

PROCESS DESIGN PRESENTATION — GUIDELINES

"Four to six weeks in the lab can save you an hour in the library."¹

G. C. Quarderer

Dow Chemical Company

Background

A group leader interrupts one of her seasoned process engineers with news of an impending assignment. A research chemist at their company has just uncovered a solution to a process roadblock that had thwarted commercialization of a coveted product for decades. This breakthrough, however, requires implementing process technology that is new to the company. The process engineer will have to evaluate whether piloting of the new process (i.e., the next stage of process development) appears feasible. And the group leader informs the process engineer that she must present her evaluation at a meeting – tomorrow – with the Vice President of Research & Development.

What's the process engineer going to do? How can she gain a quick overview of the new technology?

One of the most effective sources to learn the key elements of a new topic is an encyclopedia. Moreover, a good encyclopedia provides pertinent literature references to continue an in-depth search on the new topic.

While the classic *Encyclopedia Britannica* can provide valuable information on many subjects, it typically lacks the focus needed for most process design topics. Fortunately, there are many *process* encyclopedias available. Indeed, one can find multivolume encyclopedias devoted to only a single major area, such as to polymers, or to heat exchangers, or to separations. *If* the engineer's new assignment is in one of these areas and *if* the engineer already has a good knowledge of the overall area, then one of these specialty encyclopedias would likely prove to be ideal for the first step in gaining the needed overview for the new assignment.

What if the engineer has no knowledge of the process area? Then a specialty process encyclopedia might be just too detailed and too perplexing to effectively provide an overview. Fortunately, there is an "all purpose" encyclopedia that is usually available in technical libraries of universities, companies, government, and other organizations:

Encyclopedia of Chemical Technology
4th Ed., John Wiley & Sons, New York, 1991-1998
Library Call Number: TP9.E685 1991

¹ This quotation is from Fogler, H. S., *Elements of Chemical Reaction Engineering*, 3rd. Ed., p. 262, Prentice-Hall PTR, Upper Saddle River, New Jersey, 1999.

Also known as the "*Kirk-Othmer Encyclopedia of Chemical Technology*", "*ECT*", or "*Kirk-Othmer*", chemical engineers, chemists, and other professionals in chemical industry and related areas routinely consult this reference source.

The entire 27 volume set, 29899 pages, is currently priced at a bargain \$9895. If this is too expensive for your budget, then you may utilize copies located at the Dirac Library on the FSU campus and the Coleman Library on the FAMU campus.²

The objective of this assignment is to gain an overview of a process design topic and to present it to the class. The primary source will be the *Encyclopedia of Chemical Technology*.

Topics are drawn from four general process areas:

- Environmental Compliance
- Commodity Chemicals
- Emerging-Technologies
- Consumer Products

These topics provide, for the entire class, an overview of examples of diverse processes that a chemical engineer may encounter during one's career.

Learning Objectives

By the end of this assignment, the student will be able to:

- Use an engineering encyclopedia effectively to gain an overview of a new process design topic, including contemporary issues.
(*Outcome C, F, H, I, J, Level 2*)
- Explain in an oral presentation with a teammate a new process design topic to an audience of chemical engineers with limited professional experience.
(*Outcome C, D, F, G, Level 2*)

² On-line editions of *ECT* are also becoming accessible at many libraries.

Process Design Topics and Presentation Schedule

Topic ID	Date	Topic Title	Team No.
A	Sep 19	Air Pollution Control Methods	1
B	Sep 19	Sulfuric Acid and Sulfur Trioxide	2
C	Sep 26	Drug Delivery Systems	3
D	Sep 26	Carbonated Beverages	4
E	Oct 3	Waste Treatment, Hazardous Waste	5
F	Oct 3	Benzene	6
G	Oct 10	Radiopharmaceuticals	7
H	Oct 10	Chocolate and Cocoa	8
I	Oct 17	Water (Pollution)	9
J	Oct 17	Alkali and Chlorine Products	10
K	Oct 24	Fermentation	11
L	Oct 24	Perfumes	12
M	Oct 31	Sulfur Removal and Recovery	13
N	Oct 31	Vinyl Polymers (PVC)	14
O	Nov 7	Water (Desalination)	15
P	Nov 7	Paper	16
Q	Nov 14	Recycling	17
R	Nov 14	Fertilizers	18
S	Nov 21	Nickel and Nickel Alloys	19
T	Nov 21	Pilot Plants	20

Report Evaluation

The overall grade on the assignment will be based upon a composite of the criteria below.

- Insight. Did the presentation spell out the key process design issues? Or were essential elements omitted?
- Clarity. Was the presentation straightforward to understand? Or did the listener struggle to understand?
- Focus. Was the presentation concise? Or did it seem to meander?
- Creativity. Were there features of the report, either style or content, that were novel and stimulated the audience? Or was it dull?

The contribution for this assignment in the overall course grade is 10 points. The instructor may assign bonus points for exceptional presentations.

Students in the audience who offer particularly good questions or comments will be eligible for bonus points.

Oral Report

- Location: Room B114 (i.e., in class)
- Date: Teams must present on the scheduled date, listed in the above table. Excused extensions beyond the due date will only be considered for students facing extraordinary situations (e.g., hospitalization).
- Format: Team presentation. All members of the team are expected to participate and to know all pertinent material.
- Audience: The presentation should be geared for chemical engineers with no knowledge of the process design topic. Expect the course instructor, teaching assistant, and all class members to be present.
- Focus: Of particular interest are process design issues related to the topic and how they are addressed. For example, issues may be related to chemistry, process alternatives, equipment, safety, environment, capacity, economics, etc.
- Length: The *maximum* length of the presentation is 12.00 minutes. Thereafter, expect the instructor to cut off the presentation and to deduct points from the assignment grade.
- Questions: Questions from the audience will follow the team presentation for approximately five minutes.
- Handouts: A one-page summary of the topic highlights should be distributed to all audience members.
- Guidelines: The following easy-to-read text provides nuts and bolts guidelines on presentations: Westerfield, Jude, *I have to give a Presentation, Now What?!*, Silver Lining Books, 2002. [ISBN: 0760729123] This book is available at the campus bookstores, Tallahassee bookstores, and on the Web at a nominal cost.
- Colors: Do not use yellow. The instructor may not be able to see data points, curves, and text in this color.
- Equipment: Students who plan to use the computer/projector or other equipment should gain familiarity with its operation well ahead of the scheduled presentation date.

Report Submission

Submit by e-mail an electronic copy of the report file and the handout file to the instructor.

Name the file in the following format:

teamX_processpresentation
teamX_processhandout

where your team number is substituted for X.

These files must be submitted to the instructor within 24 hours of your presentation. Thereafter, the assignment will be penalized one point for each day late.