© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 06 Issue: 04 | July-September 2015

Investigation Into Image Intensification Technology

Reena Jangra[1], Abhishek Bhatnagar[2]
1. M.tech student 2. Asstt. Prof. ,IIET (Jind)

Abstract- It is an detect ability of an image by the statistical fluctuations resulting from the quantum nature of light are analyzed and the efficiency of the photoelectric effect as a detector of optical images is compared with that of the photographic effect. The possible methods of using the photoelectric effect for image detection are enumerated and it is pointed out that this review deals only with those image intensifiers using free electrons. The possible light gain to be had from a simple photocathode-phosphor image tube and gives the reasons for its failure to reach the ideal performance. The methods employed to enable these tubes to be operated at high gain without undue background and to enable the output light to be used efficiently are described. The techniques developed allow the electron image to be projected through a thin window on to a fine grained photographic film external to the tube. the number of electrons is multiplied by a large factor before they are accelerated and detected. Three methods are described: firstly, the cascaded phosphor-photocathode screen intensifier, secondly, the transmission secondary-emission multiplying screen method, and thirdly, the channelled electron-image multiplier.

Keywords: *Photocathode ,MCP, CCDs(charge coupled devices) ,Phosphor Screen, Intensifier.*

Introduction

An image intensifier is a vacuum tube device, generally 18-25 mm in diameter. The intensifier (see Figure 1) comprises a photocathode input, which is a coating of multi-alkali or semiconductor layers on the inside of the input window, and a phosphor screen, which is a fluorescing phosphor coating on the inside of the output window.

Also included are either simple grid-shaped electrodes (i.e., early intensifier technology) to accelerate electrons through the tube or, in later intensifiers, a complex electron-multiplying micro channel plate (MCP).

A portion of the incident photons striking the photocathode causes electrons to be released via the photoelectric effect. These electrons are then accelerated and multiplied to the phosphor screen, where they strike the output phosphor coating and cause it to release light.