

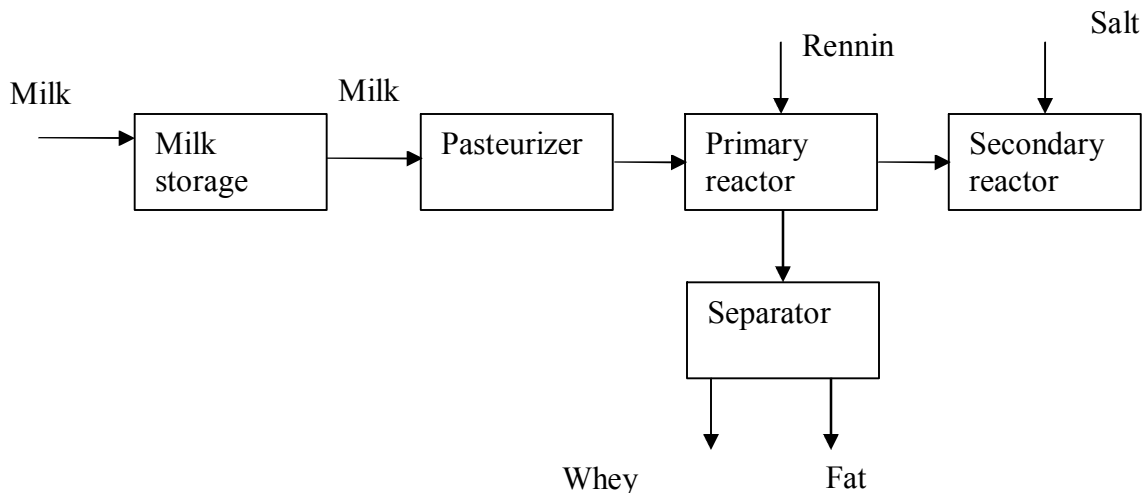
4/17/2006

FABE 481	Instructor:Dr. Kaletunç TAs : Boon Lee Tee
<u>Homework #4</u>	Spring 2006

Homework Due 4/24/2006 by 5pm

1. Text book. 4.1
2. Text book. 4.3
3. Cheese production involves addition of rennin and bacteria to milk to produce whey and curd. After the curd is produced, it is salted, packaged, and aged.

Flow chart of cheese making plan is given below.



The cheese plant takes in 200,000 lb of milk per day and produces cheese containing 33% fat (by weight). Calculate the amount of whey produced by the plant daily.

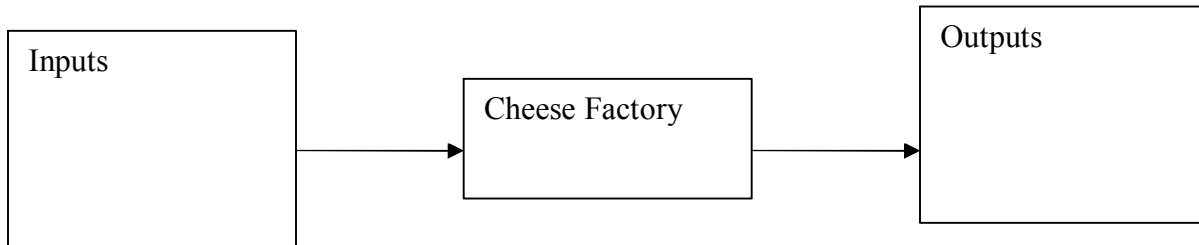
Plant specifications:

- Incoming milk contains 5.6% fat by weight
- One lb of cheese is produced from every 10 lbs of milk
- Rennin is added in a ratio of 1 part rennin for every 5000 parts of milk
- The cheese contains 3% salt by weight

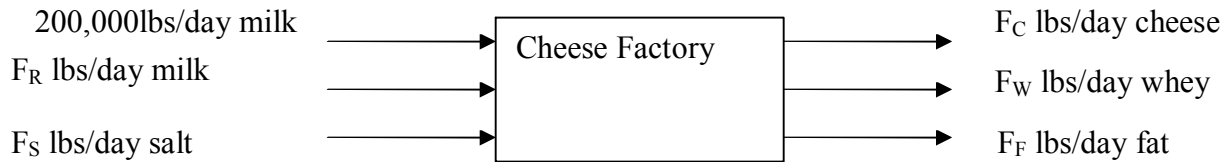
Use the problem solving algorithm to solve the problem

- a) The sketch is given below is missing the inputs and outputs. Choose from the given variables inputs and outputs and place in the correct location.

Cheese, Rennin, Milk, Fat, Salt, Whey



- b) Assign symbols to unknowns



What type of process is the cheese making process

- I) semi-batch
- II) batch
- III) continuous

- c) What is the goal of the problem?

- d) What do you select as your system to solve the problem?
- i. Primary reactor
 - ii. Overall process
 - iii. Secondary reactor and packaging
 - iv. Separator

- e) What will be the best basis for this problem?
- i. One year
 - ii. One minute
 - iii. One day
 - iv. One hour
- f) Write the overall balance
- g) Write the fat balance
- h) Put all the information back in your diagram
- i) Write the potential ways whey, the waste stream, is used.