Ice Machines

A short tutorial on sizing and purchasing ice machines.

Applications

- Ice machines are used by restaurants and bars, hotels, concession stands, company break rooms – almost anywhere a drink is served.
- Ice machines also produce the ice used to cool salad and food bars.
- Sports teams and arenas use ice machines in their therapy rooms, as do hospitals and clinics.
- Food providers / manufacturers use ice to chill or hold food products either in a holding area or for transportation.

Why Buy A Machine?

- Why make your own ice? Why not buy the ice from an ice company?
- Bagged ice from a vendor is inexpensive in low volumes, however the price climbs steeply in high volume establishments.
- Bagged ice in a bar, for example, is far less convenient than an undercounter machine close at hand.

On Demand

- Ice machines have storage bins that hold the product ready to use.
- As ice is taken from the bin, another batch of ice is harvested from the machine.
- The correct combination of machine and storage bin can assure a steady flow of ice for an establishment.

Production Comparison

- Ice makers are compared by measuring their production, in pounds of ice, across a 24 hour period.
- A test standard is set so that comparisons will be on equal footing.
- All ratings assume that the machine is in a room where the air temperature is 70 degrees and the incoming water is 50 degrees.

Now, A Little Reality

- Where was the last commercial kitchen you were in where the air temperature was 70 degrees?
- Most kitchens run considerably hotter than 70, most approach 100 degrees while in full swing.

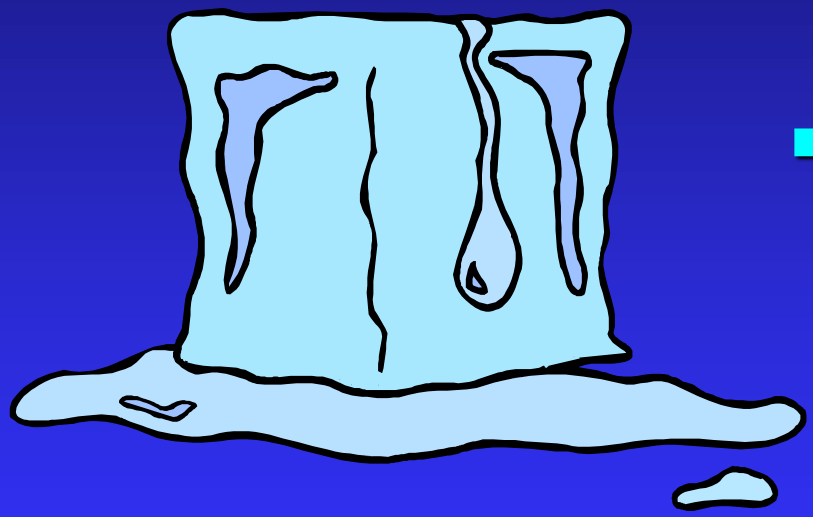
Water-Cooled

- An answer to the hot kitchen problem can be found with a water-cooled ice machine.
- These are machines that use running tap water rather than room air to cool the refrigeration unit.
- Water-cooled machines cost about the same as an air-cooled machine, but the cost of operation can be higher due to the constantly running water.

A Note on Water-Cooled Machines

- The water used for cooling is only running while the machine is trying to make ice.
- If the holding bin is full, ice production and water consumption are automatically stopped.
- A way around using a water-cooled machine is simply to locate the unit somewhere other than the kitchen. A service area or the back of house wait station.

How To Determine Ice Machine Sizing For Your Customer



- Finding the correct sized ice machine for your establishment can be difficult.
- The best place to start is in the Rapids catalog. On the ice machine page you will find a chart that reflects common usage per person in several different establishments.
- Talk with your Rapids representative about your needs if you require more information.

Two Part System

- The majority of ice machines sold are two part systems.
- The ice machine itself (often called a “head” or “maker”)
- An insulated storage bin to hold the ice production.
- At the right, you can see that this is really two separate pieces. A large bin with a small looking head on the top.

Mix and Match

- The combination of the ice head production and the holding bin capacity are juggled to find the best fit for the customer.
- First, lets look at the ice machine itself.

A Little Math

- Your have a restaurant open for three meals a day. The restaurant can seat 125 people per meal. The chart in the book suggests 1 ½ pounds of ice per restaurant diner.
- 125 people X 3 meals X 1.5 pounds of ice = 562 pounds of ice per day. MINIMUM!
- Since it is best to be conservative, as well as to allow for business growth, a head that can produce more than 675 pounds of ice is the best recommendation. This allows a 20% buffer.

Now lets look at the bin…

The Storage Bin

- Our previous example told us we needed 562 pounds of ice a day. But we have to remember that the ice is used primarily during three peak periods.
- We now have to determine how much ice is needed per meal.
- 562 pounds of ice divided by three meals = 200 pounds per meal (roughly).
- A 200 pound capacity storage bin? Not quite. It is best to have two meal cycles volume of ice on hand at all times. This means at least a 400 pound capacity bin.

The Final Recommendation

- The combination close to 675 pounds of ice and 400 pounds of storage capacity can be found in the catalog
- The setup at the right is a 690 pound production head with a 430 pound capacity storage bin.
- You will always round UP when selecting the correct size combinations.
- This setup provides a 20% cushion over minimum needs.

Required Connections

- Ice machines and bins need certain connections to services in order to function.
- Of course water must be supplied to the ice head. The size of the water line can be found on the machine's information sheet.
- A floor drain is required to carry away ice melt and water overflow from ice production and cleaning cycles.
- Electrical power (usually 120V) is required. Many units are "hard wired" to the building electrical system rather than plugged in to an outlet. ***MOST ICE MACHINES DON'T COME WITH AN ELECTRICAL CORD! THE INSTALLER MUST SUPPLY IT!***

Sized For Convenience

- Under counter ice machines are available for locations that are a tight fit – or when it is simply more convenient to have the ice made near the point it is used.
- Bars are a big user of undercounter units.
- Daily production and overall storage capacity are much less than full-sized ice systems.
- These are one-piece units with an integral head and storage bin.

Undercounter Ice Units

- Undercounter units still require the same connections to services as their full-sized brothers.
- Air-cooled and water-cooled choices are available.
- Daily production varies from 44lbs to 390lbs.
- Storage capacity can be from 25lbs to 85lbs.

Is an Undercounter Unit Enough?

- The smallest bars and restaurants may find that a compact unit is sufficient. However most quickly outgrow them.
- Undercounter / compact ice makers are a good choice if supplemented with either purchased ice or a large capacity machine located in a different part of the facility.
- Using the chart in the catalog, a bar with the largest compact machine can serve around 30 guests before running out of ice. After the storage bin is empty, this same machine only produces 16lbs of ice an hour – or about enough for 6 guests.

Nice Ice

- Ice must be considered a food product. Every precaution needs to be taken to keep it sanitary before consumption.
- In addition, ice that seems cloudy or impure is unappealing to customers.

Water Filters

- A water filter added to an ice system produces bright, clear ice.
- Filters also remove odors and chlorine from the water. This prevents an “off” taste from being introduced to drinks and food.

Safety

- Since ice must be handled as a food product, ice handling safety is highly important.
- Dedicated ice buckets for transport, special scoops or shovels, machine cleaning supplies – All must be properly used and cared for.

FYI – Pounds of Ice Per Drink

- In a typical 12 to 14 oz glass, about ¼ pound of ice is used.
- Water glasses, bar glasses, soda glasses – A quick lunch customer served water and a soda uses ½ pound of ice without counting refills!
- Most facilities use 20 oz glasses for soda – these glasses hold almost ½ pound of ice per filling!

Other Considerations

- Cube size
  - Regular cubes tend to be too large for drink glasses but are fine for cold storage
  - Dice sized cubes are roughly half the size of a regular cube and are often used for drink service
  - Half dice or contour cubes are more popular for drink service by a wide margin. These smaller cubes displace more volume in the glass offering greater surface area for cooling. The greater displacement also means fewer ounces of liquid will fit in the glass.

Please note! A machine can only make ONE size of cube! The cube size has to be determined at the time the machine is ordered.

More Choices

- Flake Machines
  - Flaked ice is used in salad bars, drinks and displays (meat counters, delis etc.).
  - Ice flakers are more expensive than a cube machine but operate in the same manner.
- Nugget Machines
  - Nugget machines produce a soft, chewable product preferred by hospitals and care facilities.
  - Chiplet machines are similar, but produce hard, bright chips used almost exclusively for salad bars and food displays.

Painless Profit

- Many grocery and convenience stores have found a huge profit maker in their ice machines.
- By bagging their own ice for resale (cost usually around 60 cents), stores are able to create large profit margins on a customer's $1.79 purchase.
- Think how many bags of ice it takes to fill your picnic cooler at home!

Summary

- An ice machine can save many dollars each year vs. purchasing ice from a vendor.
- Ice machines are compared and measured by pounds of ice produced every 24 hours.
- In hot environments, water cooled ice machines will produce more ice.
- Undercounter ice machines are a great way to add convenience to a bar, but won't keep up with most demand.
- Ice machines can produce many types of cubes, flakes or nuggets – each with a particular use.
- Ice is a food product and MUST be handled as such.

Summary (cont.)

- Water filters will remove impurities and chlorine from the water that is used to make ice. This can eliminate cloudy cubes and an aftertaste in drinks.
- All ice machines require a water hook up, electricity and a floor drain.
- The Rapids catalog has a helpful chart to use when sizing a machine and bin combination for a client.
- 12 to 14 oz glasses hold ¼ pound of ice per filling – 20 oz glasses almost ½ pound! The type of restaurant or bar will determine how often the glasses are refilled.
- Remember! Oversize the ice machine estimate by about 20%. This allows for growth and helps make up for unexpected peak periods or hotter than expected environments.