

Designing and Constructing an Automatic, Electrical Independent, Pneumatic-Based, Cardiopulmonary Resuscitation Machine to Eliminate Human Error in the Medical Field

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Human error is inevitable and has consequences. In the medical field, medical malpractice accounts for almost 251,000 deaths per year. The purpose is to solve the ongoing problem by building a machine that can perform CPR accurately and efficiently that does not need electricity to operate. The project consists of two main parts: the machine, and an advanced backpack that quickly connects and powers the machine. The MedicalTech Airbag consists of a belt that connects magnetically to the pressurized air tank backpack which can easily be switched out to promote longevity of operation. The device is a metal-based body that is welded, bolted, and supported through various mechanical techniques which make the machine portable and durable. After constructing the machine, there are many features that this device has. The operation is flexible with different patients and has a magnetic attachment switch system that can change out the attachments that go on the chest during CPR. The device has four extendable legs controlled by a touchpad for varying chest heights and is also equipped with various sensors that monitor and relay leveling information to the operator. Regardless, power can be turned off and the machine will still be able to completely perform CPR. The machine is also equipped with an intelligent pneumatic valve switching system where the machine can perform compressions without attention. The MedicalTech Mark1 CPR machine is the next step in ensuring the elimination of human error and the advancements technology and the medical field can bring to society.