



# Consistent Quality With Steam

Choosing the most effective and efficient  
steam preparation method

# Addressing the Different Elements of Preparing Various Menu Items

With menus expanding more rapidly than ever, operators and kitchen staff are faced with a constantly growing number of ingredients and preparations. And with priorities such as food safety, finished quality, efficiency, workflow and productivity always at the forefront, it's critical to address all the unique variables that each food item represents during preparation.

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## Quality

Steam cooking provides the highest quality production of any traditional cooking method.

While there is certainly not a one-size-fits-all technique that can deliver the same level of success across the menu, the fact remains that every cooking method used in today's commercial kitchens is driving toward the same common goal: transferring energy to the food product. It restructures the cell walls of the item to create a more palatable consistency, it emulsifies selected combinations of ingredients (baking a cake or making a casserole), it enhances the flavor of seasonings and, most importantly, it makes the food safe to consume by killing harmful bacteria.

Transferred energy achieves all of the above — but how you do it makes all the difference.

## The Basics of Steam Cooking

Steam cooking provides the fastest and highest quality production of any traditional cooking method. When enough energy is supplied to water, steam vapor is formed. This vapor is a highly efficient method of transferring energy despite only reaching 212°F. Steam is actually rich in latent heat, which carries the energy to the food product.

Once the energy is transferred, the vapor returns to a hot liquid known as condensate. This condensate is normally just below boiling temperature and must be cooled to below 140°F before it is sent down the drain or recycled in some other manner. How steam is produced and how the condensate is managed makes a significant difference in both production capacity and cost of operating equipment.

## The Process of Making Steam

When you look closely, steam production is slightly more complicated than boiling water. Certain devices use boilers to generate steam but, though powerful, they tend to consume the most energy and water in the process. On the other hand, so-called “boilerless steamers” allow direct access to the steam generator and are typically available in both covered reservoir and open reservoir configurations.

Generally, but not always, open reservoir models are known as “connectionless” because most are not connected to a water supply and drain, but produce steam by boiling water poured directly into the cooking compartment prior to operation. Then there is “spritze” steam, which is most effective in creating steam and humidity at controllable levels. While this method can be limited in producing consistent steam, spritze steam remains popular with certain baking applications.

- 1 Pressure Boilers** These pressurized vessels produce large volumes of steam and can be used to power steamers and kettles which are connected to the boilers.
- 2 Pressureless Steam Generators** While the term “pressureless” can be a bit confusing, water is actually boiled and steam is generated just as with a pressure boiler. In this case, however, the steam is not contained under pressure, hence the label “pressureless” or “atmospheric.” These units generate steam by heating a closed tank of water until steam is produced. The steam travels through a tube or channel to the steaming compartment where the cooking takes place.

- 3 Boilerless Steam Generators** With this design, water is boiled and steam is generated in a reservoir. Once generated, the steam travels through tubes to the cooking cavity where it is moved around the cavity. This method is a major breakthrough because the operator can directly access the reservoir to clean it, so only minimal chemical deliming, or no deliming, is required.

Steam Production Advantages & Disadvantages	+	-
<b>1 Pressure Boilers</b>	<ul style="list-style-type: none"> <li>Powerful, instant recovery with surplus steam to power multiple steam appliances</li> </ul>	<ul style="list-style-type: none"> <li>High energy and water usage</li> <li>Most must be delimed and maintained by service technician</li> </ul>
<b>2 Pressureless Steam Generators</b>	<ul style="list-style-type: none"> <li>Powerful</li> <li>Instant recovery</li> </ul>	<ul style="list-style-type: none"> <li>Most moderate to high energy and high water usage</li> <li>Must be chemically delimed</li> </ul>
<b>3 Boilerless Steam Generators</b>	<ul style="list-style-type: none"> <li>Powerful, fast recovery</li> <li>Can be manually delimed or no deliming required</li> <li>Easy to clean</li> </ul>	<ul style="list-style-type: none"> <li>Moderate energy and water usage</li> <li>Very few Energy Star models</li> </ul>
<b>4 Connectionless</b>	<ul style="list-style-type: none"> <li>ENERGY STAR available</li> <li>Can be manually delimed or no deliming</li> <li>Easy to clean</li> <li>Low energy and water usage</li> </ul>	<ul style="list-style-type: none"> <li>Limited performance in “a la carte” cooking (repeatedly opening and closing doors)</li> </ul>
<b>5 Spritz</b>	<ul style="list-style-type: none"> <li>Works well in flash steam applications</li> <li>Reduces water usage</li> <li>Manages maintenance</li> <li>Efficient and relatively clean</li> </ul>	<ul style="list-style-type: none"> <li>Has latent heat energy limitations</li> <li>Metal surface must be reheated to produce steam</li> </ul>

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## Enhancing Quality & Capacity

Steam cooking is a critical part of any kitchen's preparation lineup.

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## Choose Balance

The right piece of steam cooking equipment provides the optimal balance to prepare the widest range of menu items.

- 4 Connectionless** This is also a "boilerless" steamer design, but as its name implies, it is not connected to a water supply and doesn't have to be, but it can be connected to a drain. Steam travels freely from the reservoir to the cooking compartment and, in some models, the vapor is circulated by a fan. While there are a wide variety of units in this category, a few poorly performing models have given others a bad name.
- 5 Spritz** With this method, water is sprayed on a heated metal surface to create steam vapor. This technology works well in flash steam applications to reduce water usage and manage maintenance. While this form of steam generation is efficient and relatively clean, it does have limitations concerning the amount of latent heat energy that can be continuously released during production. At some point, the metal surface must be reheated to be able to produce sufficient volumes of high-energy steam. These factors have limited spritz technology from being a viable choice in the design of a highly functional steam device.

# Today's Steam Cooking Technology

Many kitchens have sought to incorporate the efficiency of steam cooking into equipment purchases – maximizing versatility and enhancing performance. While traditional convection ovens use heated air movement which can dry out foods and affect quality.

Steamers remain a critical part of any commercial kitchen today, and products like the Groen SmartSteam® Pro or Intek® Connectionless Steamers provide operators a valuable solution for a variety of menu items.

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