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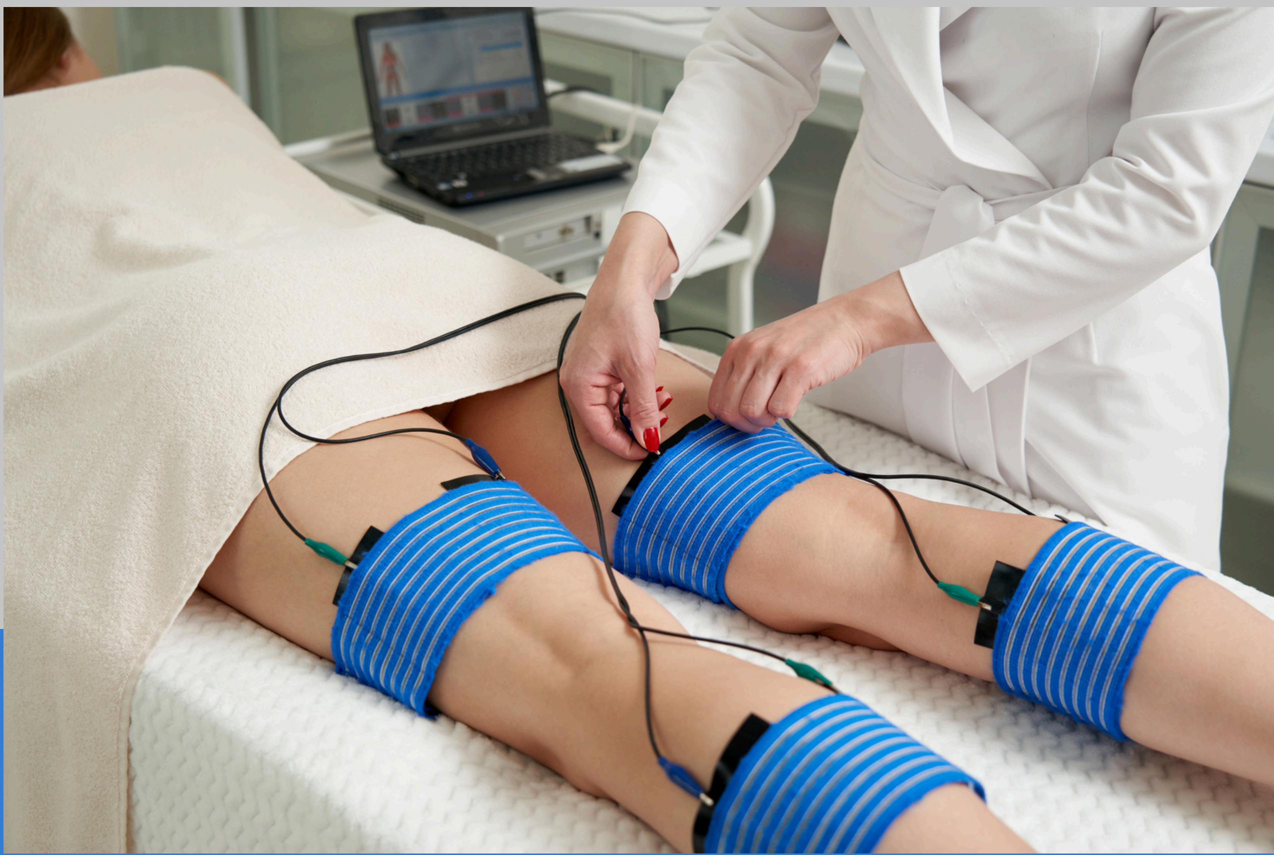
Design and Implementation of Electric Shock Device for the Muscles of the Body



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Thank you for your great compassion, for your great light, for your project that you can appreciate. express our thanks and gratitude to the research group for their contentions work, study and sedulity for this project. To the one who taught me how to stand firm on the ground, My respect father. To the source of hardship, selflessness and generosity my estimated mother.to my soul, the joy of my eyes and the pulse of my heart my sisters and brothers. To all those from whom I revived advice and support. You can use everything that is needed for your family, for your family life, health, life and life. And you can find the first option and do it in order to do this project.

Abstract

Nobody is surprised by the fact that, according to official figures, the number of medical devices needed in Iraqi hospitals is rising yearly in tandem with the country's population growth at a pace that is appropriate for one million or more people. Naturally, this will result in a rise in the need for hospital and health center construction. Improving civil infrastructure in the field of health care undoubtedly necessitate the expensive importation of several medical devices made by foreign corporations. What is the best course of action to maintain the bare minimum of healthcare for Iraqi citizens? The solution is in promoting practical scientific investigation within the medical domain. This is accomplished by directing our researchers' attention on innovation and the production of medical equipment using affordable raw materials that are readily available in the Iraqi market, particularly in engineering colleges and general universities in Iraq. Even though this was the first time the device was studied, I advise you to take care of electricity and electrical energy, but you have to take care of your business until it is safe in your business. longer time dos months. Also known as ventricular flicker counteracts is a treatment for potential damage to the heart rhythm, and to synchronize the ventricular flicker (VF) and the ventricular flicker (VT) to the perfusion, which allows for jets of blood in the blood, leaks or blood leaks. A defibrillator shocks the heart with an electric current dosage, sometimes known as a countershock. This would stop the dysrhythmia by depolarizing a significant portion of the heart muscle, however its exact mechanism is unknown. The body's own pacemaker, which is housed in the sinoatrial node of the heart, then restores normal sinus rhythm. Synchronized electrical cardioversion, as opposed to defibrillation, involves administering an electrical shock in time with the heart's rhythm. Cardioversion typically tries to halt poorly perfusing cardiac dysrhythmias, such as supraventricular tachycardia, even if the patient may still be critically unwell.. Depending on the type of

device used or required, defibrillators can be implanted (implantable cardioverter-defibrillator), transvenous, or external. [4] Some external devices, known as automated external defibrillators (AEDs), automate the detection of stable rhythms, which enable bystanders or lay responders to effectively employ them with little to no training.

Keywords (Design…Implementation…Electric Shock Device…Muscles…Body)

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CHAPTERONE

1.1. INTRODUCTION:

These days, heart disease is among the most dangerous illnesses. Cardiovascular disorders have spread across the globe in recent years and are now particularly common. In the past, the incidence of cardiovascular disease has increased and continues to increase on the rise, in accordance with to statistics that were conducted much later than expected. Nobody understood how hazardous it was to spread, and many people began experiencing severe side effects. This is Despite great advances in the medical field, researchers and cardiologists are now aware The gravity of cardiovascular diseases and the need to prevent the increase and diffusion. This is evidenced by recent times when heart disease has increased by as much as 60%, the mortality rate from these diseases is over Three million people die every year, and heart disease is widespread in developed countries and developing countries. Significant progress has been made in the treatment and screening heart disease. In the past, tests to detect heart disease were more advanced and developed, but now they can detect heart disease. The spread and increase of heart disease is a sign of great medical and scientific progress in the treatment of heart disease. Additionally, the test findings are highly clear and reliable, with a lower error rate than in the past. Furthermore, there was a lot of misunderstanding regarding the many cardiac conditions, and test findings were frequently inaccurate, leading to mistakes in the disease's diagnosis and course of therapy. Take the patient to their heart. Additionally, the field of treating and operating on heart illness has developed, with medications becoming more effective and efficient and with considerable advancements in cardiac surgery leading to better outcomes. As medications were more potent and efficient, cardiac surgery also made great advancements and produced better outcomes, open heart surgery evolved, and therapeutic catheter and diagnostic emerged, improving the situation for certain patients who were at risk. with difficulties during the open cardiac procedure. Regarding the advancements in science and technology related to heart disease, arrhythmia was one of the largest and most complicated cardiac conditions.The patients who experience this issue endure the symptoms of their sickness. The course of treatment was challenging. There was an electric shock therapy. delivering powerful electrical impulses to the heart Improved therapy for irregular heartbeats was necessary since irregular heartbeats can result in rapid cardiac arrest and patient death. These signals reach the heart and cause it to beat regularly, but they soon generate an imbalance once more. The 1960s saw the introduction of the pulse generator.It used a basic battery-operated gadget with an electric circuit to generate a typical pulse modulation. Due to the inclusion of sensors, projectors, and electric circuit sets that were especially created with the introduction of advanced microprocessors, the new gadgets are more complicated

1.2 Background :

Defibrillators were first introduced in 1899 by Jean-Louis Prevost and Frederic.

Batelli, two physiologists at the University of Geneva, Switzerland. They found that

Mild electrical shocks could induce ventricular fibrillation in dogs, and stronger shocks

reversed the condition. In 1933, Dr. Albert Hyman, a cardiologist at the beth davis clinic

in New York city, and C. Henry Hyman, an electrical architect,

searching for an option in contrast to infusing strong medications straightforwardly into the heart, came up

with a creation that involved an electrical shock instead of medication infusion. This development

was known as Hyman Otor, where a hollow needle is used to pass a protected wire into the heart area to deliver an electric shock. The hollow steel needle went as one end of the chain and the tip of the protected wire was at the opposite end. It is unclear whether Hyman Otor was an achievement. The external defibrillator implemented today was invented

electrician-designer William Kouwenhoven in 1930. William focused on the communication

between electric shocks and their effects on the human heart, when he was a student

Johns Hopkins College School of Design. His research helped him find

device for external impulse of the heart. He designed a defibrillator and tested it

cane, like Prevost and Batelli. The main application on humans was in 1947 by Claude Beck, teacher of medical procedure at Case Western College Save. This was Beck's hypothesis.

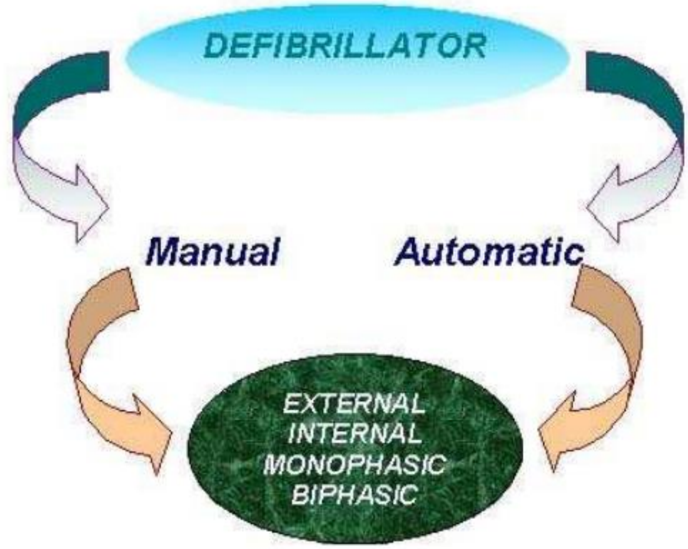
that ventricular fibrillation often occurs in generally hard hearts, in their

the expression "hearts too big to even think about dying" and that there must be an approach to save them.

Beck first used this method effectively on a 14-year-old boy who had undergone surgery for an internal deformity of the chest wall. The boy's chest was carefully opened and manual cardiac kneading was attempted for 45 minutes until the defibrillator appeared.

Beck used the internal rows on both sides of the heart along with procainamide, an antiarrhythmic drug, and was able to restore normal sinus rhythm. [citation needed] These early defibrillators used alternating current from a power source that switched from the 110-240 volts available on the mains to values between 300 and 1000 volts to the exposed heart through "paddle" type anodes. . The procedure was often insufficient to restore ventricular fibrillation, and postmortem morphological studies revealed damage to the heart muscle cells. The idea of an air conditioner with a huge transformer also made these units extremely difficult to move, and they were usually huge units on wheels.

1.2Type of Defibrillators



1.3.1- Manual external defibrillator

Manual outside defibrillators require the skill of a medical care proficient. They are utilized related to an electrocardiogram, which can be isolated or underlying. A medical services supplier initially analyze the heart beat and afterward physically decide the voltage and time of electric shock. These devices are mainly tracked in medical clinics and in some ambulances. For example, all NH rescue vehicles in the UK are equipped with a manual defibrillator for use by the paramedics and technicians who intervene. if necessary, treatment with a manual defibrillator.

1.3.2- Manual internal defibrillator

Manual inner defibrillators conveys the shock through paddles put straightforwardly on the heart. They are generally utilized in the working room and, in uncommon conditions, in the trauma center during an open heart method.

1.3.3- Automated external defibrillator (AED)

Computerized outside Defibrillators are administered in non-existent isolation or by untrained persons. An AED uses technology to study the heart rhythm. In addition, it is a trained health care professional. These are the most significant outcomes of CVD treatment outside the emergency department. Hidden health care professionals show that the availability of AEDs is limited compared to manual external defibrillators.[15] No studies have shown that AEDs monitor other cardiac events in the emergency department.[15][16] An AED allows the operator to adjust voltage as needed. An AED may also delay effective CPR. To detect CVD, an AED often requires chest compressions and relaxation. For this reason, other organizations, such as the European Parliament animation, recommend using louder defibrillators rather than AEDs if manual external defibrillators are readily available. After a long period of defibrillation, most people will be able to do so. PEPs have been integrated into the basis of life support (BLS). They are also known to many civil servants, primarily political and social security officers. And can be fully automated or self-contained. Self-contained AD automatically dials the heart rate and decides whether a shock is necessary. It is recommended to do this, patients do not need to use the lid, the contents of the discharge. Fully automated, taking into account the ser r r r . Non-standard types of AED include various functions, such as the ability to manually replace or use an ECG..

1.3.4. Implantable cardioverter-defibrillator

Otherwise called programmed interior cardiovascular defibrillator (AICD). These gadgets are inserts, like Pacemakers (and many can also replicate the function of the pacemaker). They constantly monitor the patient's cardiac status and thus deliver shocks for various dangerous arrhythmias depending on the modification of the device. Many modern devices can detect ventricular fibrillation, ventricular tachycardia, and more benign arrhythmias such as supraventricular tachycardia and atrial fibrillation. Some devices can attempt to accelerate pacing before synchronized cardioversion. At the point when the dangerous arrhythmia is ventricular fibrillation, the device is set to rapidly continue the unsynchronized shock. There are situations where a patient's ICD may trigger continuously or incorrectly. This is considered a health crisis because it drains the device's battery, causes critical stress and nervousness in the patient, and can sometimes even lead to dangerous arrhythmias. Some emergency clinical staff are now equipped with a magnetic ring that is placed over the device, which actually affects the shock capability of the device while still allowing the pacemaker to function (if the device is rated for it). If the device stuns regularly but appropriately, EMS staff can supervise sedation.

1.3.5. Wearable cardioverter defibrillator

A wearable cardioverter defibrillator is a versatile outside defibrillator that can be worn by in danger patients. The unit screens the patient 24 hours per day and can naturally convey a biphasic shock on the off chance that VF or VT is recognized. This gadget is primarily demonstrated in patients who are not prompt contender for ICDs..

1.3.6. Internal defibrillator

a set of two electrodes that are used to shock the heart during or following heart surgery, like a bypass.

1.4. Type of shocks

There is two types of shocks:

1-non synchronized or defibrillation

2-Synchronized

Differences between them non synchronized or defibrillation

1 - By hitting the deliver button, we may determine the time of charge discharge in an asynchronous electric shock.

2- High joule: adults typically begin with a 200 joule course.

3 - After giving three successive shocks (200, 300, and 360 J, at the very least), then returning after a minute of CPR work that did not alter the clot

Either for synchronized or cardio version

1 - shock timed to coincide with the start of the R wave in order to ascertain the discharge timing. When you click "unload," the device determines when it is best to do so.

2- Low joule Sometimes fifty or 100 joules

3. Even if the patient is not conscious that at least an analgesic is necessary, they should still receive a dose of sedative and analgesic.

4 - Giving one shock. Then can be returned single

Precautions to be taken before giving a shock

The Intubation set should be prepared next to the patient, oxygenated, and suction set before the shock

Note:

The fragment is already aberrant and waiting for the direction of the R wave, so the device is in the body of the Synchronicaside and is not expected to change. The patient receives 60 seconds of therapy if the shock is delivered during the T wave. The electroshock device eek.gif is used to deliver electric shocks to victims of ventricular tachycardia, a fatal condition. This crime is committed by many ignorant medical professionals and the patient is buried in their hands without even knowing it.

Non-synchronized shock causes:

1 - Pulseless ventricular tachycardia.

2- Ventricular fibrillation.

Synchronized shock causes:

If an arrhythmia is followed by a drop in blood pressure, it is classified as unstable tachycardia:

1-Atrial fibrillation <<<< AF 2. Atrial flutter

3-Ventricular tachycardia

4. Supra ventricular tachycardia <<< SVT

However, if the pressure is normal, we should begin by administering medications like digoxin, adenosine, or ibupotin first, followed by cheddar one when the pressure falls as a result of consecutive shocks. The deadly error, which is made without hesitation every day.

1.5 Problem Statement

Although this equipment is accessible in the market, it is expensive and requires no maintenance.

1.6 Objectives

The goal of this article is to make sense of manners by What procedure passes through the human body and how it affects the type of injury. Methods: This interdisciplinary subject is primarily understood through the study of electrical and pathophysiological standards. It discusses how current passes through the body through air, water, soil, and man-made conductive materials. It also discusses skin resistance (impedance), body resistance, inversion through the body, release properties, skin damage, electrical stimulation of skeletal muscles and nerves, cardiac arrhythmias and heart attacks, and electrical asphyxiation. After reviewing the relevant standards, several important system failures and their consequences are presented. Topics related to high voltage burns include problems with grounding, ground slope, slope and contact capacity, kinks, and fastener strikes. Results: The practitioner will have a better understanding of electrical injury instruments and their general clinical significance. Conclusions: There are different types of contact occurrence, each due to the causes listed. By understanding how current reaches and passes through the body, the physician can better understand how and why severe cases and medical and surgical problems can often occur on a standard platform. This article describes how current passes through the human body and how this affects the occurrence of injury. This interdisciplinary topic can be partially understood by first examining A the electrical and pathophysiological norms and then examining B the characteristics of accident types. It deals with how the process passes through the body through air, water, soil and artificial conductive materials. It discusses skin occlusions (impedance), body stability studies, flow through the body, energy loss properties, injuries, electrical sensation of the skin, skeletal muscles and nerves, cardiac arrhythmias and cardiac arrest, and asphyxiation due to electrical shock. After reviewing the main recommendations in Part B, several significant cases of system accidents and their clinical consequences were reviewed. Topics related to high voltage fires include ground faults, ground slopes, mounting and contact options, ring junctions, and impact fasteners. Understanding how current technology reaches and passes through the body can help you better understand how and why severe cases can occur in the standard version, and what common problems are with the structure and body.

CHAPTER TWO

2.1 Principle

As shown in figures 1 and 2, a high-voltage electrical current is delivered to the heart muscle to stop ventricular fibrillation either directly (internal defibrillator) through the open chest or indirectly (external defibrillator) through the chest wall.

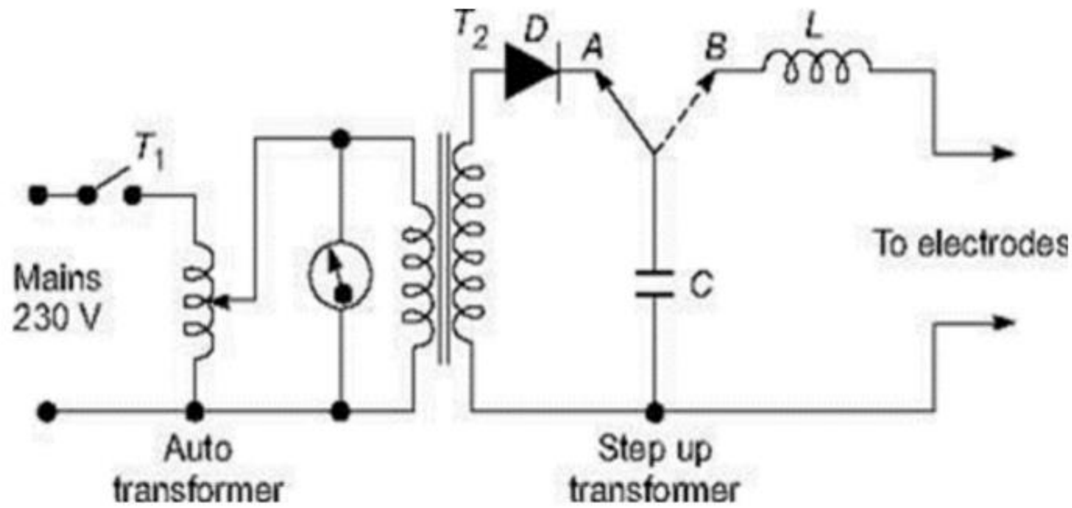


Figure 1: Electric chart of the device.

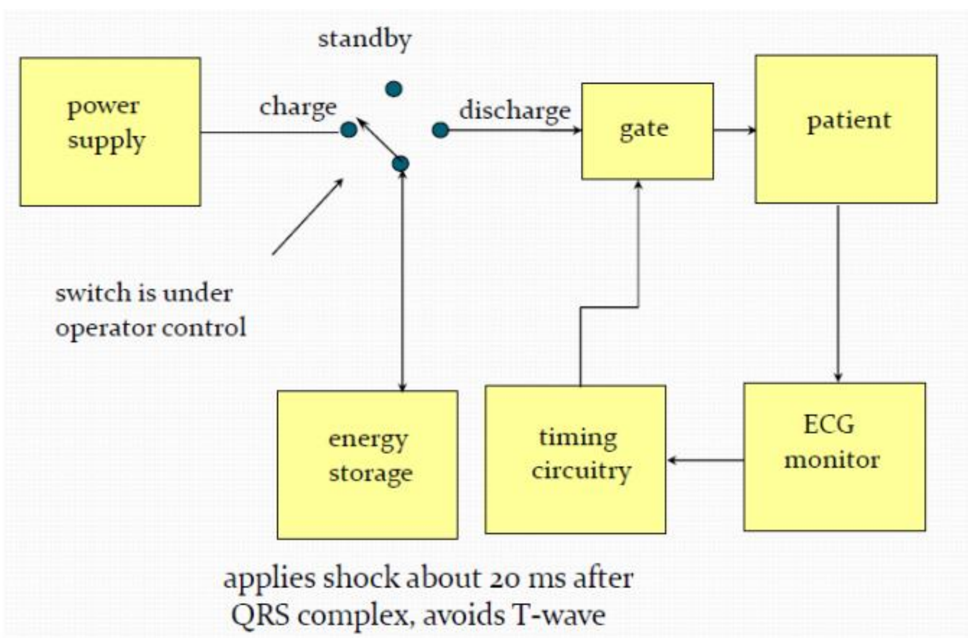


Figure 2: Power states through the activity interaction of the mechanical assembly

• For every moment slipping by between beginning of vent fibrillation and first defibrillation, endurance diminishes by (10)%.

• Defibrillators ought to be versatile, battery worked, little sizes.

• Energy in for the most part put away in enormous capacitors.

• Absolute energy put away in capacitor: w= $1/2CV$ 2 (1) Where V is the capacitor voltage.

2.2The fundmental parts of the electric shock gadget

2.2.1 The machine comprises of the accompanying parts end unique source:

- Electrocardiography : A medical device that diagnoses the function of the heart muscle is considered essential in all hospitals and health centers. It contains several connections that are attached to the patient's body to monitor the heart's function. The device receives signals from the body and amplifies them for analysis.

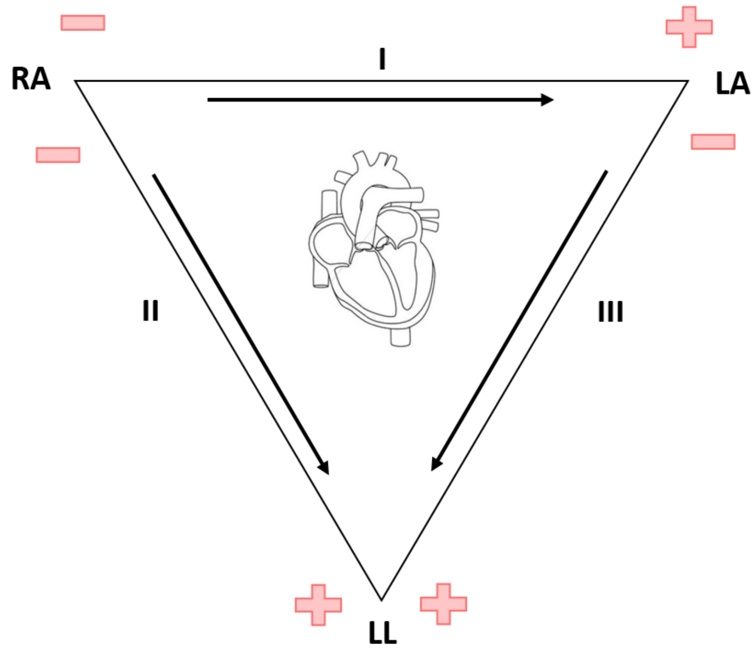
1-The white colour : the right arm (RA)

2-The black colour : the left arm (LA)

3-The green colour : the right leg (RL)

4-The red colour : the left leg (LL)

5-The brown colour : the chest ©



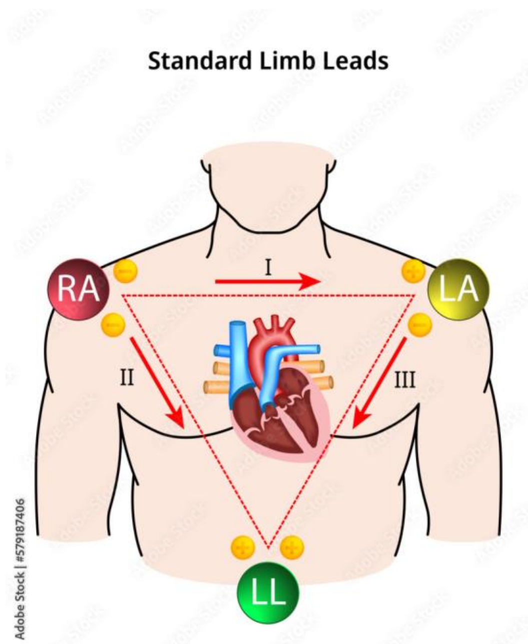
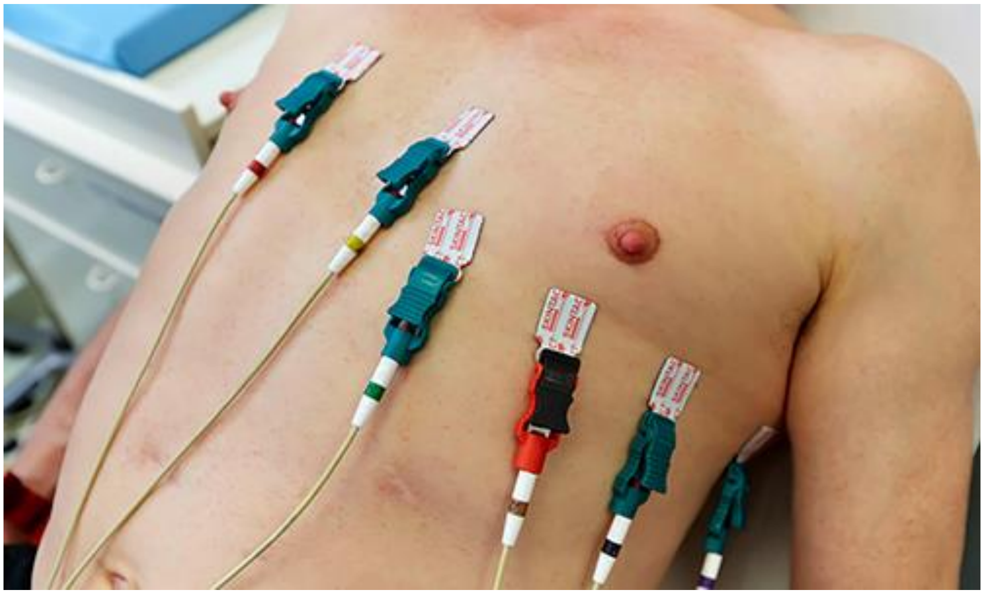
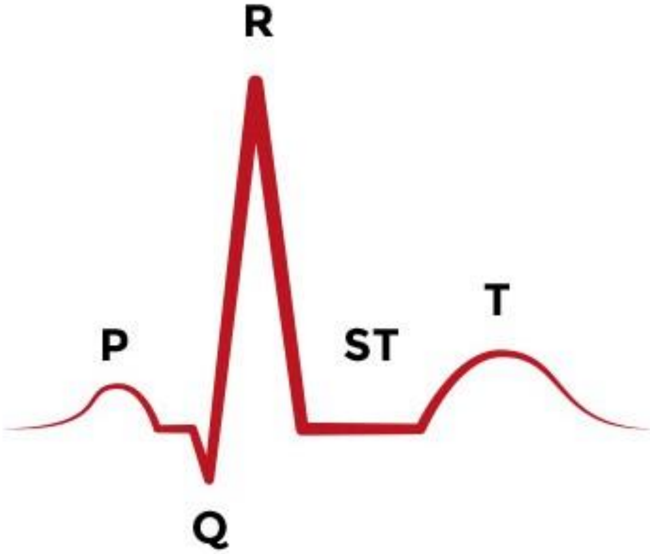


Figure 3 : triangle ECG





]

Figure 4: normal ecg

- moth-board.

- voltage high.

-energy sources.

-Treatment troubles.

2.2.2 Paddles

The figure below contains several buttons, including the discharge and charge buttons

Through it, the user uses these without being exposed to danger due to the presence of an insulator in show figures 5 and 6

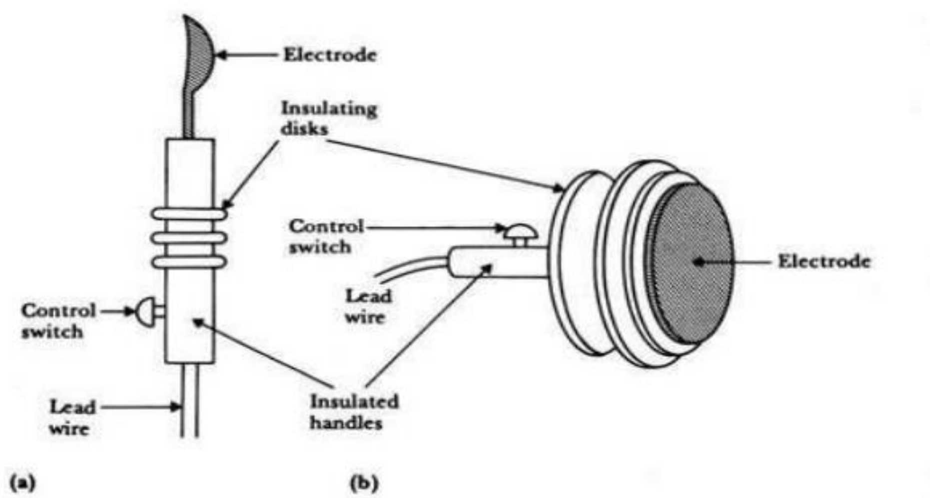


Figure 5: Electrodes used in defibrillator (a) a spoon shaped internal electrode that is applied directly to the heart. (b) a paddle type electrode applied against the anterior chest wall.

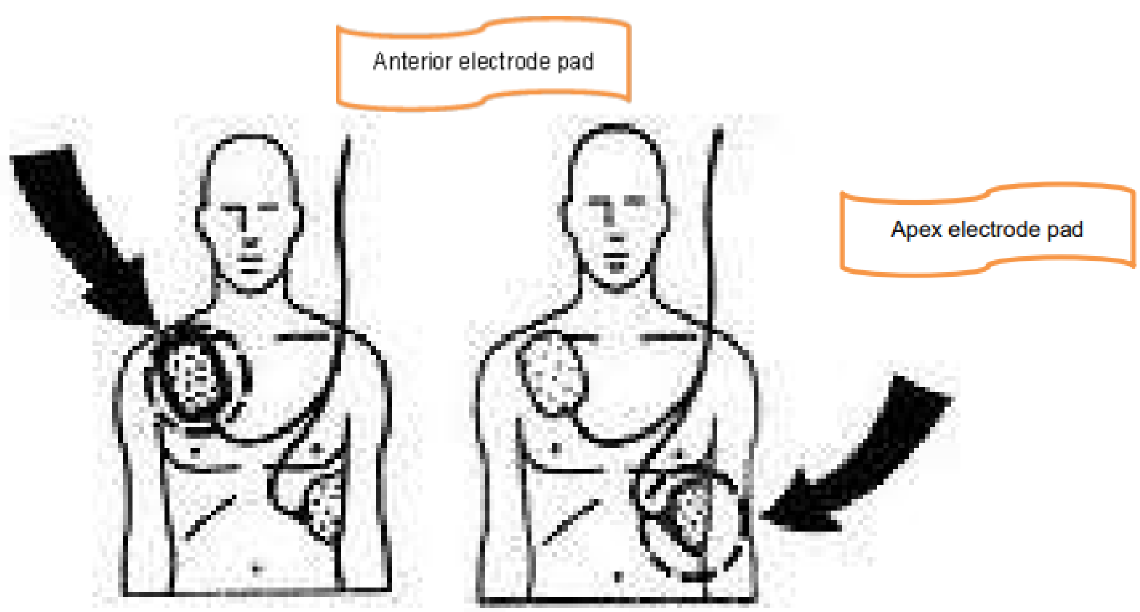


Figure 6: anterior –apex scheme of electrode placement.

2.2.3. Cable (ECG):

to quote the heart signal

2.2.4. Control buttons :

-Power: Turns on the device.

-Selector: Selector to adjust the power required to charge the capacitor and the power range between (0-360) Joules.

-Charge: Used to charge the capacitor.

-Synchronizer synchronization: To synchronize the release of the ECG signal explicitly with the highest point of the R limit, where the release wave is applied after the detection of the R wave and above.

-Unload: A button located on the paddle simultaneously presses its partner on the rear paddle to release the load on the patient's chest.

-Charge indicator light: Shows that the capacitor has been charged and is ready for release and is located on the damper and control board..

2.3 Electrical parts:

2.3.1-Transformer:

A transformer is an electrical design device consisting of two insulated windings bent over iron bars at a short distance. The electrical terminal is known as maximum anode cushion essential ring while the associated end is known as auxiliary name. The transformer is utilized to change the voltage value of the AC connector of the current power transmission framework where the connector cannot work in the current framework. Assuming the auxiliary voltage is less relentless, the transformer had less voltage. In case the optional voltage was higher than the essential voltage, the transformer was a voltage promoter. The activity of the electrical transformer is based on the law of electromagnetic enlistment, which specifies that the electric power (voltage) has a value of direct correspondence to the forward speed of the flow. Therefore, the transformer does not work in a DC system as the DC creates a static attraction field and then an electric voltage can be produced by enlistment. This is one of the main explanations behind the inclination of the rotating current, which does not have a useful and conservative strategy to modify the voltage estimation and the use of Faraday's law.

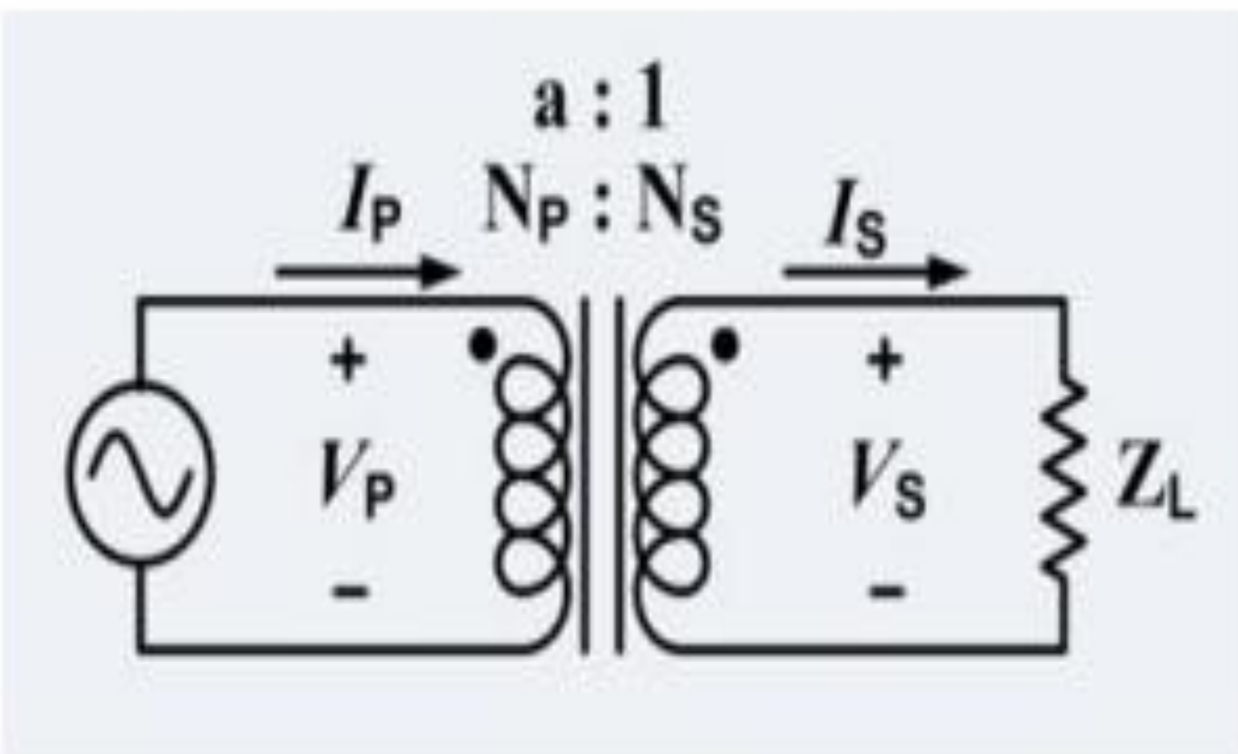


Figure 7: sketch of the simple transformer

2.3.2-Choke coil

Two (20) turns of MH choke rated for (2) A current. An inductor used in electronics, a choke coil allows lower frequencies of alternating current (AC) and direct current (DC) to flow through an electrical circuit while blocking higher frequencies. Most chokes are formed of an insulated wire coil that is regularly wrapped around, however some feature “Business” in the form of a network, which is made of current materials, based on provocation and magnetic processing methods. Forwarding is carried out automatically with the specified data. There is a possibility of power supply to a low-power, permanent electricity supplier; It is an average permanent task, which can be a potential customer who naturally enters into a reactive customer relationship. The name of the blockage – “access” – is a type of blockage that follows the absence of a blockage. This is functional; The designation “choke” is used when the choke is used to block or crush further electrical equipment Filters or chemical generators are called “inductors”. Exceptional designs with small pots (high reliability), not suitable for induction catalysts used in public networks, etc. Filtraches. typically distinguishes inductors intended for use as chokes.

Figure 8: sketch of the choke toroid transformer.

2.3.3-Capacitor

This is a circuit and depends on and stores energy and charge For a extent of time of time in the form of an electric field It contains two conductors that are opposite in signal and equal in magnitude The capacitors are recharged and are made of plates with layers of insulators between them, and no damage occurs between them due to the presence of insulators. These charges dissipate when they are introduced into the circuit in moments of time.

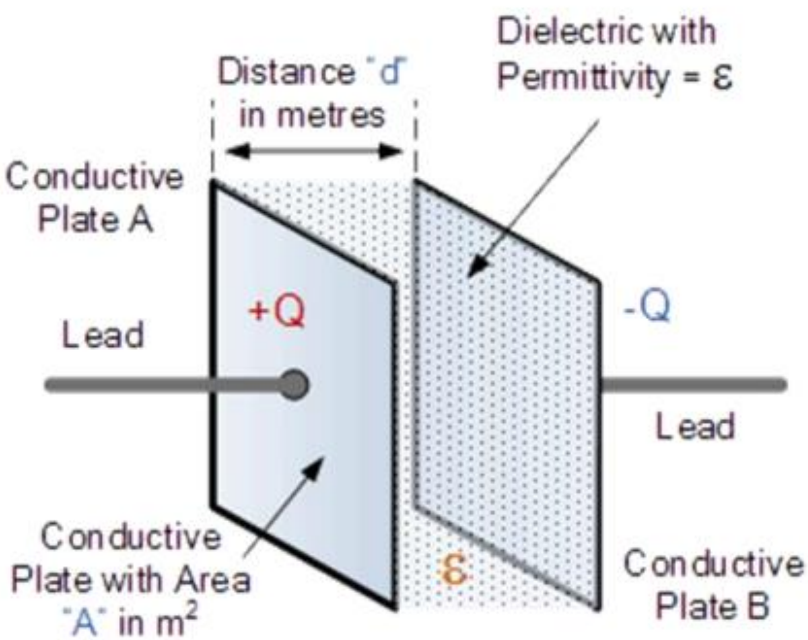


Figure 9: sketch of the electric capacitor

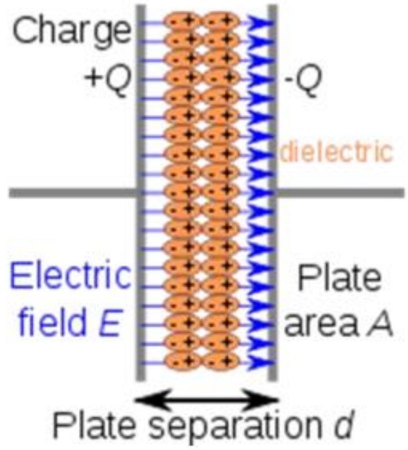


Figure 10: details inside the capacitor.

2.3.4-Battery

The battery is an essential component for the proper operation of a medical device. It operates at 12 volts and the best type of battery is lithium, which has a long lifespan. If the battery develops a problem or a specific defect, it can cause the device to fail and operate inefficiently, leading to an inability to hold a charge. Consequently, this could prevent us from saving the patient.

2.3.5 DC-Relay

Relays are electromechanical switches. It responds as an automatic switch utilizing a low voltage signal to control (only ON/OFF) a huge voltage load. As seen in figure 11, a DC relay switch is one that uses a DC (direct current) supply to energize an electromagnetic coil inside a relay. As you are aware, when an AC supply is applied to a coil, the resulting fluctuating magnetic field makes the switch (which is utilized here) unsuitable for continuous ON/OFF operation.Construction of Relays.

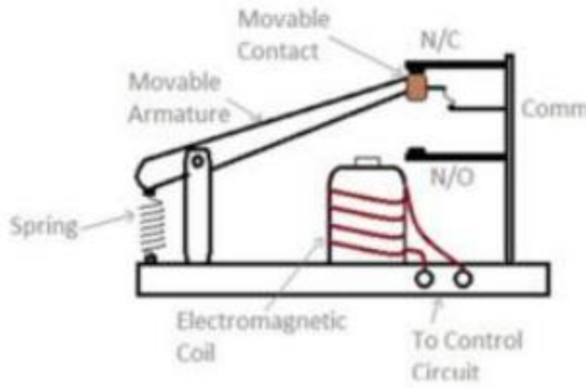


Figure 11: Relay Construction

The electromagnetic coil in the relay is oriented around a metal component, and when the coil becomes activated, it will react like a magnet. With a spring precisely positioned above the electromagnet configuration, the movable armature connects the common terminal to the normally closed contact (N/C). In the absence of any supply or zero input supply, this state is known as a normally open relay. Moveable armature is drawn to the coil by an electromagnet, closing the N/O contact and opening the N/C contact when the coil is energized.

CHAPTER THREE

EXPERIMENTAL WORK & RESULTS

The specifications manufacture of the electrical components which are used in the of the implemented apparatus.

3.1. Electrical parts:

3.1.1. Transformer

Vin =(115) volt

Vout =(12) volt

3.1.2-Choke coil

Inductance” (L) =(36)mH

Peak voltage” =(5.3)KV

Resistance” R=11.2Ω

3.1.3. Capacitor

Capacitors work and depend on direct current. They store electrical charge in the form of an electric field. A capacitor consists of two metal plates and an insulating material between them, such as ceramic, paper, or other insulators. This distinguishes capacitors from electric batteries, which are chemically based. In the picture, there is an electric field in the capacitor. Capacitors discharge much faster than batteries. Therefore, the charge of a battery is greater than the charge stored in a capacitor.

.

3.1.4. DC-Relay:

During discharge, Use the breaker to connect the electronic circuit. Drainage (2) sets the capacitor voltage to be completely discharged from the charge during the charging process, and cooling (3) determines the value of unloading for a long time. Economy (5) calculates the total energy in the container, and (4) represents the duration of unloading. During unloading, acting as a breaker, disconnect the electronic circuit. Drainage (2) sets the capacitor voltage to be completely discharged from the charge during the charging process, and cooling (3) determines the value of unloading for a long time. Equation (5) calculates the total energy in the opponent, and (4) represents the period of discharge.

$$Vc=(1-e^{\frac{-t}{t}}) \quad (2)$$

$$ic = \frac{E}{R}e^{\frac{-t}{t}} \quad (3)$$

$$t=RC \quad (4)$$

$$W = \frac{1}{2}Cv^2 \quad (5)$$

Table 1: the exploratory benefits of charging time ,energy assimilated and voltage of capacitance during the charging system.

Test No.	Time charge (Seconds)	Energy (Joule)	Voltage (Volt)
1	0.21	10	**800**
2	0.42	20	**1125**
3	0.63	30	**1325**
4	0.84	40	**1550**
5	1.05	50	**1750**
6	1.26	60	**1920**
7	1.47	70	**2125**
8	1.68	80	**2320**
9	1.89	90	**2525**
10	2.1	100	**2730**
11	2.31	110	**2935**
12	2.52	120	**3135**
13	2.73	130	**3340**
14	2.94	140	**3545**
15	3.15	150	**3750**
16	3.36	160	**3960**
17	3.57	170	**4165**
18	3.78	180	**4365**
19	3.99	190	**4570**
20	4.2	200	**4780**
21	4.41	210	**4990**

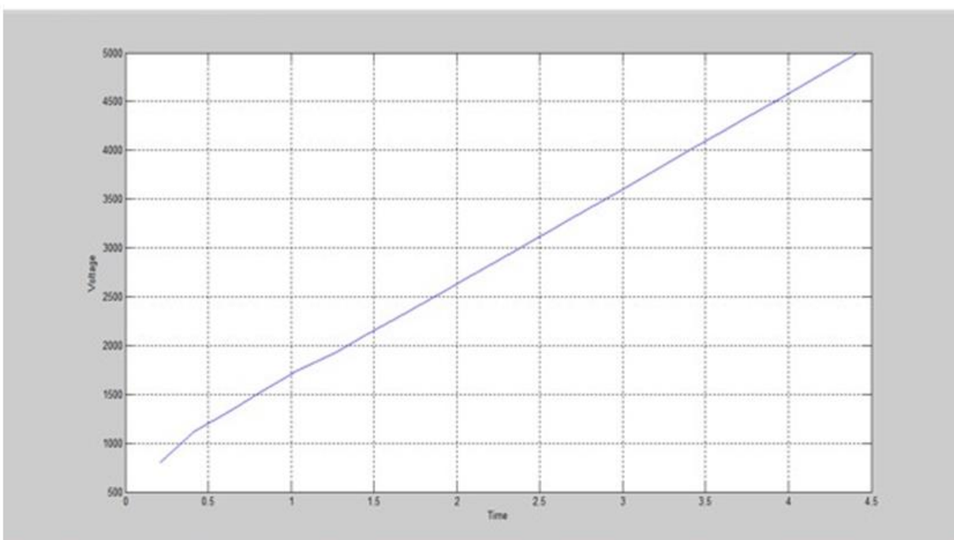


Figure 12: capacitance voltage increments when the hour of energizing ascents as indicated by exploratory recorded

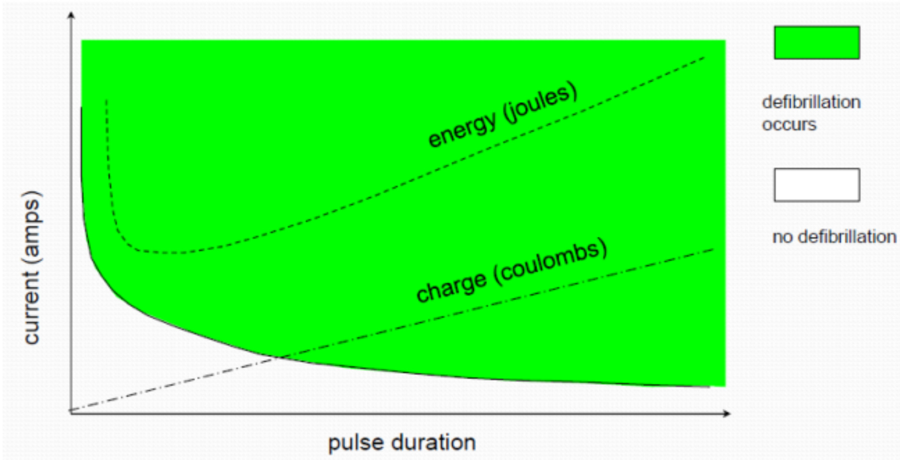


Figure 13: Performance of charging current by capacitor through the charging process.

When using the equipment to treat the patient, follow the instructions and make notes:

• For the majority of pulse forms, pulse durations between 3 and 10 ms result in the lowest defibrillation energy.

• A few thousand volts, or tens of amperes, is the pulse amplitude.

• The operator chooses the delivered energy: 50–360 joules,

depending on the following: patient intrinsic qualities; patient's disease;

patient age; duration of arrhythmia; and kind of arrhythmia (greater energy needed for vfib.)

CHAPTER FOUR

4.1-Result& Discussion

DC.SHOCK:

It is an important medical device to help the patient in dangerous situations in the event of a sudden irregular heartbeat. It is found in operating rooms and is placed on the patient's chest to give him the appropriate electrical shock in the event of unstable heart signals.

How to use :

It is a series of DC.SHOCK devices, mainly responsible for management and use. It is not possible to describe the current method of use in DC.SHOCK, installation, use in bolides, rework, reissues, reorders Intensive therapies and various treatment methods. crews.

1- The electrically conducting liquid is painted on the electrodes of the device to ensure that the maximum amount of therapeutic energy reaches the heart muscle, thereby increasing treatment effectiveness, and to reduce the electrical resistance of the skin to the current and prevent painful superficial burns caused by the current exceeding the resistance of the skin.

2- The heart rate the wave is diagnosed using an electrocardiogram on the device screen, and based on the diagnosis 27

3- The appropriate voltage is chosen for treatment, which depends on the quality of the DC.SHOCK device. In single-phase devices, the energy used is 360 joules, while in two-phase devices it is between 100 and 200 joules. It is also determined whether the electrocution will be synchronous or asynchronous with the electrocardiogram (emergency and cardiac arrest the choice is asynchronous).

4- Placing the two electrodes on the chest as shown in the picture and pressing them firmly to obtain good contact and conduction that reduces transcutaneous resistance.

5- Using the button that is typically on these electrodes, begin charging the electrodes.

6- After hearing the signal that the electrodes are finished charging, all those present are warned in a clear and strong voice to stay away from the patient so that none of the attendees is exposed to electric shock!

7- The electric charge is released to receive the necessary treatment while being careful not to contact the patient.

8- Pressing the discharge handles on the electrodes (handles) will release the charge, which will then pass through the body's up to 50 ohm resistance.

4.2. Basic components of an electric shock device:

The device consists of the following boards:

1. ECG board.

2. Charging board and high voltage. 3. The power supply board.

4. Processing boards.

5. The main board.

6. Board the screen.

. Board printing**.**

4.3. Device alerts:

The gadget gives a sound caution as per the client's heart recurrence setting. The gadget is pre-adjusted to the base heart recurrence limits, which are 30 pulsate/minute, greatest heart recurrence, and 150 thump/minute. Assuming the patient's heart recurrence surpasses the past two cutoff points, it will give a perceptible alert, and a discernible cautioning marker. Which is the state of the chime will show up on the screen

.• 'Nursing'

•' nurse'.

•' Nursing courses'.

• 'Diploma in Private Nursing'

• ''training'

• 'electric shock' • 'DC.SHOCK' • 'hospital'

4.4. CONCLUSION:

After conducting practical tests on a device manufactured to simulate an internationally imported device, the description of electrical materials used in the Iraqi market includes various specifications that are important for the components of the device, and they are available at very reasonable prices. During the charging process, if it lasts just a little over increased charging voltage from 800 volts maximum to 5 kilovolts for 4 seconds. Increased energy stored in capacitor from $10 to $219. It appears that the process of charging and discharging is highly suitable for medical applications and simulates devices with high values.

REFERENCES

[1] F. Bouzidi and Y. Baghzouz, "On the Optimal Efficiency of Split-Phase Induction Motors under Light Load Conditions," in IEEE Conf., 2008

[2] P. Enjeti and et al, "Economic single phase to three phase converter technologies for fixed frequency output," in IEEE APEC Conf, 1991.

[3] B. K. Bose, Modern Power Electronics and AC Drives, Tennessee, USA: Prentice Hill PTR, 2000.

[4] Jimmie J. Cathy "Electric Machines, Analysis and Design Applying Matlab" pp: 492-510.

[5] B. L. Theraja and A. Theraja, Electrical Technology, Chand and company limited, 1996.

[6] K. Mohammed, "New Design Correlations for Single Phase Induction Motor," Journal of Engineering Sciences, vol.03, pp. 134-144, December 2010.

[7] Author: Stephen Bowling, Microchip Technology Inc., Chandler, AZ. PIC18CXXX/PIC16CXXX DC Servomotor Application.

[8] Saad Ahmed Salah. "Speed Control of a Three-Phase Induction Motor Using Microprocessor". University of Baghdad. Thesis.

[9] Saba A. Shukry. "Design of Optimal Communication Portable Full Duplex System". Thesis, University of Technology, Iraq, 2004.

[10] Smoot AW, Bentel CA. Electric shock hazard of underwater swimming pool lighting fixtures. IEEE Trans Power Apparat Sys.

[11] United States Navy. Navy Electricity and Electronics Training Series. Module 1—Introduction to Matter, Energy, and Direct Current. Nonresident Training Course. Pensacola, Fla: Naval Education and Training Professional Development and Technology Center; 1998. pp. 38