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DESIGN AND FABRICATION OF INVOLUTE GEAR PROFILE ERROR DETECTOR

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ABSTRACT

Gear is a widely used mechanical component whose primary use is to transmit power from one shaft to other. These gears are of many types namely spur gear, helical gears, worm gears etc.. Gear drives are used to various kinds of machines like automobiles, metal cutting tools, material handling equipments, rolling mills, marine power plants etc. The friction and other losses in this type of power transmission equipment is comparatively very low. In this Work we use a software called "MATLAB" to design gear. MATLAB is extensively used for scientific & research purposes. It is accurate & also has a number of built in functions which makes it versatile. In this project spur gears are designed. The program is a user friendly one & when executed it ask the inputs and performs the necessary design calculations and gives necessary output values. It also gives the involutes gear tooth profile with accurate safe dimensions. As computers are used to perform the task of gear design becomes simple, friendly & error free.

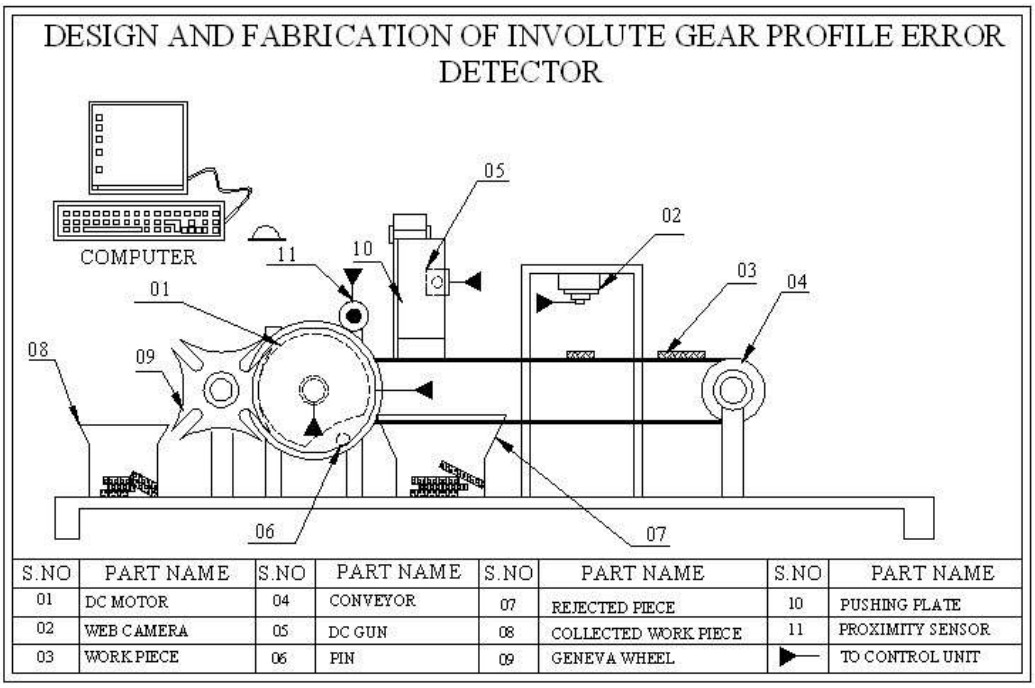
Keywords: Gear, Matlab, Tooth Profile, Spur gear

I. INTRODUCTION

Involutes Gear Profile Error Detector is the error name that contains the details of the error, including why it occurred, which system component or application malfunctioned to cause this error along with some other information. The numerical code in the error name contains data that can be deciphered by the manufacturer of the component or application that malfunctioned. The components are moved from one place to another with the help of Geneva conveyor. It is necessary to minimize the workers involved in it. We have designed a conveyor with Geneva drive which is useful in industries. So, here we have made a conveyor model which is used for material transformation from one place to another. The size of the specimen is determined by the dimensions. Our model consists of a web camera, Geneva conveyor model, collecting tray and dc gun. The error using this code may occur in many different locations within the system, so even though it carries some details in its name,

it is still difficult for a user to pinpoint and fix the error cause without specific technical knowledge or appropriate software.

II. EXPERIMENTAL SETUP



S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME	S.NO	PART NAME
01	DC MOTOR	04	CONVEYOR	07	REJECTED PIECE	10	PUSHING PLATE
02	WEB CAMERA	05	DC GUN	08	COLLECTED WORK PIECE	11	PROXIMITY SENSOR
03	WORK PIECE	06	PIN	09	GENEVA WHEEL	▶	TO CONTROL UNIT

Fig.1.PROFILE ERROR DETECTOR

III. WORKING PRINCIPLE

Computer is the main unit of the project. The I/O devices are connected across the parallel port of computer. Image processing is any form of signal processing for which the input is an image, such as a photograph or video frame; the output of image processing may be either an image or, a set of characteristics or parameters related to the image. Most image-processing techniques involve treating the image as a two-dimensional signal and applying standard signal-processing techniques to it. When we press the start key, the Geneva conveyor gets started. Two rollers are mounted according to the required distance the belt is mounted on the rollers on which the materials are placed. The rollers shaft is coupled with the Geneva drive. The Geneva drives shaft is coupled with the motor shaft hence when power is supplied to the motor rollers rotate with a certain time delay according to the Geneva drive and the belt moves along the rollers. Thus material handling is carried out. With help of the Geneva drive the time delay can be achieved. The proximity sensor is used to count the rotation of the Geneva and it can stop after particular rotation. Once it is detected the Geneva conveyor stops and the material is measured by the camera fixed at the top of the setup. The measured dimension is sent to the computer and the selected piece is collected in a separate tray and the rejected piece is collected in another tray with the help of dc gun. A pushing plate is mounted in front of the dc gun with help of hinge and spring

arrangement. When the dc gun extends it pushes the plate hence the work piece in front is also pushed and collected in the tray. When the dc gun is retracted the plate also comes back to its position with help of spring.

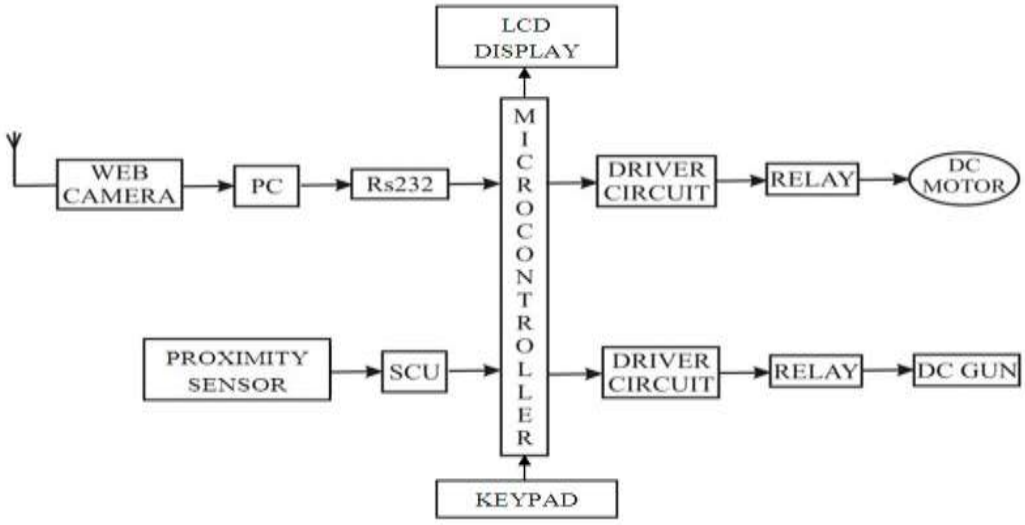


Fig.2. Block Diagram

III. CONCLUSION

Present study in the paper will help in identifying errors in involutes gear profile. Which are used in power transmission gears within tolerances is selected properly. This process is automation in gear testing and it easily detects the errors in gears**.**

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