

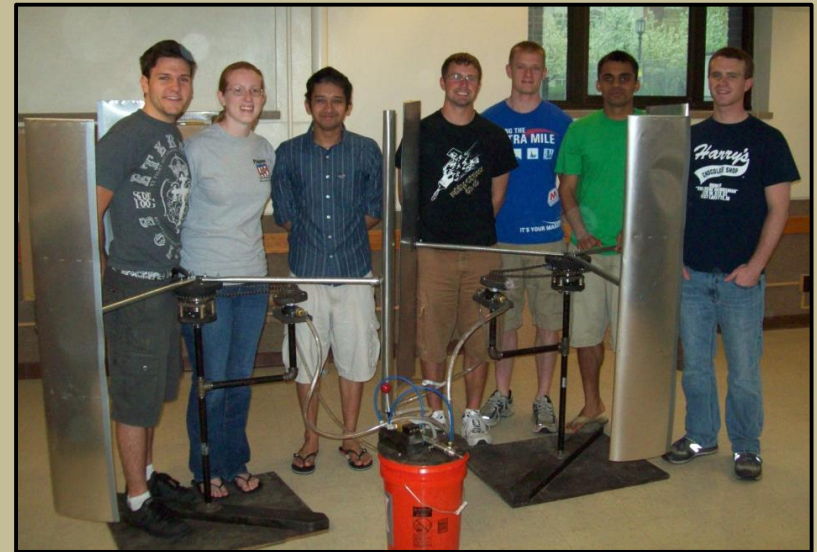
# Wind Turbine Hydraulic Power Transmission System

**Project:** Demonstrate viability of combining the power output of multiple wind turbines into a common generator via a hydraulic transmission system.

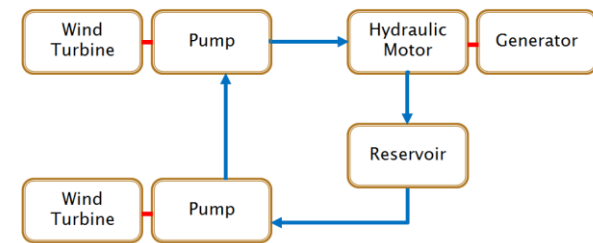
**Team:** (L to R) Ryan Martin, Heather Goebel, Ahmad Anwar, Jared Lursen, Timothy Kamp, Ajinkya Shirude, Phillip Schreibfeder,

## Objectives:

1. Design wind farm model that combines outputs of several wind turbines to a common generator
2. Demonstrate viability of sharing concept
3. Construct working prototype using readily available parts and tools
4. Design system with DIY community in mind

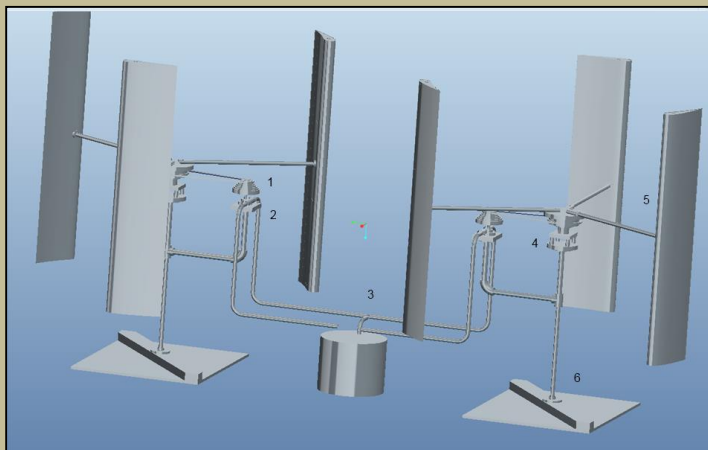


**Goal:**  
Multiple Turbines, One Generator



## System Model

Two turbines combining power into a common output

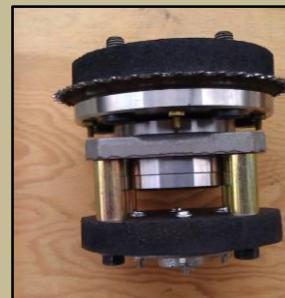


## Emphasis on DIY and Open-source Movement

- Focus on ease of construction and maintenance
- No custom machined components
- Inexpensive and readily available tools and parts



Pump Assembly



Hub Assembly



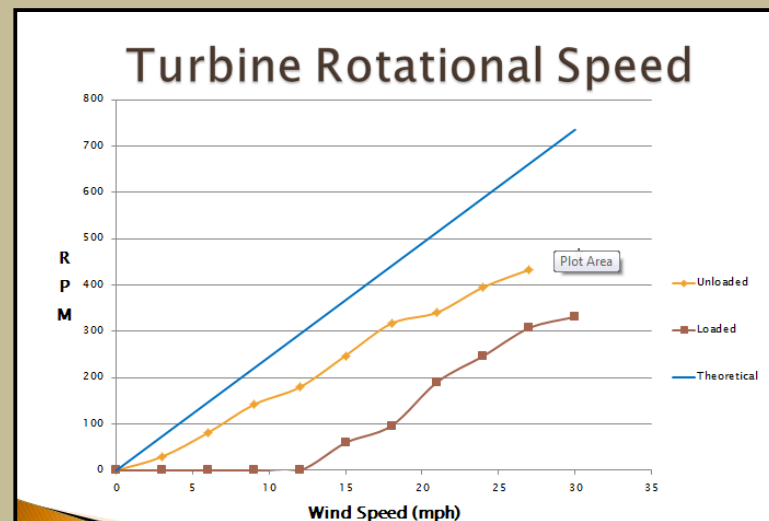
Blade Interior



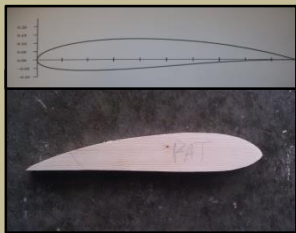
Support Structure

## Key Results:

- Power output of multiple turbines can be combined into a single hydraulic flow and can be extracted to perform various tasks.
- Prototype starts to operate at about 14 mph, which can be decreased with better pumps and broken-in bearings
- Our fabricated blades met expectations and provided high rotational speeds while maintaining rigidity and stability.
- This is a suitable starting design for the DIY community. Improvements can be made which will increase efficiency and power output.



# Construction / Assembly Process



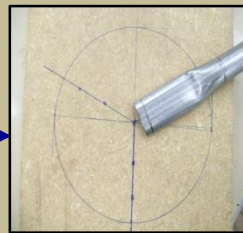
**Profile**



**T-joint Attachment**



**Finished Blades**



**Blade support**



**System Construction**



**Base structure**



**Bearings**



**Blades, Bearings, Base**



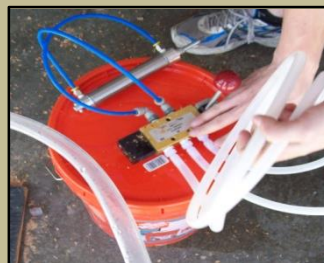
**Gears, Hydraulic Pump**



**Geartrain**



**Piping for Hydraulics**



**Switch Board, Linear Actuator**



**Final Product**