

Energy Group

REDUCING INDOOR COOKING SMOKE HAZARDS

ABHISHEK JACOB

NEED

2
Billion

1.5
Million



OBJECTIVE

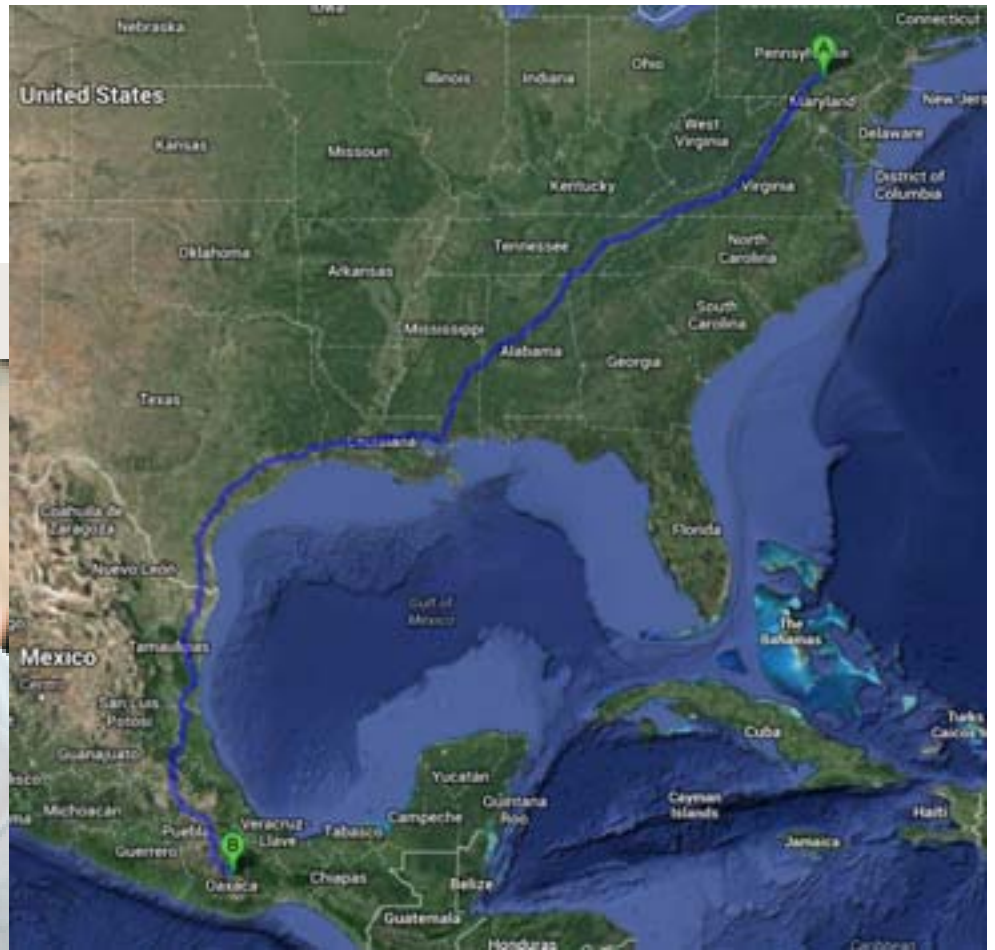
- Universally Implementable
- Unobtrusive
- Doesn't rely on the power grid



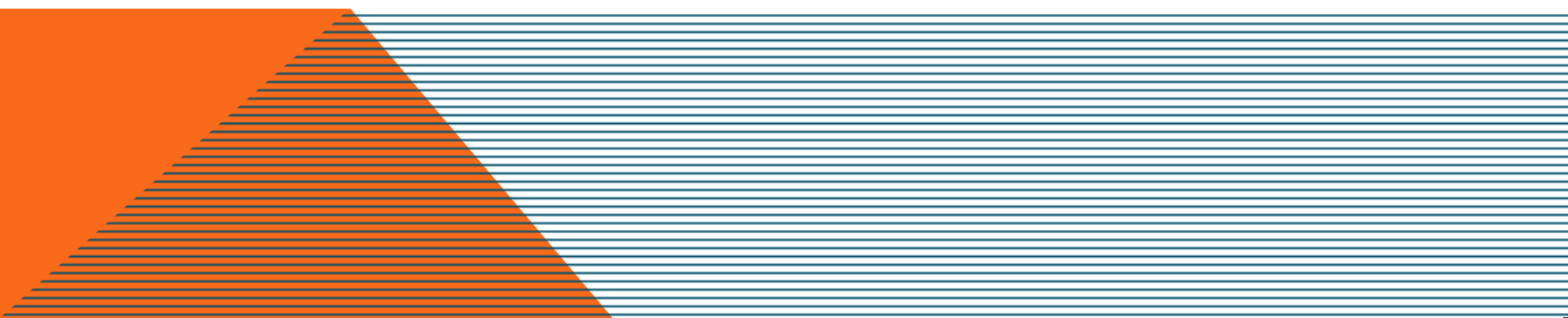
CLIENT



Tom and Wendy Hogan

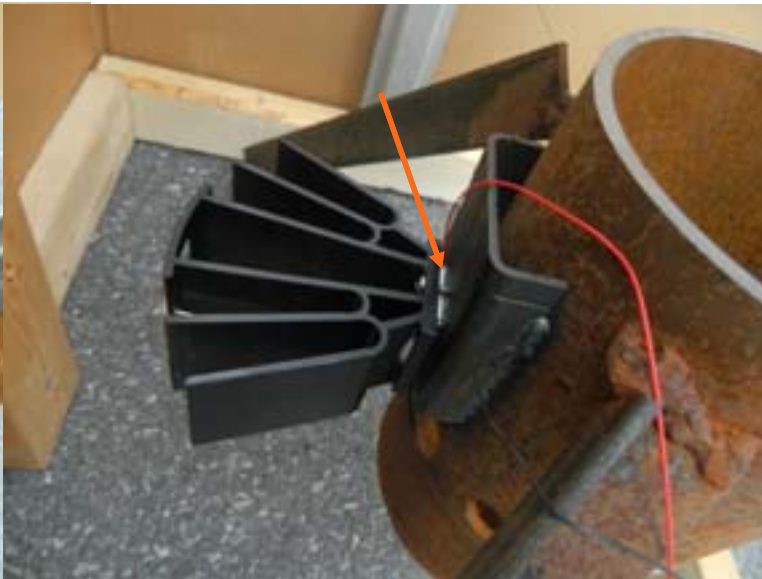


Oaxaca, Mexico



PREVIOUS WORK

- Research
- Proof-of-Concept



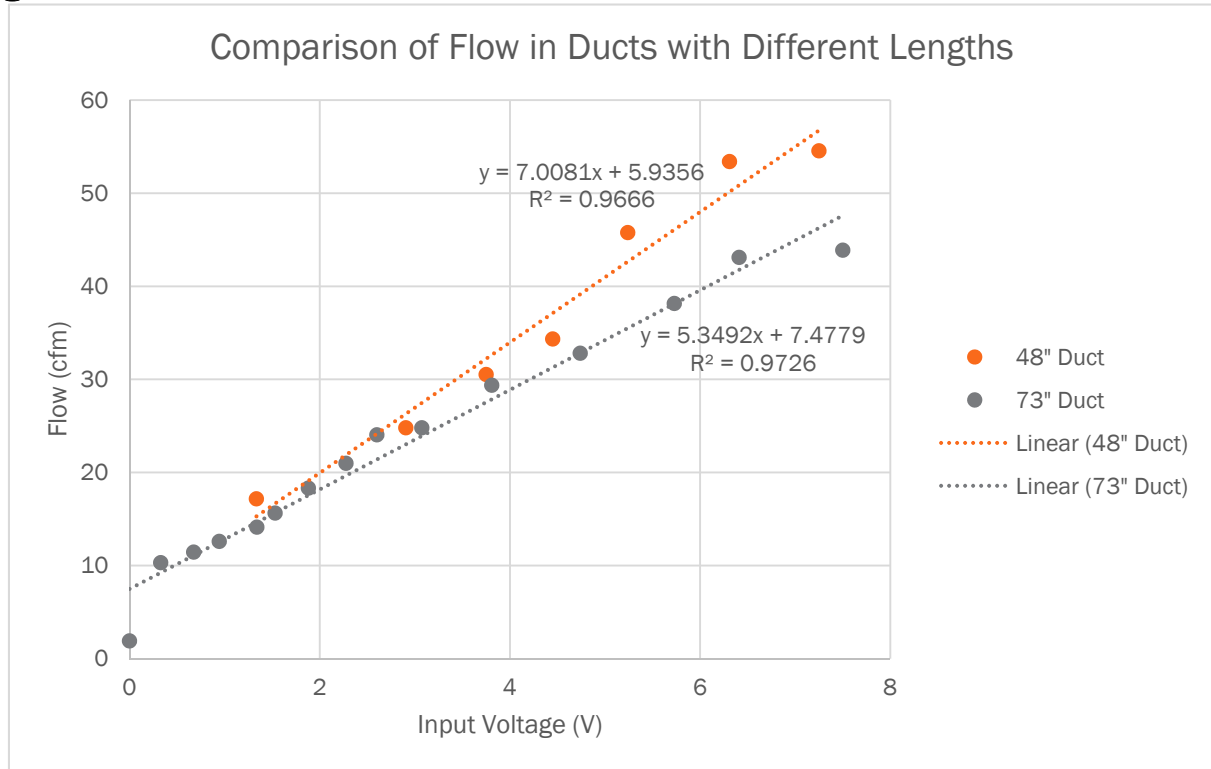
RESEARCH AND EXPERIMENTATION

- Goal: Identify prototype design
- Two parameters
 - Duct
 - Hood



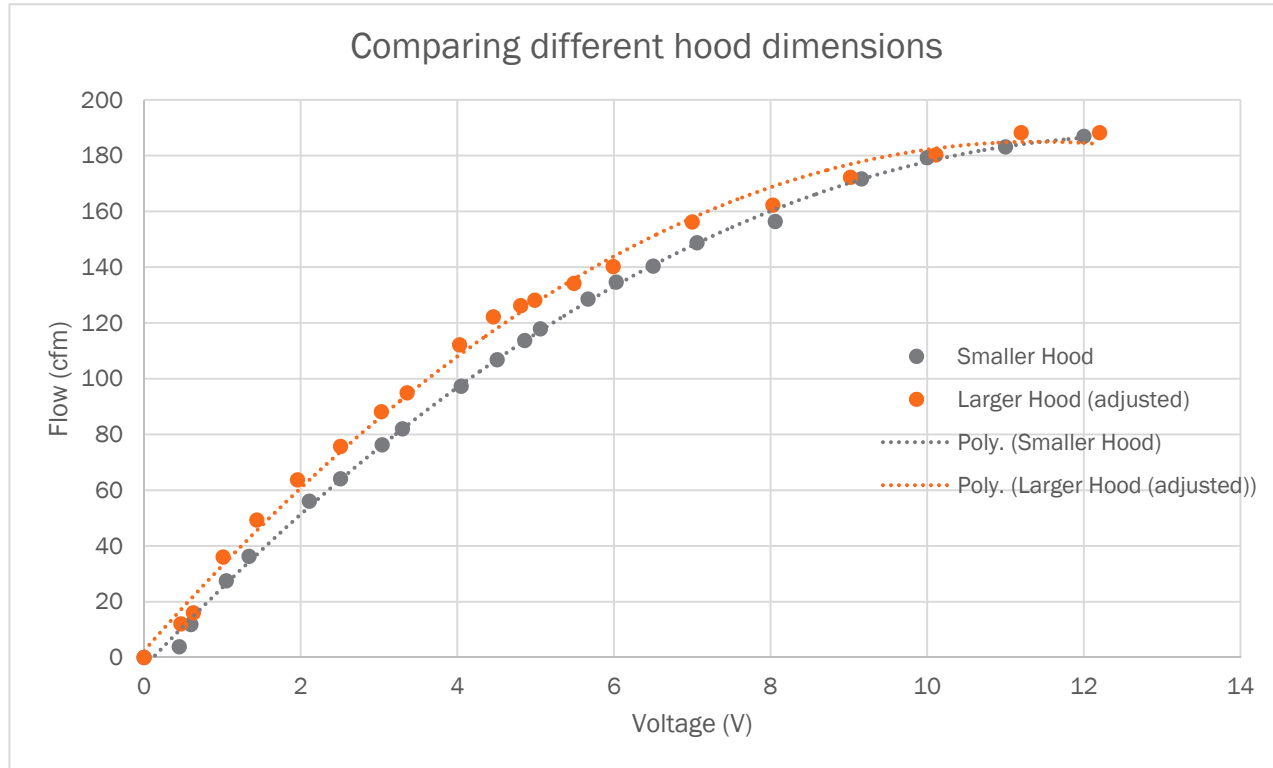
DUCT

Changing the length of the duct



HOOD

Changing the Size of the Hood



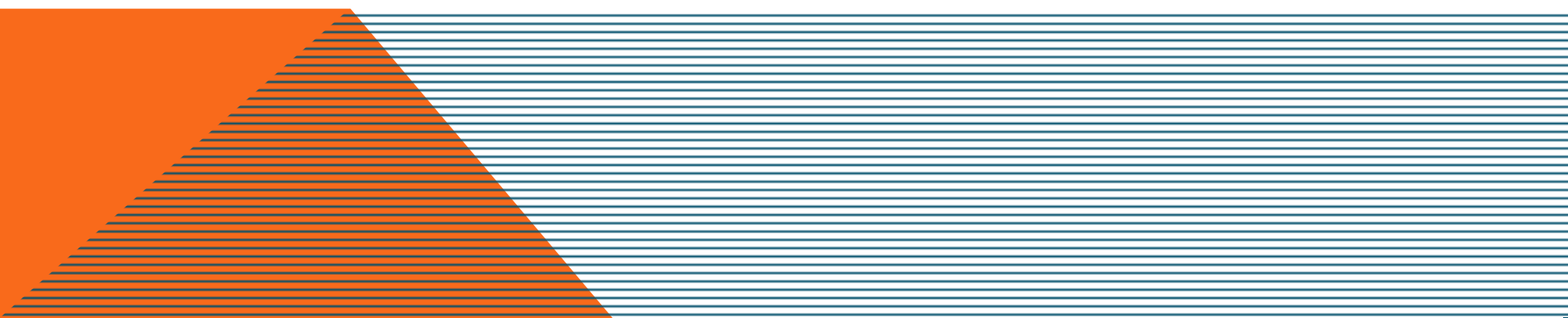
HOOD

Changing the Size of the Hood

Smaller Hood ($V=721 \text{ in}^2$)



Larger Hood ($V=1414 \text{ in}^2$)



SYSTEM OVERVIEW

Components:

- Hood
- Duct
- Fan
- Stand

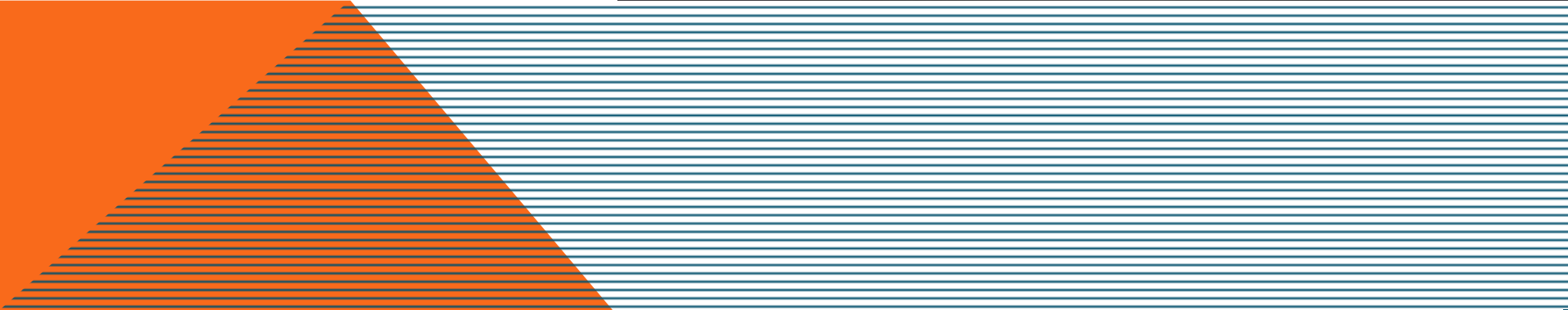
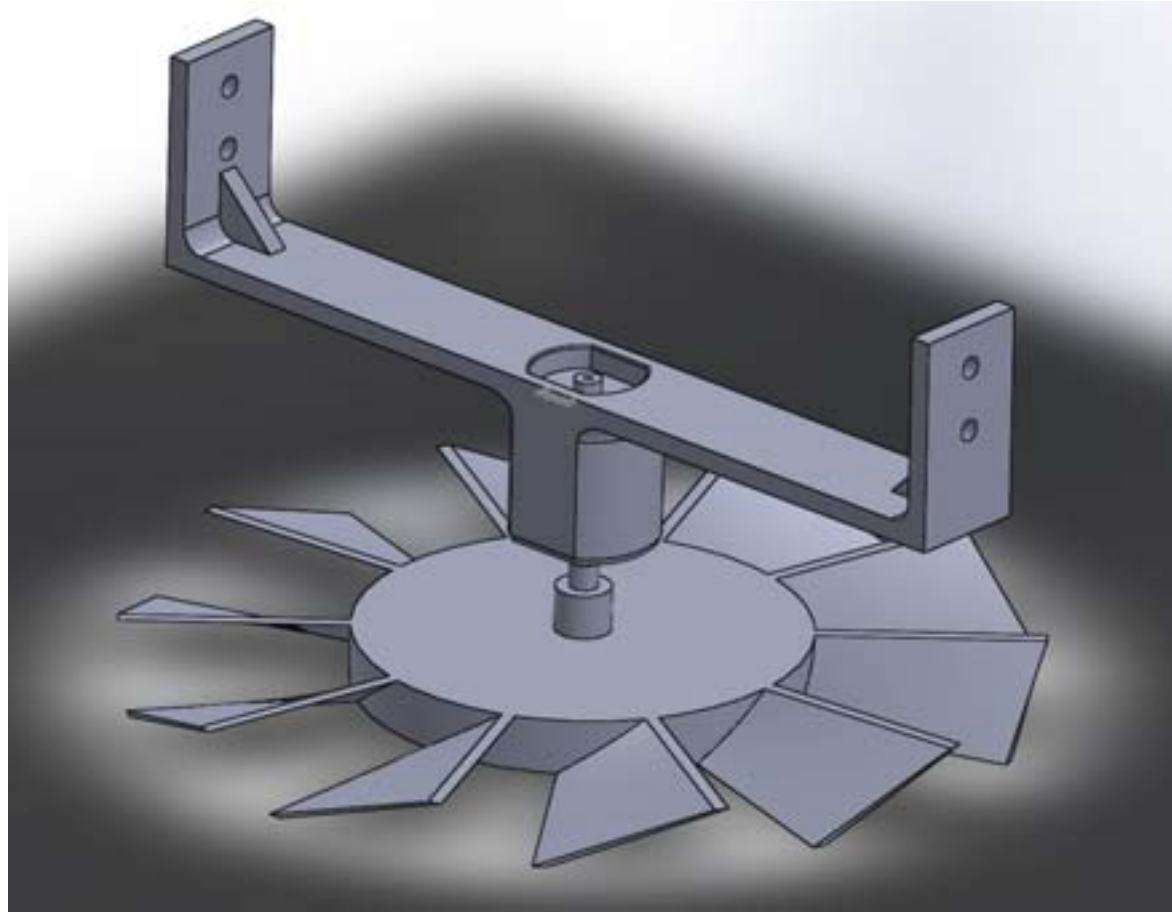
Criteria

- Built from cheap, easily available materials



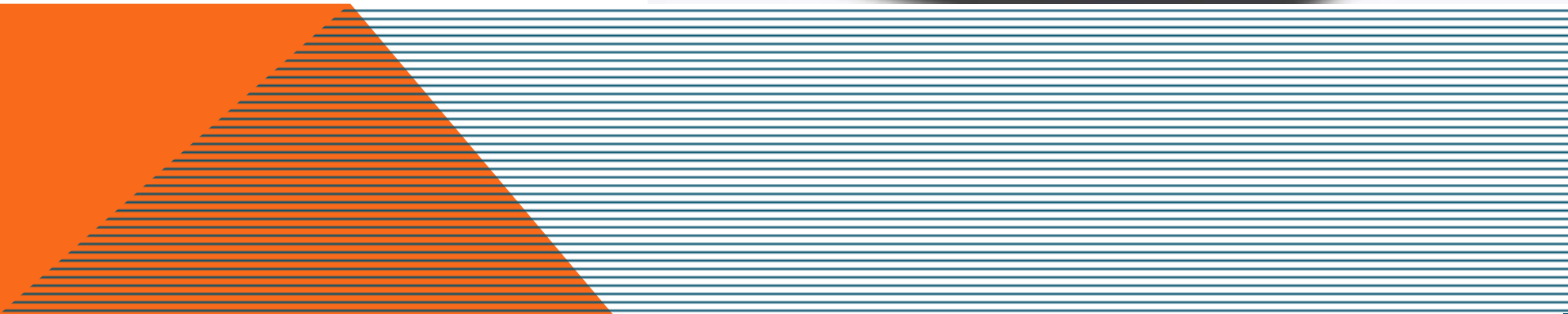
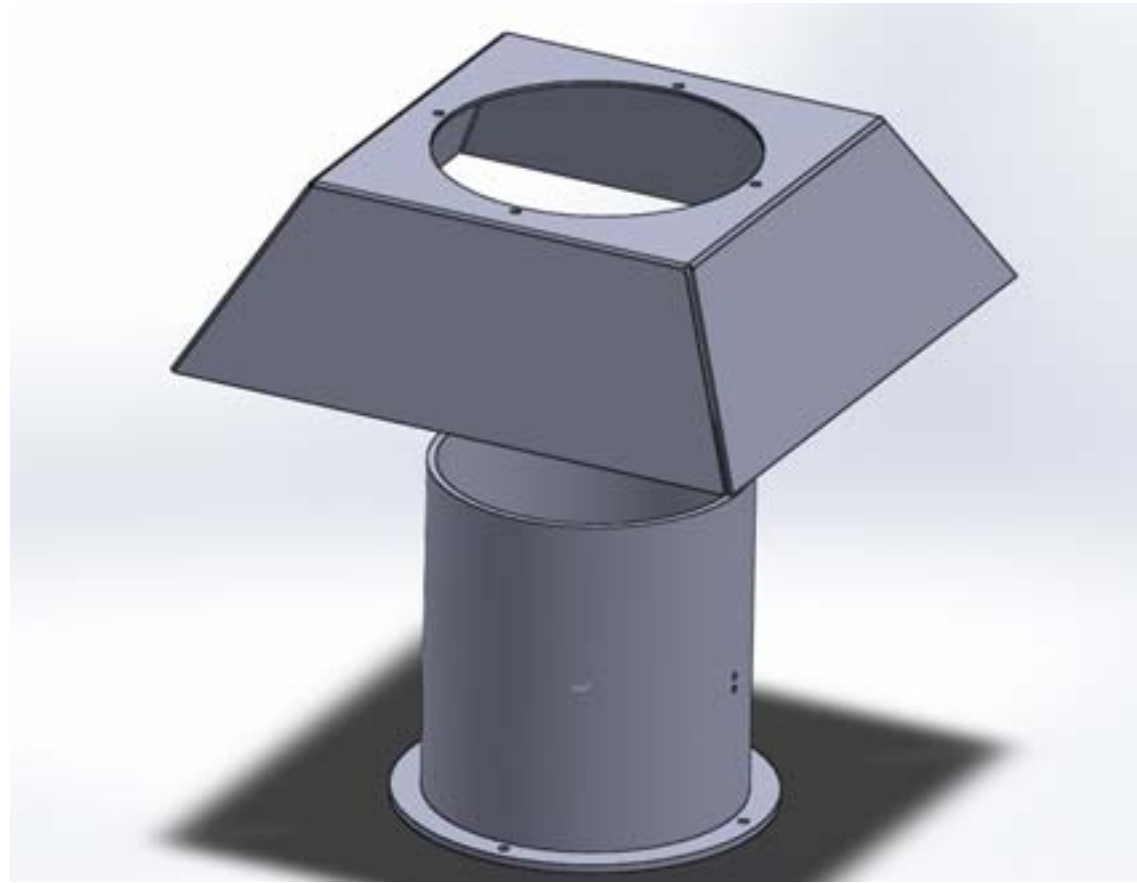
DESIGN

Motor Mount and Fan



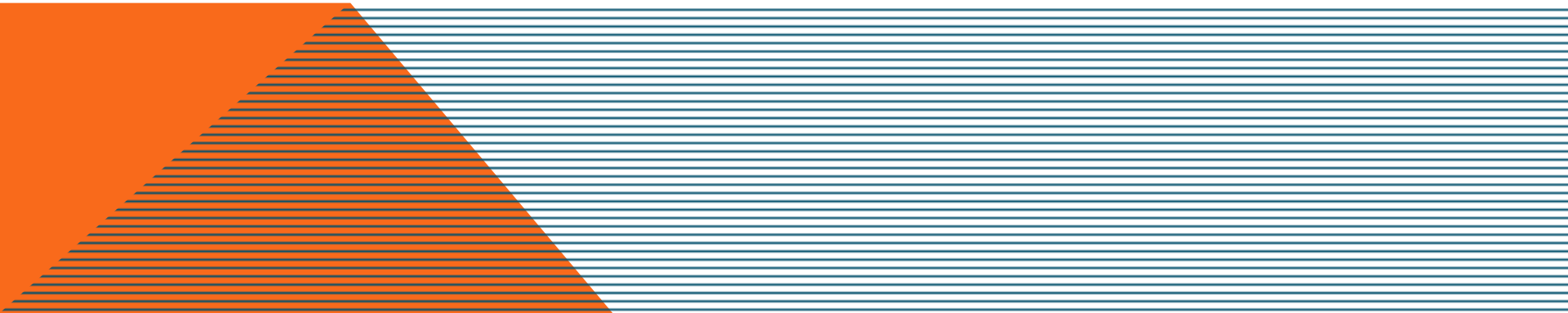
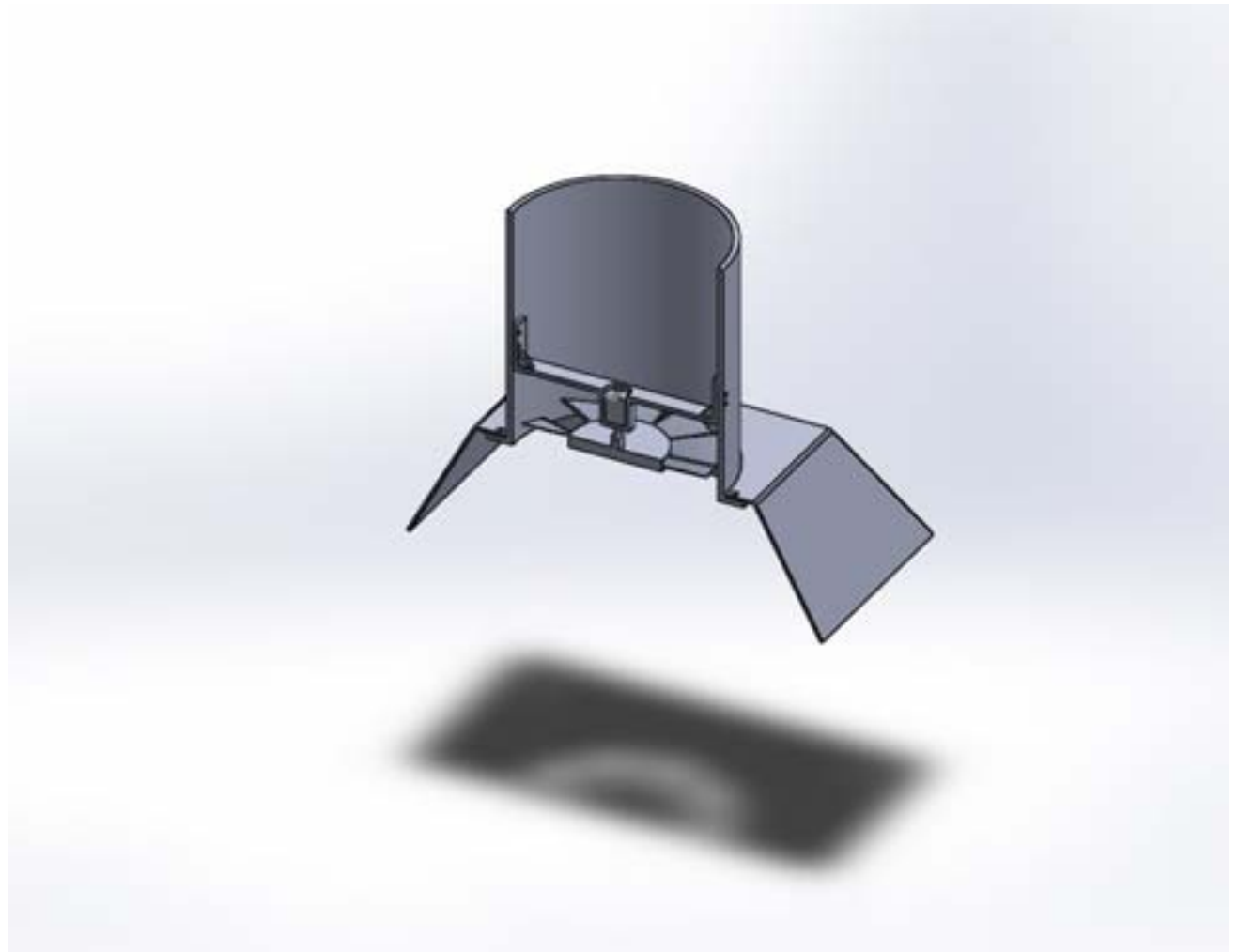
DESIGN

Hood and Pipe Contact



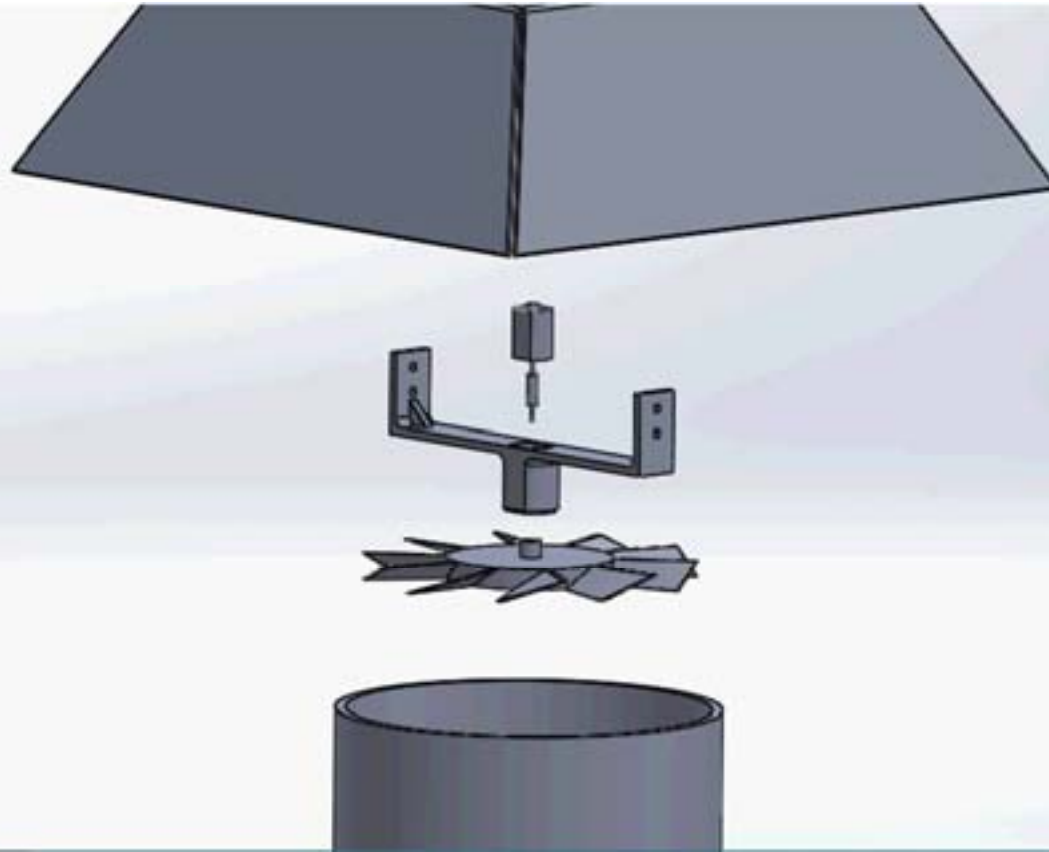
DESIGN

Assembled



DESIGN

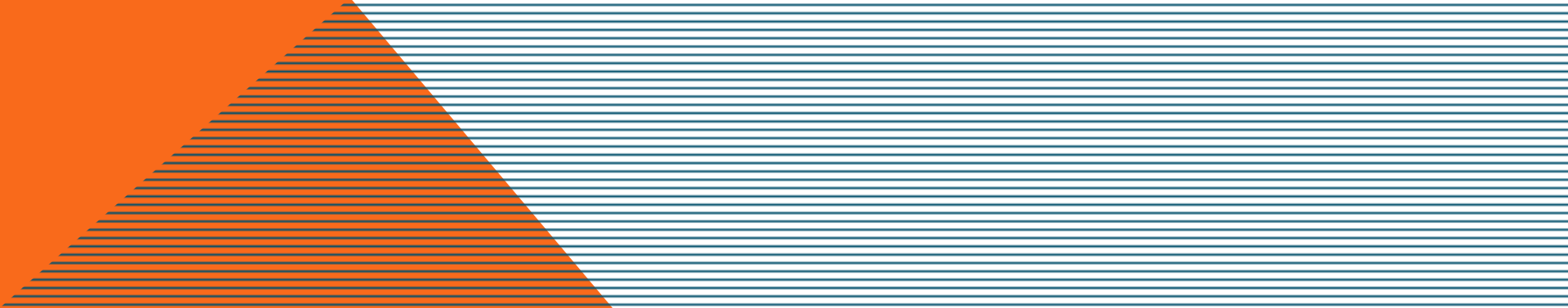
Assembled



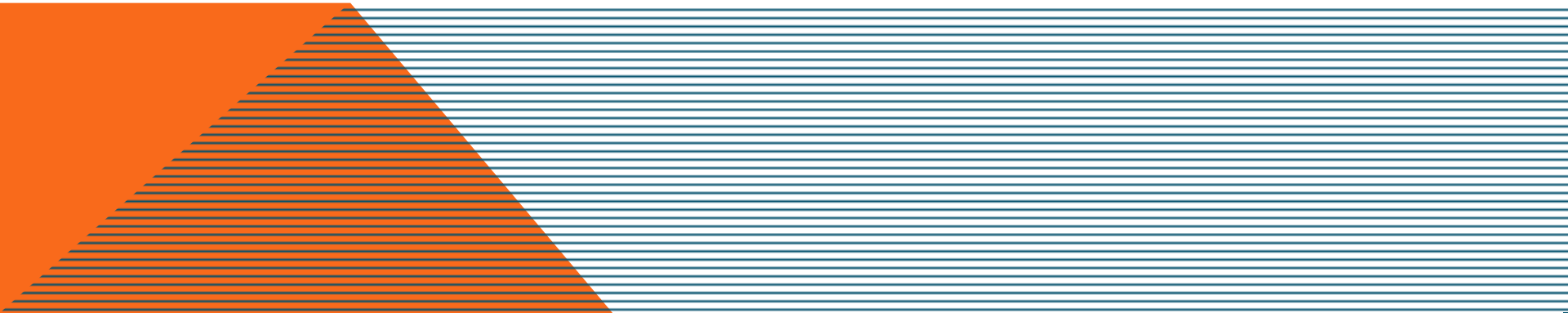
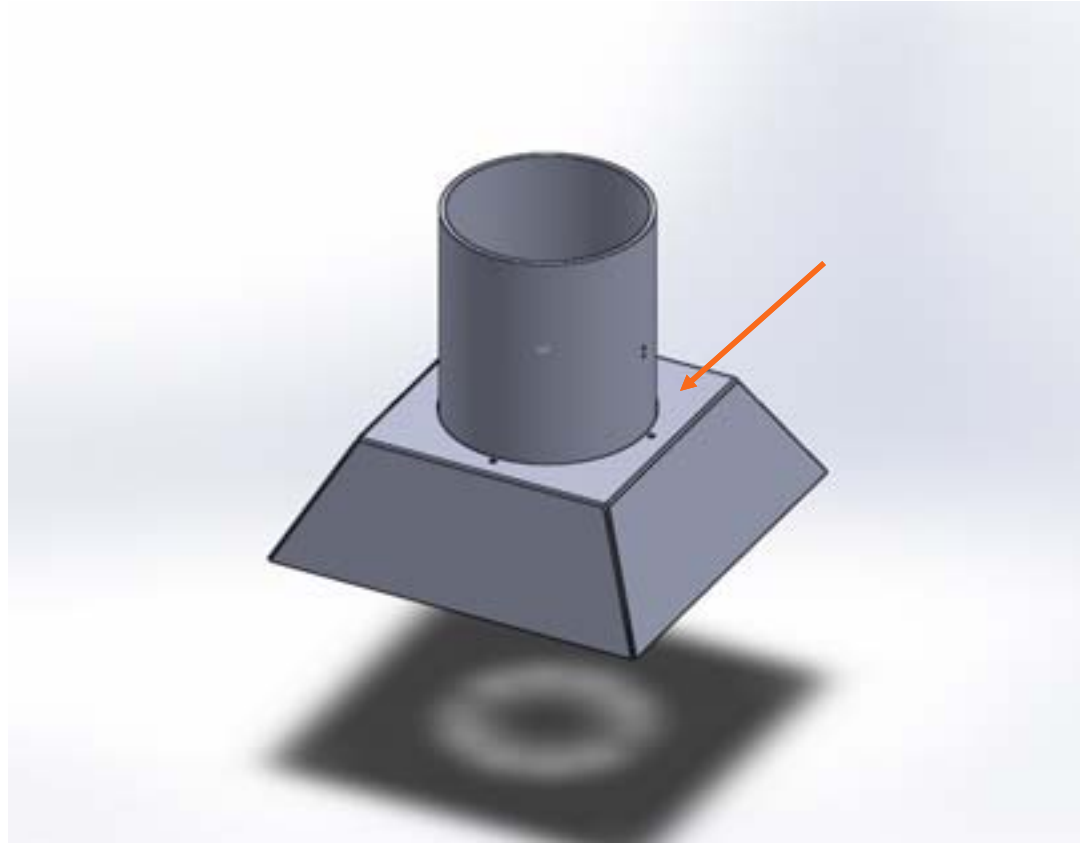
CONSTRUCTION



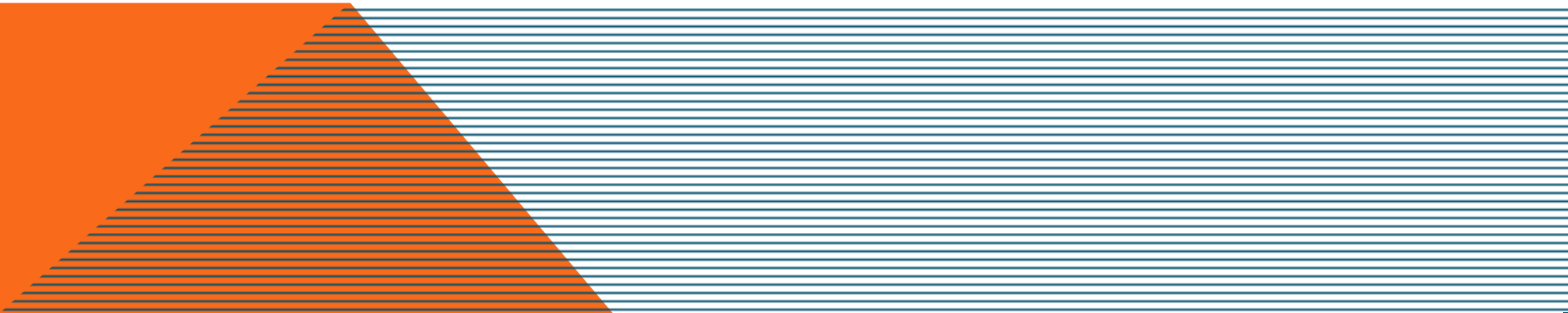
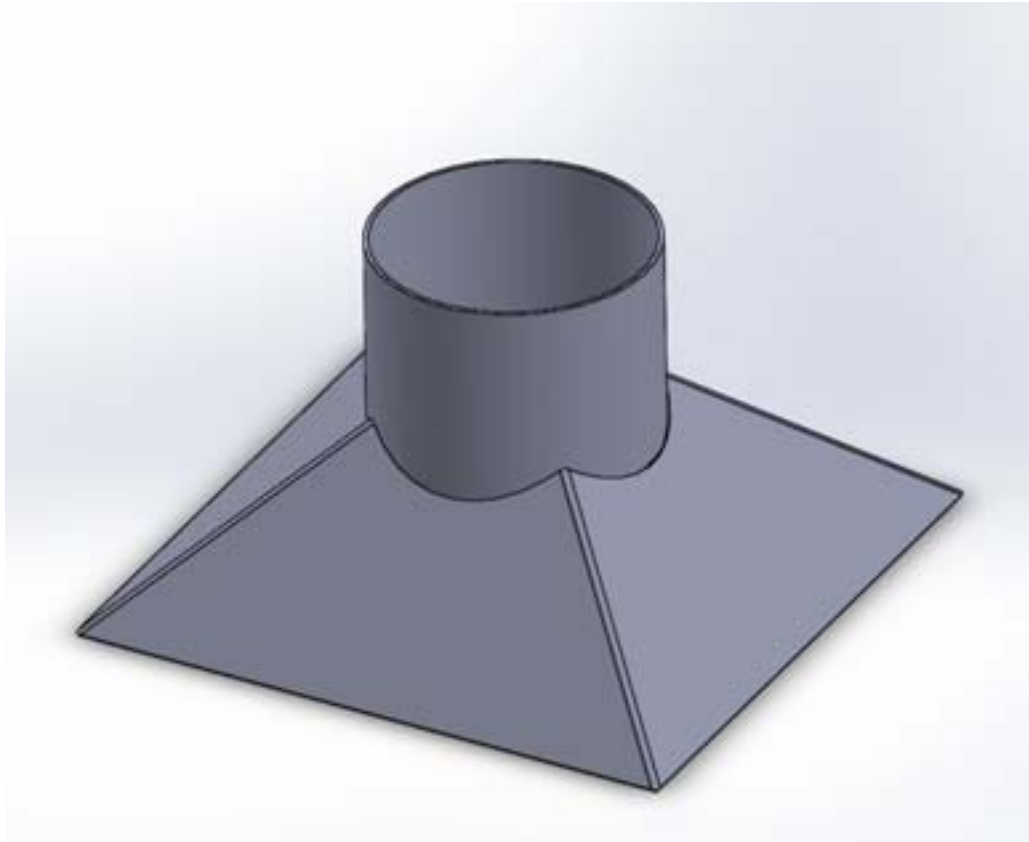
CONSTRUCTION



MODIFIED HOOD



MODIFIED HOOD

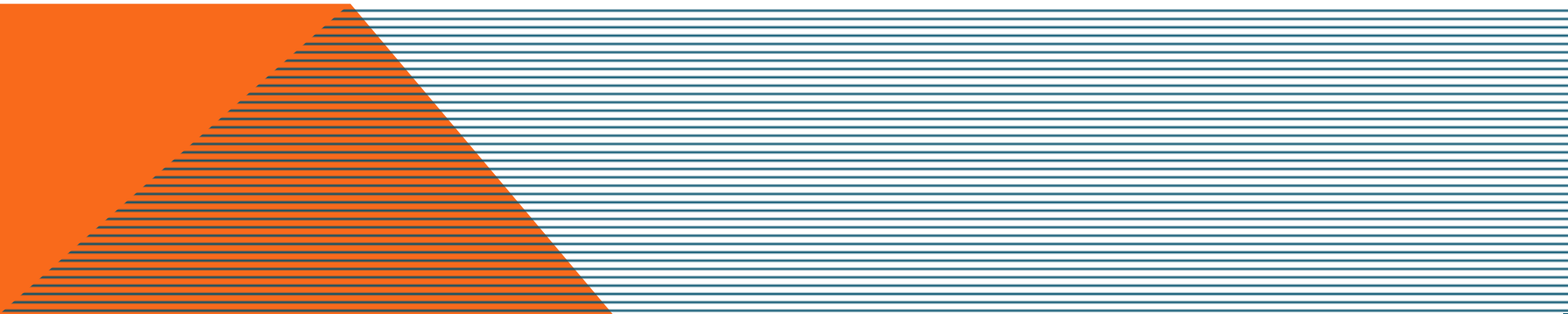


MODIFIED HOOD

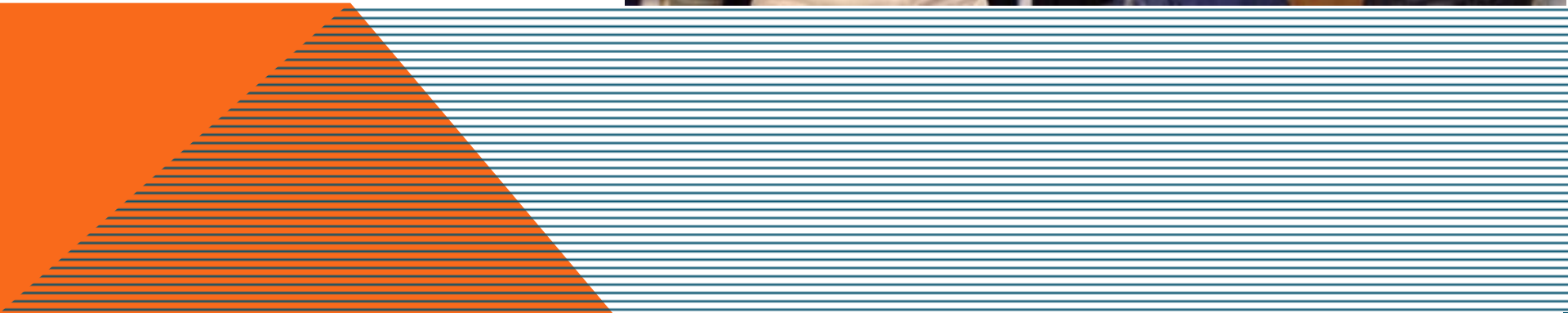


FUTURE WORK

- Begin testing on prototypes
- Confirm ideal power source
 - Solar vs. TEG
- Implement battery and charge controller
- Create a device to automate the fan
- Install prototype in Oaxaca, Mexico



ACKNOWLEDGMENTS



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QUESTIONS?

