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DRONE TECHNOLOGY AID FOR WILDFIRES

## A methodology of recognition and suppression of fires

BACKGROUND

Every year, climate change and human accidents cause wildfires worldwide. To name a few recent disasters: Australia, Amazon Rainforest, Siberia and California. Wildfires cause environment disasters, high-cost infrastructure damage and harm flora/fauna and firefighters. The aim is developing a concept drone with the objective of simulation major aspects of the system (flight properties, CFD tank flow, fire recognition, energy system)

WHY DRONES

- Cost effective compared to firefighters aerial vehicles
- Can fly closer to high-risk areas
- Sensors and cameras detect hidden fires
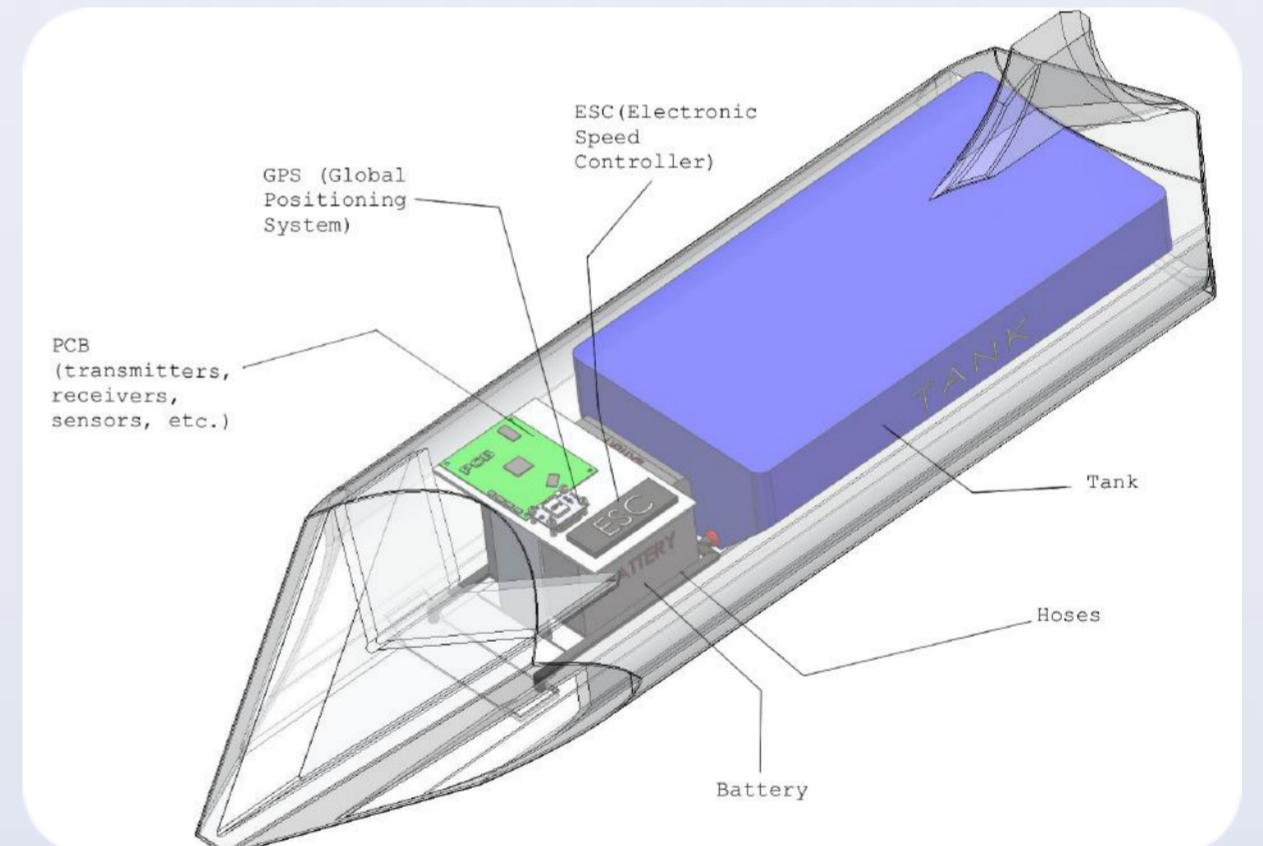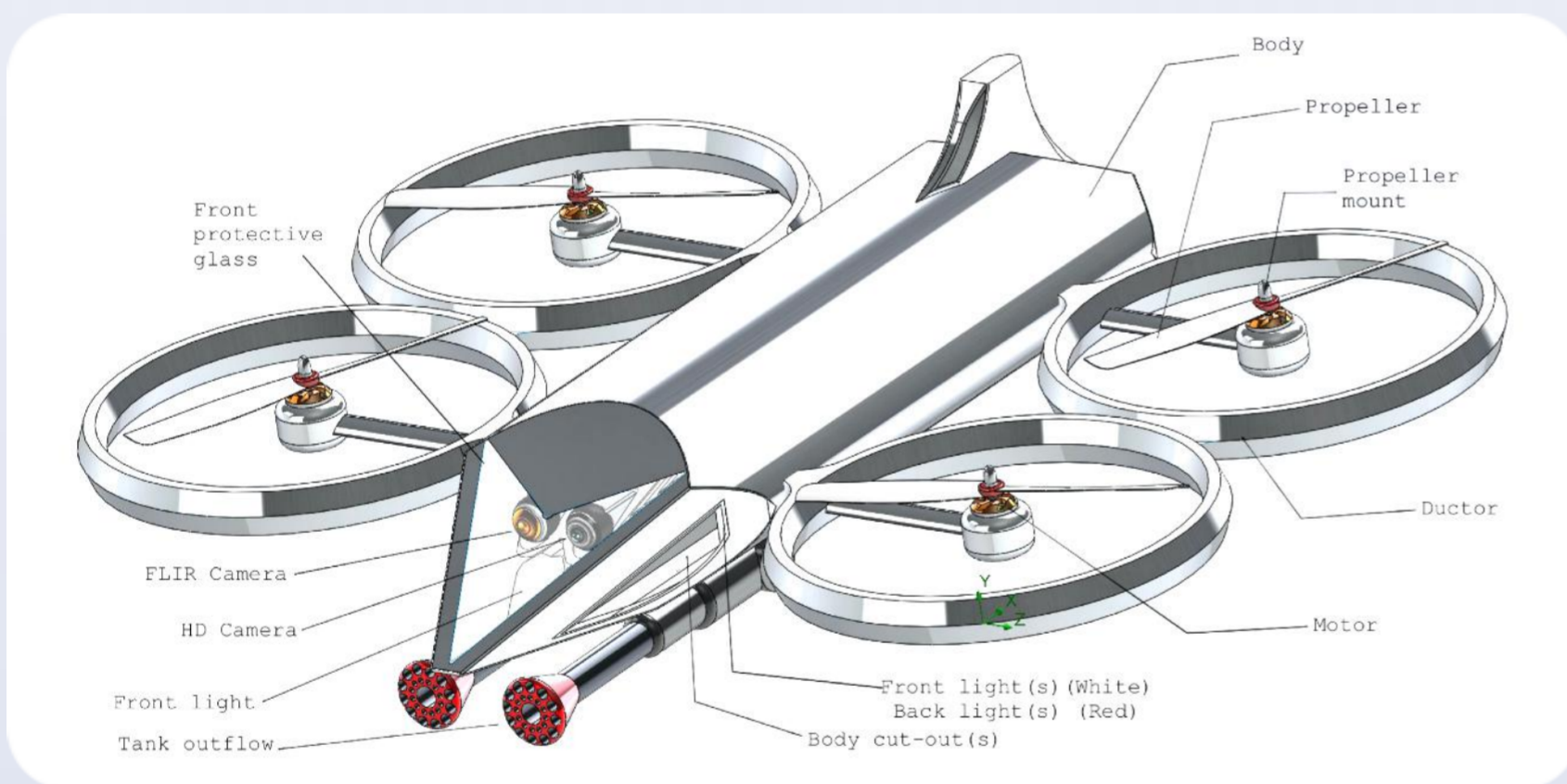- Fully electrical and sustainable

FIRE RECOGNITION

This methodology adopts MATLAB for imaging computing through coding. A set of captures of a fire are taken with a FLIR camera, to be imported on MATLAB. On the right, an example of input image and the respective detected fire.
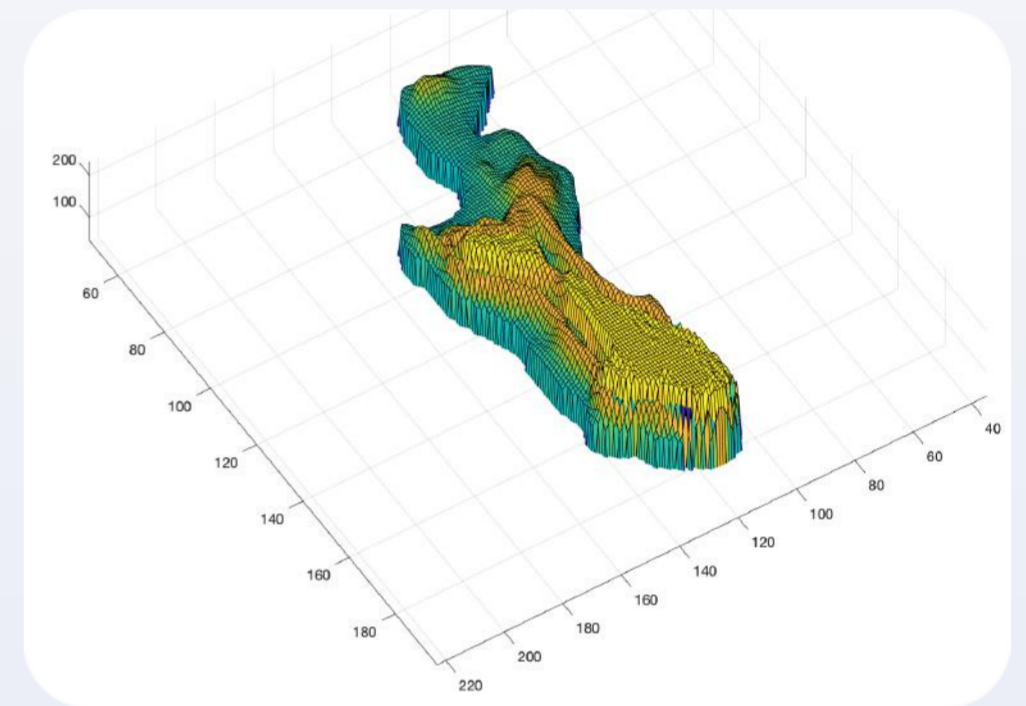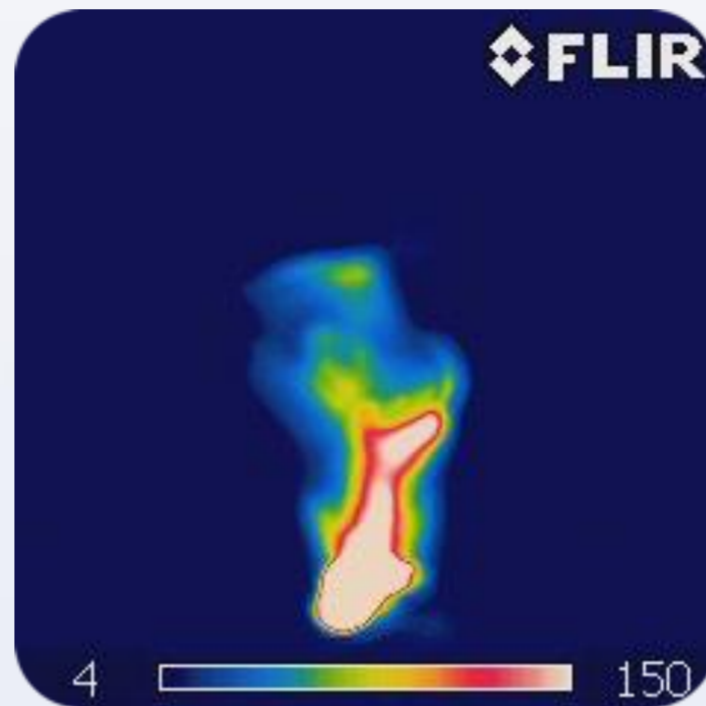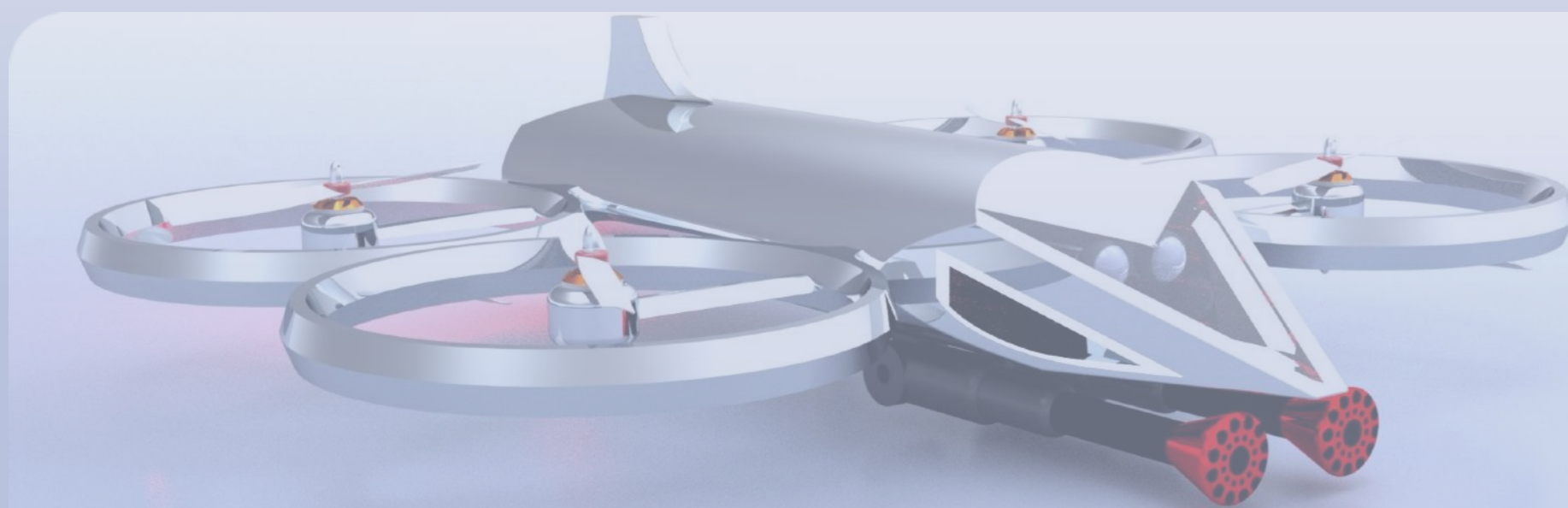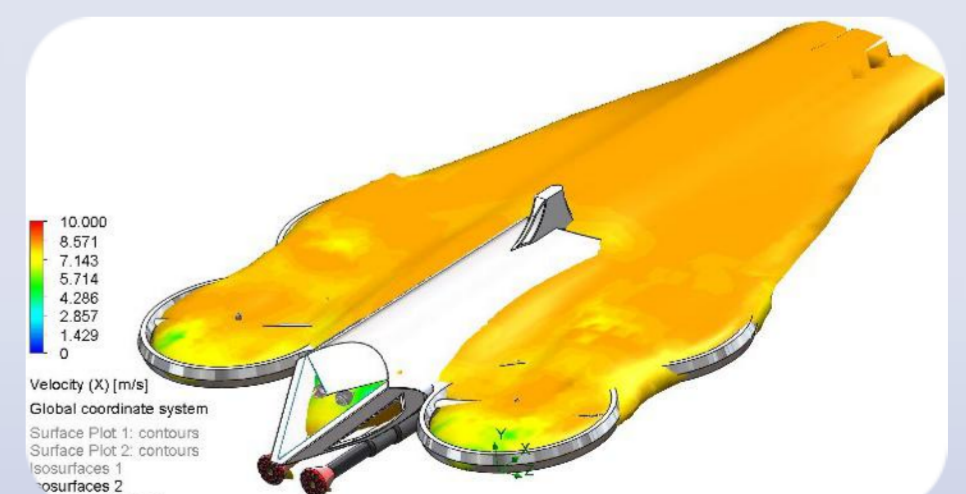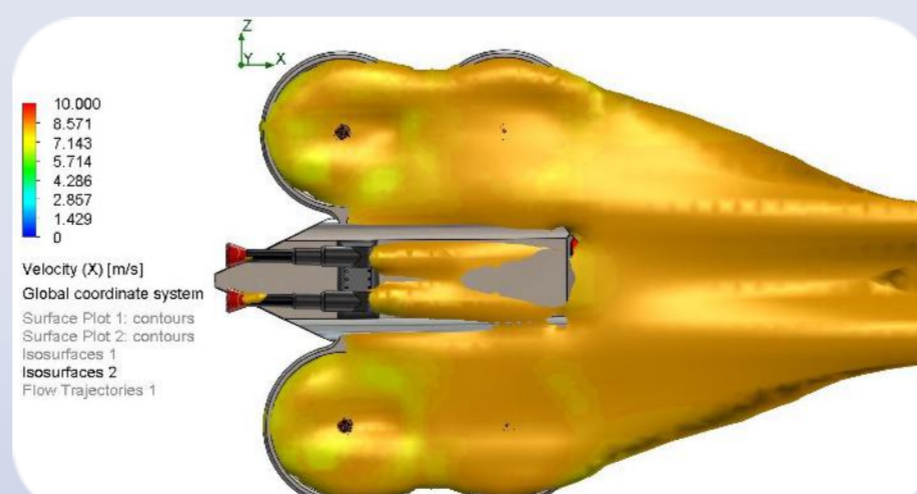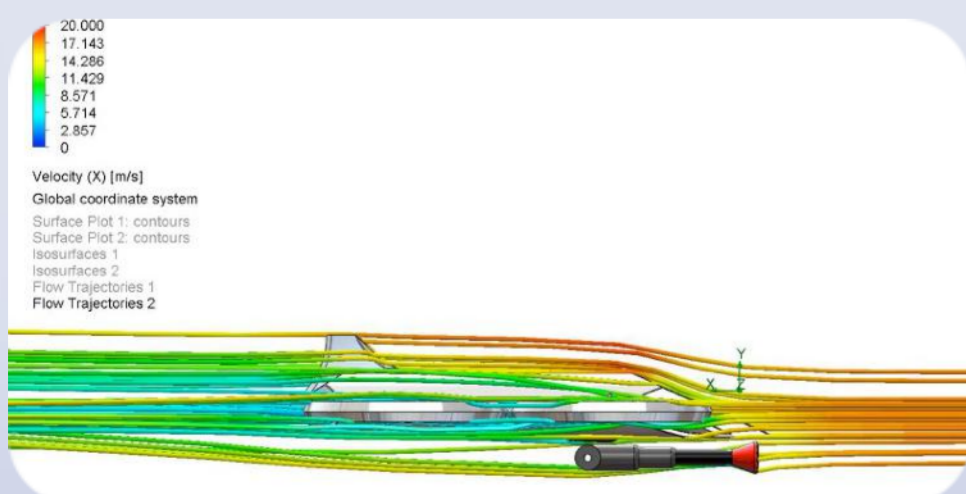

DESIGN

The conceptual design with internal components is modelled on Solidworks

CFD SIMULATION

Simulation of aerodynamic properties during flight is carried. Drag factor, velocity and pressure areas are identified.

CONCLUSION

The concept is successfully simulated with software tools and supported by research/calculations. Future work involves research of regions often affected by wildfires and testing of proposed concept for further validation.