* Seals and Bearings
  + If the first seal probably won’t work, just use a tight fitting bushing to prevent failure with allowable amount of bleed, use purge gas to reduce leakage rate
    - Not a good long term solution, but a good way to get data in case of a seal fail
  + Material: Rulon? (Filled Teflon) or bronze
  + Long term solution should be no seals: transmit electrical power through a stainless steel body
    - There are magnets that work at cryo, and the motor will probably heat enough that it would not be cryo anyway
  + Good company for seals: Trelleborg
    - Be clear that the life is very short
* Impeller: high density blockage, thick blades and many blades
  + Taper inlet of blades so not pure vertical
  + (Look at the second impeller on a multi impeller design)
  + Axial Clearances: Keep as small as possible but not so small that rubbing will be an issue, expect high deflection
    - Shims can be added to keep the clearance tight
    - Increase clearance as a test step?
* Efficiency will probably be low because of drag loss and recirculation loss
* Electric Motor
  + It will be loud! And it will make things vibrate funny
    - Check all bolts after running
  + Use a rubber motor mounting, it will be eccentric
  + There may be very high speed flying pieces, be careful
    - Add protection around it
    - Wear safety helmets and goggles
* Instrumentation for testing
  + Support or put through T on exit
  + Bypass valve: seems reasonable, but not totally necessary
  + Calibrate an orifice to create our own venturi, make sure there is no cavitation! This will be create a sufficient dP
  + Minimum 3 pressure transducers, one at inlet, 2 at outlet to measure flow rate and discharge pressure
    - Placement: at least 4\*L/D past the diffuser
  + Add a pressure transducer to the volute if possible, tap into the volute itself to find the static pressure of the volute
  + Engine rpm measurement: fishing lure tape will work well with an optical tachometer
  + Temperature sensor by bearings to find out if overheating is happening
  + Filter on outlet so we know if we are rubbing