

Rancang Bangun Alat Uji Kekuatan Puntir Material Tipe Rotary (*Design Build Tool Test Strength Twist Material Rotary Type*). Pembimbing (Azamataufiq Budiprasojo, ST, MT)

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ABSTRACT

Mechanical work in the field experienced by technical experts in their fields has many problems such as material fracture problems that are difficult to predict when they occur and cannot be seen in plain sight as to what signs of a break will occur. The magnitude of the effect of a load on the fatigue strength of the shaft material can be known through material testing using test specimens (specimens) and is accompanied by careful analysis and calculation. The aim of this research is to design a rotary type twisting material test equipment. This type of research uses experimental research. The object of this study is the result of the design of the rotary type twisting force test equipment. The results of the study were obtained by researchers related to the design of the rotary type twisting force testing instrument, namely the manufacture of test equipment designs using solidwork applications, and continued with the manufacture of test equipment which was carried out in several stages, namely the measurement of material weight, the incorporation of the test tool frame, the calculation of the frame structure, and motor torque calculation. The results of the design of the torsional strength test equipment will be tested by making comparisons using a standard rotational strength test tool that produces the selisis of the largest load between the design test equipment and the standard test equipment of 0.28 Nm with each of the largest loads for standard test equipment and the design test equipment namely 3.37 Nm and 3.65 Nm. In response to this, it is necessary to make adjustments for the design of the test equipment by giving contours to the specimens in the design test results so that the grip is more optimal. The difference in the number of specimen fractures can be overcome by shortening the distance of the load arm on the design test results, so that the measurement is more precise.

Keyword: *design, twisting strength*