Vantage Performance Materials is a constituent of Vantage Specialty Chemicals located in Gurnee, IL. It is a batch surfactants plant that makes hundreds of products that have applications in many different industries such as cleaning, food, oil, gas, and many more. Vantage has another location for co-ops on the South side of Chicago and that is a continuous plant with a much narrower product focus.

I spent my third session at Vantage working with the technical team. This was my first experience with working in a plant setting as well as an engineering role. The main areas that my session focused on were emissions estimation/reporting, safety, process improvement calculations, and various small-scale project management activities. I directly reported to the technical manager and spent a lot of time collaborating with and learning from him and the other members of the technical team. Additionally, my projects allowed frequent interaction and collaboration with the site manager, maintenance manager, safety manager, production manager, production supervisors, and many other plant staff including operators, maintenance staff and contractors.

This session I got exposed to a lot of safety process that I previously didn’t even know existed. This includes the 14 elements of PSM with a specific focus on MOC, PSSR, PHA, and incident investigation. This session I wet my beak in these topics and in addition to learning about these topics I was able to complete my first ever MOC, PSSR and lead my first incident investigation. One of the actions that came out of my incident investigation led to the adjustment of PSV’s from a 2-year PM schedule down to a 1-year PM schedule. I was also able to participate on the incident investigation team for 2 other events that resulted in fires in our plant. Observing the problem-solving process and getting to take part in the resolution of these incidents was an amazing overall experience.

Safety and the MOC process go hand in hand with the project engineering portion of my session. This included developing piping plans, designing equipment modifications, and adjusting existing control philosophy in our design control system. The piping mod work allowed me to step into the plant and walk equipment down as well as taught me the value of isometrics. Designing equipment modifications taught me how to read P&IDs and served as intro into many design styles like double block and bleeds, where to place indicators, and to make sure to leave enough room for operators and maintenance to actually do the work. In addition, this project also led me to interact with production and maintenance staff which ended up being one of the highlights of my session. While working with one of our technicians and a project engineers I was introduced to the complex world of PLC programing and control philosophy. Though I wish I could have learned more about the electrical engineering and coding part of this process I was still able to learn a lot about the intricacies of control philosophy and how important it is to plant function.

A major part of my session was also spent on doing product optimization calculations. This was one of my favorite activities since I got to learn a lot more in-depth information about how the specific product chemistry work and the nuances associated with them. I got to work closely with one of the more senior process engineers and he taught me how to do the calculations needed to do the product optimization. I was able to take what he taught me and create excel based calculators and SOPs to be used to teach future engineers how to do the work. Additionally, I spent a lot of time focused on tracking plant emissions. This project allowed me to showcase skills I learned in CHE 320 by using statistical analysis to create a model to estimate plant emissions during periods of downtime.

Overall, this has been my favorite session at Vantage thus far. I always saw myself as a plant engineer and this session confirmed that for me. I was able to learn more about engineering in these past few months than I had been able to do in my entire life. I was able to build quality relationships with many co-workers and seek out mentors. I am excited to continue learning more about process engineering and even more excited to see how much more of an impact I can make in my 4th session at Vantage this Fall when I return to the plant as a production engineering co-op.