

الآية

قال تعالى: { ألم تر أنّ الله أنزل من السماء ماءً فأخرجنا به ثمراتٍ

مختلفاً ألوانها ومن الجبال جُدَدٌ بيضٌ وحمراً مختلفاً ألوانها وغبابٌ

سُودٌ * ومن الناس والدوابِّ والأنعامِ مختلفٌ ألوانه كذلك إنّما يخشى الله

من عباده العلماءُ إنّ الله عزيزٌ غفورٌ }

فاطر {27-28}

إهداء

إلى من سهرت الليالي وتحملت الصعاب لأجليإليك أُمي

.

إلى من حملت اسمه وأفتخر بي دوماً.....إليك أبي.

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بعلمه..... إلى كل من

علمني حرفاً..... اليكم أساتذتي.

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المستخلص

يعتبر انبوب الاشعة السينية بمثابة قلب جهاز الاشعة في جميع انواعه فهو مولد الاشعة السينية وبالتالي يمكن تعريفه على انه انبوب مفرغ يعمل على انتاج الاشعة السينية. تعتبر الاشعة السينية جزء من الطيف الكهرومغناطيسي وهي اشعة ضوئية ذات طول موجي اقصر من الطول الموجي للاشعة فوق البنفسجية ولكن 99% من انتاج انبوب الاشعة السينية عبارة عن حراره وبالتالي ظهرت أهمية نظام تبريد للانبوب وهذا النظام يعتمد في عمله على الزيت ، ولكن نسبة للظروف البيئية في السودان هناك احتمال كبير لحدوث اضرار لانبوب الاشعة وهذه الاضرار قد تتفاقم الى ان تصل جهاز الاشعة بكامله وتعتبر هذه الاضرار نفقة مادية

كبيرة على الدولة .وعليه فان الهدف الاساسي لهذا البحث هو تقييم نظام تبريد جديد ومتطور
لانبوب الاشعة باستخدام غازات التبريد وبتكلفة مادية قليلة ويكون هذا النظام مناسب
لطبيعة الجو في السودان.تم تصميم هذا النظام بعد اجراء استبيان حول الغاز المناسب وكذلك
الاضرار الناتجة عن البيئة وارتفاع درجات الحرارة
وبعد تصميم النظام واختباره قد لوحظ انخفاض درجة حرارة الزيت بواسطة غاز التبريد
وذلك في دقائق معدودة وهذا بمثابة حل لعدة مشاكل في جهاز الاشعة السينية خاصة تلك
التي تحدث بسبب ارتفاع درجات الحرارة

Abstract

X-ray tube is the heart of the x-ray machine in all its types. It is the generator of the x-ray so that it can be defined as (An x-ray tube is a [vacuum tube](#) that produces [x-rays](#). It used in [x-ray machines](#). X-rays are part of the [electromagnetic spectrum](#), an [ionizing radiation](#) with wavelengths shorter than [ultraviolet light](#)). But 99% of the production is in a form of heat, Therefore it is necessary to make a cooling system for the x-ray tube,

depending on oil in its operation, but due to the environmental conditions in Sudan and the hot and dry weather, damage is expected in the tube or in the cooling system resulting in limit workload of the x-ray machine, and poor quality for radiographs although a great financial loss to the country. So that the objectives of this thesis is to modify a new x-ray cooling system by using cooling gases with less cost and suitable for Sudan weather , this design after making visual inspection for suitable gas and also the damages caused by the weather in the x-ray machines. After modified the new design it was noticed that the oil temperature cooled down by the cooling gas and in a few minutes and this solved many problems in the x-ray machines specially that caused in the tube by the effect of high temperature result when or during x-ray producing.

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