Abstract

Magnetic Resonance Imaging (MRI) is a diagnostic procedure that uses a combination of large magnet, radio frequencies and computer to produce detailed image of organs and structures within the body. The MRI scanner has a large magnet with a massively strong magnetic attraction, which is responsible for scanning. The magnet in the MRI scanner creates much larger electric current, creating intense magnetic fields which cause high heat in the scanner and this can bring in undesirable effects. This paper investigates the problem of heat in MRI scanner which may lead to inaccuracy to results and hazards to patients. To ensure this issue, various existing methods were employed but this work will act as an effective and flexible remedy. This system is instigated in MATLAB/Simulink platform. A cooling system for MRI scanner based on LASER Technology is presented. Laser Cooling System (LCS) is a resonant technology used for cooling an object to an absolutely quite low temperature by around 40 K. The presented cooling system for MRI scanner using laser provides optimal cooling, the system has less cost and the complexity associated with handling is also less.
References

11. Informed Decision Making Trumps Informed Consent for Medical Imaging with Ionizing Radiation James A. Brink, MD, Marilyn J. Goske, MD, and John A. Patti, MD January 2012 Volume 262, Issue 1
12. Moderate dose rate ionizing radiation increases longevity © The British Institute of Radiology J R Cameron, PhD, Departments of Medical Physics, Radiology and Physics, University of Wisconsin, Madison WI, USA DOI: http://dx.doi.org/10.1259/bjr/62063624 Published Online: January 28, 2014.

Index Terms

Computer Science          Biomedical
Keywords

Magnetic resonance imaging, super conducting magnet, laser cooling system, semiconductor ring laser