

Reuse fluorescent lamps



İsmet Ergin

Turkish Military Academy, Bakanlıklar 06654 Ankara, Turkey.

E-mail: ismet.ergin@gmail.com, or iergin@kho.edu.tr

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Abstract

Nowadays the most important thing is to prevent waste. We aimed to use a fluorescent lamp longer by making a circuit via simple and cheap settlement, which is formed of lamps, in which the heaters are broken and damaged that are joined to each other and they give out light without any delay. A fluorescent lamp is more productive than a normal lamp. Because a fluorescent lamp turns more electric energy in to light and wastes little energy ahead. This one of our reasons for this project. Today fluorescent lamps are used in a large area, because they give out white light, they consume not so much, their light is strong, they do not get too warm, they do not dazzle the eye, they are used to assist daylight and they are useful in places which have high ceilings. In damaged fluorescents with the help of the ends in our circuit, we give a high tension. In this way even if the streams are broken or the gas in doesn't make it properly the high tension helps it work again.

Keywords: Fluorescent Lamps, Saving, Electric Energy, Electric Circuit.

Resumen

Hoy en día lo más importante es evitar el desperdicio. El objetivo de utilizar una lámpara fluorescente más por hacer un circuito a través de asentamientos sencillos y baratos, que se forma de las lámparas, en los que los calefactores están rotos y dañados que están unidos entre sí y dan a luz sin ningún tipo de demora. Una lámpara fluorescente es más productivo que una lámpara normal. Debido a que una lámpara fluorescente resulta más energía eléctrica para la luz y los desechos asheat poca energía. Este es uno de los motivos de este proyecto. Las lámparas fluorescentes se utilizan hoy en día en un área grande, porque dan luz blanca, que no consumen tanto, su luz es muy fuerte, no se calientan demasiado, no deslumbrar a los ojos, se utilizan para ayudar a la luz del día y son útiles en los lugares que cuentan con techos altos. En los fluorescentes dañados con la ayuda de los extremos en nuestro circuito, nos dan una gran tensión. De esta manera, incluso si las corrientes están rotos o el gas no lo hace adecuadamente la alta tensión ayuda a que funcione de nuevo.

Palabras clave: Lámparas fluorescentes, ahorro, energía eléctrica, circuito eléctrico.

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I. INTRODUCTION

Nowadays waste is very important. The machines and instruments which transform energy in a useful thing are defined as productive instruments. Changing ultra violet rays into visible light is called fluorescent. With heating the streamer in tube to a high degree, we can produce electrons in the tube and in this way we can obtain fluorescent light. These electrons are put on speed with applying a tension and in this way the mercury steam atoms in the tube crash with these electrons. As an effect of this crashing many mercury atoms get in an induced position. While induced atoms turn back to their normal position they diffuse ultra violet photons. These photons strike to the inner surface of the tube which is covered with phosphorus and are absorbed and at the end this fluorescent procedure visible light is diffused. A fluorescent lamp is more productive than a normal lamp. Because a fluorescent lamp turns more electric energy in to light and wastes little energy a sheat. This one of our reasons for this project. Today fluorescent

lamps are used in a large area, because they give out white light, they consume not so much, their light is strong, they do not get too warm, they do not dazzle the eye, they are used to assist daylight and they are useful in places which have high ceilings [1, 2, 3, 4].

In the last years fluorescent lamps are used especially in offices, schools, houses, etc. A fluorescent of 40W has nearly the same consumption as a normal lamp of 40W. Only fluorescent lamps light a bigger place, better than a normal lamp. The light flowing of a 40W fluorescent lamp is 3000 lumen while a normal lamp of 40W is 350 lumen. We can see that, when we use a fluorescent lamp of 40W we can light a big area, but light the same area with a normal lamp we need to use a bigger lamp with more energy. Therefore in our project we tried to make something so that the fluorescent lamp, which is used much an gives more light can be reused. Lamp productivity is the visible light which is obtained by the electric energy that is used. The light amount that we get from a lamp is measured by lumen. The electric that the lamp uses is measured by

Watt. This the productivity of a lamp can be expressed by how much lumen is produced in a Watt energy sparing means using energy reasonably and preventing unnecessary energy consumption [1, 2, 3, 4].

As in many disciplines, there are some troubles with teaching some subjects in the instruction of Physics, as well. In recent years, it has been suggested to develop and use various instruction materials on behalf of removing these troubles in various academical publications [5, 6, 7, 8, 9, 10, 11, 12, 13].

One of the objectives of Physics and Chemistry oriented courses at undergraduate level is the study and understanding of the properties of various substances [22].

II. PURPOSE

Nowadays the most important thing is to prevent waste. We aimed to use a fluorescent lamp longer by making a circuit via simple and cheap settlement, which is formed of lamps, in which the heaters are broken and damaged that are joined to each other and they give out light without any delay. The settlement that we designed, will be fitted up to a little and normal fluorescent lamp and because of this it is could be more useful. Humanity likes to throw away the instrument which can't be used again. In this research we aimed to make a settlement with which we could prevent wasting and reuse fluorescent lamps that are used a lot in our houses offices etc. In damaged fluorescents with the help of the ends in our circuit, we give a high tension. In this way even if the streams are broken or the gas in doesn't make it properly the high tension helps it work again.

III. METHOD AND MATERIAL

The circuit in our project which is formed of lamps, in which the heaters are broken and damaged, and which are joined to each other, causes the lamps to light without any delay. Our circuit works according to the tension doubling principle. A normal fluorescent lamp is formed of the tube, ballast, starter and bobby socks.

A. Fluorescent tube

The light tube which makes up the lamp is made of glass. It's vacuumed and covered with phosphorus. The tube is filled with are argon gas and a small drop of mercury is dripped in it.

B. Ballast

It's a shock bobbin which is serial tied to the fluorescent lamp circuit. Its duty is to provide the leaping induction tension set the end of the streams heating period.

C. Starter

When the lamps are connected to the circuit, it's a starting instrument which provides the heating current go through the streams.

D. Bobby Shock

They are made of plastic or balcalit. For one lamp we use 2 bobby socks. They tie the lamp streamer and the starters the circuit and they form a stand for the fluorescent tube. Our circuit is as below.

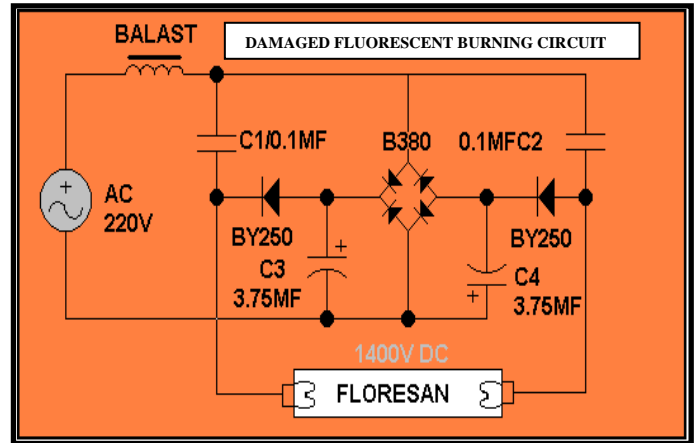


FIGURE 1. Electronic circuit [1, 2, 3, 4].

At the beginning the 40W ballast, provides us to pass the breakdown area with a high shock tension. Our bridge diode straightens this tension. In the circuit two tension are applied to the inlet of the doubly the (+) and (-) alternant straightens and doubles the tension; in this coat we obtain two tension. If we don't want only one fluorescent in our circuit, but a few that are tied parallel then we have to tie as much ballast parallel as our fluorescent or we have to put in 2W ballast where we can tie 4 x 20W fluorescent. The circuit that has obtains at more tension than the AC tension which is applied from the inlet to the outlet is called tension doubling. In tension doubling circuits, the condensers are filled on the straightening ways and are tied with a tension. For example as it is in our circuit in another condenser tension it can be serial tied. When tension doubles the tension reduplication is seen. When we trice the tension that we get tension increase. The tension reduplication is used for example in machines which work with small tension. Tension increasers are used for example in TV's to produce high tension and in electro-static dust filters. Our circuit works according to the tension doubly principle. In our circuit that lights a 40W fluorescense lamp, about 1,4KV tension is composed at the fluorescense ends. To use it in a proper way a good insulation operation has to be done. We tie parallel at 4MΩ charge resistance to discharge the tension at the ends of the fluorescent against the probability that the condensers are charged even if we switch off the lamp.

IV. DISCUSSION AND CONCLUSION

As it is known fluorescent lamps clearest property is that they need a very high voltage for their first lightening. The reason of this is there is a part called. Slip area, in the tube. This area like the diode has to fall down only once. In our project using an electronic firing circuit we pass this area easily and in the shortest way. Because of this with the help of high tension, we prevent blinking flickering firing and the noise that we have in normal installations. In damaged fluorescents with the help of the ends in our circuit, we give a high tension. In this way even if the streams are broken or the gas in doesn't make it properly the high tension helps it work again.

In this study, the design, production and utilization of a simple, economic, useful, material that would enable the students to comprehend the concepts of reuse fluorescent lamps and to establish the relationship between them easily were explained in detail and presented to the service of all Physics educators [5].

In many studies [17, 18, 19, 20, 21] which have been carried out for the last thirty years, it was reported that students approach the Physics lesson with a negative and prejudicious attitude and consider this lesson as difficult to understand. In overcoming these challenges, developing and utilizing simple, useful and economic instruction materials that would help to motivate the students for the lesson is an alternative solution. However, similar studies [6, 7, 8, 9, 10, 11, 12, 13] in which some material suggestions are presented aimed at concreting the Physics concepts which are difficult to comprehend are quite limited and rare in esteemed academical journals. Therefore, as well as designing instruction methods, the design and production of instruction materials shall be paid attention in Physics education, as well. For this purpose, publication of such studies in which simple, economic and useful instruction materials are suggested in qualified academical journals and preparation of books of this style shall be encouraged.

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