Ember Generator for Wildfire Research/Simulation

SDSU
San Diego State University

ASHES

Project Overview

Team ASHES developed an ember generator to simulate the behavior of embers at varying wind speeds. The ember generator burns wood pellets inside an ignition chamber to generate embers and uses a fan system to carry them at a desired direction and speed. The system is compact and easy to transport. This device will be used to advance research of fire risks associated with Wildland-Urban Interface (WUI) vegetation and structures.

Team ASHES

Emmanuel Flores
Co-Lead

Galia Melgoza Cruz
Co-Lead

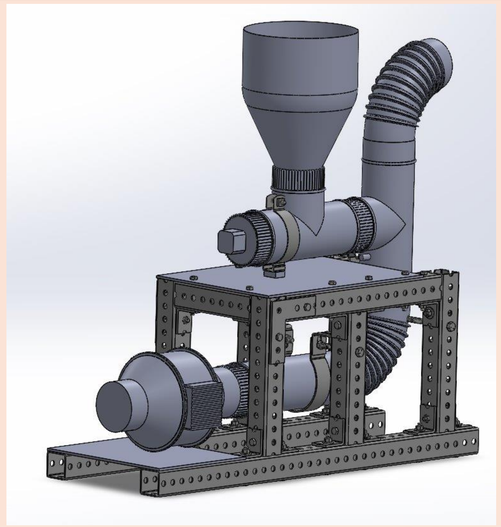
Jeremy Parks

Riya Shah

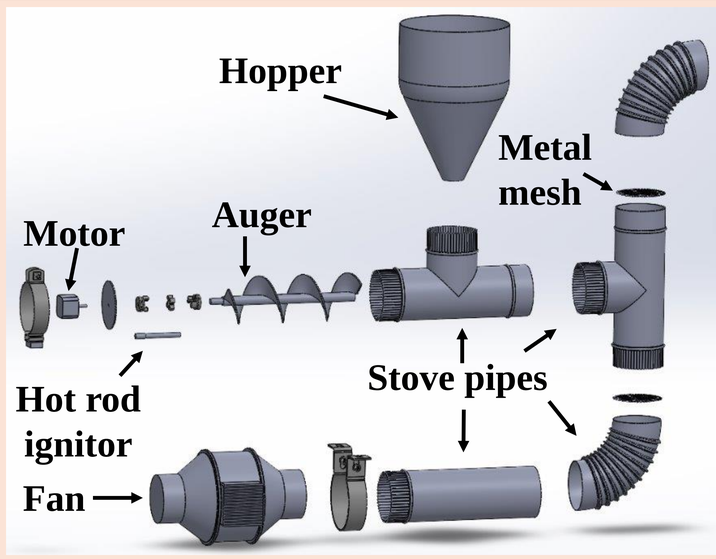
Acknowledgement

Team ASHES would like to thank Dr. Shaffar, Dr. Carmignani, and Michael Lester for all their guidance and help throughout our journey. Additionally, we would like to thank the Mechanical Engineering department at San Diego State University.

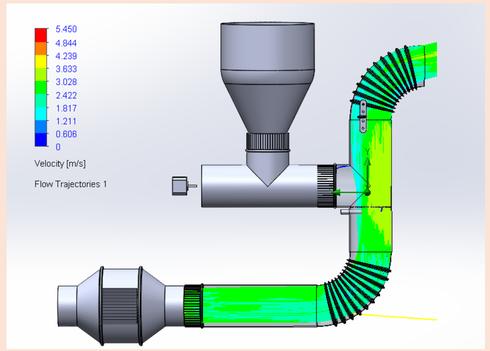
CAD & Exploded View



Final Design CAD Model



Testing/Analysis

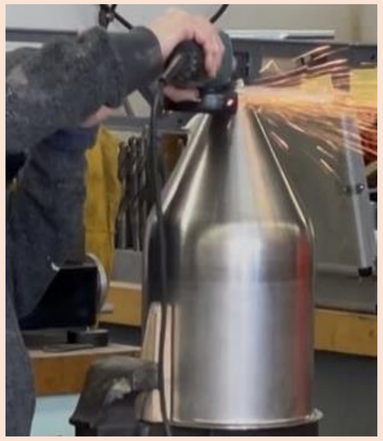


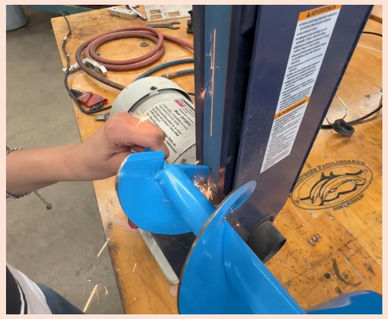
FEA of System Flow

Incense Air Flow Test

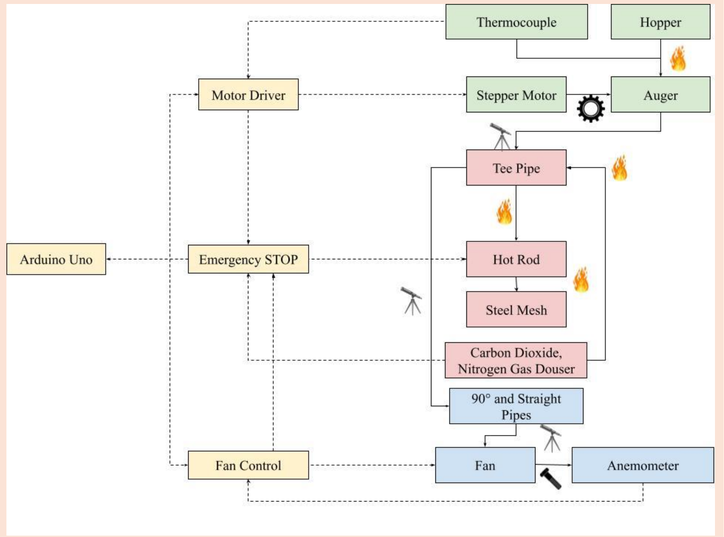
Small Scale Ignition Testing

Assembly & Manufacturing





System Level Diagram



Spring 2025