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ABSTRACT

The primary aim of this project was to design a device that can be used as a bicycle wheel truer. The project systems will allow a wheel's current state to be measured and analyzed. The project was using strain gauges to detect the degree of wobble and eccentricity on the bicycle wheel. The strain gauges will produce a small voltage value from it as its means of detection, thus an amplifier needs to be designed need to be implement to boost the signal level for increased measurement resolution. The systems also need a gadget that will help requires some means of holding the bicycle wheel properly, securely while the wheel is being tested with the strain gauges. The test results from the systems will inform provide information about how big the extent of the wobbles and eccentricities that occur in the wheel.

INTRODUCTION

The wheel stability of a bicycle is very important for safety and comfort while riding a bike it. For that reason, the project aim is to make design a system that can test the stability of a bicycle wheel and assess how 'true' wheel it is or to help 'true' a bicycle wheel. The project This involves the measurement of the degree of eccentricity and wobble that may have produce by that characterize the bicycle wheel.

The directions to be sensed

For the purposes of testing the wheel, the project requires: that a number of elements be designed. These are set out below.

1. Sensors to detect the degree of wobble and eccentricity of the wheel.

The wobble or eccentricity produced by the bicycle wheel usually is originate over very small distances lengths of its circumference. Thus, the sensors to fulfill the requirement have to be able detect those small changes. Strain gauges were chosen because they have the capacity-ability to measure very small changes in the length of a piece material, usually for the purpose of strain gauge used for detecting stress in structures.

Figure 1 Strain gauge

The strain gauge consists of a very fine wire or metallic foil arranged in a grid pattern. The grid pattern maximizes the amount of metallic wire or foil subject to strain in the parallel direction. In the application, strain gauges are glued to the

side of a piece of metal or strain bar. ~~and when~~ the ~~strain bar~~ is placed under stress, its resistance changes.

Figure 2. Strain gauges use for ~~E~~eccentricity - ~~s~~Strain gauges use for ~~S~~side wobbles

~~As a result of a~~Attaching strain gauges to the strain bar can be applied in the case of the wheel to detect, ~~it will be applicable to use for the~~ eccentricity and ~~for the~~ side wobble. ~~Therefore~~For this purpose, ~~it they can~~should be placed ~~on for~~ the side and ~~on~~ the top of the wheel.

2. ~~Gadget~~Device for the ~~securing the~~ bicycle wheel

~~We~~A device will need to be built ~~gadget for placing the strain gauges so it can~~ ~~be~~to secure and hold the wheel properly when ~~we~~ conducting a test ~~with the~~ wheel by placing the strain gauges in position. Bicycles have ~~variant~~ble wheel sizes ~~of wheels; thus to make gadget that~~The required device must be able to be placed on the bicycle frame and ~~able to~~used on different sizes of wheels. Its design ~~it needs~~will involve advanced calculations ~~for the design~~and ~~also needs~~a particular ~~to be~~ machine ~~d~~ will be needed ~~to for~~ construct it. However, ~~the~~ students do not have the facilities ~~or and enough~~ skills to construct such a machine ~~to do it~~. The ~~chosen~~ design for the ~~gadget was device chosen to~~ must be ~~more~~simpler, but still able to ~~accept~~different wheel sizes ~~of wheel~~.

Figure 4. ~~Gadget~~Device for holding the bicycle wheel

The picture in Figure 4 ~~above~~ shows ~~that~~ a bicycle wheel placed on towers made ~~by~~from aluminum. The ~~gadget device enables make~~ any size of wheel ~~can to~~ be tested with strain gauges, which ~~are~~ placed on the towers and ~~on~~ the table.