



# TEXTRON COOLING FAN PROJECT 2ND SEMESTER WORK STATEMENT



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# Textron Cooling Fan Project Work Package

For the Spring semester 2022, there are several items left that need to be accomplished. The major milestones are detailed below.

- Finalize the component values for the first prototype. (Week 1)
  - The design that we currently have is still in need of some adjustments as it relates to the specific component values. Additionally, we need to finalize the output stage in order to ensure that it is able to sink 1-amp continuously. We had hoped to be at this point already but been delayed due to our inexperience and differing
  - opinions within our 'mentor' support system.
  - After this above steps are accomplished, we will generate a BOM to acquire the specific components needed to move on to prototype and test the circuit. These first pass materials will likely be obtained via the university so cost at this point will be minimal.
  - It would also be appropriate to set up a design review with Textron at this point before moving on.
- Breadboard and test the first pass prototype. (Week 1)
  - At this stage we will require the use of a power supply, oscilloscope, the accompanying leads, etc.
  - We will perform tests on the design to ensure that we get the appropriate response in regard to frequency response, output voltage, and output current (to sink 1-amp continuously).
  - Once the performance is satisfactory, we will generate a progress and testing results report to forward to Textron.
  - Generate a BOM and acquire components that fit our value, ratings, safety requirements.
- Design the PCB that our circuit will utilize. (Week 4)
  - It is my understanding that in order fulfill FAA and DoD requirements, the design will be forwarded to Textron who will then manufacture the PCB for us and return it for testing. This will also mean a minimal cost the team.
- Design the package to enclose the PCB. (Week 5)
  - To do this we will have to research specific material requirements with regard to aircraft. This could be anything from a plastic, 3-d printed package, to an encapsulated circuit.
  - We will have to refamiliarize ourselves with Catia, or other CAD software if it is to be 3-D printed.
- Assemble the PCB and enclose within the package (Week 9)
  - At this point there are tests to be run to ensure compliance with DO-160g. These tests will be performed by Textron will the team observing.
- Assemble the deliverables and draft the final report for Textron. (Week 13)
  - PCB Schematic files
  - PCB Layout files
  - Package Design files
  - Final Report
    - Detailed Functional Description

- Detailed Description of how to set the Frequency Threshold and Hysteresis Parameters
  - Results of any testing that was accomplished to prove out the design.
- Timeline
  - Week 1: Have first prototype breadboarded done
  - Week 2: began research on how to design, layout and create PCB boards
  - Week 3: continued
  - Week 4: continued and research how to enclose our PCB board
  - Week 5: continued
  - Week 6: continued
  - Week 7: began creating package and testing
  - Week 8: make modification and test
  - Week 9: repeat
  - Week 10: repeat
  - Week 11: repeat
  - Week 12: repeat began creating a report
  - Week 13: should have deliverables and report ready for Textron
  - Week 14: Began getting ready for showcase
  - Week 15: continued
  - Week 16: showcase

Sign

I have read the entire report and it meets my personal quality standards for this project:

Signature: Ayham Sabra 12/6/2021

Cody White 12/6/2021

Melvin St. John 12/6/2021