media:



Images are available clicking on this [link](#).

ABOUT OxyGEN

OxyGEN is an open hardware project to build an emergency mechanism that automates an AMBU type manual ventilator in situations of extreme shortage such as the one caused by coronavirus (COVID-19) in some parts of the world. (<https://www.oxygen.protofy.xyz>)

ABOUT PROTOFY.XYZ

Protofy.xyz is a Barcelona-based company, helping companies and research departments develop fast and high quality technological solutions. We excel at integrating both hardware (mechanical, electronics, electric, etc.) and software together. We have a multidisciplinary team, used to working collaboratively with customers. We do idea generation, rapid prototyping, testing and iteration, minimum viable product and consulting.

<https://protofy.xyz/>

Contact information for the media:

Celia Díaz-Pardo
LF Channel – Barcelona
616 40 9876
celia@lfchannel.com

Estela Cayón
LF Channel - Madrid
627 75 24 38
ecayon@lfchannel.com