

Second Project: Completion of the Process Simulation Cup

Read the problem statement here: <https://www.process-simulation-cup.com/process-simulation-cup-2019/>

Make sure you go through all of the material including:

[PSC2019 Task Story](#)

[PSC2019 Step-By-Step](#)

[PSC2019 Phases](#)

You can download the adaptable flow sheet here: <https://www.process-simulation-cup.com/wp-content/uploads/2019/02/PSC2019-Student-R01.cc7>

The problem requests you optimize two distillation columns in a transient state. Your goal is to optimize settings on two distillation columns in series. It is your groups responsibility to understand the provided material, understand the PFD and simulation, and propose the best solution.

Before meeting as a group, each member should submit an individual answer and solution to the competition. This submission is worth 250 points out of the total.

After individual solutions are presented, get together as a group and discuss:

“Why were the parameters chosen?”

“Who had the best answer?”

“Why did those lead the best results?”

As a group you will write a Two-page executive summary to present the group answer to the problem presented by ChemCAD. Submit this solution no later than 10 AM on April 1

Executive Summary 600 pts (2-pages)

Summary of problem	50 pts
Assumptions and thought process clearly articulated	200 pts
Choice of group parameters	50 pts
Choice of parameters explained clearly	150 pts
Format and clarity	150 pts

Appendix 150 pts (no page limit)

Calculations and group notes	100 pts
NOTE: The group notes should show calculations used to develop the group answer, decision charts, and any other calculations demonstrated in the executive summary.	
Each individual answer submitted is recorded in report	50 pts

Total Group Score	750 pts
Individual Answer Score	250 pts
Total Score	1000 pts
Total Extra Credit Possible	400 pts

EXTRA CREDIT:

+100 if you are the leading the international competition on April 1.

+50 if you are in the top five submitted solutions at UNH on April 1.

+50 if you are the top five submitted solutions in the international competition at the end of Phase 1 (April 15).

+50 if you are in the top five submitted solutions in Phase 2 at UNH on May 8.

+150 if you are in the top five of the international competition in Phase 2 on May 8.

Few Thoughts...

- It is possible to update your answer after submission of this report for the May 8 extra credit. With Extra Credit, it is possible to get 140% on this problem. Yet, completion of Phase 2 or any other engagement with the problem after submission is purely optional.
- While not required, you are strongly encouraged to watch the ChemCAD workshops on Youtube (links available on Canvas) prior to addressing this problem.
- Both Professor Halpern and Lev are available to answer questions and teach ChemCAD. Yet, Professor Halpern is only able to answer limited questions about this particular problem statement. It is up to your group's interpretation to answer the question appropriately.
- Just like most design problems, there is no right answer, only a better answer. For this particular problem, you are graded individually on the "better answer" (i.e. on who makes the most money). The group is graded on the explanation and decision making to justify the group's answer based on engineering principles beyond "making more money."
- Just like the design problem, the materials presented by ChemCAD have greater weight than those found in literature. However, unlike the design problem, your responses and approaches are more limited.
- For this problem, it is better to individually submit the best answer possible (makes the most money) but, as a group, justify the engineering appropriately. If the engineering does not match the best answer, explain this clearly in the executive summary. In 2017, the groups that were graded the best found major flaws in the PSC problem that resulted in corrections. Yet a member of this group won multiple cash prizes from ChemCAD.
- If you are unable to address this problem or need greater assistance, an alternative problem can be supplied by request. Please email this request to Prof. Halpern by email. The alternative problem will not have extra credit opportunities. The alternative problem will be designing a new distillation column instead of controls around existing columns. Once requested, you must submit the alternative problem.