ENES MS 3

For Spencer’s portion of MS 2 and MS 3, Spencer worked on CAD designs and doing some research on the chemical aspects of the O.S.V. project. Spencer also took measurements to determine the mass, volume, and areas, of multplie components of the O.S.V. Additionally, Spencer and Isaac came up with the idea that the O.S.V. would drive and park over the polluted water source, and then lower the pH and base solutions into the water.

Ken would dimension parts for the O.S.V. that had to be CADded, and Spencer would CAD them. Ken and Spencer about equally split the amount of CADding for the O.S.V., but Ken is the one who assembled all of the parts together to make one-coherent viewing of the O.S.V. as it is in the presentation. Ken would give Spencer an idea of a part that the O.S.V. needed, and Spencer would create it. Otherwise, Ken would give Spencer dimensions or other parameters that needed to meet O.S.V. specifications, and Spencer sought out to create a part that could fit those dimensions. After Spencer created the part, Spencer would then determine the area, volume, and estimated mass of these parts, given the density and mass of polylactic acid (P.L.A.). That way, the group could have a decent idea of how much everything would weigh, and therefore could stay within the given parameters of the project. There were also times where Ken gave Spencer dimensions for a part that would later either be scrapped, or re-written/constructed, with new dimensions. Either Ken or Spencer would create this new part. This dynamic duo came through clutch with the CADding for this O.S.V. Although the O.S.V. is currently slightly over the permissable mass, this will be resolved by reducing the battery capacity.

Pertaining to the chemical portions of the project, Spencer determined the density, molarity, molar masses, normality, substance pH, and chemical composition. Based on Spencer’s calculations, this aided Stephen in the chemical portion of the project. Stephen would go on to determine how many grams of base the O.S.V. would need to neutralize varying concentrations of acetic acid in the polluted water environment.

One of Spencer’s initial sketches included a diagram that depicted the O.S.V. lowering the pH indicator and the base dispensor into the water. Isaac, too, initally had this idea. The two of them convinced the group that this was plausible, and left little room for error in approaching the water source (i.e. getting to within 250 mm of the objective wouldn’t be difficult). This is the approach that the group has chosen to operate with. Some difficulties may include interference with the wheel motors and the water-source, but this is to be remedied by sticking the motors on top of the platform.