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depot is also the depot repair point for the drive and rotary systems of the MQ-8B Fire Scout.



This project will deal with an Auxiliary Power Unit (APU):



APU's are gas turbine engines used on aircraft to provide power when the aircraft is on the ground to do such things as operating hydraulic and electrical systems to check their operation. This



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project will seek to improve a maintenance action that is required periodically on the unit.

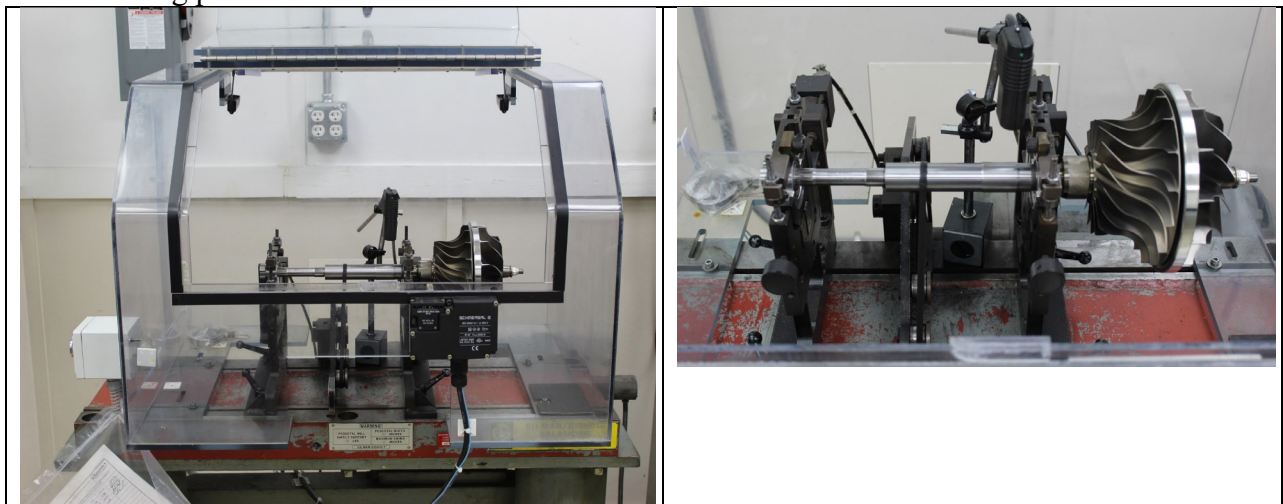
Project Requirements:

A critical component of the APU is the “Compressor Wheel”. See picture below:



The Compressor Wheel is attached to the rotor shaft. Due to the high speed operation, it is critical that the assembly is balanced. Checking this balance is one of the critical maintenance operations when the APU’s come in for service.

The following pictures show the device that is used to check the balance:



This machine spins the rotor shaft and measures the balance of the unit. When complete, it provides an output which indicates if the unit is in balance or not:



If the unit is not in balance, the output provides a location and amount of material that must be ground away to rebalance the shaft.

Currently, the material removal is done by hand with a hand-held grinder who follows a written instruction process. This process defines exactly where and how much material can be removed to meet the balancing specification. As the removal amounts are small (gram(s)) this can take a human operator multiple passes and measurement iterations to balance to specifications. The goal of this project is to automate the material removal operation so it is more precise which will result in less time and iterations required.

Expected Deliverables/Results:

- Develop and automated grinding system for the Compressor Wheel:
 - Develop a holding fixture for the Compressor Wheel assembly
 - With the Compressor Wheel in the fixture, program in the instructions for the grinding operation that is provided from the balance measuring machine.
 - Develop an automated grinding machine operation that will grind the prescribed amount and location
- Goal is to achieve balance after 1 grinding cycle.



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Disposition of Deliverables at the End of the Project:

Hardware developed is the property of the Industry Supporter. Work product is displayed at the last Expo then immediately handed over to the supporter unless arrangements have been made to deliver at a future date.

List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):

- Travel to NAVAIR Cherry Point, NC is required. Travel costs will be reimbursed from the team's project budget.