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Adjustable FLUROSCENT Tube Holder

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ABSTRACT

In this paper we are going to discuss the design of an ADJUSTABLE FLUROSCENT TUBE HOLDER. Most of the people still use the old model full length fluorescent lights. As the technology keeps on changing there are many sizes of fluorescent tubes which can be used but there are no holders for them, if we can provide a flexibility to adjust the length of a holder it will save a lot of time and money. We can also use many models. This will increase the standards, applications, style of the users. In this present work we have designed only mechanical component of the holder which enables us to change for different lengths.

Keywords : Holder, Solid works, Fixed and Sliding parts, Sliding joint.

I. INTRODUCTION

In this present the designed holder is compatible and can be adjusted to different lengths. In conventional holders it can be used only for fixed tubes and to use a small tubes we should use a smaller holder according to that and it is expensive and not user friendly. In this design we can use a 900mm to 1200mm length tubes i.e. they are the starting and ending range of the most commonly used tubes. The radius of all the length tubes is same.

II. METHODS AND MATERIAL

We have designed the all the components in "Solid Works" software. The basic dimensions of the holder were taken from a conventional household holder. This design consists of mainly three components. They are

1. Fixed part.
2. Sliding part
3. Sliding joint.

1. Fixed Part of the holder: This is the fixed component of the holder. This holds the choke and starter of the component. The connections of wires are fixed in this part. It is shown in fig.1

The dimensions of the component are as follows:

Length of tube -800mm
Height -50mm
Depth -20mm
Thickness-2.5mm
Choke length- 100mm
Choke depth: 40mm
Choke height- 50mm

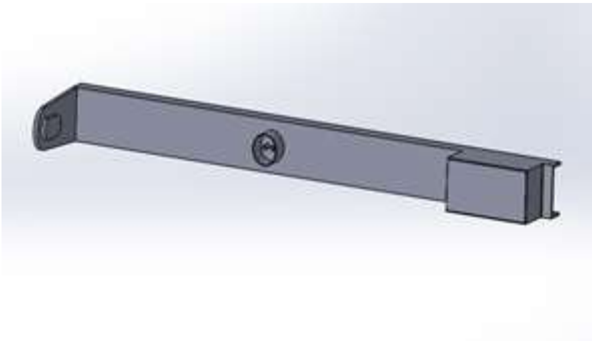

Figure 1. Fixed Frame

2. Sliding component: This is the sliding component of the design. This part can be slide to and fro according to the desired length. It doesn't contain any wired connections except the other end of the tube. It is shown in fig.2

The dimensions of the sliding part are:
Length of tube -500mm

Height -30mm
Depth -14mm
Thickness-2.5mm
Starter diameter -20mm

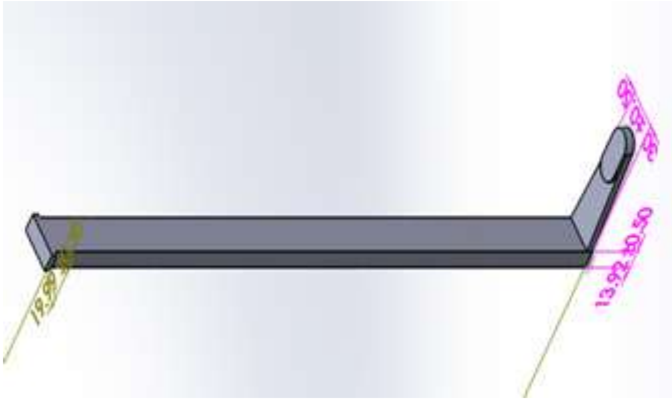

Figure 2: Sliding Frame

3. Sliding Joint: It is the main part of the whole assembly. We used rollers as bearings for the free movement of the frame. There is a stopper for the movable frame to avoid slipping from the joint. It is just a block gate for the frame. It is shown in fig.3

There are 4 rollers and they are attached to the main frame. There are extensions behind the rollers to avoid the bragging completely.

The diameter of the rollers is "8mm" each.

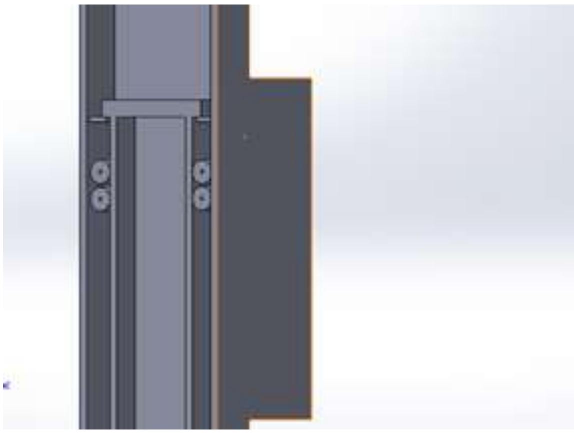

Figure 3: The joint of both frames and rollers

4. The assembled components form the Holder: All the three parts are joined accordingly to form a single component. The movable or small frame is placed inside the Fixed frame. The bearings are placed below the block gate of the fixed frame as shown in the fig.4. Thus it allows the small frame to slide along the length of the frame.

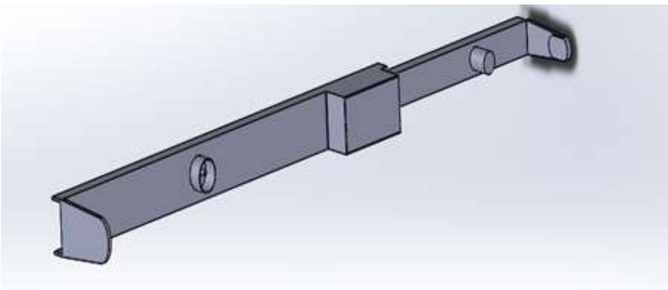

Figure 3: Isometric View of the Holder

5. Analysis:
We have conducted the analysis of the whole component in "Ansys 15.0" analysis software. We have applied "Alloy Steel" as a material in studying the analysis. A load of 10N is applied for the study And Maximum &Minimum Stress points are observed.

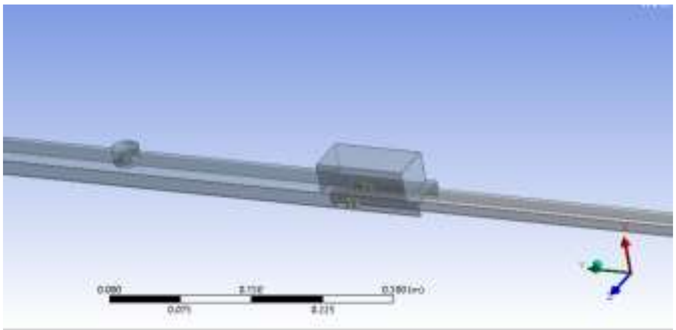

Figure 4: Material applied to the design

III. RESULTS AND DISCUSSION

Maximum deformation is formed at the point of load that is far end of the sliding frame. A load of 10N is applied downwards. The minimum bending is observed at the joint of the frame that is with the rollers. Maximum stress is observed at the joint of the frame.

In deformation the minimum value is -2.7367e-8 and the maximum value is 7.8347e-6 and the image of the deformation is shown in fig.6

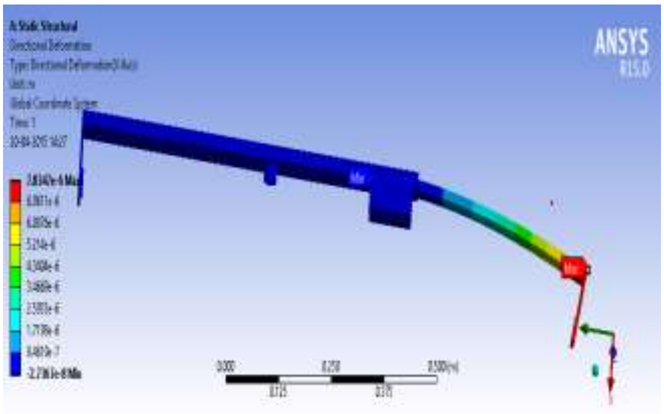

Figure 5 : Deformation in structure when load is applied

The minimum stress occurred at the point of load applied and the value is 3.5444e-7 Pa. The maximum stress is occurred at the joint if the sliding frame and the rollers of the fixed frame and the value is 2.3755e6 Pa.

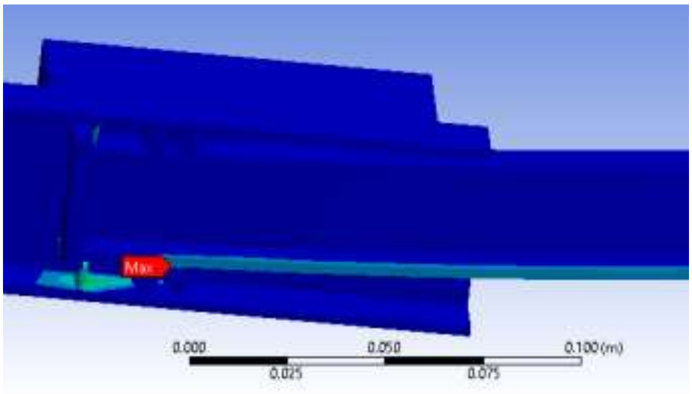

Figure 6 : Maximum stress point at thejoint

A normal fluorescent tube holder cannot be used for different size tubes. This model can be used for the tubes varying length from 800mm to 1200mm in different applications.

The analysis is done on this component and the deformations are observed and plotted. The component can with stand the normal loads applied on it which is similar to that of present design.

IV. CONCLUSION

The proposed payment system combines the Iris recognition with the visual cryptography by which customer data privacy can be obtained and prevents theft through phishing attack [8]. This method provides best for legitimate user identification. This method can also be implemented in computers using external iris recognition devices.

V. REFERENCES

[1] https://www.uclahealth.org/Safety/Documents/Lighting.pdf

[2] http://www.littlegreenhouse.com/accessory/lights2.shtml

[3] Yang-sheng lin, Chun-An Cheng, Jiann-Fuh Chen, Tsorng-juu Liang, "Design and implementation of electronic Ballast for fluorescent lamps with low lighting flicker".

[4] Avrk Teja, N.S.K.Teja, J.Sri Harsha, P.Aravind,Ch.Satya Kalyan "Finite element static analysis of male and female links of a chain drive". IJSRSET- Volume-2, issue-2.

[5] http://www.electrical4u.com/fluorescent-lamp-its-working-principle