Cost Modeling Exercise - 3.57
(also available on the WWW)

Introduction

As we have been explaining, the key to cost modeling is the decomposition of the problem of manufacturing cost into problems of a far smaller scale, exploiting an understanding of the process technology and the engineering principles underlying it.

The process can be thought of as proceeding through the following steps:

1. What is the cost question? (cost of what; cost varying how; cost compared to what; cost when in the design/development cycle?)
2. Which elements of cost to consider? (e.g., materials cost - yes; advertising costs - no)
3. What elements of information do we know? (factor prices, process technology, engineering principles)
4. How to relate what we know (3) to the elements of cost we identified as needed (2)?
5. Finally, how integrate all of these relations (4) in a coherent framework, ensuring consistency.

The September 30th and October 5th lectures are quite detailed discussions of how to accomplish step 4 listed above for injection molding.

Your assignment is to develop a cost model of a process of your choosing. Naturally, developing this model is going to take some time. You have some specific assignments now, however.

Tuesday, October 5, 1999 — Draft Model Proposal Summary Due

For the next class, we would like you to prepare a one-page summary, including the following information: (1) the name of the process that you are planning to model; (2) your answers (or likely sources of the answers) to questions 1,2 and 3 above; and (3) a process flow sheet, describing as completely as possible the process you plan to model. We recognize that you will not be able to answer these questions completely, but the more thoroughly you answer, the more useful the October 7 workshop will be. The workshop/lecture on October 7 will be devoted to discussing the Step 4 issues that your processes pose for cost modeling.

In addition to the lecture notes, there will be a sample spreadsheet cost model, based on the injection molding of plastic parts, available for your study. You should get a copy of this from the WWW.

Tuesday, October 12, 1999 — Model Proposal Summary Due

This write up, of no more than three pages, should recapitulate upon the materials prepared for the October 5, class, amplified based upon the October 7 workshop proceedings.

Thursday, October 28, 1999 — Models Due

You will be required to present a cost estimate, a plot of cost breakdowns at two different production volumes, and a plot of total cost versus production volume. More details, based upon the process that you select, will be defined over the course of the October 7 workshop.