

**Week 4 report**

This week we went back in to Bausch & Lomb to familiarize ourselves with the facility and to understand what we had available to us. We explored the Operation Room (OR) simulation where the surgical equipment was tested.

We sat down together to start brainstorming possible solutions to the problem and evaluating the feasibility and possible issues with each of the 3 solutions that we had come up with in previous discussions for de-aeration of the Balanced Salt Solution (BSS) fluid.

The outcome of our discussion was as follows:

***Solution #1: Running small free flowing streams of BSS through a vacuum.***

This will be affected by:

1. Diameter of stream
2. Number of stream

and how both of those relate to de-gassing also factoring in Time. So we need to test and evaluate which of these independent variables reduce the gas in the fluid most efficiently.

***Solution #2: Pulling BSS through a resisting membrane via vacuum.***

1. Problem: Access to such a membrane – we are unable to find a membrane that perfectly fits our needs within the materials available to us presently
  - a. Possible solution: for the initial testing phase we might scrounge around the facility to find something that resembles the membrane –  
ex: Fabric with a high thread count
2. Problem: We also need to evaluate the cost of production of the final product if we do choose to use this membrane. The cost of procuring the membrane will need to be factored in. Depending on the cost of the membrane, we might have a trade off between efficiency (should this prove to be most efficient) and cost of the product – which are our 2 main goals.

***Solution #3: Running BSS through a tube of air-permeable only material under vacuum.***

1. Problem: Manufacturing something that is permeable to air only – This was our main concern with this solution. Some research into this helped us come up with ways to solve this:
  - a. At Bausch & Lomb we were informed that there is a material which is supposed to be permeable to air only so that is something we will have access to.
  - b. Alternatively, Silicone is reported to be permeable to air and not to water.  
(<https://www.youtube.com/watch?v=AQKnwGzsBwM>)  
Our research on this is superficial as of now but we are looking into this because silicone is not very expensive to procure.
2. Problem: Cost of production of the final product – we are unable to estimate the production cost and/or the cost of procuring material required for this solution.