SRP Fluids Analysis: Concept Generation and Evaluation

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ME476C – SEC. 5 - Team 33

Project Sponsor: SRP

Faculty Advisor: DR. TREVAS

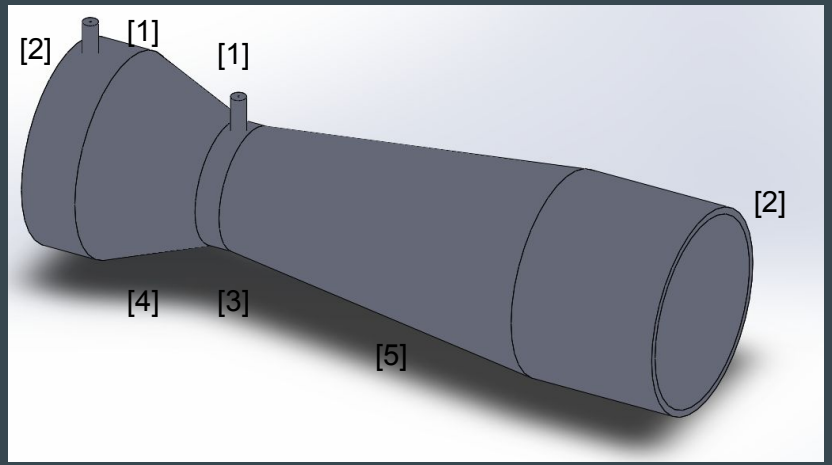
Sponsor Mentor: Vy Kieu

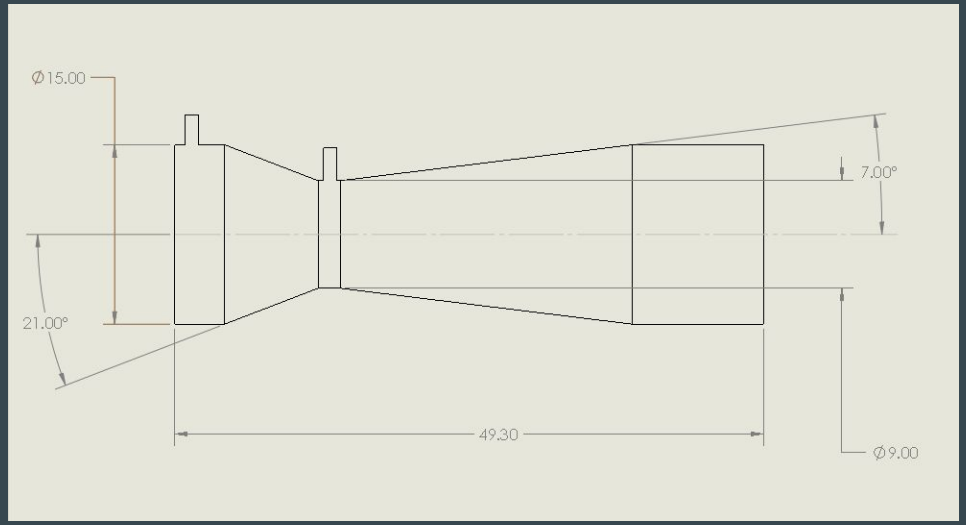
30 November 2016

Project Description

- Fuel Measurement System
- 2% Error
- Collaborate with SRP technicians
- Collaborate with EE group

Updates





[1] – pressure tap
[2] – pipe diameter
[3] – inner diameter
[4] – converging section
[5] – diverging section

Updates

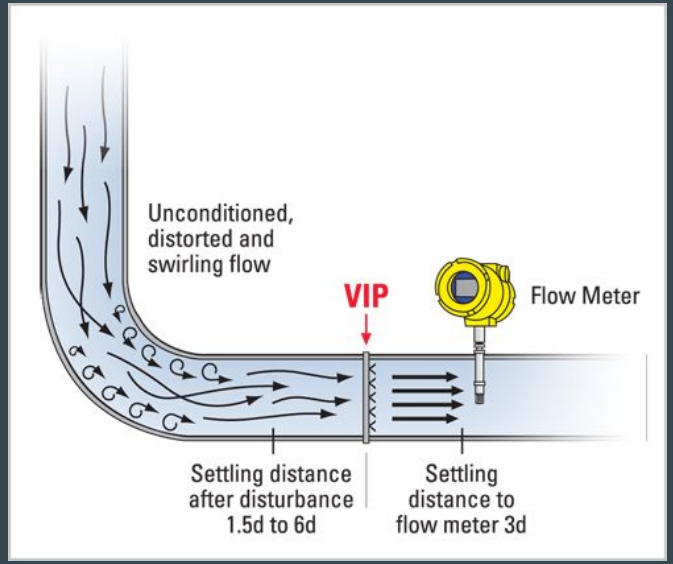
- Researched the effects of flow straighteners
- Contacted suppliers for purchasing
- Attempted to contact American Gas Association (AGA)
- Requested pipeline schematics from SRP
- Developed preliminary testing procedures.

[1]-Flow straightener

Manufacturing/ Testing

Testing Objectives

- Demonstrate the effects of an upstream pipe bend.
- Compare the precision of an orifice plate and venturi with and without flow straightener
- Compare the energy loss of an orifice plate and venturi with and without flow straightener



[2]-Flow straightener mechanics

Manufacturing/ Testing

- Model a system in the fluids lab that will replicate the system used at the Agua Fria power plant
- Measure pressure and energy losses for orifice and venturi meter with and without flow straightener
- Investigate the effect of upstream pipe length on accuracy/precision
- Use data acquisition systems (DAQ) to show numerical results
- Show results and procedure using Schlieren imaging

[3]- Venturi Tube

Budget

Anticipated Expense	Anticipated Costs	Costs to date
Transportation	$200	$0
Machinable Parts	$1000	$515
Prototyping	$300	$0
3-D printed parts	$500	$15
Miscellaneous	$1000	$0
Total	$3000	$530

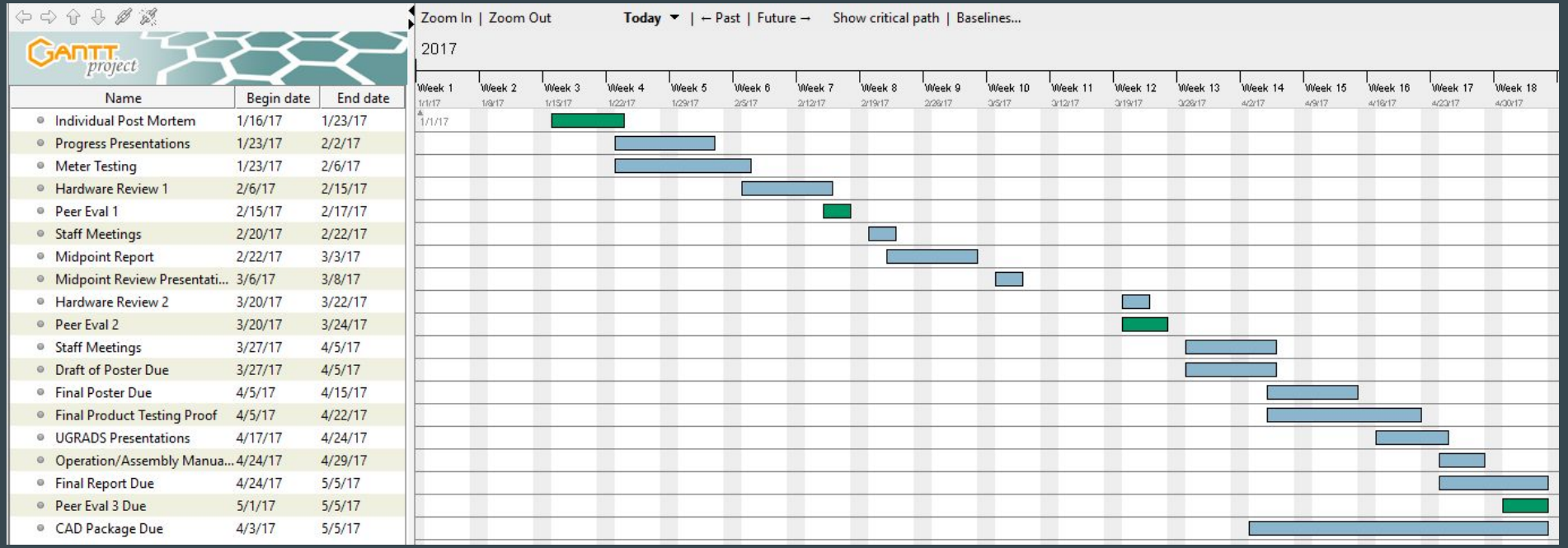
Left from the Budget: $2470

Actual Budget: $3000

Galen Geislinger

Schedule

Color	Reference
	Individual
	Team



Name	Begin date	End date
Individual Post Mortem	1/16/17	1/23/17
Progress Presentations	1/23/17	2/2/17
Meter Testing	1/23/17	2/6/17
Hardware Review 1	2/6/17	2/15/17
Peer Eval 1	2/15/17	2/17/17
Staff Meetings	2/20/17	2/22/17
Midpoint Report	2/22/17	3/3/17
Midpoint Review Presentati...	3/6/17	3/8/17
Hardware Review 2	3/20/17	3/22/17
Peer Eval 2	3/20/17	3/24/17
Staff Meetings	3/27/17	4/5/17
Draft of Poster Due	3/27/17	4/5/17
Final Poster Due	4/5/17	4/15/17
Final Product Testing Proof	4/5/17	4/22/17
UGRADS Presentations	4/17/17	4/24/17
Operation/Assembly Manua...	4/24/17	4/29/17
Final Report Due	4/24/17	5/5/17
Peer Eval 3 Due	5/1/17	5/5/17
CAD Package Due	4/3/17	5/5/17

Thank you!