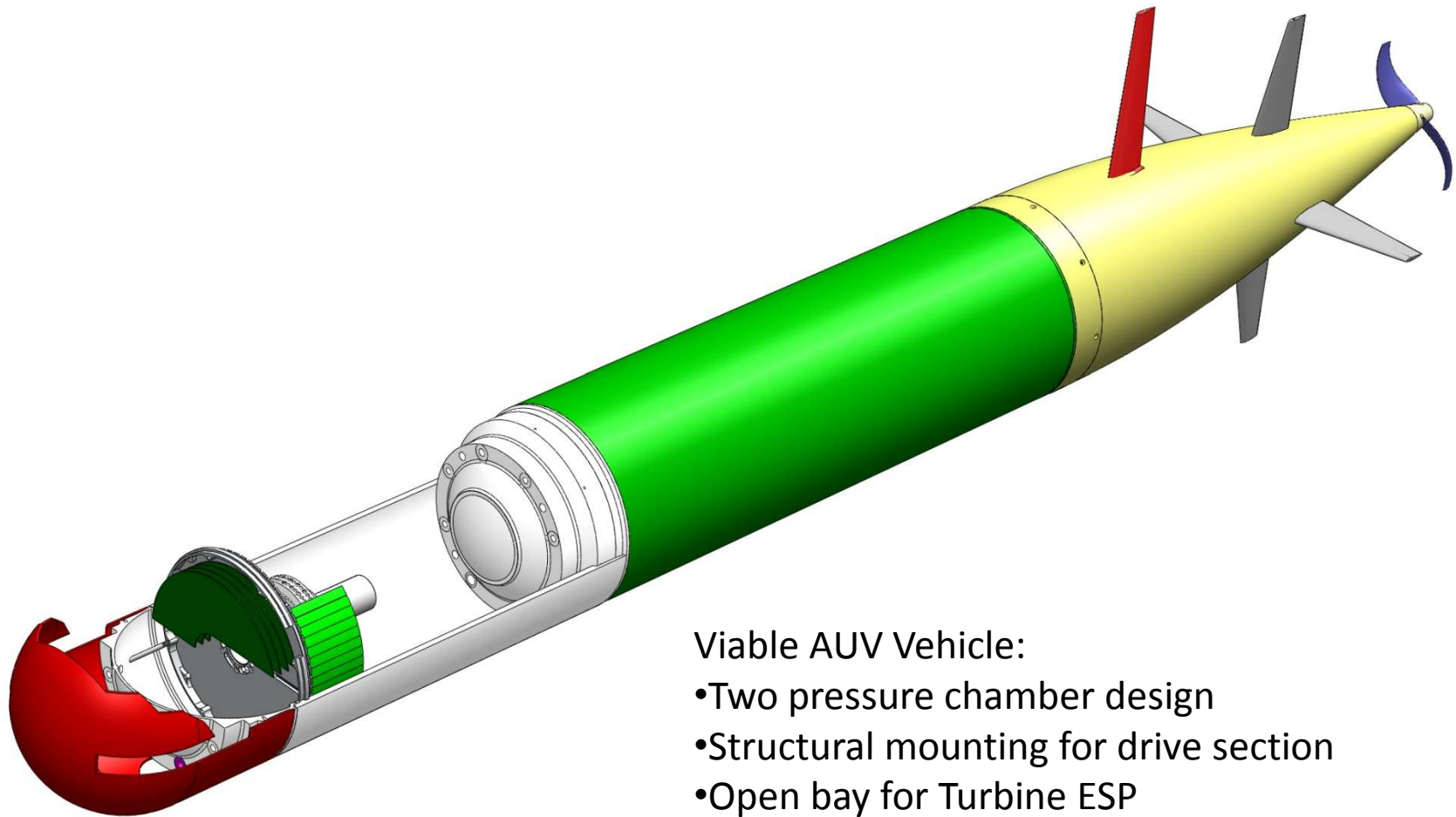


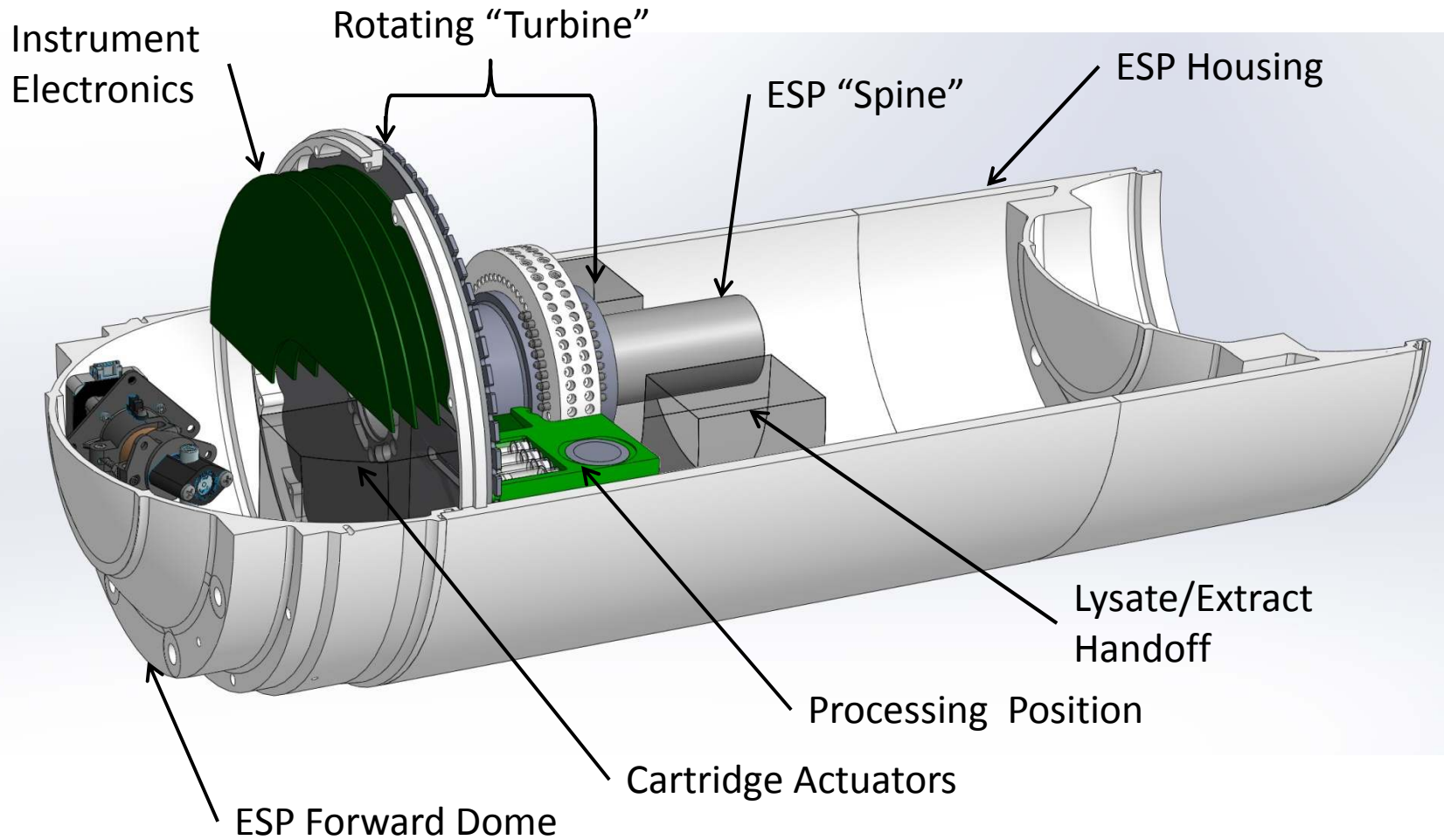
# G3 ESP Mechanical Design Update



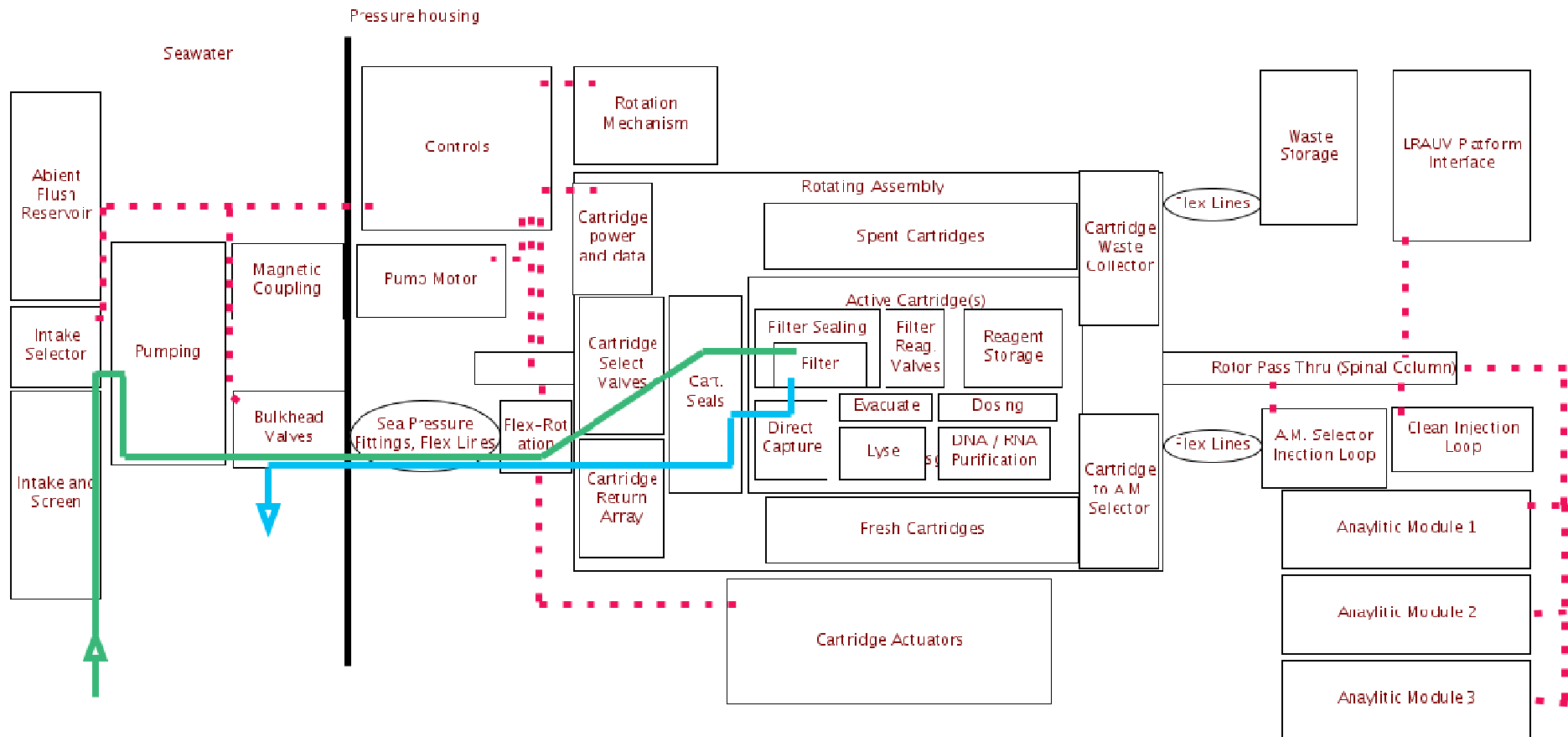
Viable AUV Vehicle:

- Two pressure chamber design
- Structural mounting for drive section
- Open bay for Turbine ESP
- Assembly method is reasonable

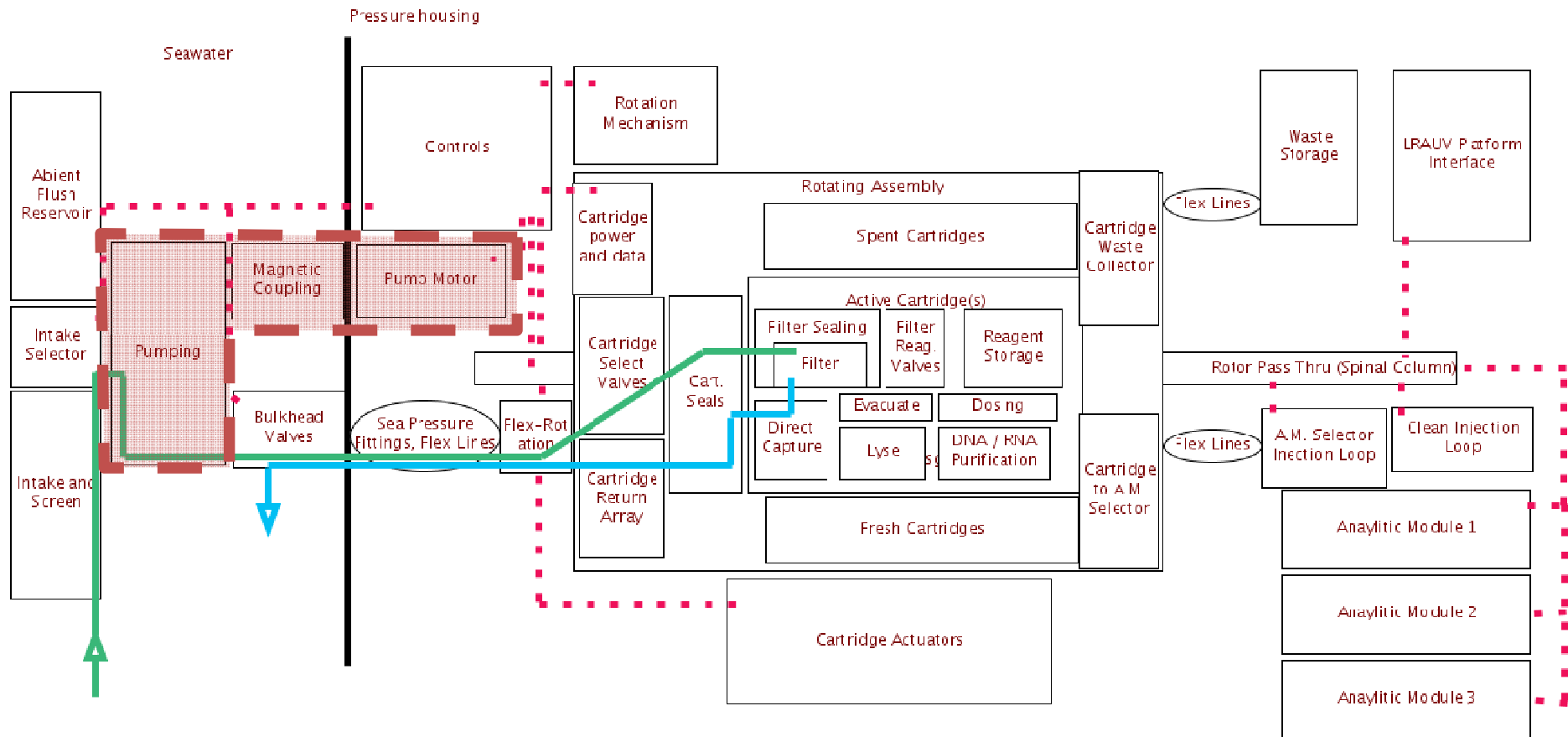
# ESP Bay and Components



# G3 ESP by Functional Block

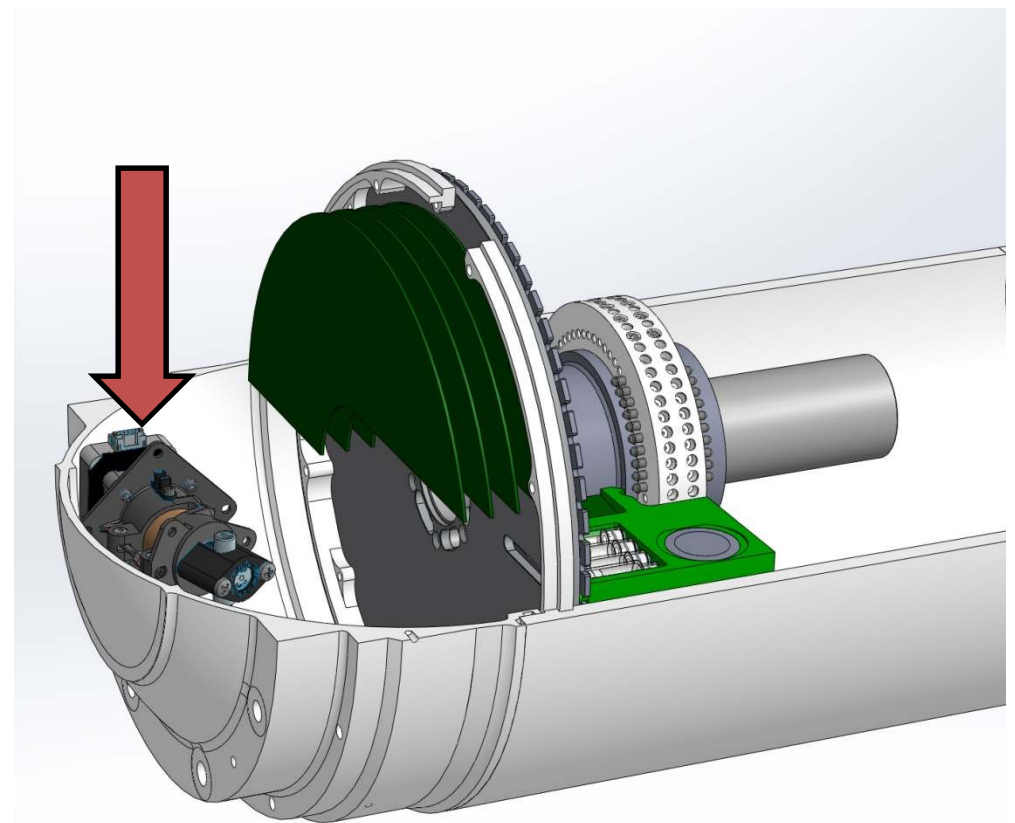
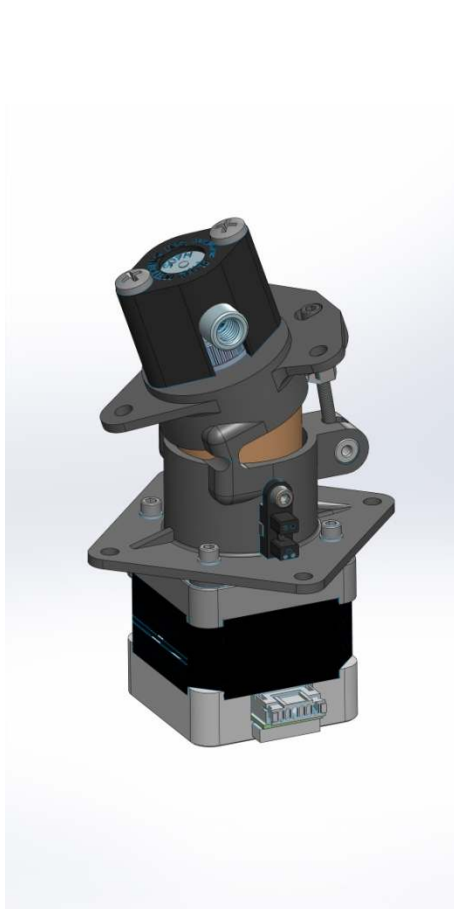


# Filter Pump

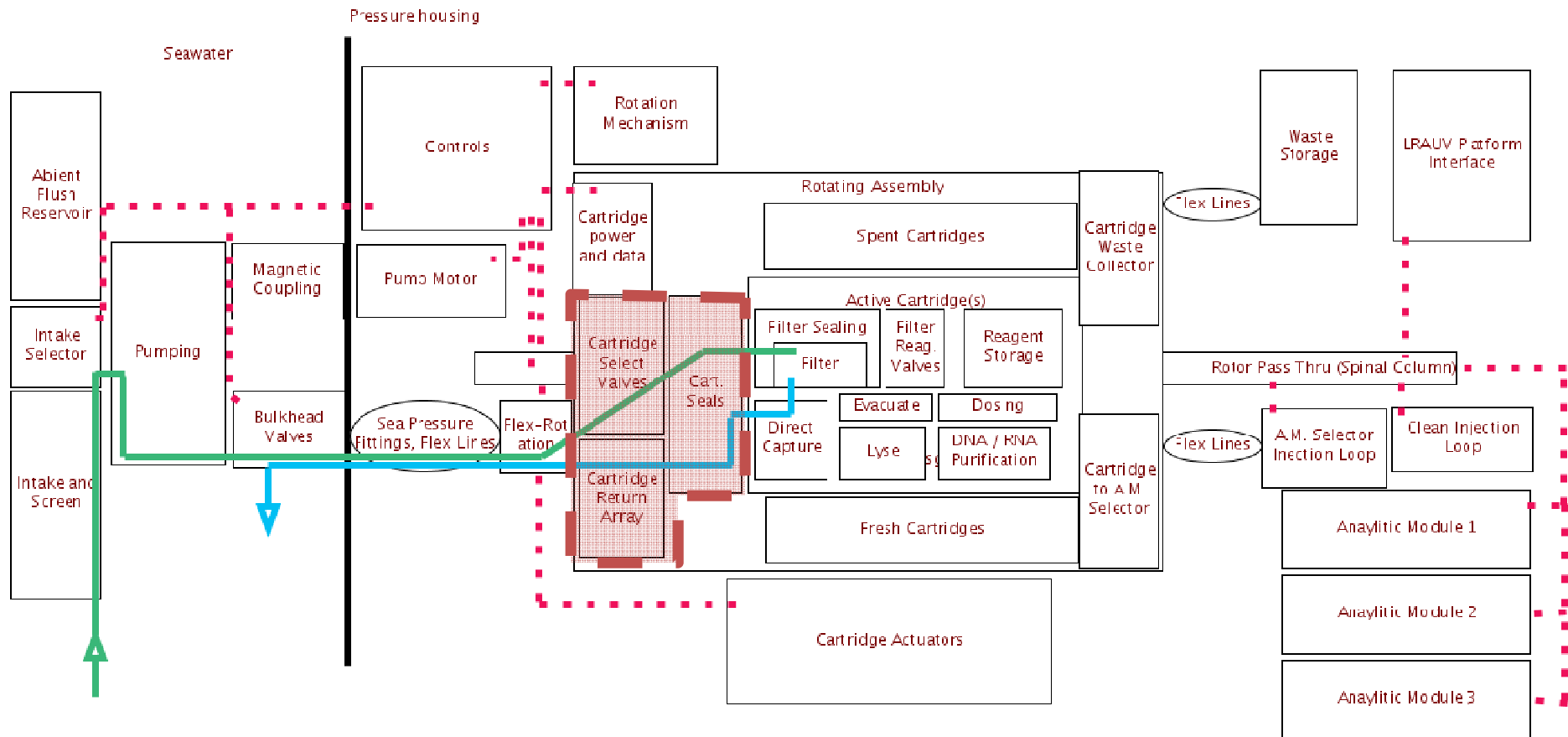


# Filter Pump

- Rotating piston pump
- At ambient pressure (oil compensated)
- Passed live culture pumping tests

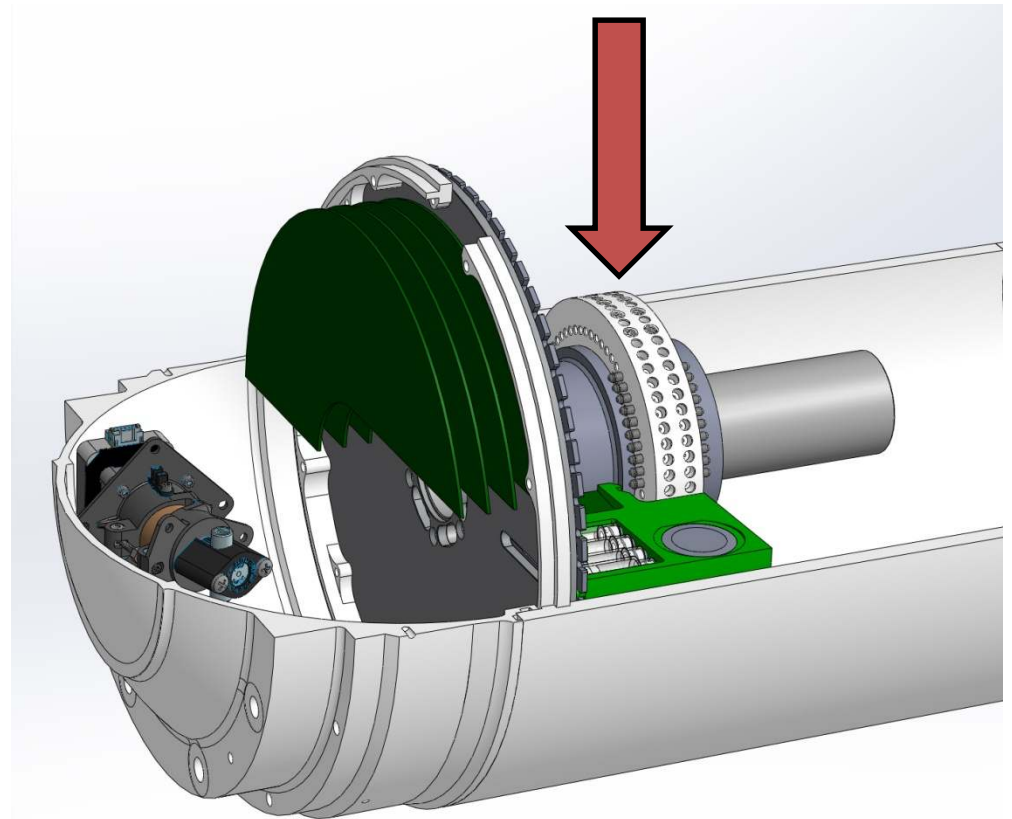
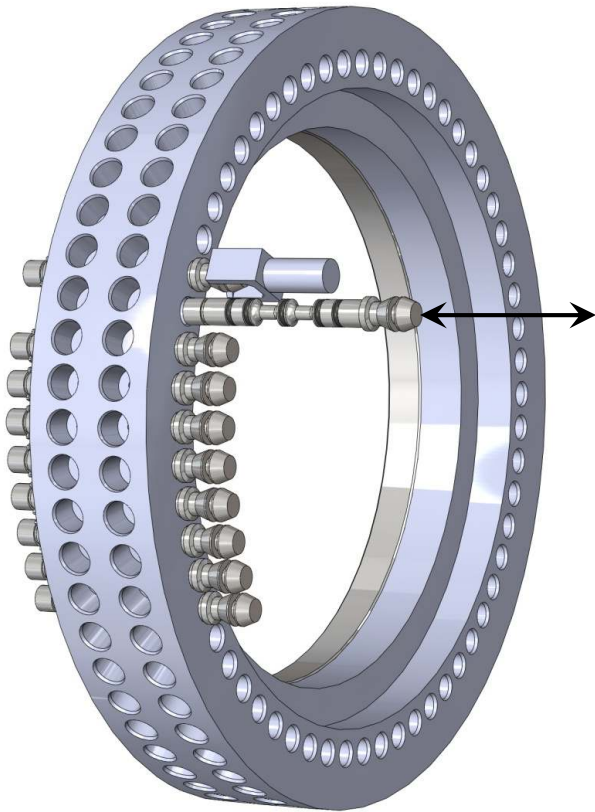


# Spool Valve Array

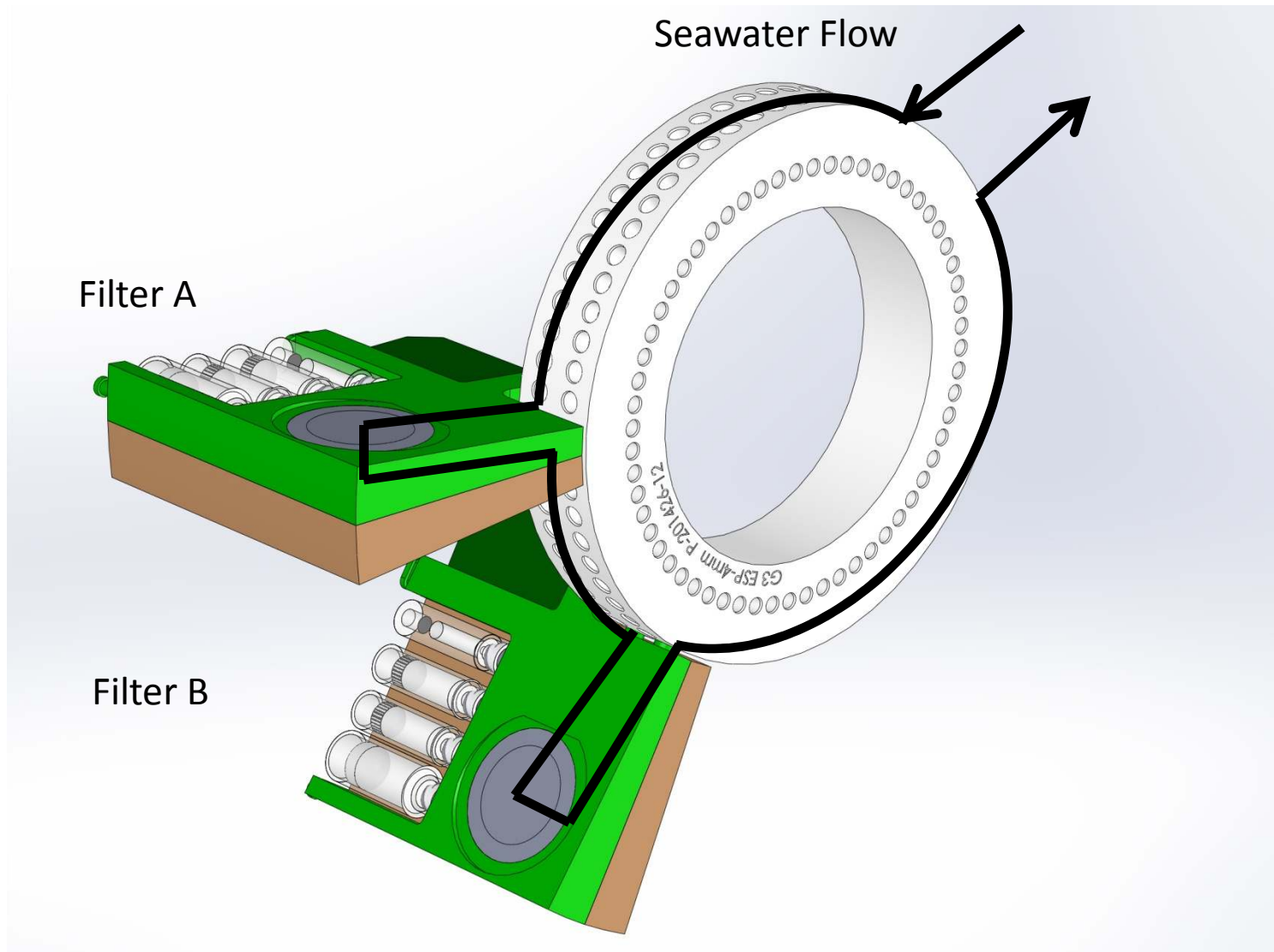


# Spool Valve Array

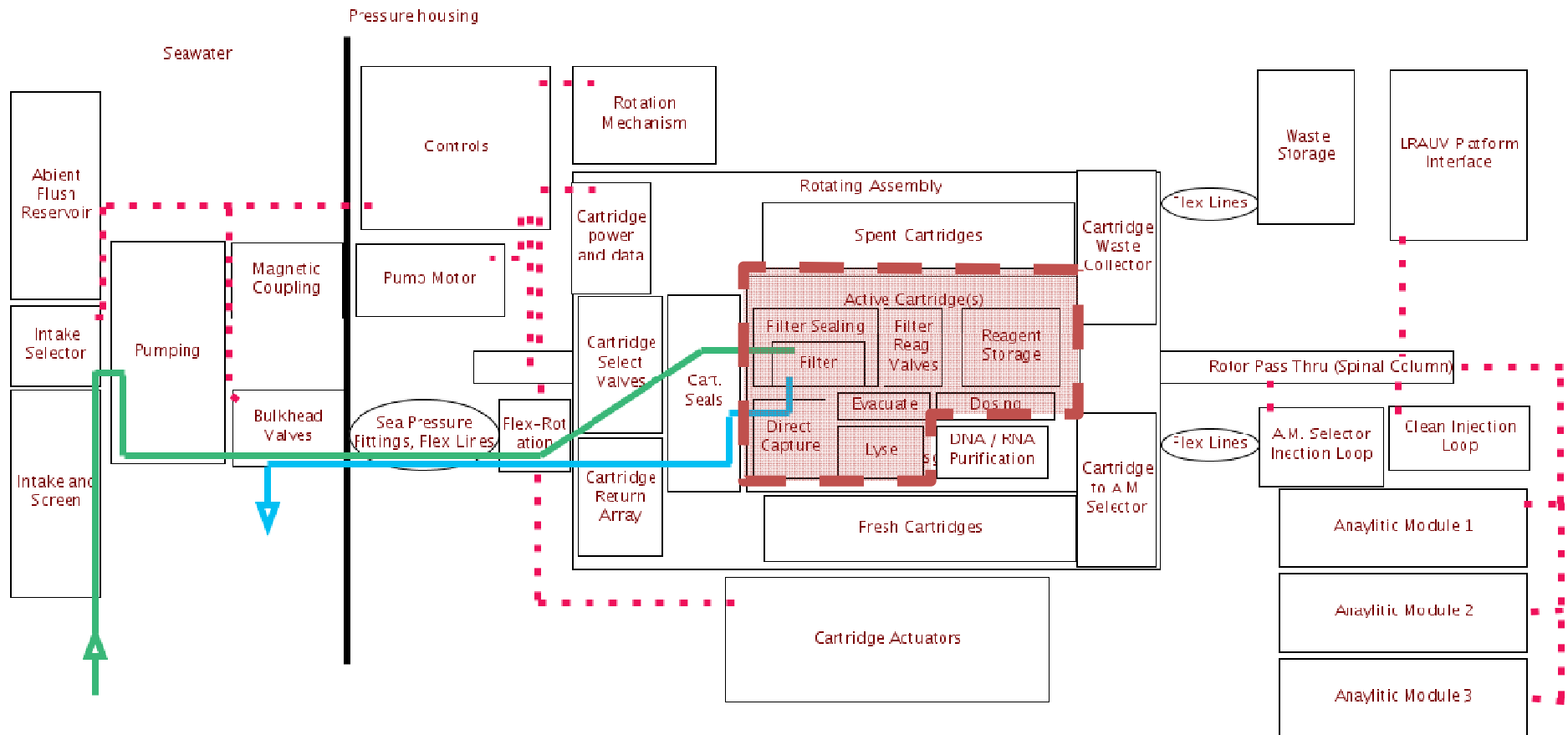
- Valve array selects which cartridge(s) get seawater.
- Switch flow from bypassing a cartridge, to looping thru the cartridge
- Currently design is 60, two position, 4 port spool valves



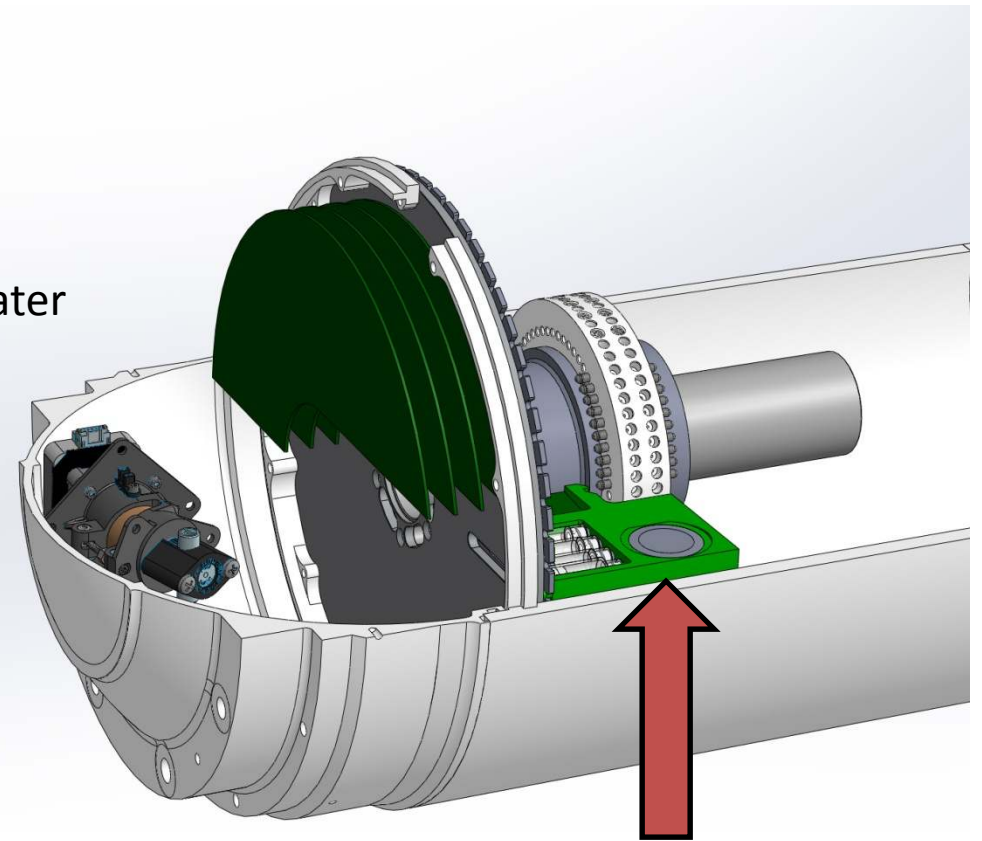
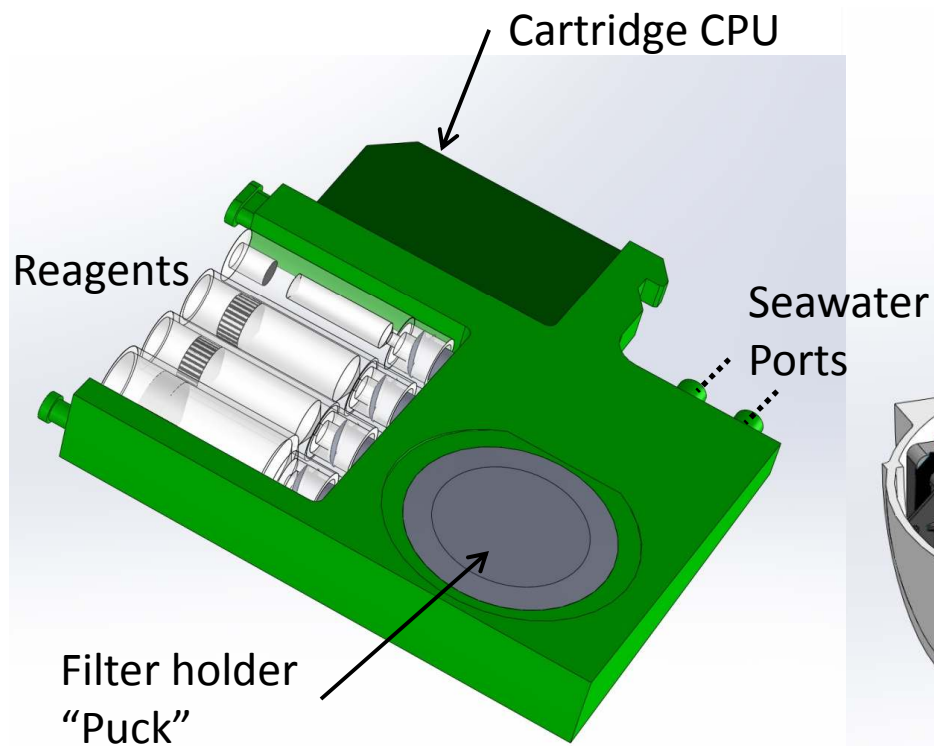
# Loop-Bypass Valve Array



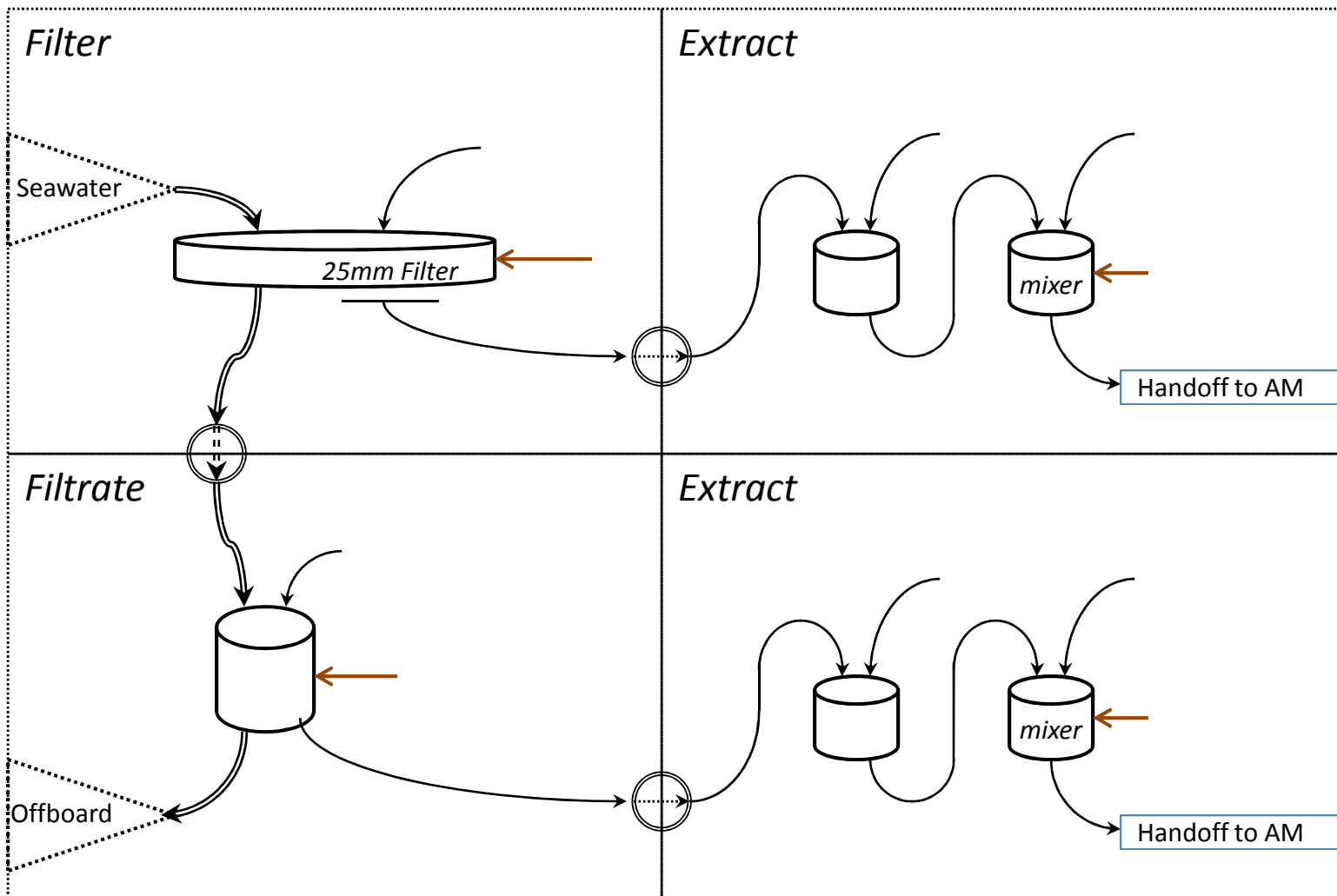
# Filter Cartridge



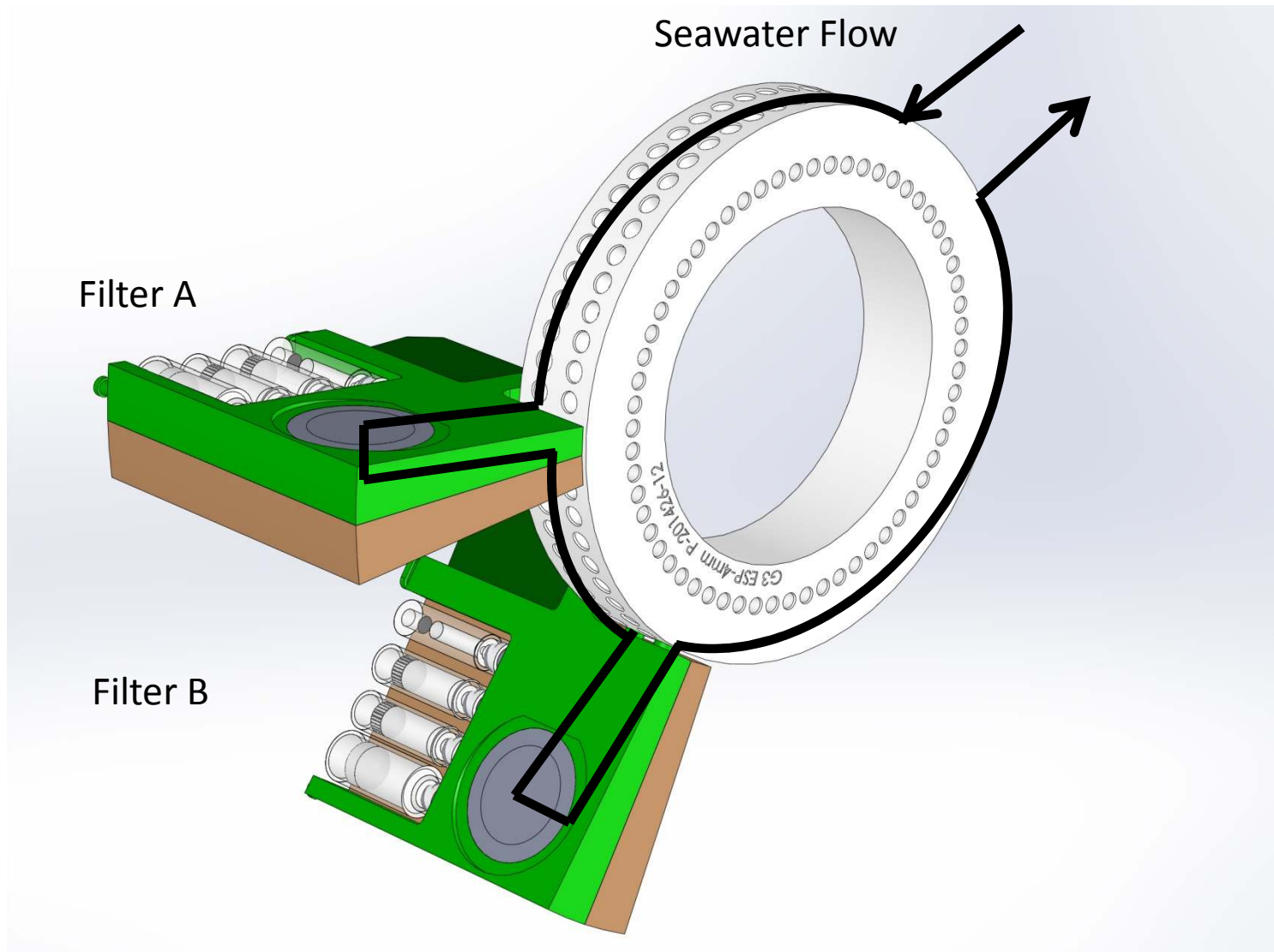
# Cartridges



# Modular cartridges



# Series Filtering



# Filter Holder

- 1mL lysing volume
- Filter holder rotates to select between reagent/filtering ports
- Contains pressure with no “clamp”
- Investigating piston mechanism to empty filter volume

