

## ROBUST ARTIFICIAL RESPIRATOR WITH RAPID MANUFACTURING

### Description:

The CoVid-19 disease stands out due to severe pulmonary involvement in a percentage of 20%, in patients with a confirmed diagnosis of the virus. Within this group of patients, between 5% -15% require admission to the different Intensive Care Units. In 80% of those admitted to them, invasive mechanical ventilation is the only treatment support measure for the developed pathology, known as Acute Respiratory Distress Syndrome (ARDS). The massive penetration of CoVid-19 in the population has caused the demand for respirators to perform mechanical ventilation to skyrocket worldwide. Growth has been so rapid and sudden that providers are unable to meet demand, and as a consequence there is a shortage of ventilators for treating patients in countries suffering from this pandemic. In many countries, the absence of respirators to treat patients affected by ARDS is causing an increase in mortality, as well as in the frequency of the appearance of serious secondary injuries. The present invention tries to solve the above problems by designing a respirator through an artificial respirator specially designed to allow rapid manufacturing and with readily available components that, at the same time, maintains a robustness of operation compatible with the treatment of patients with severe respiratory failure. This new ventilator is indicated to provide invasive mechanical ventilation to patients requiring full ventilation support. Its programming allows to achieve positive pressure values ??at the end of expiration (PEEP) between 10 and 20 cmH<sub>2</sub>O, VT > 100 ml / kg and plateau pressures lower than 40 cmH<sub>2</sub>O, as well as values ??of the inspiration / expiration (I / E) ratio 1 : 1, 1 : 2, 1 : 3, 2 : 1, 2 : 2 and 2 : 3, and respiratory rate parameters from 10 to 40 breaths per minute.

### Keywords:

[Respirator](#), [Mechanic Ventilation](#), [Respiratory Distress](#), [Acute Respiratory Distress Syndrome \(Ards\)](#), [Covid-19](#)

### Sectors:

[Health](#), [Engineering](#)

### Areas:

[Hardware / Devices / Components](#), [Health Sciences](#), [Equipment](#), [Instrumentation](#), [Infrastructure improvements](#)



### Advantages:

Currently known commercial respirators are complex devices whose manufacture requires qualified personnel and highly specialized machinery. This respirator can be manufactured using conventional parts available on the market easily even in the emergency situation created by CoVid-19. In addition, it can be assembled in a very short time by personnel with an average qualification (approximately two hours), which allows its mass manufacture in a relatively simple way. This respirator, therefore, constitutes a reasonable alternative to the necessary therapy for this group of patients if a conventional commercial respirator is not available. Currently there is a prototype that has passed technical certifications and that is tested in artificial lungs, animals and real human patients.

### Uses and Applications:

The present invention relates to the field of Engineering applied to Health Sciences. The invention generally belongs to the field of applying invasive respiratory therapy to a patient. Specifically, this respirator design constitutes a reasonable alternative to the necessary therapy for the group of patients with Acute Respiratory Distress Syndrome (ARDS).

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**Applicants:** Universidad De Málaga, Junta De Andalucía. Consejería De Salud. Servicio Andaluz De Salud.

**Inventors:** Ignacio Díaz De Tuesta Revilla, Víctor Fernando Muñoz Martínez, Carlos Jesús Pérez Del Pulgar Mancebo, Antonio Ángel Santiago Morales

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**Protection Level:** Worldwide (PCT countries)

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