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CC: Connor Gaudette
From: Alonso Garcia
Re: Machine Shop Training/Self-Learning

I. INTRODUCTION

This memo will talk about the skill I learned, the purpose of learning the skill, and how the skill can be applied to the Collegiate Wind Competition (CWC) generator.

II. THE SKILL

The skill that I learned is operating a Computer Numerical Control (CNC) vertical mill. I learned the CNC vertical mill because the CWC generator will need screw holes on the stator, which will help connect the CWC generator to the dynamometer (dyno). The CNC vertical mill includes design attributes such as drilling screw/pin holes and removing material, as demonstrated in Fig. 1.

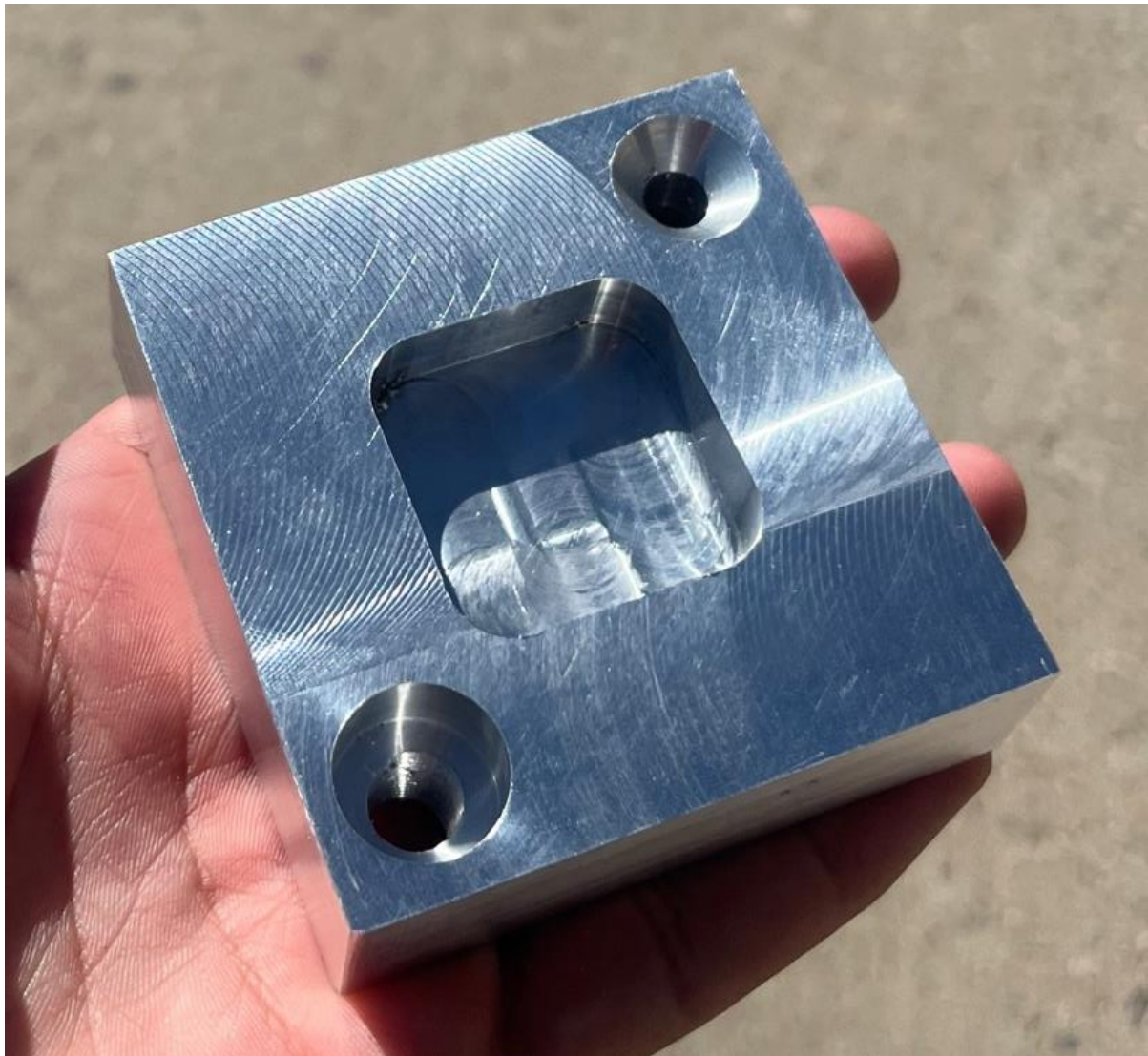


Fig. 1. Aluminum piece with a countersink screw hole, a counterbore screw hole, and removed material from the center of the piece

III. APPLICATION

As explained in II. THE SKILL, the CNC vertical mill applies to the CWC generator by drilling screw holes that will be needed to connect to the dyno.

This application can be seen in Fig. 2, where the L-plate has screw holes for holding the NAU CWC team's generator in place, while both parts are integrated to the dyno.

So, the CNC vertical mill will be applied by drilling screw holes on the stator of the CWC generator to be held by a custom L-plate. Then, the L-plate and CWC generator will be integrated to the dyno for future testing. The results of this will be obtaining efficiency curves of the CWC generator and other testing results the NAU CWC team may need to find for their future wind turbine designs.

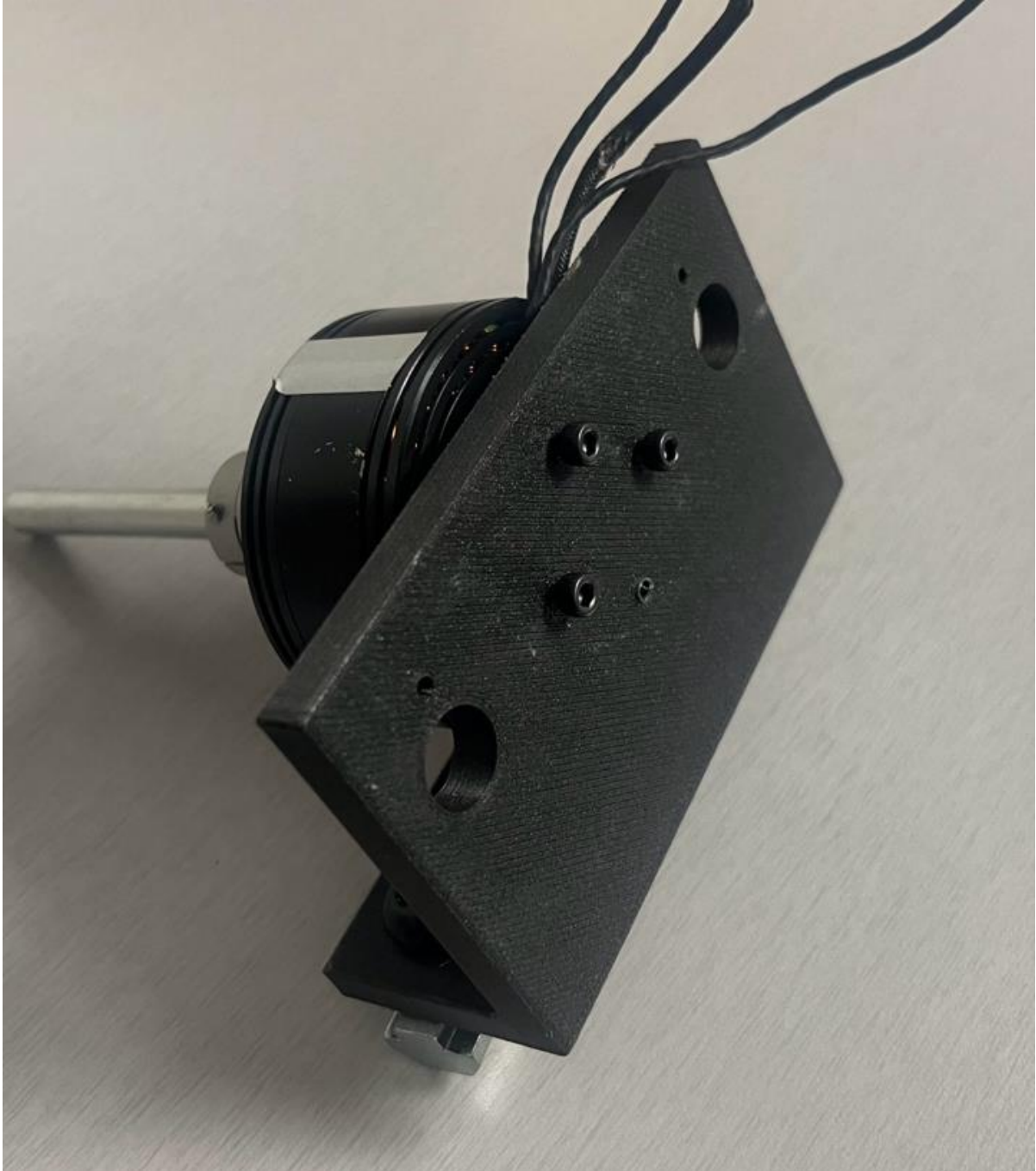


Fig. 2. NAU CWC team's past generator fastened to a L-plate