



FAMU-FSU  
College of  
Engineering

# Design Review 4

Team 509 - Corning





# Team Introductions



Anthony Arroyo  
*Manufacturing  
Engineer*



Austin Cramer  
*Control Systems  
Engineer*



Khanh Nguyen  
*Material Specialist*



William Shuman  
*Testing Specialist*



Nathan Thompson  
*Design Engineer*



# Sponsor and Advisor



Project Sponsor  
Dr. McConomy, Ph.D.  
*Professor*



Project Sponsor  
Jeffery Roche  
*Project Manager*



Project Sponsor  
Trent Brush  
*Additive Manufacturing  
Engineer*



Project Sponsor  
Justin Barber  
*Additive Manufacturing  
Engineer*



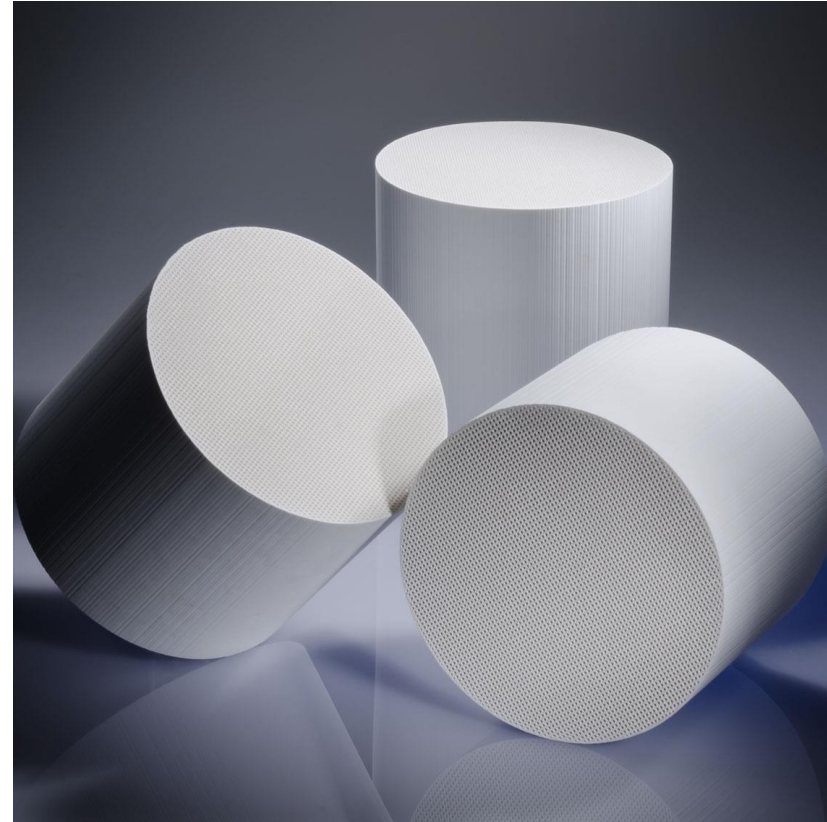
# Objective

The objective of this project is to mitigate debris on the mylar sheet during the justification process.



# Background

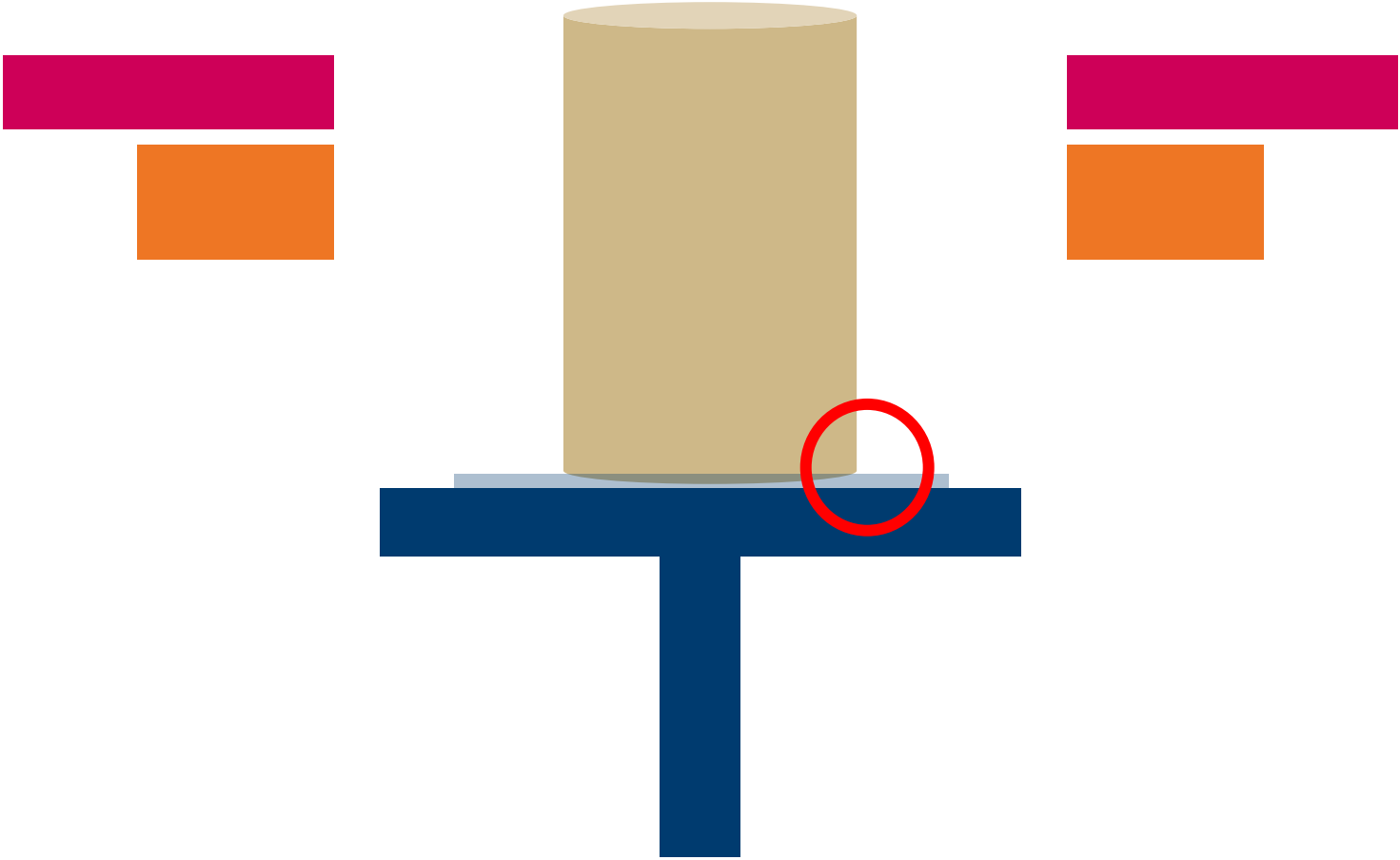
- DPFs are used to filter diesel exhaust gasses.
- Made of an extruded cellular ceramic material.
- Cement is pumped in on both sides.





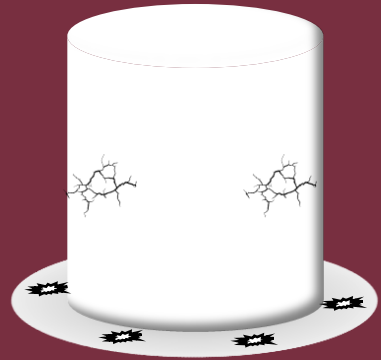
# Project Summary



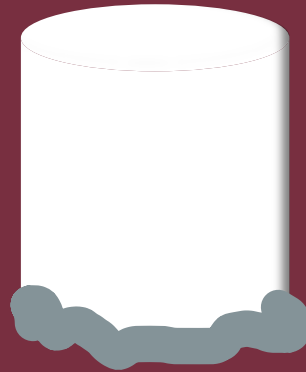


# Key goals

Prevent Debris On Mylar



Reduce Filler Waste



Reduce Downtime





# Critical Targets

Automated  
Design

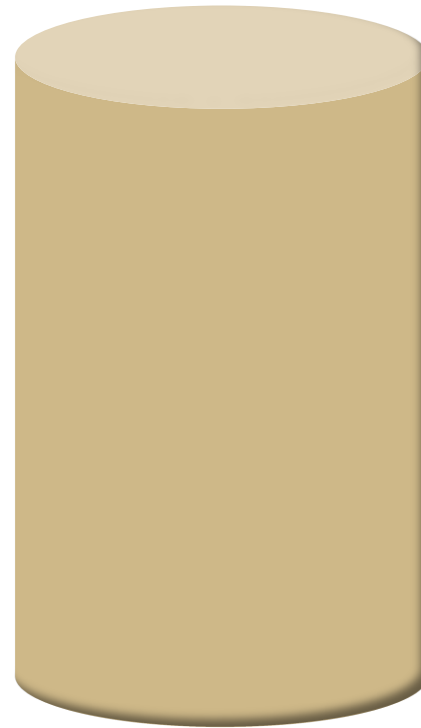
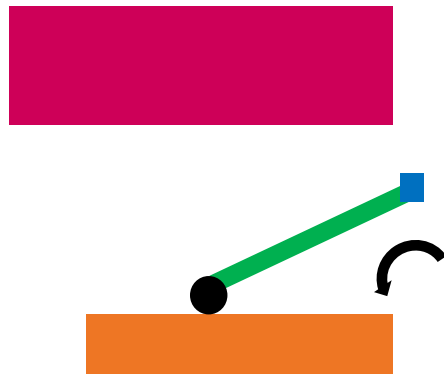
Fix 50 Parts  
per Day

2 Degrees of  
Freedom

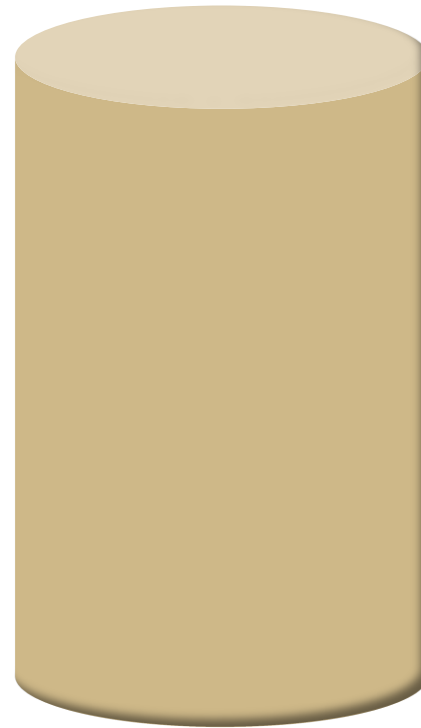
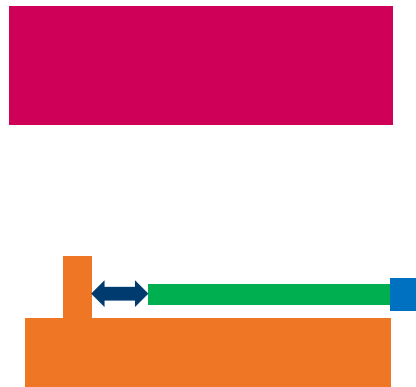
0.4 g of  
debris

9 hrs/month  
of Downtime

# Initial Selected Design

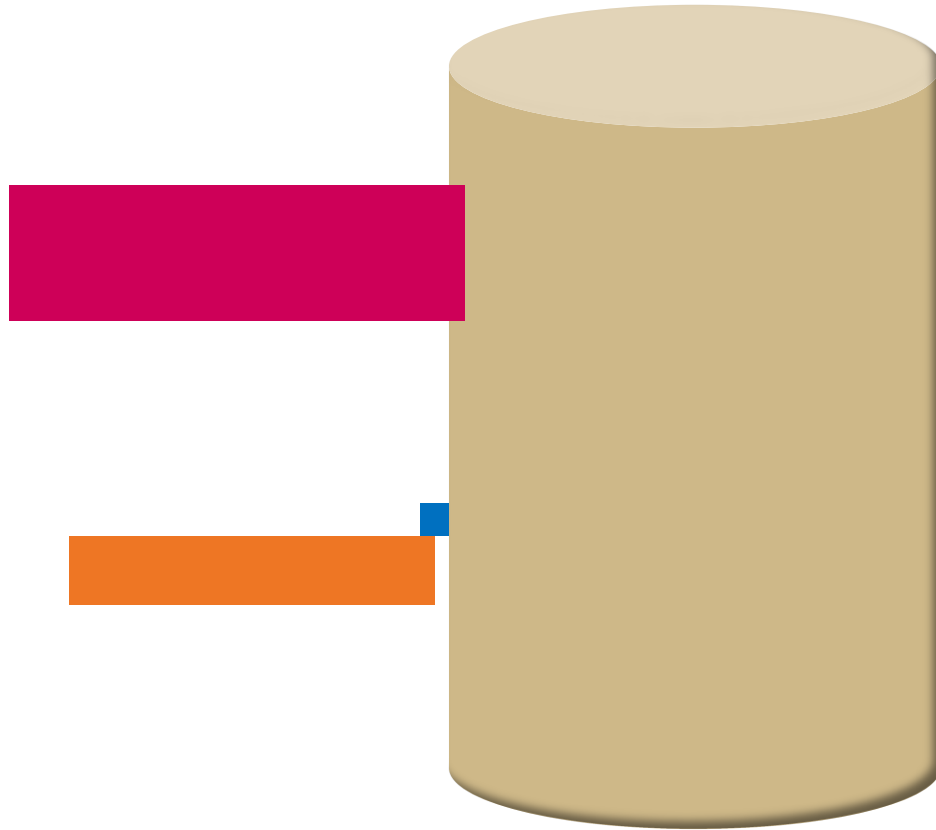


# First Update

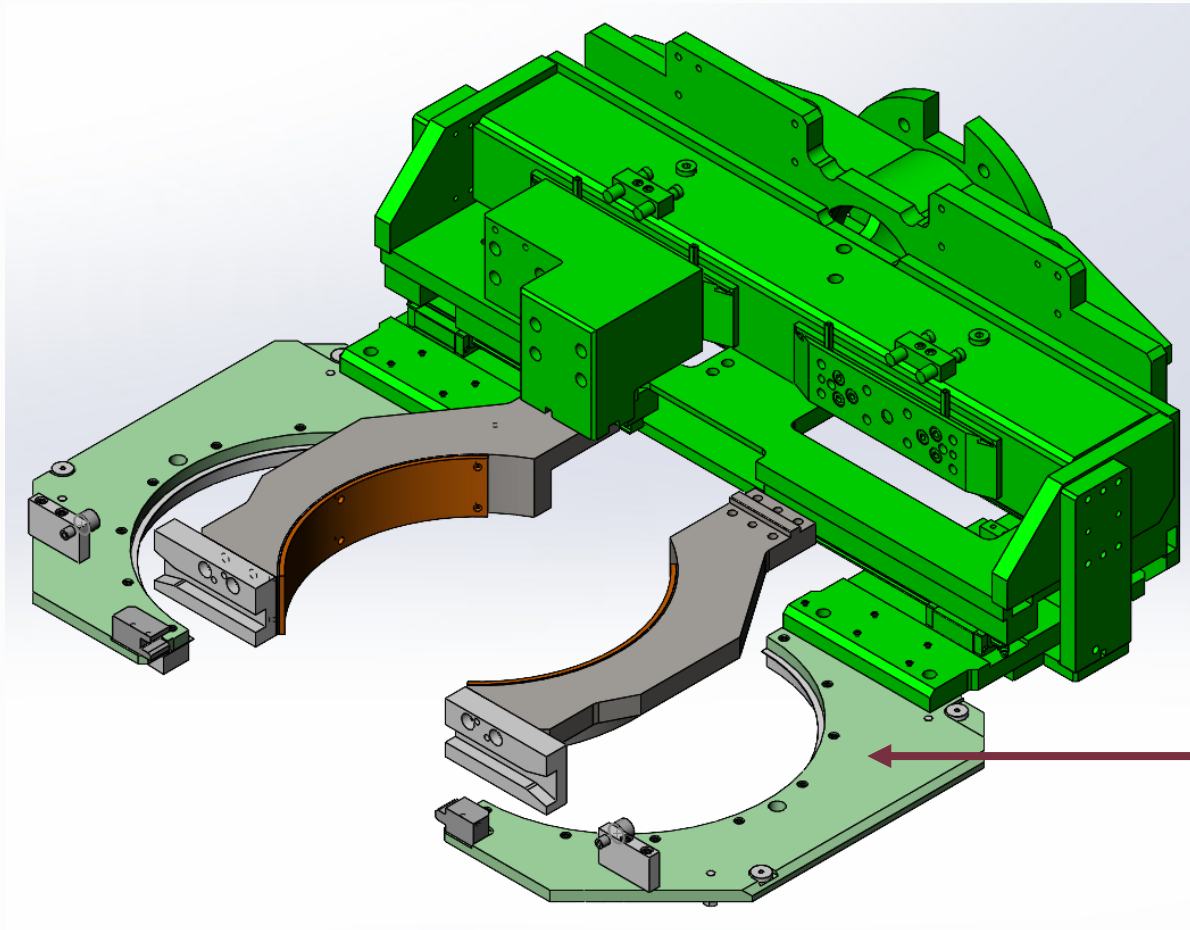




# Second Update



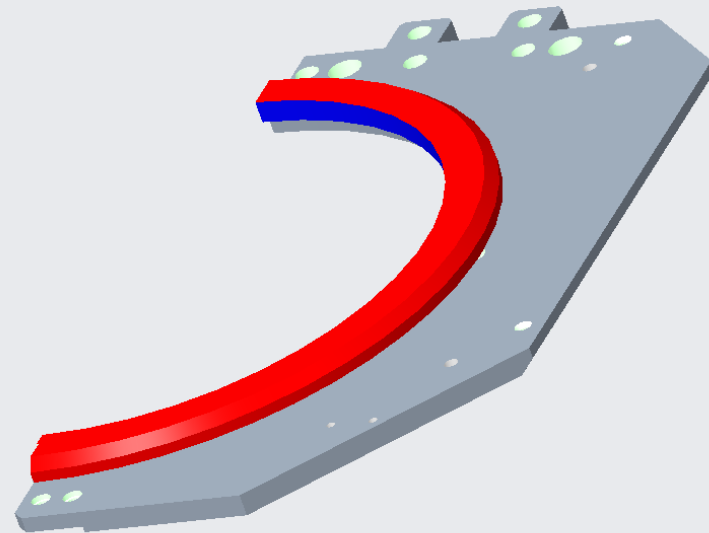
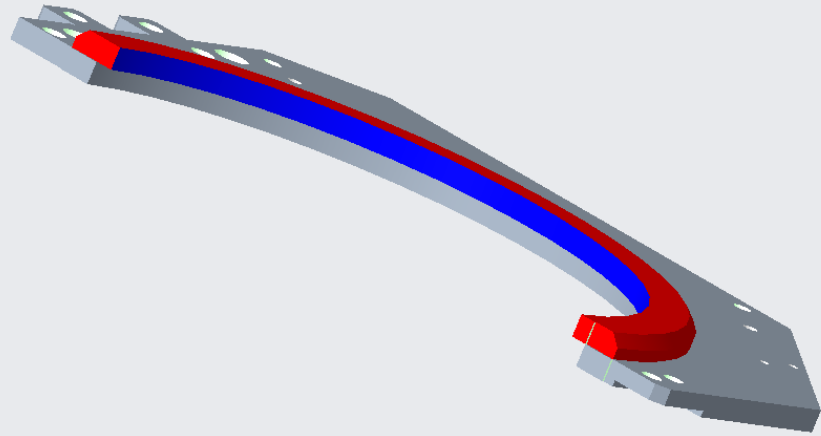
# Tooling CAD



Lower Tooling



# Prototype





# Material Selection

## 6061 Al

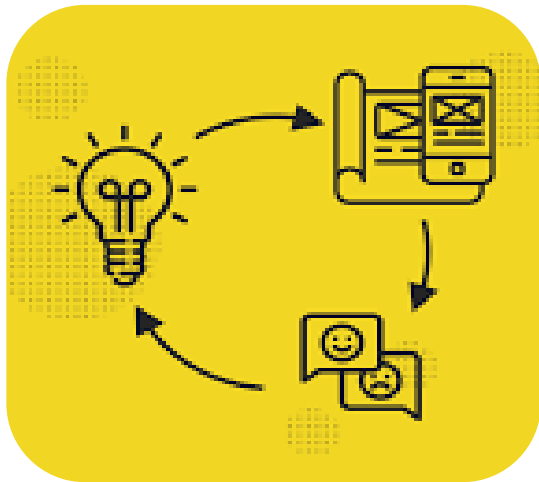
- Ease of Machining
- Low Cost
- Lightweight



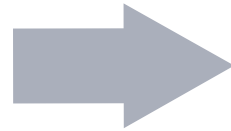
## UHMW

- Low Friction
- Abrasion Resistant
- Chemical Resistant

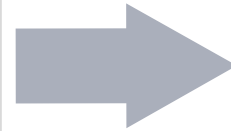
# Future Work



Prototyping



Purchasing



Testing

# Thank You

Anthony Arroyo | Austin Cramer | Khanh Nguyen | William Shuman | Nathan Thompson







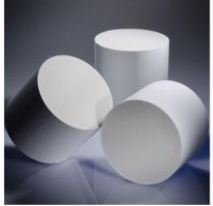
# Design Review 4

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## Background

- DPFs are used to filter diesel exhaust gasses.
- Made of an extruded cellular ceramic material.
- Cement is pumped in on both sides.




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## Critical Targets

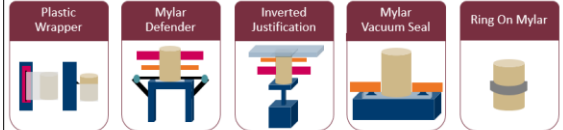
- Automated Design
- Fix 50 Parts per Day
- 2 Degrees of Freedom
- 0.4 g of debris
- 9 hrs/month of Downtime

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## Medium Fidelity Concepts

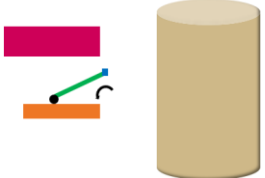
- Plastic Wrapper
- Mylar Defender
- Inverted Justification
- Mylar Vacuum Seal
- Ring On Mylar




Team 509 10




## Initial Selected Design



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## Future Work



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