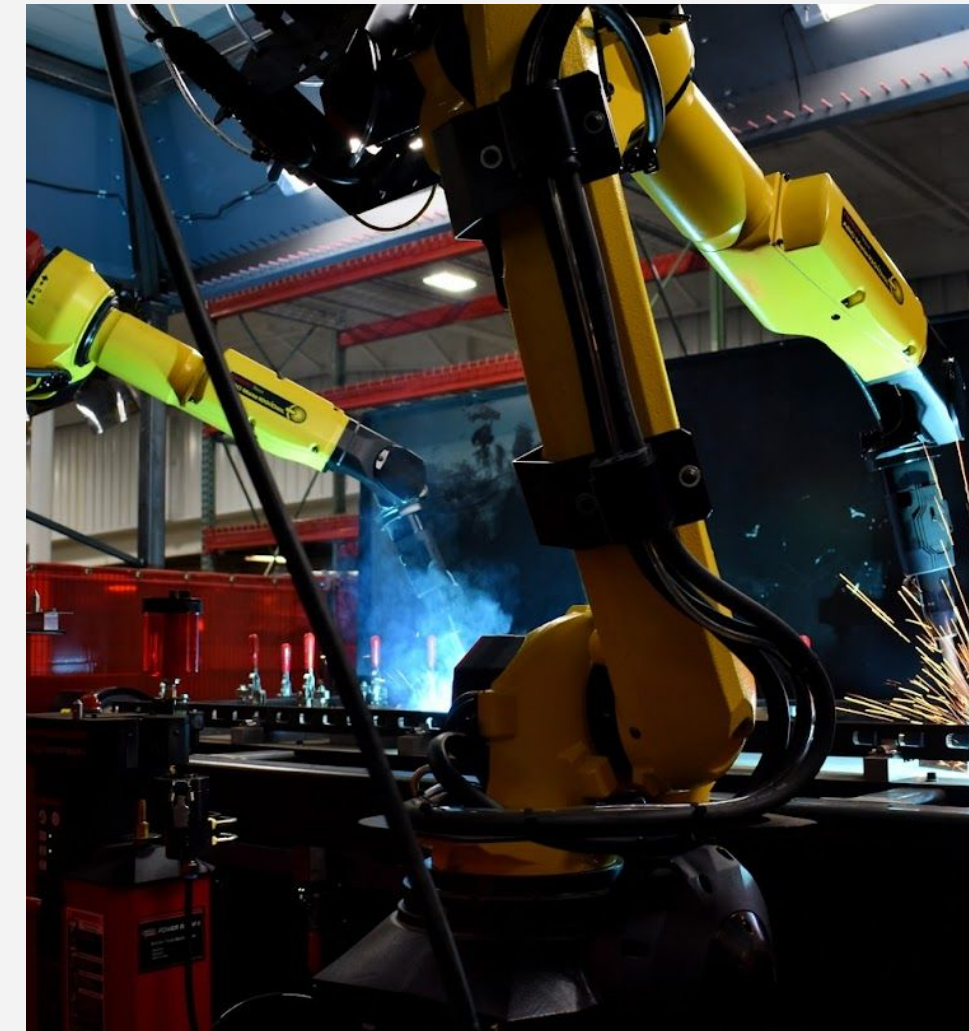
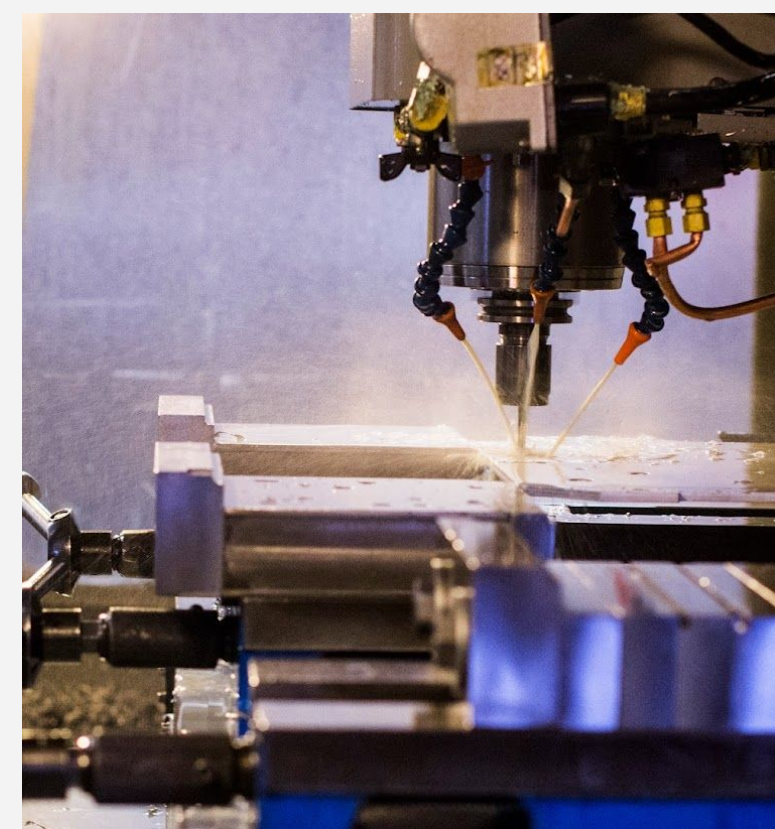


Who is DeWys Manufacturing?

DeWys Manufacturing is a complete metal solutions company that offers capabilities from precision sheet metal, powder coating, machining, metal stamping, and product assembly.



First Stage of Machine: Separating Silicone from Ceramic

This stage of the machine removes the ceramic parts from the silicone parts using water flow. The ceramic parts sink when the silicone parts are pushed by the flowing water to the next stage of the sorting process.

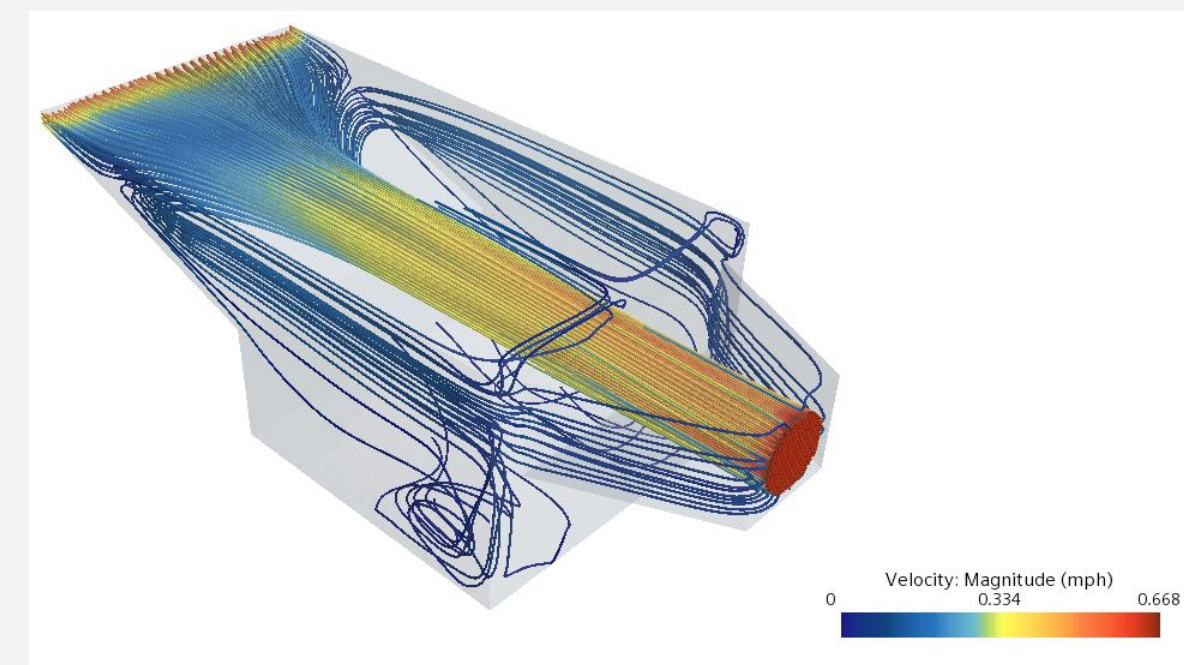


Figure 2: CFD Analysis of Bath

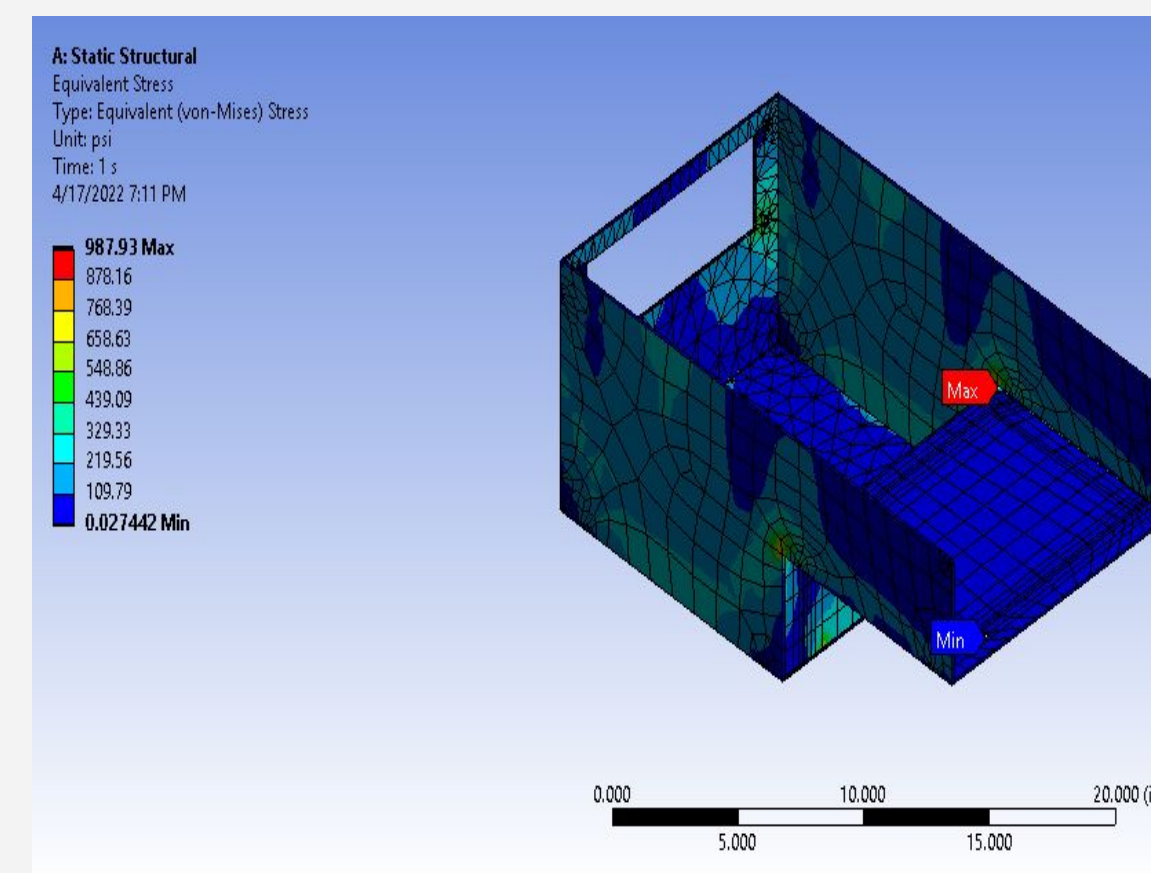


Figure 3: FEA Analysis of Bath

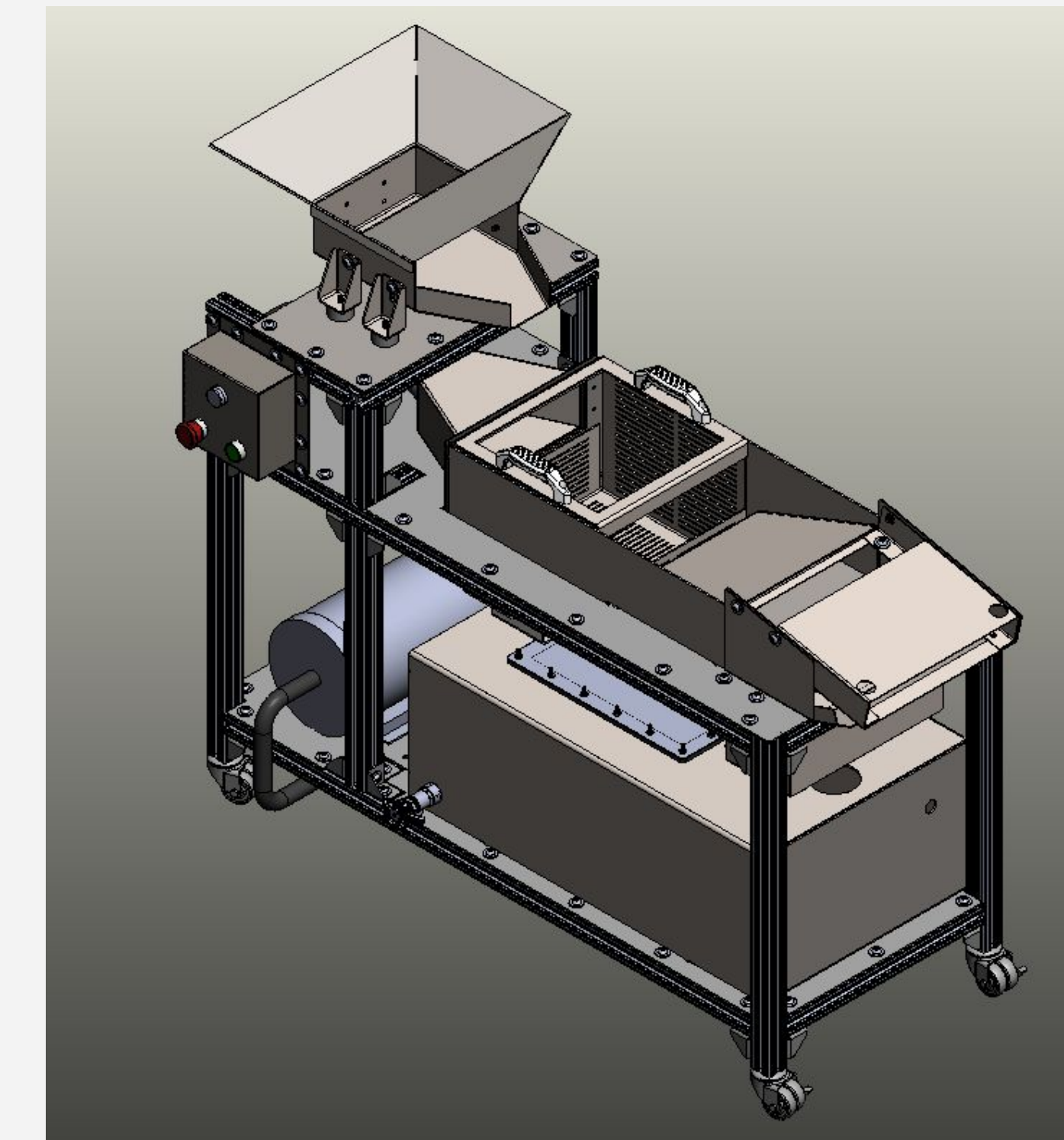


Figure 4: Fluid Bath Assembly

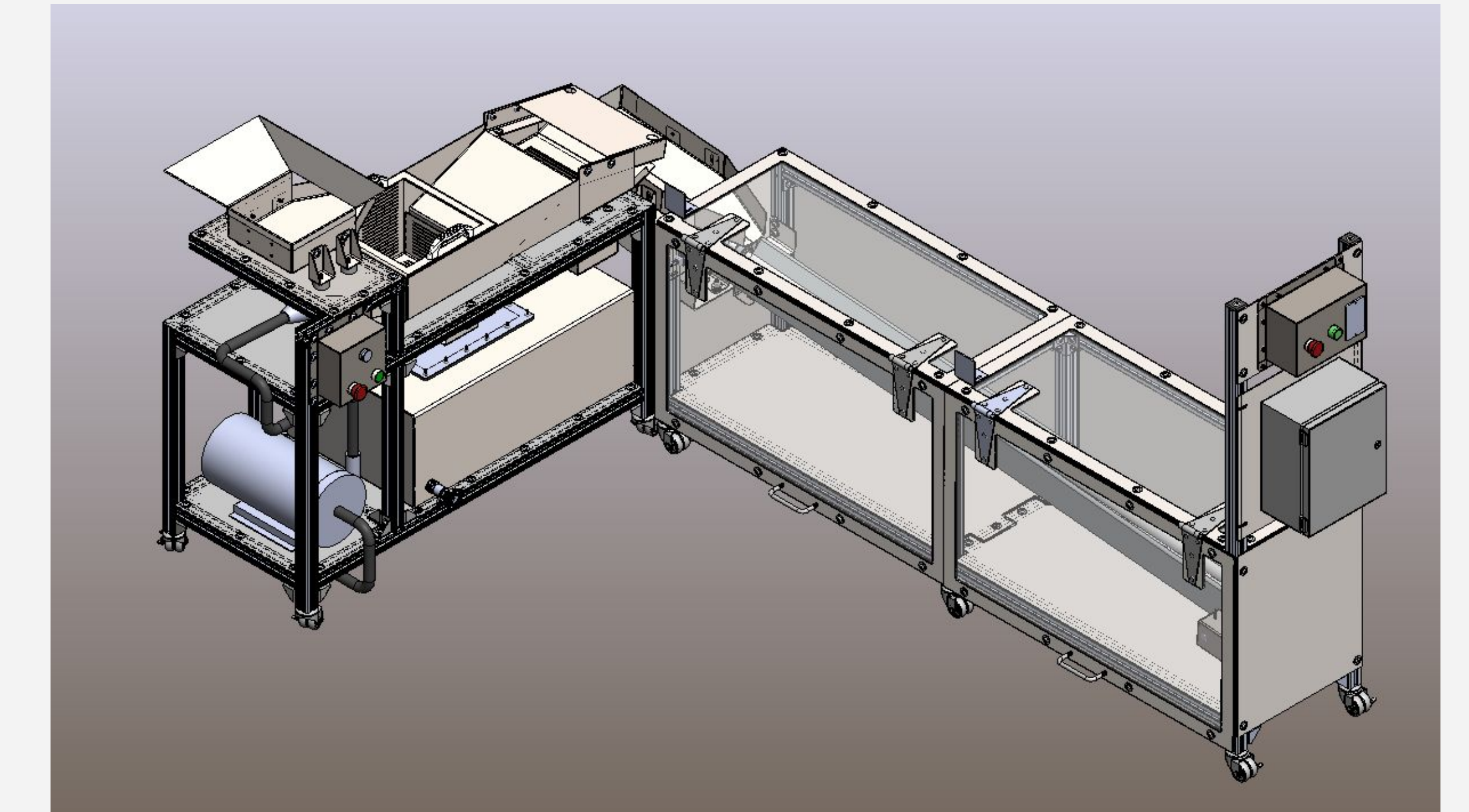


Figure 7: Full Assembly

Purpose

DeWys Manufacturing sponsored this project in order to reduce the manual labor spent in sorting reused caps and plugs for their powder coating line. The project entails designing and building a machine to automatically sort ceramic washing media from the caps and plugs and the caps and plugs into respective size ranges. This is currently being done by hand after the caps and plugs are washed for reuse. On average 10 hours a week is spent sorting them by hand.



Figure 1: Parts to be Sorted

Second Stage of Machine: Sorting Silicone Parts by Size

This second stage utilizes two rollers that are set at diverging angle to one another. Additionally, the rollers will rotate in opposing directions to keep the parts on top of the two rollers.

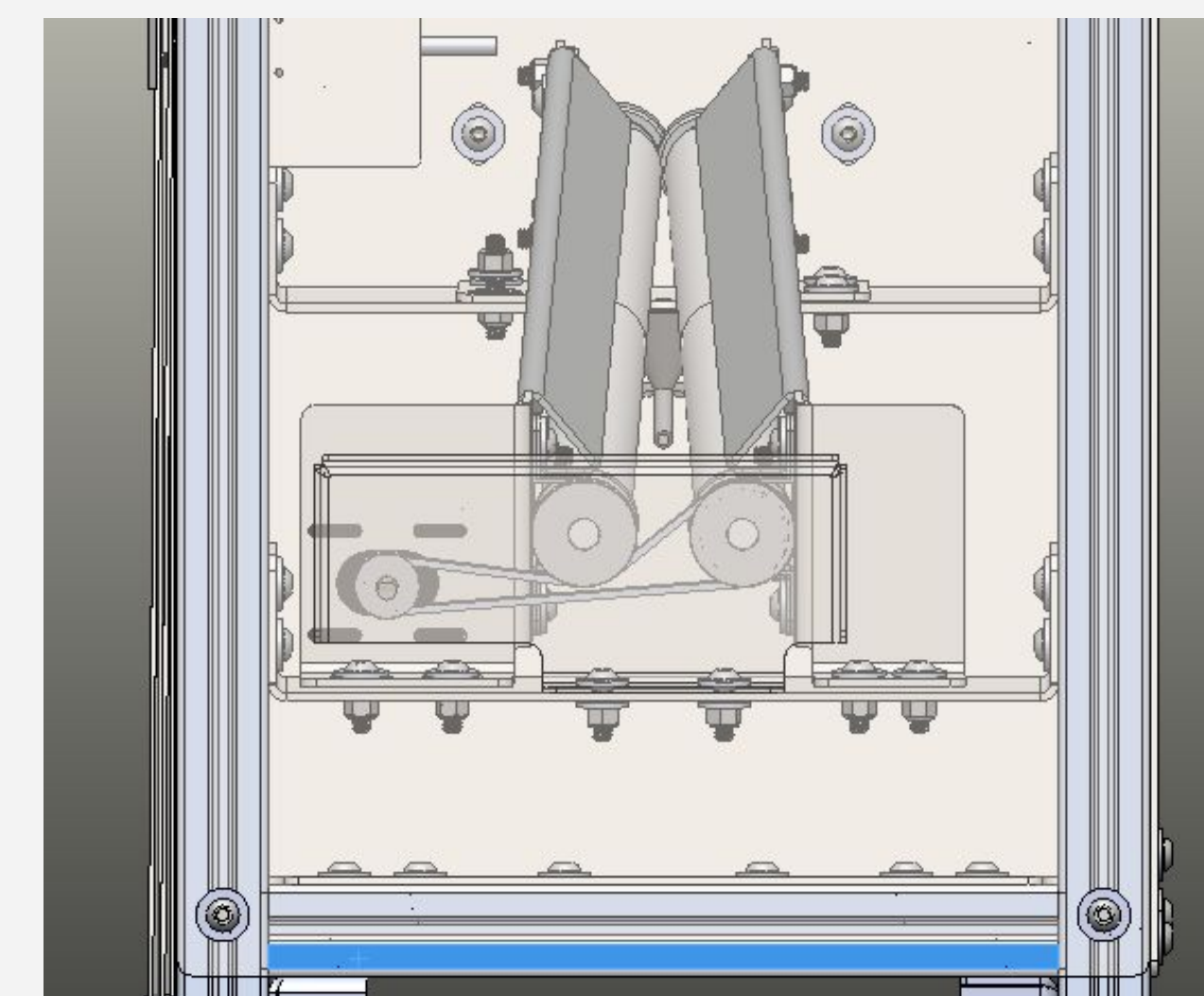


Figure 5: Diverging Roller Interior

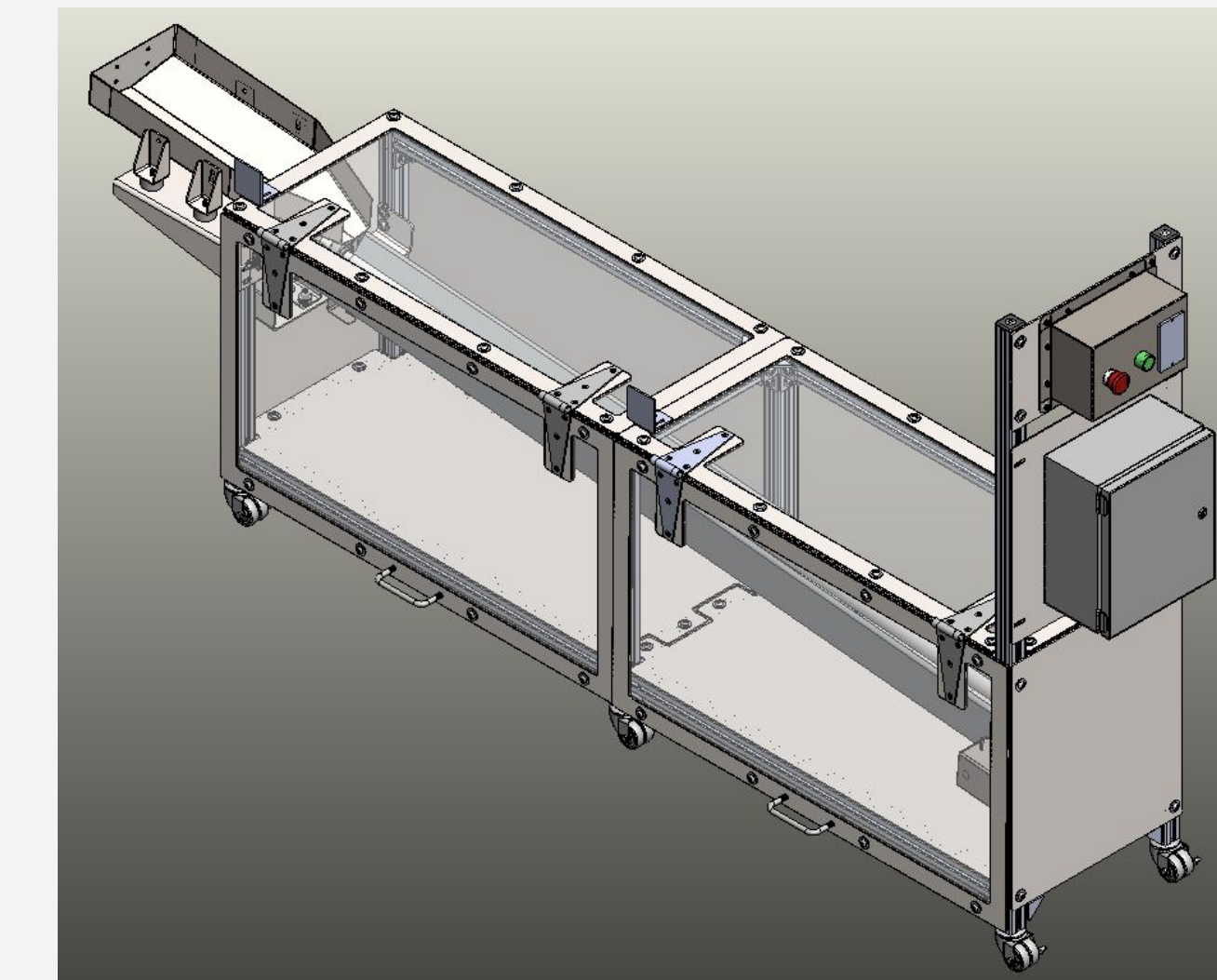


Figure 6: Diverging Rollers Assembly

Conclusion

Once the machine build is complete. This machine will be able to sort the different caps and plugs and washing media autonomously. As well as without any intervention. Once the operator has loaded the machine with parts, they will be able to leave the machine and do other tasks while the parts are being sorted.



Figure 8: Project Team

Special Thanks to:

Sponsor Team:
Curtis Kolarik
Zack Tuuk

Faculty Team:
Dr. Wendy Reffeor
Dr. Ryan Krauss