

## Chapter 8: Popping Methods: Hot Air

Popcorn pops when it is heated to the correct temperature. That heating can be accomplished in several different ways, popping in Hot Oil, popping in Hot Air, and popping in Microwave Oven.

### **Dry pop**

When popcorn is popped without the use of oil the process is referred to as dry popping. This process is found in the home, commercial, and in industrial situations.

The first hot air poppers were wire baskets containing a small amount of popcorn that were held over a fire. The baskets were shaken rapidly to agitate the corn and keep it from burning. Today commercial versions of this process use a motorized rotating wire drum over an open flame or electric heat elements.

Today dry-popped or hot-air popped corn is used mainly in the Snack Food industry. Many specialty popcorn shops also use dry popcorn as a base for the many products they make and sell. Industrial hot air poppers are continuous automatic machines that have many applications. The industrial hot air corn popper is essentially a continuous-feed, fluidized-bed oven. While it is primarily a popcorn machine, it is also used to puff third generation snacks, roast peanuts and it will process any type of snack that requires precise temperature and time control and where a continuous process is needed. The dry pop machine used in specialty shops uses a rotating wire screen to simulate the shaken wire basket used in the 1800's.

### **Dry popping Machinery**

There are two basic types of Dry poppers on the market today, batch and continuous hot air poppers.

#### **1. Batch Dry Poppers**

Batch poppers are made with a rotating wire drum with a fine mesh that supports raw popcorn over an open flame or electric heat element. A coarse wire mesh shaped like a helix is fitted inside the drum. The mesh in the helix is coarse enough that the raw popcorn grain will fall through and popped corn will not. When the corn sitting on the fine mesh outer screen pops it becomes too large to fall through the inner screen. The shape of the inner screen feeds the popped corn out of the drum as the drum rotates

#### **2. Continuous Dry Poppers**

Hot air poppers are continuous automatic machines that have many applications. The commercial hot air corn popper is essentially a continuous feed fluidized bed oven. While it is primarily a popcorn machine, it is also used to puff third generation snacks, roast peanuts and will process any type of snack that requires precise temperature and time control and where a continuous process is needed.

The basic design of a hot air popcorn machine incorporates a horizontal rotating perforated metal cylinder. Popcorn is fed into one end of the cylinder. Heated air is forced up through the perforations in the cylinder with enough pressure to fluidize the raw popcorn lying on the bottom surface of the drum. The high velocity of the air agitates the corn and provides for very rapid and uniform heat transfer. The extremely high air velocity can transfer heat almost as quickly as the oil popping processes.

Popcorn kernels are a raw grain, the only processing they have been exposed to is that of drying to the correct moisture and cleaning to remove undersized kernels. The variables of a natural product require that the popcorn machine operator be able to adjust the machine to compensate for variation in kernel size, shape, hybrid and moisture content. In addition to accommodating the variables in the raw grain, control of the process variables permit the operator to modify the shape of the finished popcorn kernel and the scrap rate.