

Human Powered Vehicle (HPV)

04-October-2018



MECHANICAL ENGINEERING

Team Members

Project Manager: Powertrain Engineer: Ergonomics Engineer: Steering Engineer: Tyler Schilf Jacob Thomas Kyler Marchetta Tristan Enriquez

Sponsor

Jess Ball Shayne McConomy, Ph.D.

	IT	Notetaking/Minutes	Systems/Analysis	Aero	Safety/Quality	Finance	CAD	
Tristan	x		х			х		
								1
Jacob		Х		Х	Х			
Kyler		Х			Х	х	х	
								.
Tyler	X		х	Х			Х	

 Table 1: Additional Roles

Objective

Produce a vehicle for the Human Powered Vehicle Competition (HPVC) that is mechanically driven and controlled by the occupant.

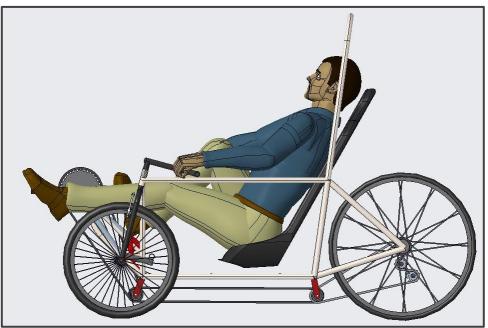


Figure 1: Team 512 (2017 Team) conceptual model with occupant



Project Background



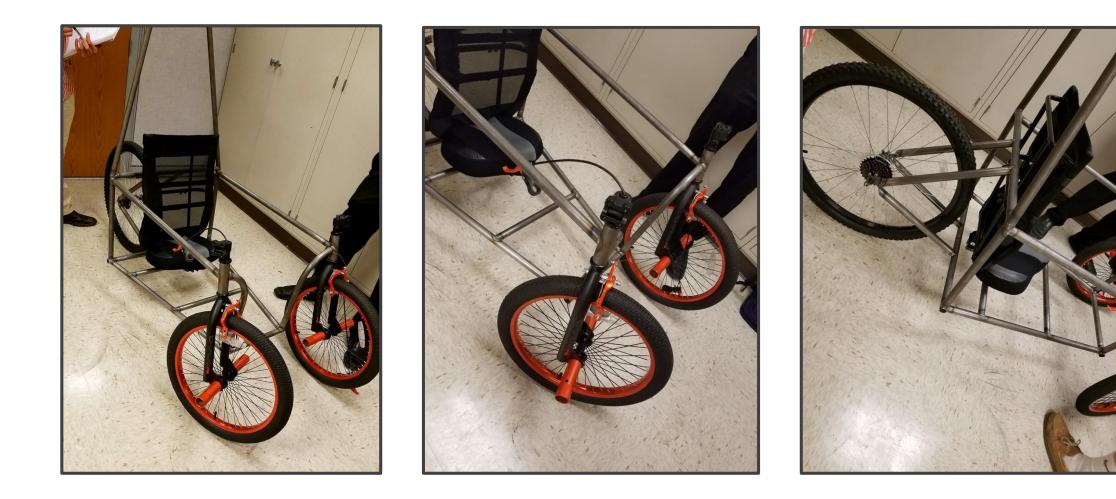
The Competition

- **Design Event:** Score based on application of engineering principles and practices toward vehicle design
- Innovation Event: Scored on our design and demonstration of a technical innovation related to the vehicle
- Speed Event: Scoring will be based on a speed test that will be announced at a later date
- Endurance Event: Scoring based on speed, practicality, performance and reliability of the vehicle in a race format with urban transportation obstacles and challenges

Key Goals

- Design an HPV that will satisfy all the competition requirements.
- Utilize existing frame in the HPV.
- Appeal to the four main events of the competition
- Focus on the design and innovation events.
- Accomplish the competition objectives.
- The team will target additional aspects of the HPV once it meets base requirements.

The Existing Frame



Markets

Primary

Designed for the **HPV Competition** (appealing to the competition judges)

Secondary

Individuals in :

- rural areas,
- cities
- third world countries
- suburban areas

RULES FOR THE

Competition Needs 2018 HUMAN POWERED VEHICLE CHALLENGE

- Must compete in Design, Innovation, Men & Women Speed, and Endurance events
- HPV must be Innovative
- HPV must be able to stop in a short distance at speed
- HPV must have brakes on front wheels
- Roll-over protection system (RPS)
- Secured driver in HPV by safety belts or shoulder harness
- May want Aero devices, energy storage device, vehicle modifications

Persona Needs

Unpaved Roads Long Distances Head/Tail Lights

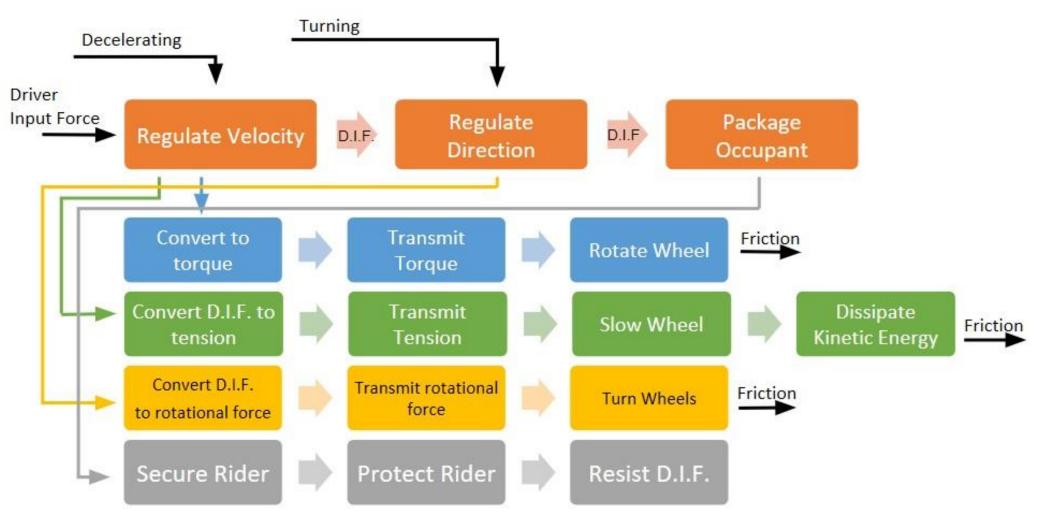
Conjested Streets Frequent Turns Close Proximity to Cars Navigates small areas





MECHANICAL ENGINEERING

Functional Decomposition





Any Questions?



