## Que Design

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**2 wicks**

* Replaceable, pre-packaged wicks instead of re-saturating wicks due to potential oversaturation and leakage into device
* Will be enclosed in small replaceable, plastic cartridge so that the essential oil does not rub off onto the device

**2 air pumps**

* Controlled, more isolated release of scent vs only electronic valves and passive diffusion
* Better than a single pump and a switching mechanism so users can choose between scents
* May use pump valves to isolate scent
* Microblowers/microfans are still a consideration because of higher flow rate
* Place fan/microblower above or below wick? Drippage may occur if below, condensation may occur if above
* Multipurpose – places air intake holes in locations that cause the air to flow across high-temp components such as the battery and pumps/fans

**PCB**

* Bluetooth connection to app
* Connection to remote (BLE or radio?) – how much larger will this make the PCB, how much more will it cost, how much more power will it use?
* Firmware – programmable with USB-C
* Recharging circuitry – recharges through USB-C
* Connection for LED, power switch, 2 air pumps

Important Considerations:

* Size
* Safety
* Power consumption
* Cost for additional functionality

**LED**

* For communicating device states

**Switch**

* manually turn pendant on/off

**Rechargeable battery**

Options:

* Prismatic lithium ion batteries
  + High capacity
  + Stiff
* Pocket-type lithium ion batteries
  + High capacity
  + Flexible
* Pin-type lithium ion batteries
  + Very safe
  + Small
  + Lower capacity

**Remote**

* Bluetooth or radio?
  + Test Bluetooth before moving on to radio
* 4 buttons
* App should not be a hard requirement?

**App**

* Better control of pendant
* Better control of user settings
* Gathering HR from devices such as Apple Watch or FitBit

**Housing**

* Black PETG
  + Unscented, aesthetic, biocompatible, durable, UV resistant, hygienic, doesn’t stick to essential oil
* Air vents on bottom to promote water resistance and aesthetics, or hooded vents
* Isolate wick chamber system to promote water resistance and reduce scent leakage
* Gasket to seal pendant to promote water resistance?
* Attachment to necklace – hooks, magnets, or what?

**Silicone Case**

* Wraps around pendant for children
* Resistant to chewing, grabbing, etc.
* TPU for initial rapid prototyping, then move on to 3D printing silicone molds

**Other considerations**

* May implement valves depending on success of open wick (ball or flap check valves)
  + Attempt to leave wicks open before implementing valves
  + Valves may get clogged, add expense, and more potential for complication
  + Improves waterproofing – adding both intake and exit valves may make pendant waterproof, if a cover is put over the USB and gaskets around any openings
* Valves used with a higher concentration of essential oil is also a consideration
* Essential oil cartridge vs wick