

Anaesthesia machine simulator

Anaesthesia simulator with a circular circuit that simulates all the parts of an anaesthesia machine. This simulator can reproduce a variety of clinical situations that can occur during the patient ventilation process so anaesthesiologists are able to handle them in the most appropriate way.

Description and essential characteristics

Anaesthesia simulator with a circular circuit that reproduces the entirety of the components of a standard anaesthesia machine. This device helps the anaesthesiologist have a deeper understanding of the elements, performance and variables governing the use of an anaesthesia machine, which allows for continuous monitoring of problems that may occur during the ventilation of patients under anaesthesia, to learn how to resolve them.

The anaesthesia simulator is comprised of a variable-volume, sealed and transparent container to which the following items are connected:

- A gas inlet system that introduces gas (preferably O₂) into the sealed container.
- A mechanical flow generating system capable of exerting pressure inside the sealed container, which directs the gas introduced by the gas inlet system towards the gas outlet and return system.
- A gas outlet and return system in which gases penetrate, pushed by the mechanical flow generating system, which will be returned to the sealed container when the pressure exerted by the system ceases.

The gas outlet and return system is comprised of the following:

- An inspiratory branch with a unidirectional valve that allows the entry of gas from the sealed container, but prevents its return by the same path.
- An expiratory branch connected to the inspiratory one that contains in its interior a unidirectional valve that prevents the entry of gas from the sealed container, and allows the exit of gas from the inspiratory branch to the sealed container, towards the outside. A CO₂ filter is connected at the end of the expiratory branch.

The connection between the inspiratory and expiratory branches is through a conduit with a valve that represents the patient or his/her airways, and allows partial or total exit of the gas entering through the inspiratory branch, thus simulating gas leak situations of varying magnitude as well as gas capture processes.

Competitive advantages

The simulator promotes better knowledge and understanding of the elements, performance and variables that govern a common anaesthesia workstation. This improved knowledge will enable not only a more suitable handling of anaesthesia workstations, leading to cost

savings, but will also aid in the avoidance of adverse clinical situations during anaesthesia processes that generate avoidable damage to the patient.

Type of collaboration sought

Cooperation is sought with any Party interested in partnering, licensing or investing in the technology, whether it be an investor to fund the project, a partner interested in getting involved in any of the various phases until its placement on the market, a patent licensee, etc. Organisations potentially interested in this technology are those devoted to the manufacture, commercialisation and/or distribution of healthcare products; as well as hospitals, healthcare centres, universities, research centres and all types of institutions engaged in the training of healthcare professionals.

Current stage of development

R&D Phase

Current state of intellectual property

Spanish patent P200702128, granted in May 2011.

International patent application PCT/ES2008/070109.

US patent application number 12/228,712, applied for in August 2008.



For further information, please contact

Innovation Unit

Foundation for Biomedical Research of La Paz University Hospital (FIBHULP)-IdiPAZ

Telephone number: +34 91 207 12 34

e-mail: innovacion@idipaz.es

Web: www.idipaz.es

Technology Offer from the Foundation for Biomedical Research of La Paz University Hospital