**Design and Development of a High Altitude Wind Tunnel (HAT)**

**Mission Statement**

“To design a prototype closed circuit, recirculating, high altitude wind tunnel for Abaco Systems (Huntsville, Alabama). The product will test electronic systems and their board-level components at varying pressures, temperatures, humidity, and airspeeds. Conditions will be similar to those expected in flight situations.”

**Background**

In order for Abaco Systems to ensure that their products are of the highest quality, they require a wind tunnel for testing the coupling effects of various simultaneous condition changes on their equipment. The wind tunnel is being designed by a UAH Senior Design Team and will allow testing of products under desired conditions of 73°F (room temperature) to 185°F, 4.36 psia to 14.7 psia, and laminar flow from 300 LFM (linear feet per minute) to 600 LFM, in a humidity controlled environment.

**Impact/Results**

The HAT design allows Abaco Systems to truncate the amount of testing apparatuses needed to test for a wide variety of flight conditions such as airspeed, temperature, pressure, and humidity at a large range of conditions. No system currently exists that resembles the UAH design, bringing Abaco Systems a unique product which could open an expansive array of future testing and research.

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