

# D-Lab Development

2009.10.13

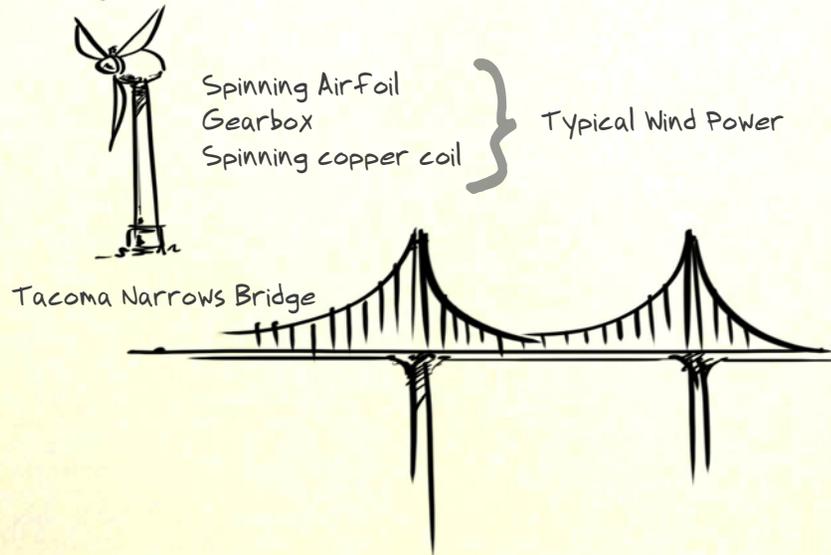
## Sean Frayne | Wind Power HUMDINGER WINDBELT

### 1. Know your resource

- How much power is available in a given area
- commercial viability - Standard of reality
- solar example of current room

### SMALL SCALE

energy is what matters, not power (electricity)



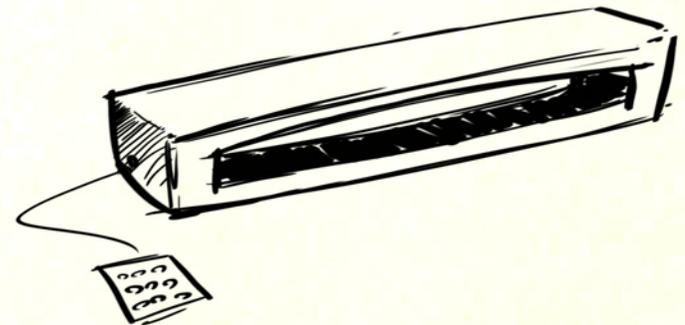
### Windcell w/o Gears

- go where wind + solar can't go
- result of design challenge of wind energy in Haiti
- maybe 10-15 windcells could power your house

- Wind Belt @ 1 Meter scale starts to effect performance
  - aluminum @ 1m can ... tweak (?)
- Vorticity shedding not main part of system power capturing
- Expected to have about 25 year life with current materials

### Rapid Prototyping Windbelt

square tube with holes popped out the side

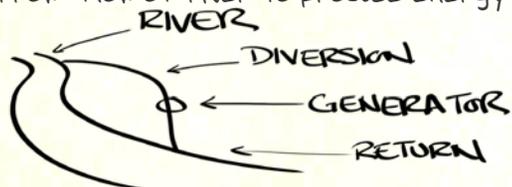


# Pete Haas | Water Power AIDG

Introduction to Microhydro  
(sub 100kW electric system)

-How it Works

"Borrow" flow of river to produce energy



Most complex part: Load Controller

- consider low and peak usage
- electrical power is mechanical load on turbine  
Dump Load → Light/Heat  
(excess load)

AC or DC Choice - depend on the size of system

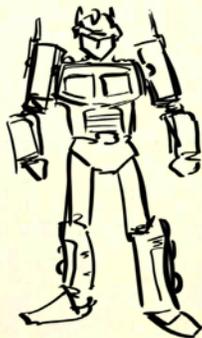
Sub 500W - DC

AC advantage: larger transmission length

-Remember one formula to calculate the power of system  
 $\text{Head} \times \text{Flow} \times \text{Gravity} \times \text{Efficiency (assume 51\%)} = P$

- Balancing Safety vs. Cost

- Distribution → Professionals: Transformers



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