

Chemical Client

Chemical Process Wastewater Separation

With extensive expertise in chemical processing, SSOE proved integral to assisting the client in its efforts to enhance and improve the chemical process wastewater system in its batch chemical process plant. The optimization project, led by SSOE experts, resulted in long-term success for the client through design of a simpler and more cost-effective treatment system.

With a goal to eliminate external costs for disposal, SSOE developed a conceptual design to separate the organic impurity (an impure flammable liquid) from a wastewater stream as part of a modified disposal system, researching various types of technologies available and equipment to integrate into the process. SSOE evaluated the physical properties of the two liquids in the chemical wastewater and performed computer modeling utilizing ChemCAD to simulate how the recommended separation process would function. The firm also provided PFDs and a material balance to support its design details.

SSOE determined that the wastewater system did not have to be a batch process, but rather, could function continuously, a simpler method with easier functionality whereby an idle, smaller tank transitioned into a pump tank was used to pump the water into one tank and the organic chemical into another. This allowed for an additional feature without the need to add an additional separation tank. Previously, the waste sat in one large tank while separation took place over time. SSOE's design included pipe routing, instrument controls, and identifying methods for connectivity of equipment. The firm's design integrated two existing tanks and an external phase separator. What resulted was a solution that allowed the client to conduct treatment internally, while decreasing disposal costs by three to four times for 90% of the waste liquid, thereby increasing profit.

value promise

Reduced client's operational costs by four times the original amount.

size 10,000 SF (within larger site)

location Midwest USA

highlights

Conceptual process design

Reduced process wastewater

Utilized ChemCAD simulation software