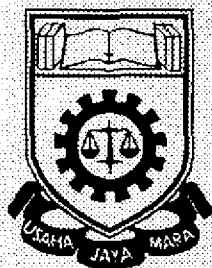


**PROPOSE OF THE LENS SYSTEM AS A PART IN
DEVELOPMENT OF OPTICAL SYSTEM FOR RED
RUBY LASER MATERIAL CUTTING TOOLS.**

This thesis is presented in partial fulfillment for the award of the
Bachelor of Engineering (Hons.)(Electrical)

MARA Institute of Technology



NORAZMI BIN BAKAR
94111911

A 2545211

**Faculty of Electrical Engineering
MARA Institute of Technology
40450 Shah Alam, Selangor
Malaysia
APRIL 1998**

Abstract

This project done by doing a case study on propose of the lens system to be implement in the development of optical system for Red Ruby Laser Material Cuttings Tool. The project proposes employing lenses in terms of their types, capabilities and shapes in order to improve the output beam (laser beam). The ultimate aim of the project is to propose the lenses system (obtain by analytical) to be use with Red Ruby Laser Material Cuttings Tool, where Nd-YAG laser was employed in laboratory experiment as a guidance to examine the practical laser beam.

ACKNOWLEDGEMENT

In the name of Allah s.w.t., the Most Gracious, Ever Merciful, the Almighty One. Praised to HIM alone for HIS endowment that let me to complete this final year project.

I am pleased to acknowledge the considerable assistance, guidance and patience to my project supervisor; Encik Ahmad Ismail along this project. I also would like to express my gratitude to Encik Ngah Ramzi Hamzah for his full technical support, ideas and willingness in sharing knowledge towards the accomplishment of this project. Also, thanks to all the staffs of Power Laboratory, technicians and laboratory assistants of Power and Machine Laboratory for their support in providing measurement and bench equipments.

Lastly, my sincere thanks to all my friends for their encouragement, kind and helpful suggestions, especially to Rozaiyana Ribot. In addition, I appreciate the kindness and friendship of the lecturers of the Faculty of Electrical Engineering, especially to Dr K. Parvatisam and Encik Ismail Musirin.

Norazmi bin Bakar

ITM, Shah Alam.

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1.0 INTRODUCTION

The word laser was coined as an acronym, for *Light Amplification by the Stimulated Emission of Radiation*. The word tells that laser light is special light. Ordinary light, from the sun or a light bulb, is emitted spontaneously, when atoms or molecules get rid of excess energy by themselves, without any outside intervention. Stimulated emission is different, because it occurs when an atom or molecule holds onto excess energy until it is "stimulated" to emit it as light.[1]

Laser could be either powerful (hazardous) or less powerful which we use everyday. Manipulation of the beam could bring a new characteristics to the beam which could be used with student laboratory work, information technology, entertainment and security sensor. More powerful lasers could be found in industries. A typical simplified schematic diagram to produce a laser beam by optical cavity is shown in Figure 1.1.[2]

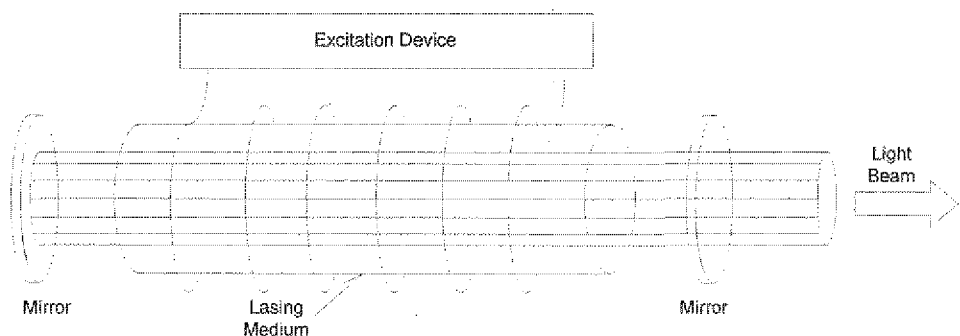


Figure 1.1 : A typical simplified schematic diagram to produce a laser beam.