The Development of an Unmanned Aerial Vehicle for Use in Silo Inspection

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Small scale farms are responsible for producing 70% of food worldwide. Of this food produced a large amount is stored in structures called silos. Silos are agricultural containment vessels often cylindrical in shape that are mainly used for the storage of grain and silage. Inspections are performed in order to ensure the integrity, stability, and safety of the structure. However, these inspections require human risk due low oxygen conditions and the presence of dangerous gases such as nitrogen dioxide within the silo. In order to remedy this, a drone, or UAV could be employed to enter and inspect the silo when it is unsafe for a farmer to do so. The first step in constructing a UAV capable of accomplishing this objective would be to construct a lightweight yet durable frame made of carbon fiber. The drone will use first person view (FPV) in order to inspect both the interior and exterior of the silo. In order to more easily interpret the location of the drone when out of sight a radio telemetry sensor will be used to allow key flight data, such as speed, to be seen by the operator. The UAV was able to successfully transmit location data.

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