

# CHAPTER ONE

## INTROUDUCTION

### 1.1 Statement of the problem

Voltage regulation has been one of the most important problems of the electric industry since its inception. The size of the many parts of a power system are determined largely by this one consideration alone.

In the early days of the industry, a relatively wide range of voltage variation was permissible, because the public was at that time unaccustomed to uniform lighting

Intensity . Today, there is a greater consciousness as to whether the voltage level is about right, as indicated by the “whiteness” of the light and by lamp life . while however, a narrower voltage band is required formerly, this is not always the limiting factor in voltage regulation. Numerous new devices have been added to power lines in the last few years, which impose rapid and frequent changes of load with correspondingly rapid voltage changes. Repeated observation have shown that rapid changes of voltage are much more annoying than slow ones so that “flicker” effects may limit the useful load carrying ability of individual circuits long before maximum steady-state regulation or heating is reached.

Consequently, the voltage regulation problems must now be considered from two angles: the normal drop in voltage from light load to full load, and the superimposed flicker due to motor-starting and to various pulsating and irregular loads.

Flicker is a difficult problem to quantify and to solve. The untimely combination of the following factors is required for flicker to be a problem: (a) some deviation in voltage supplying lighting circuits and (b) a person

being present to view the possible change in light intensity due to the voltage deviation. The human factor significantly complicates the issue and for this reason flicker has historically been deemed “a problem of perception”.

## **1.2 objectives:**

The first objective is to deal with the reaction of human eye and brain variations in electric light.

Also, to analysis the flicker phenomenon and the place of its origin.

Finally, to study the different remedial measurement which used in mitigation of voltage flicker

## **1.3 Outline of the project**

A brief description on the contents of the remaining chapter is given below

Chapter 2 is a literature review on the background information required to carry out the work presented in this project. This chapter give a brief definition of flicker and the characteristics of voltage fluctuation. Also which the perception of flicker depends on human vision (human eye ), then this chapter provide a brief over view about human visual system. The characteristics of a 60 watt incandcent lamp have been discussed. Also this chapter presents some of result of many investigators and experiments in relation with permissible voltage flicker, and maximum allowable voltage fluctuation which practiced by one or more than one operation company.

Chapter 3: in this chapter while, the flicker voltage may originate in the power system itself, but most frequently in the equipment connected to it. Its present a brief analysis of the origin of flicker voltage in the equipment connected to the power system such as generating equipment, utilization equipment.

Finally this chapter discuss the location of flicker voltage due to load equipment.

Chapter 4: This chapter show the methods which used in mitigation of voltage flicker, and what is appropriate method for each case.

Chapter 5: This chapter contain a sample conclusion of others chapters in a brief way.