

EASY EMBER: EMBER GENERATOR

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Objective

To create a portable ember generating device capable of outputting a steady stream of embers for 15 minutes without refueling that enables College of Natural Resource's researchers to test the fire resistance of building materials

Background

NIST reduced-scale continuous feed Firebrand Generator (NIST Baby Dragon)

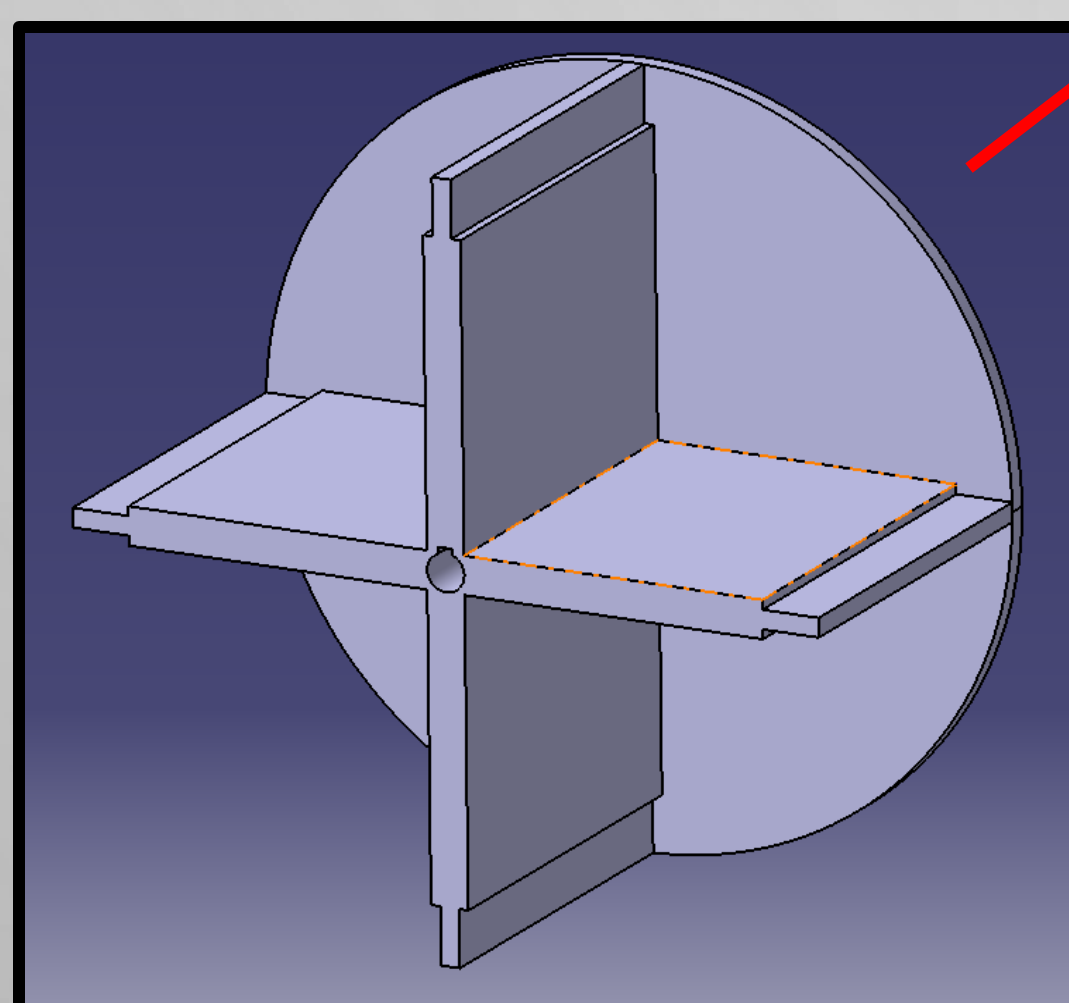
View the impact of wildland ember storms and provide valuable information to protect infrastructure from wildland fires

Key Requirements

- Ember stream: continuous for 15 minute without reloading fuel source, enough to ignite building materials
- Size: Able to be transported in bed of truck
- Controlled remotely
- Safety: emergency shutdown
- Durability: last 5+ years, handle up to 1400 °F
- Budget: \$3100
- Electric: 120 VAC, 15amps
- Flame source: propane

Feed System

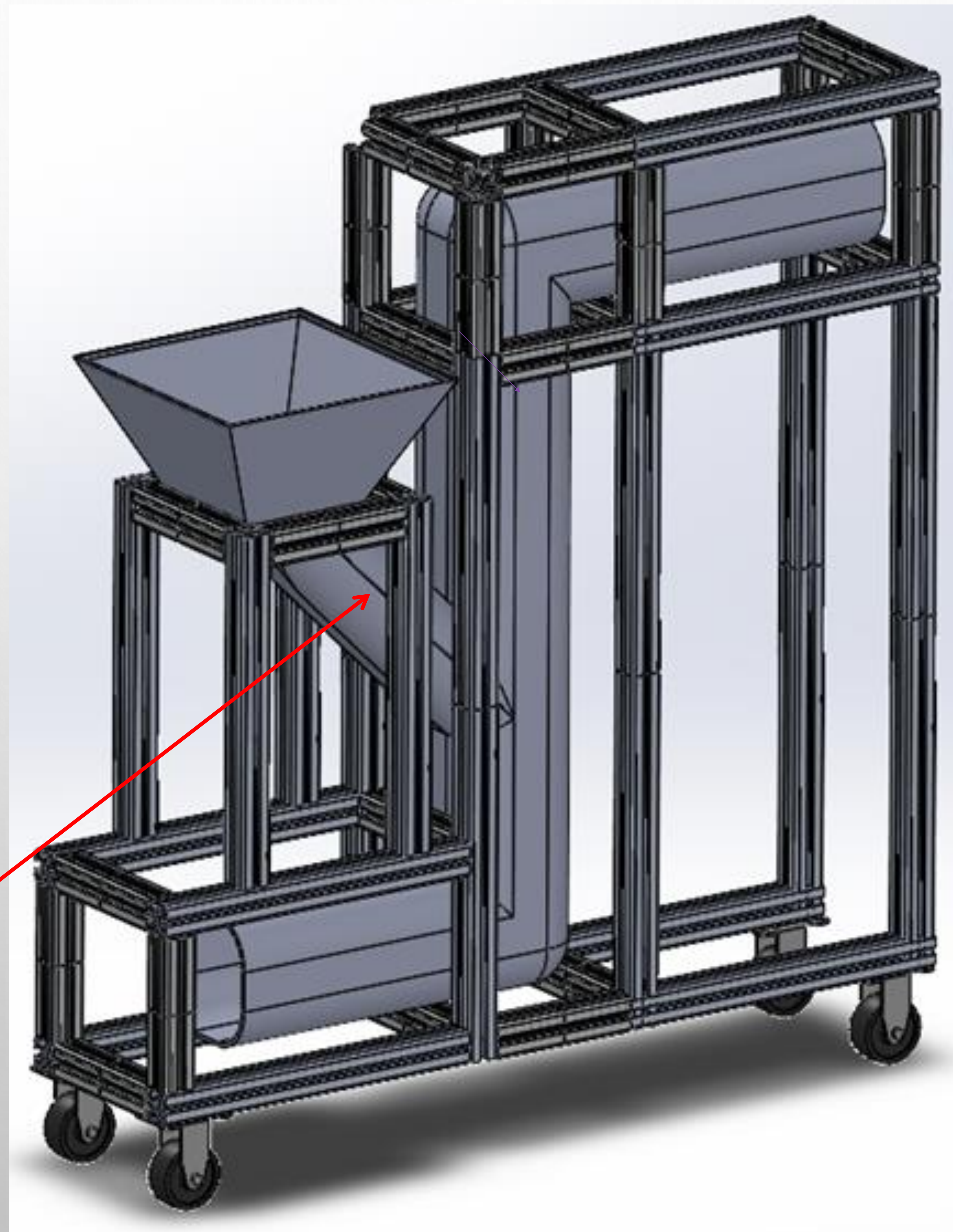
- Motor driven feed wheel
- Controls flow from wood fuel hopper
- Steel construction
- Silicon tips



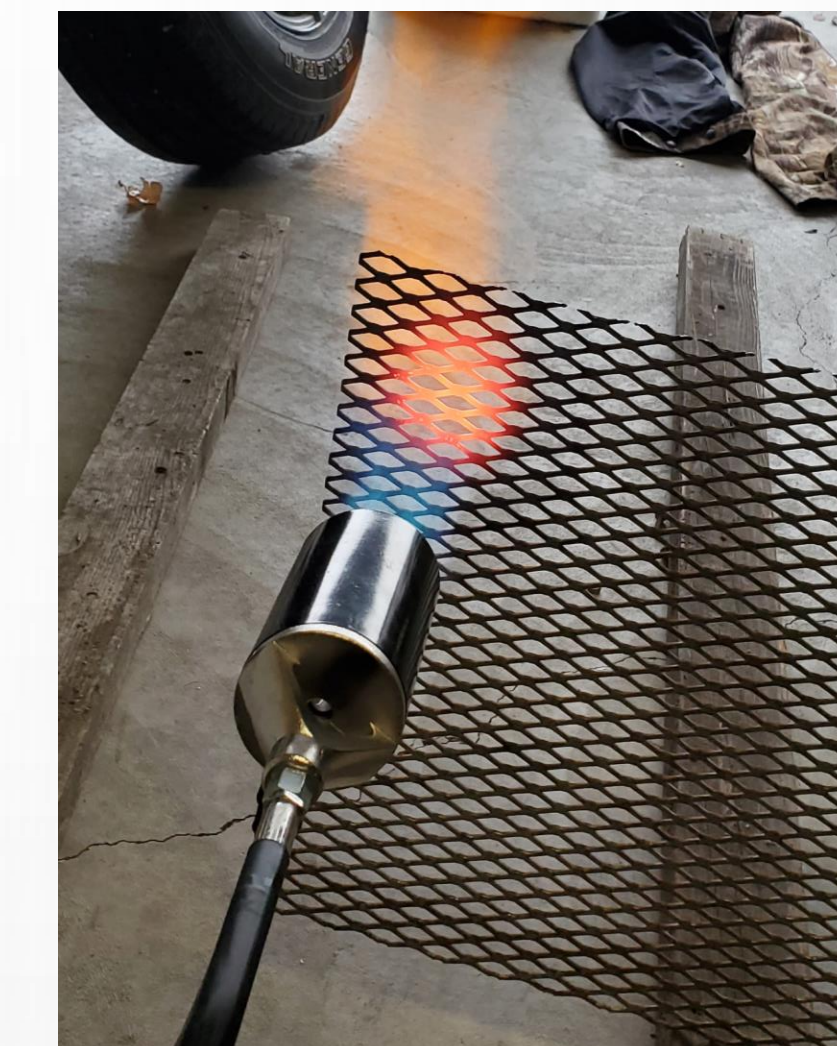
Feed Wheel Cross-Section

System Frame/Assembly

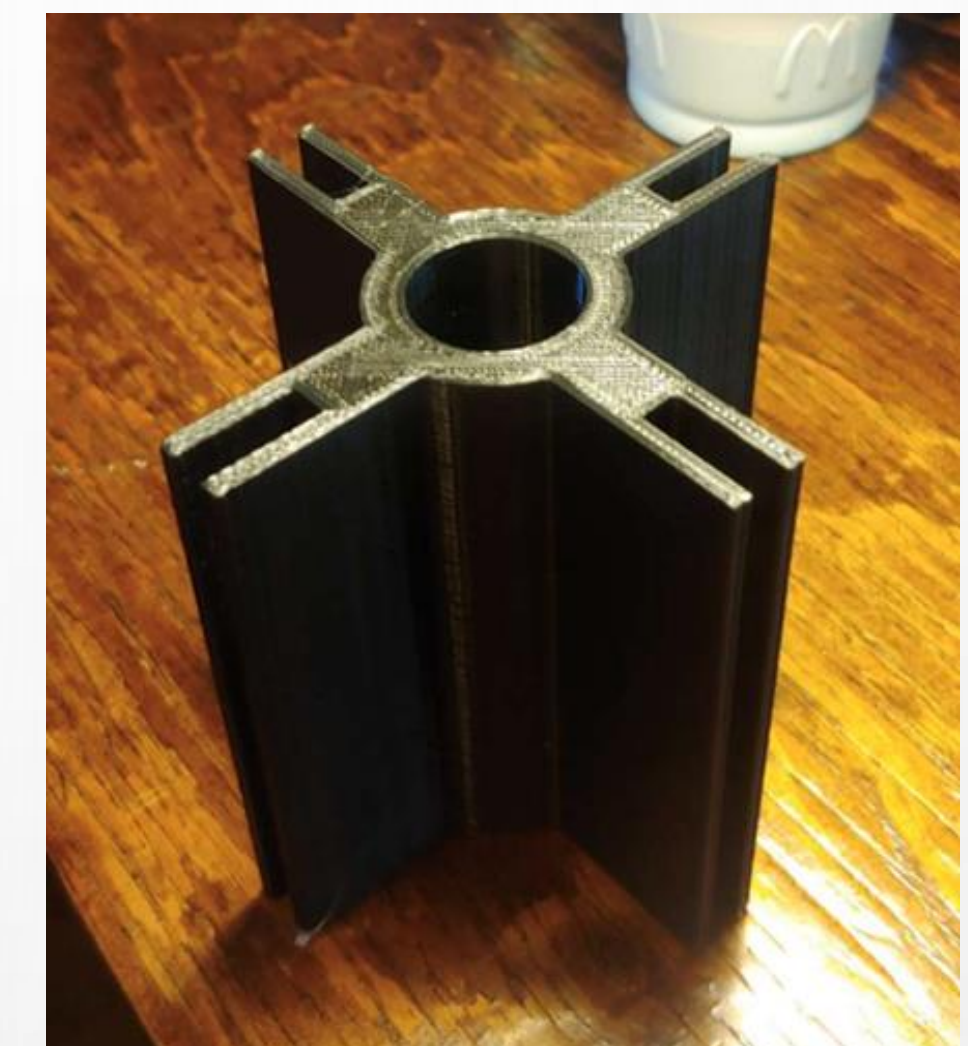
- Made of 80-20 t-slots
- Integrated castors
- Lightweight design
- Within dimensional requirements



Testing



Metal Mesh Heat Testing



3-D Printed Wheel for Testing



Future Work

- Build structure out of insulated stove pipe
- Build the motor driven feed wheel system
- Purchase hopper
- Build frame
- Design and build electrical components
- Further testing and validation