



# **Seatrec Summer 2017 Internship Review**

Huy Nguyen

# About Me

San Jose, CA

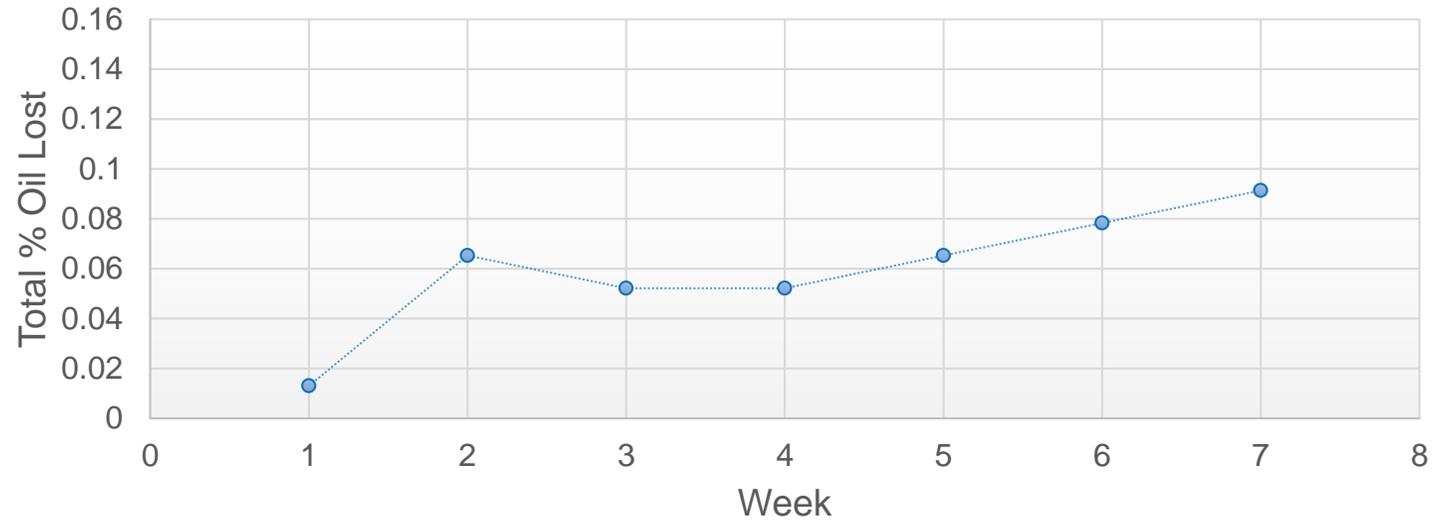
Cal Poly San Luis Obispo  
Mechanical Engineering

CSU COAST

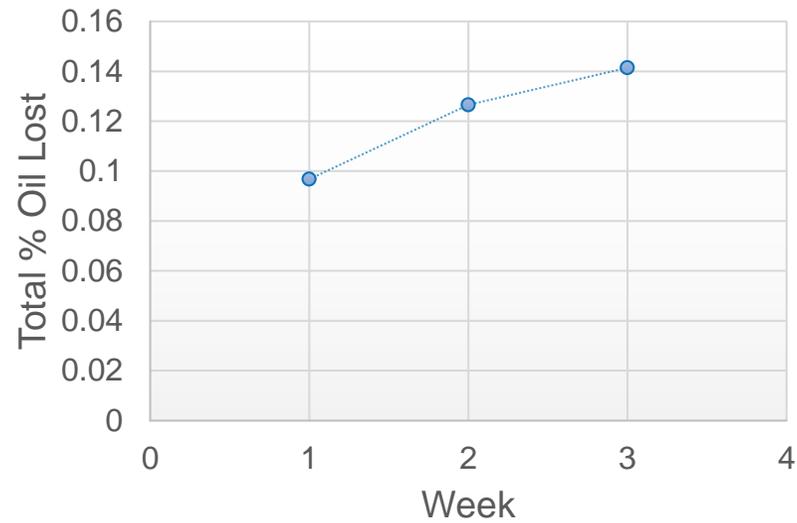
# Experiment Results

Buna-Nitrile Oil Permeation

Tube 1



Tube 2

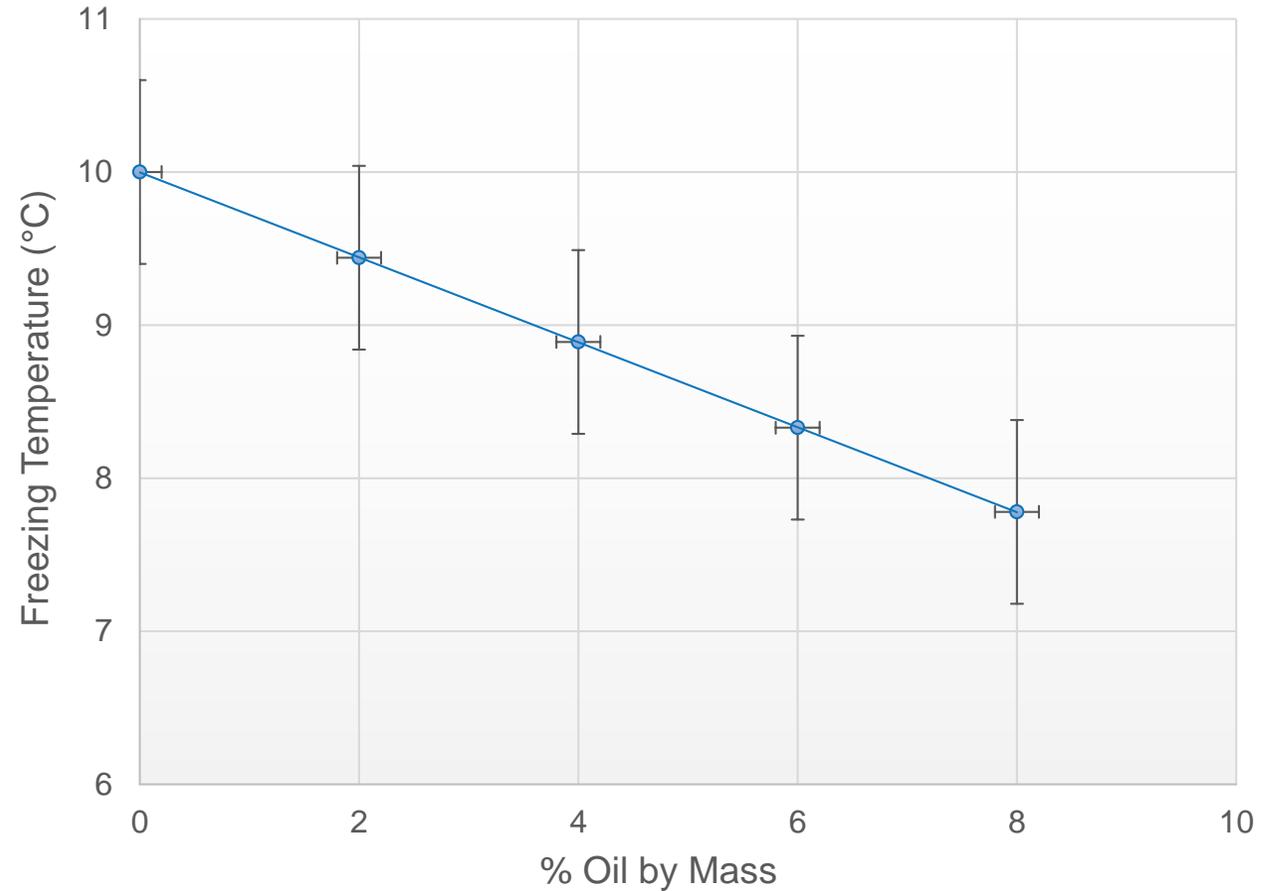


# Experiment Results

## PCM-Oil Mixtures

Thermocouple resolution is only precise to 1°F and readings varied greatly depending on where in the mixture temperature was measured. Luckily, a linear approximation seems to be appropriate as there should be no physical reason for higher order behavior.

Effect of % Oil on Freezing Point



# Main Project

To design and build an improved demonstration device to more clearly show that a phase change material can accomplish work.

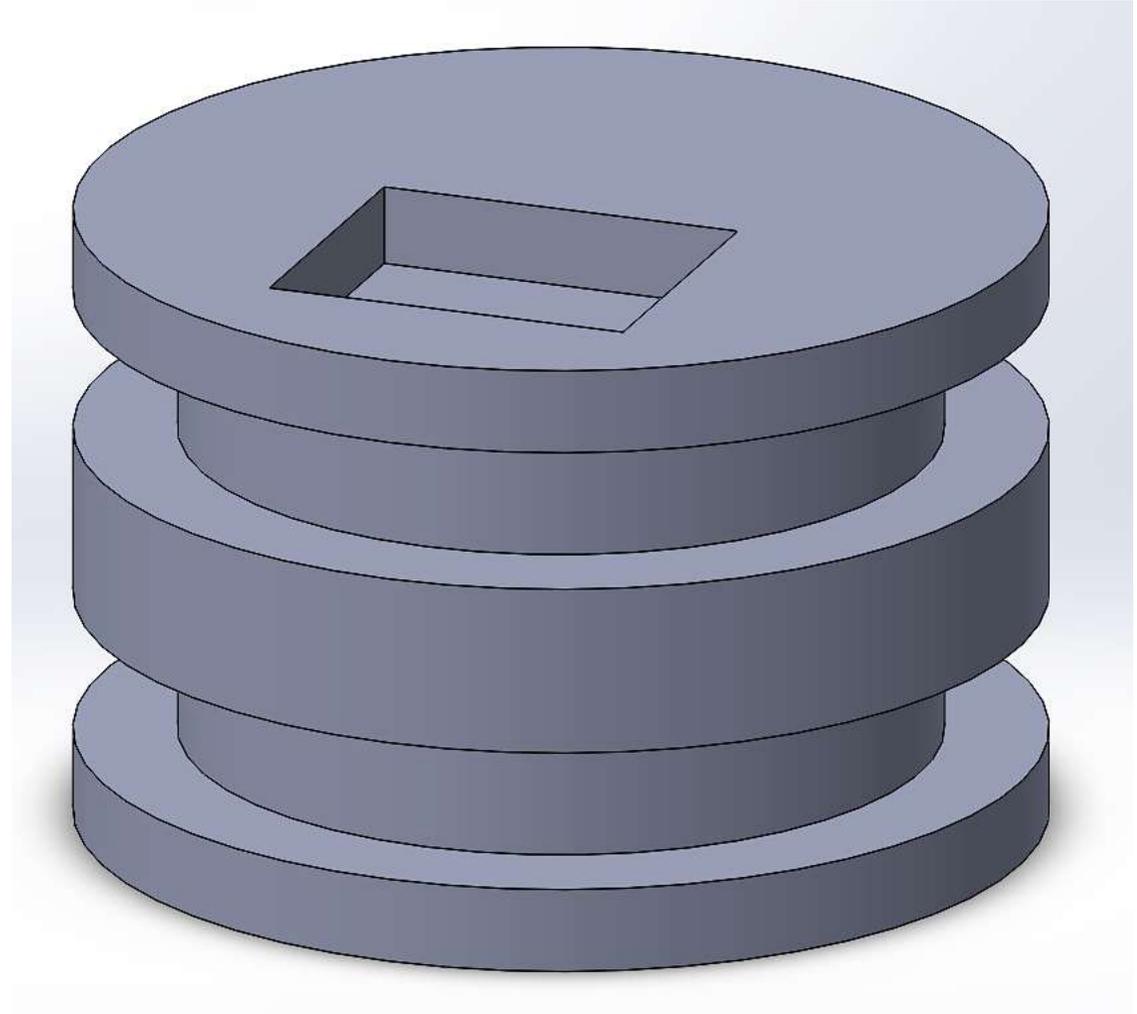
## Idea #1: Pinwheel

Channel PCM through a tiny peephole  
and turn a micro-waterwheel



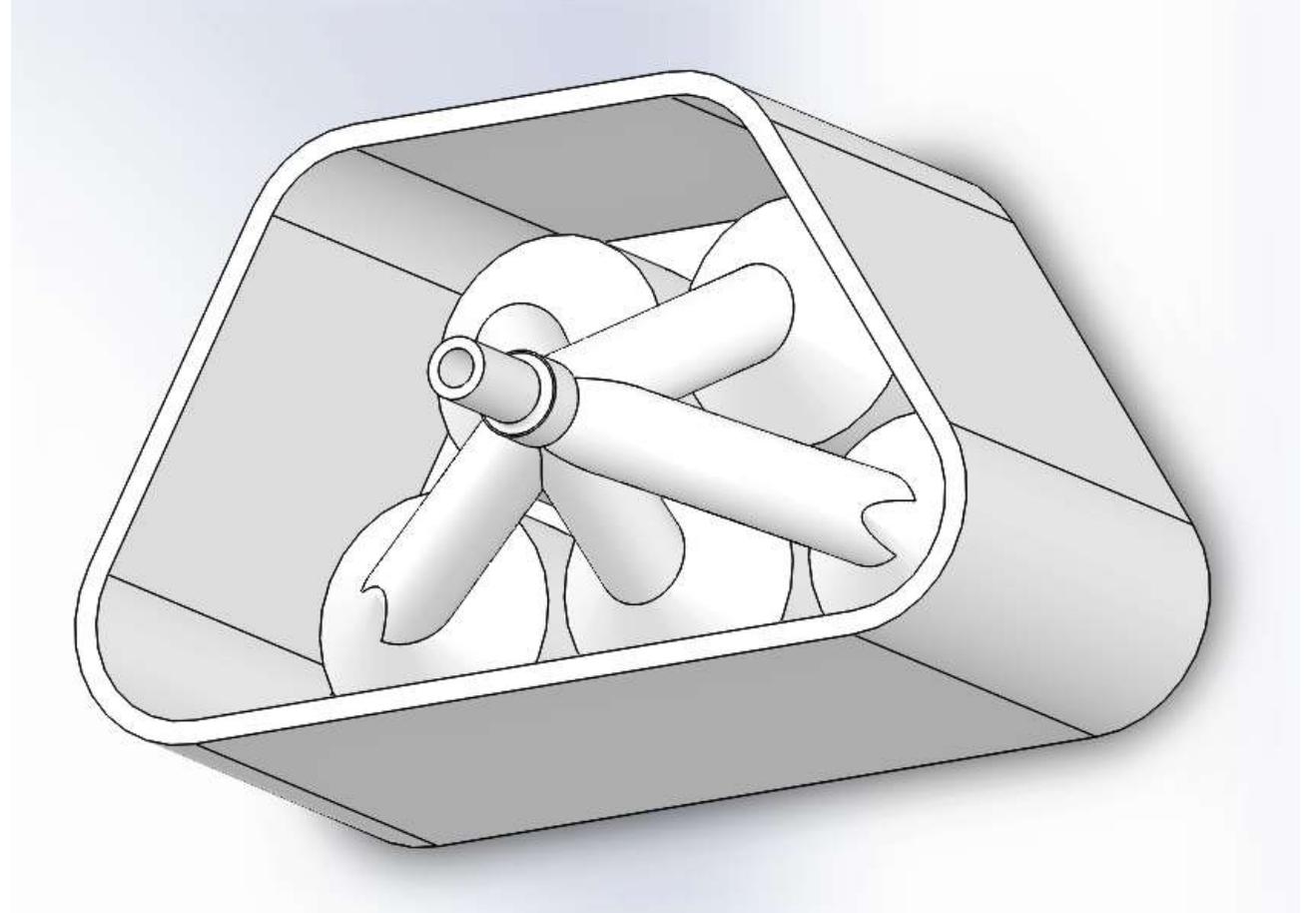
## Idea #2: Syringe

Drive a rack-and-pinion using a PCM hydraulic piston



## Idea #2: Syringe

Drive a rack-and-pinion using a PCM hydraulic piston



## Idea #2: Syringe

Drive a rack-and-pinion using a PCM hydraulic piston



## Idea #2: Syringe

Drive a rack-and-pinion using a PCM hydraulic piston



# Takeaways

- Things almost never go right the first time.
- Having curiosity and a willingness to ask questions is the quickest way to learn.
- Work does not have to be the dull grind it is often made out to be.

**Thanks!**