HydroEye

TEAM 17

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AE 4 COE ISE CHE

Subheading

Problem Statement

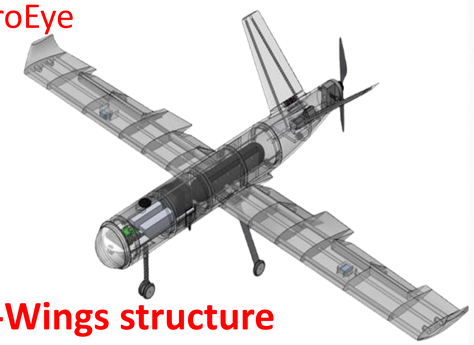
- As the global demand for clean and sustainable energy sources continues to grow, hydrogen fuel cells have emerged as a promising alternative to fossil fuel-based power systems due to their high efficiency and zero-emission.

Constraints and Specifications

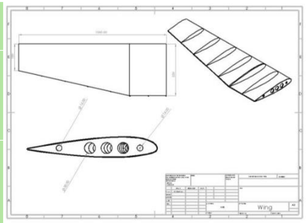
Constraints	Specifications
Speed < 160 km/h	Flight Time>30 min
Total Size < 4m3	Top speed = 100 km/h
Limited Budget < 7000 SAR	Camera Quality = 1080p 15 fps
Fuel Cell Efficiency < 60%	Operating Temperature < 80 C
Radio Range < 5km	Deployment Time < 5 mins
Integrated Specification	Manufacturing Tolerances < 1mm
Weight < 25 kgs	Hydrogen Consumption <2L/min
Survey an Area of 0.2 km2	
Power Consumption < 600 W	Transfer Latency < 150 ms

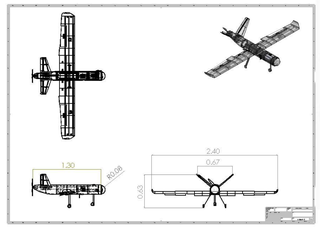
Design

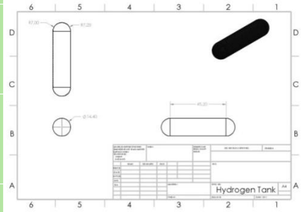
- Here is overview of the final design for HydroEye

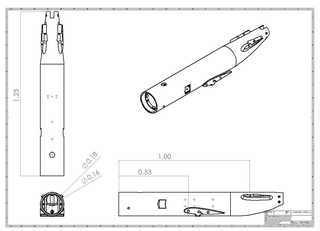


- **Body-Wings structure**

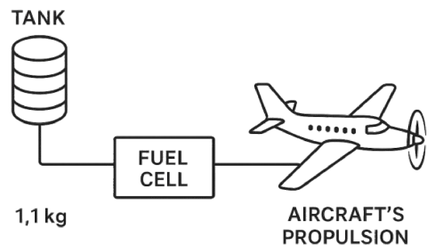






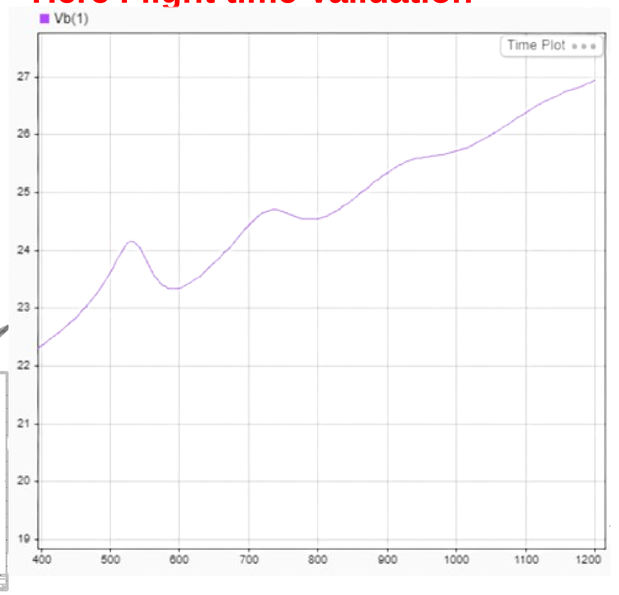


- **Power system**

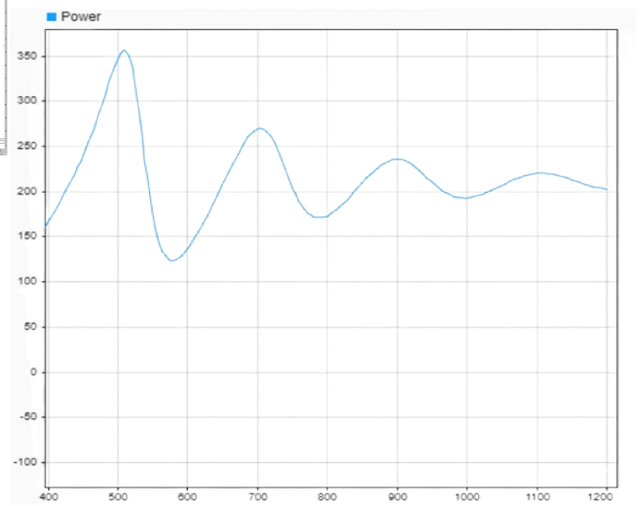


Validations

- **Here Flight time Validation**



- **Here is power chart throw the flight**



Subheading

Conclusion

- In conclusion, HydroEye was designed and built to be a bridge between the current use of battery powered drones and hydrogen powered drones. Aiming to achieve a hybrid between the two while minimizing the current high costs of building and manufacturing a hydrogen powered drone. The project required careful and detailed design by the aerospace and chemical engineers to achieve a higher flight time while adhering to a budget of 7000 SAR, the drone's performance remains competitive to other similar fuel cell drones in the market. The team got around the budget constraint with efficient design and practical manufacturing methods, mainly 3D printing.