

CHEMCAD™ Validates Biofuel Evaporator Unit Expansion to Increase Production

Biofuels | ICM, Inc | International Locations

“CHEMCAD was not only the solution, but it gave our team a skillset to properly evaluate new projects that require a similar assessment.”

- Mareus Lopez, ICM Team Leader, Process Engineer
ICM, Inc.

SYSTEM

Biorefining leader, ICM Inc, challenged their Process Engineering Department (PED) to evaluate the quantity of evaporators needed to increase the production rate of a biofuel facility.

SIMULATION

PED engineers gathered initial field processing data such as existing flow rates, temperature, pressure, composition of the hot and cold fluids, and equipment surface area as input for the initial CHEMCAD simulation. The goal of the simulation was to calculate overall heat transfer coefficients (U values) of the evaporators under current operations. The calculated U values can be used to evaluate the effect of higher flow rates of fluids.

SOLUTION

Once the second simulation was created for increased flow rates, the calculated U values from the previous simulation became the input of this second simulation. Inside the evaporator unit operation, engineers included specifications to condense all of the vapors (hot fluid). With these conditions, it was possible to calculate the required future surface area to determine how many more evaporators were required to meet the facility's increased demand.



Since 1995, ICM, Inc. has helped shape the biofuel industry with technology and expertise used by ethanol producers across the globe. Today, plants powered by ICM technology collectively produce 8.8 billion gallons annually—supporting more ethanol producers worldwide than any other brand.

ELEMENTS OF SUCCESS

Once the new evaporators were commissioned, field data validated that the simulated evaporators within the facilities met the increased production rate goals.

With the creation of the two CHEMCAD simulations, it was not only possible to provide a solution to the facility, but CHEMCAD also provided a new tool/skill to the PED team to properly evaluate future projects that require a similar assessment.



How many evaporators are needed to increase the production rate?



Simulation using field data provided confident U value calculations.



Increased flow rates met the intended production goals.

FIGURE 1
Facility model with the original equipment.

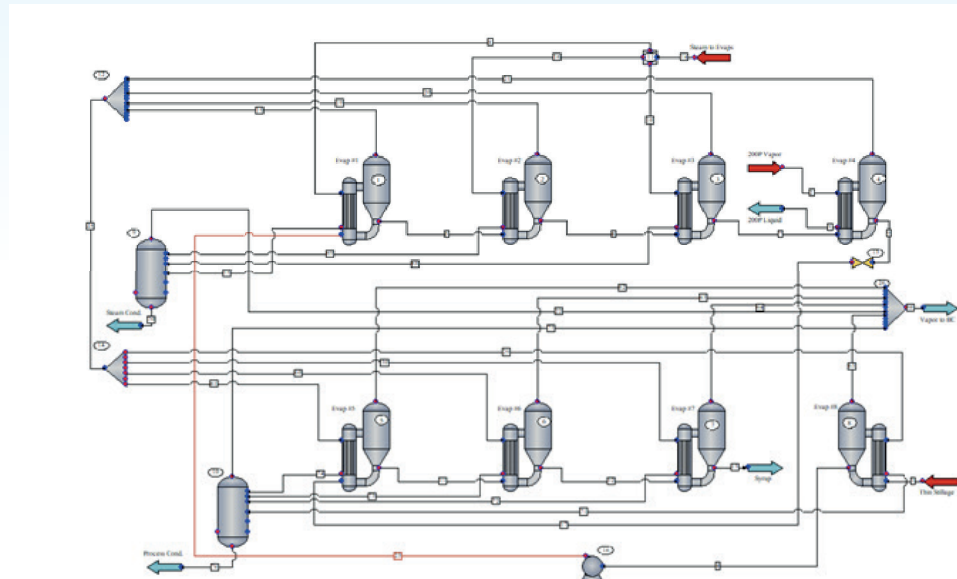


FIGURE 2
CHEMCAD model #2 includes the new evaporator to accommodate higher flow rates.

