

Mri we use a device  
called relays,

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MRI Power Circuits and Communication Devices: We use stationary and mobile telephones, in order to communicate on big distances. But they cannot work the without electromagnetism. The cooperat ion of the signals and the electromagnetic impulses make the telephones very convenient. In power circuits, we use a device called relays, which has the potential to cut down a large current to the load, with the application of small amount of current.

A small magnetic coil, which when energized, creates or breaks down the contact, thereby doing a greater amount of work on the other end. Not to forget the usage of electromagnetism in medical area. What is MRI? Everyone must have heard about MRI scans.

MRI- “ Magnetic resonance imaging” is a method of scanning a person’s body using strong magnetic fields and radio waves to get the high-quality images that help in diagnosing a wide range of human states. MRI allows the doctors to scan the patients bodies without any surgical methods. The applications of MRI. Magnetic resonance imaging has a cultural factor. It is an imaging device that uses “ magnetic resonance” of atoms within the body incited by the use of radio waves.

Human body consist of almost 70% of water molecules, which contain the hydrogen “ protons” and oxygen atoms, which wind up plainly adjusted in a magnetic field. This scanner applies a really strong magnetic field, which makes the hydrogen protons “ turn”. The protons absorb the energy from the magnetic field and flip their spins. The rate

of the chopping is called “ resonance”. Since the proton makes up the nucleus of an atom, this impact is called “ nuclear magnetic resonance”. When the field is turned off, the protons gradually return to their normal spin, a process called “ precession”. This process is pictured by a radio signal and can be made into a picture.

MRI scanners are large devices with a “ bagel” shape. This process can be summed up as follows. First of all, the patient is placed inside the big magnet, where placed a really strong constant magnetic field. Patients lie horizontally on a special “ couch”, so that they can be placed inside the MRI scanner. With the help of magnetic waves, it is possible to get the images of the head, spinal column and joints in the form of slices in three projections: axial, sagittal, coronal. For the image of blood vessels and ducts a 3D model is being constructed, for example, for arteries - angiography, for veins - venography, for bile ducts - cholangiography.

MR scanner consists of: magnetic gradients; coils; the magnet; data collection and processing systems; transmitter of radio pulses; receiver radio pulses; systems of power supply and cooling. The MRI procedure. MRI can detect abnormalities ‘ of the brain, pituitary gland, intervertebral discs, meniscus, abdominal organs and small pelvis”.

The MRI method is safe for the body, since the patient isn’t presented to radioactive radiation amid the MRI system. Before scanning, you have to expel every single metal object and check for tattoos. Prior to the arrangement of a MRI, patients are encouraged to discover what data will be given and how this will influence the treatment procedure, regardless of

whether there are contraindications for MRI, whether complexity will be utilized and for what. MRI scans usually take between 30 - 60 minutes. It depends on which part of your body is being inspected.

You will be required to lie either head first or feet first on the MRI couch, depending on the area that will be scanned. The equipment will then be placed around the area that is inspecting. This equipment does not harm or hurt you; it picks up the signal that produces the images. The scanner is controlled by a computer which is placed outside the MRI rooms.

The radiographer you can see through a glass panel at all time. Also, doctors can communicate with you through an " intercom".

However, the MRI scanner produces a very loud knocking noise which varies in sound throughout the scan, so you will be given a choice to wear the earplugs or the headphones to protect yourself from the loud noise. Through the headphones you will be able to listen to music during your scan if you wish. To ensure that the images are clear it is extremely important to remain still throughout the scan. You will be given a call bell to hold in your hand for the duration of the scanning process in case you should need the radiographer's attention. Are there any risks? Despite the fact that MRI does not transmit the harming ionizing radiation that is found in x-beam and CT imaging, it employs a very strong magnetic field. The magnetic field stretches out past the machine and applies effective powers on objects of iron, steel, and other magnetic items; it is sufficiently solid to indulge a wheelchair over the room.

Patients ought to inform their doctors of any type of medical or having an implant before the MRI procedure will start. The principle of the MRI scanner The transmitting coil generates resonant frequency waves and modulates them into pulses; A receiving coil representing a highly sensitive antenna located perpendicular to the direction of the main field (plane X-Y) transmits the received signal to the ADC; The analog-to-digital converter (ADC) sends data digitally to the operator computer for image reconstruction; The computer, in addition to obtaining an image from a tomography, allows: centrally manage the entire system; process, record and print the image; perform a fast Fourier transform. Advantages: Brilliant contrast between various delicate tissues. The resolution is higher than in computed tomography.

No ionizing radiation. Disadvantages: Little magnet bore prevents scanning in treatment position (particularly breast treatments). Some patients are unable to have the computer tomography due to an availability of sensitive equipment (pacemakers, cerebral aneurysm clips). It is really long process, that usually takes above 30 minutes. What is the difference between MRI and CT? (computer tomography) An MRI scan is usually used for exploring “soft tissue in ligament and tendon injuries, spinal cord injuries, brain tumors” and so on.

As I already said this procedure takes 30-40 minutes. And it is more expensive than computer tomography scans. Unlike MRI, computer tomography scans use the radiation waves while scanning, which might be really dangerous. And also, it usually takes less then 5 minutes to

make a scan, that's why it is placed in the emergency room, so in case of emergency doctors can do a scan really quickly.