**Introduction:**

We aim to develop a fast spaghetti production process that will produce spaghetti at a profitable scale which can be run by students.

**Objectives:**

- To produce 300 kg/h of pasta.
- To sell our pasta for $1.00 per 1lb bag.
- To run our plant for 22 hours/day, 365 days/year

**Market:**

- became really big in the 19th century
- 82.47% of American households eats dry, prepackaged pasta (Statistica 2015)
- Pasta has become a big staple in America due to its convenience, low cost, and versatility.
- people across all ages eat pasta with the highest rate of pasta consumption coming from people between the ages of 19-50 (Chung, Lee, Cho 2010).

**Background:**

**Extrusion:**

- During this process, the dough is fed into one end. An auger forces the dough through the length of the extruder and forced through a die at the other end (Redazione 2013).
- The flow rate of the dough must be uniform during the extrusion, or causing the extruded noodles to not have uniform size.

**Drying:**

- Traditionally, low temperature (lower than 50), 20-30 hours.
- Nowadays, higher temperatures, as fast as 3 days/year.

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**Plant Design:**

- Ship in semolina flour every two weeks
- Batch run mixer
- Continuous run extruder
- Continuous run conveyor dryer with 7 zones

**Alternative solutions:**

- **Mixer:** Make a continuous process, have 5 mixers, run for mixing time of 16 minutes
- **Extruder:** Have 2 extruder lines, run at medium production
- **Dryer:** 1. Paven dries pasta with a high initial temperature, following with a series stages of fast drying and stabilizing. The dryer is divided into several zones, which is controlled individually. The whole process takes about 3 hours.
- 2. Another company, Fava, initially has an intense predrying phase, then increase temperature to maximum and stays for 160 minutes, and followed by a last stage, which is a stabilizing zone. The whole process is controlled by PLC and takes about 6 hours (Field, Karen, 2009).

**Economics:**

- Estimation of TCI is based on the total price of purchased equipment.
- Estimation of TPC is based on the price of raw material.
- Depreciation calculation was based on straight line estimation with 10 year life.
- Assumed 35% tax rate.

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**Technical Advisor:**

**Instructors:**

Dr. Okos

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