

蒸焼力

NAOMOTO's 「350 Steam DC Conveyor」 is innovative new cooking machine that can cook by utilizing superheated steam. It is neither gas oven nor IH oven. Controlling oxidation and retaining original "juicy tastes" and "nutrition" of food materials.

And amazing speed and power that enable to grill more than 1600 pieces of fish fillet within 1hour.

Steam has been developed scientifically more than half century.

Please try our 「350 Steam DC Conveyor」 produced by our long experience and surely skill of specific steam manufacture's.

— Steam Grilled Power —

The revolution in massive cooking operation. Newly innovated concept for cooking "Grilled by Super-Heated Steam"

Speedy, Delicious, Healthy

It can grill fish fillet with only 5 minutes half, that is to say more than 1600 pieces per 1hour. That is amazing high speed and power. Also enable to keeping good taste even materials after gets cold due to retaining juicy taste and water of materials.

<Recommendatory place>

Lunch box factory, Food service, Manufacturer of foodstuff, Processed and marine product factory, Delicatessen factory, Process of sterilize and drying.



Super Heater (SH) unit installed

Due to Super-heated steam device (SH unit) is installed nearby grill space, it just needs to connect saturation steam utilizing at the factory.

It's not necessary to annex equipment like steam generator for making super-heated steam.

Finely-Tuned temperature control

It can be set temperature of super-heated steam(max:400°C)that blow out from top and bottom per 1block(70cm).

Also quantity of steam and oven temperature can be set.

These Finely-Tuned temperature control is useful of cooking properly for the each material. Of course it can cooked steam food as well.

Comfortable working space

Since the heater source is adopted by electricity, the surrounding of the machine will not be hot.

Also there is not built in Blow motor which will cause the noise.

Working environment will be comfortable and silent.

Excellent maintenance capability

Considering the daily maintenance, the internal oven reserves enough space.

Enable to remove stain by heat of saturated steam, in addition, the machine can be washed with water by opening the door located per 1block.

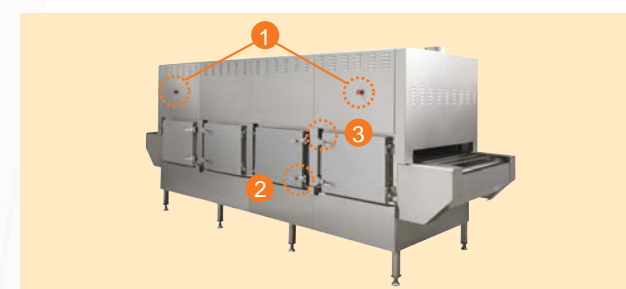
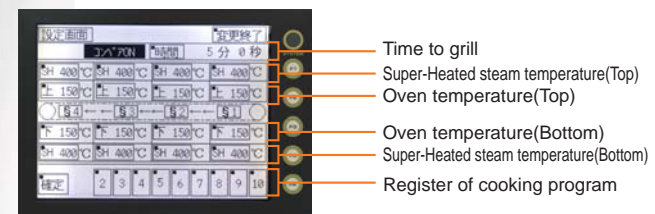
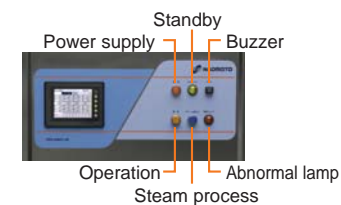


Both upper and lower trays can be removed and washed.

50 various cooking program

It can be operated simply by one-touch for turn on or off the switch and operation and steam process.

By use of controlling panel, total 50 different cooking programs can be registered to adjust various food ingredients.



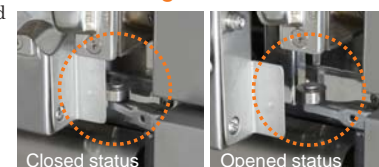
1 Emergency stop switch is installed at 2 locations.

Even under operation, by pressing these buttons, the machine will stop conveyor and heater and steam discharge. Buttons are located at 2points, loading side and exit side.



2 Safety device for door closing

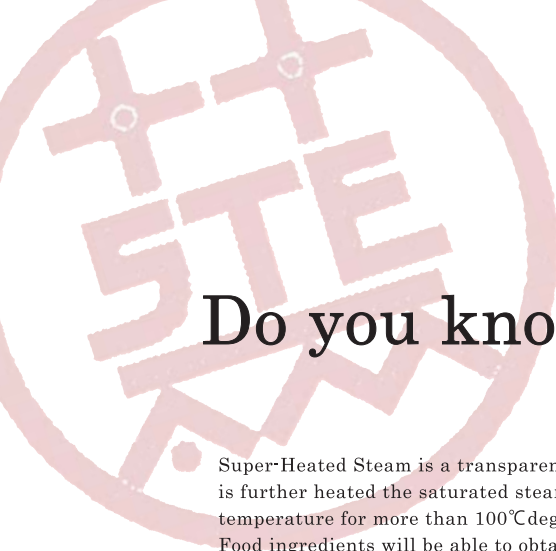
If the door is not closed properly, the safety device will activate, then stop operation. This function will protect the operator from burn or injury caused by steam.(with alarm function)



3 Prevent leakage with double packing

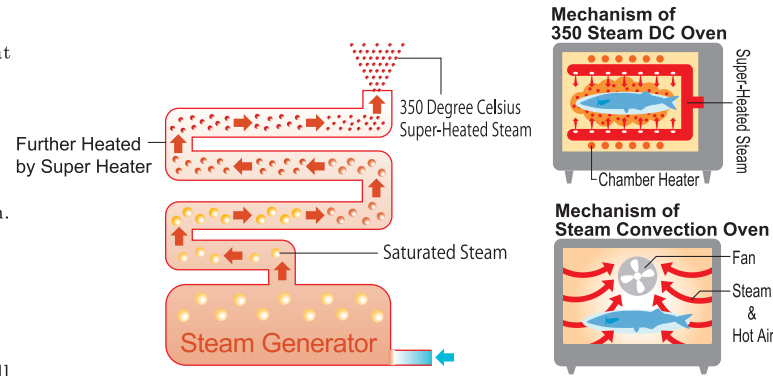
Mountain shaped metallic packing and heat proof rubber packing will prevent the leakage of Super-Heated Steam.





Do you know 「Super-Heated Steam」?

Super-Heated Steam is a transparent gas that is further heated the saturated steam to temperature for more than 100°C degree. Food ingredients will be able to obtain heavy latent heat instantly and uniformly. So it enables to make speedy finish and retaining their own juicy tastes and nutrition. As traditional steam convection oven or microwave is heating up the material by heater or hot wind, the steam is used to prevent the material from over drying. NAOMOTO's 「350 Steam DC Conveyor」 is innovative new cooking machine that can grill the materials by 350°C~400°C degree high temperature steam itself.



NAOMOTO Steam's Special quality

Complete gas

Steam of other machine's is not always gas but mist including moisture. On the other hand, our Steam is a transparent complete gas. It makes huge differences for the quality of food ingredients

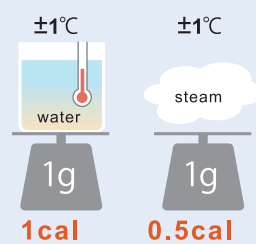
Heating&Pressurizing

At first, for turning into gas, add heating and pressurizing to steam made by heater. NAOMOTO's Super-Heated Steam is created by further more heating from this stage. Steam will be liquefied instantly by contacting on food materials, enabling much latent heat to be transmitted.

「Super-Heated Steam」will change the cooking common sense, the secret is rich calorific value.

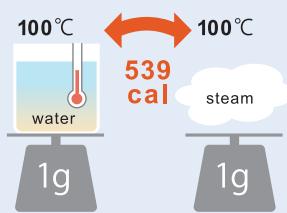
STEP 1

Normally, water is needed 1cal of calorific value when rise or drop 1°C of their temperature under 1g of water. And in case of steam, 1g of steam is needed 0.5cal of calorific value when rise or drop 1°C.



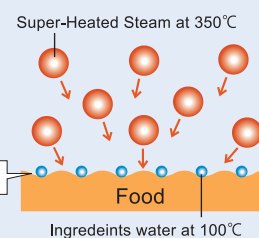
STEP 2

Then, when the water at 100°C is changed into steam at 100°C, calorific value is needed 539cal per 1g. And also in reverse case, that 100°C steam is changed to 100°C water, the same calorific value is needed as 539cal. It is called "condensation heat".



STEP 3

「350 Steam DC Conveyor」's Super-Heated Steam at 350°C will be changed into 100°C water instantly when it's contacted on surface of the materials.



STEP 4

This movement in calorific value can be shown in the below numerical formula.

Calorific value from Super-Heated Steam at 350°C to steam at 100°C: $250^{\circ}\text{C} \times 0.5\text{cal}$
 Calorific value from steam at 100°C to water at 100°C: 539cal

$$125\text{cal} + 539\text{cal} = 664\text{cal}$$

Super-Heated Steam has **6.64** times as much calorific value as water at 100°C!



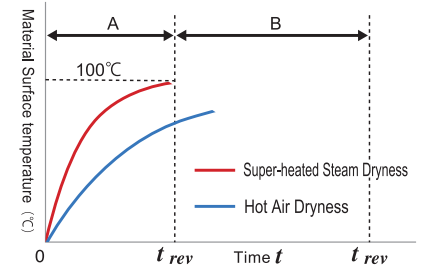
There are so many merit!

Speedy

- The effect of **Far-Infrared Rays**, makes that food can be **heated up quickly** from the inside.
- Enable to **finishing at a burst** due to food ingredients are cooked like wrapping them in steam
- You **can grill various materials at the same time** due to **less odor spreads**.
- Enable to **cook frozen food without defrost**.

Experimental Data

The Dryness time relation between Super-Heated Steam and Hot Air.



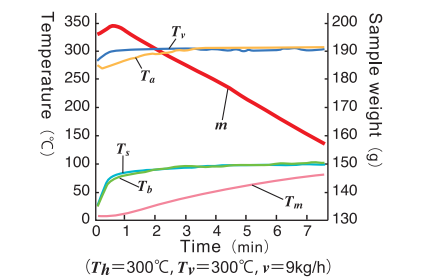
Supplied by graduate school of Tokyo university, Aihara Laboratory Daikin applied systems corp.

Delicious

- Fluffy inside** and **crispy outside**
- Since there are **little dripping** from food ingredients during the cooking process, frozen food can be cooked without defrosting
- Quick grill surface **retaining juicy taste**.
- Good yield** with keeping juicy taste.
- Tasty **even after cold**.

Experimental Data

A Chicken Breast slice heating behavior



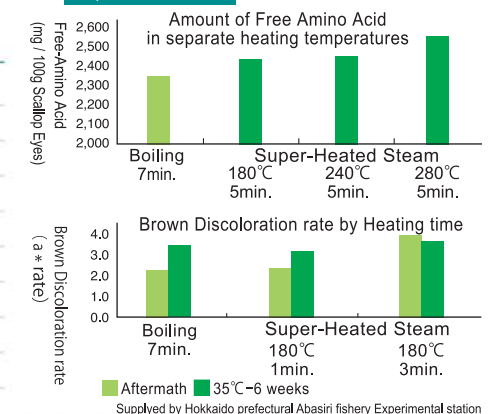
($T_h=300^{\circ}\text{C}$, $T_v=300^{\circ}\text{C}$, $v=9\text{kg/h}$)
 T_s : Super-Heated Steam influx temperature T_c : chamber ambient temperature
 m : Sample weight T_s : Sample surface temperature (upper)
 T_b : Sample bottom temperature (lower) T_m : sample core temperature

Supplied by graduate school of Tokyo university, Aihara laboratory Daikin applied systems corp.

Healthy

- Retaining rich Nutrition** such as Amino Acid, Vitamin and so on.
- The material is cooked in an Oxygen-free condition and **prevented from oxidizing**.
- Enable to cooking by original oil contents in the ingredients **without adding oil**.
- Lowering the concerned calories** and **cutting down salt contents drastically**.

Experimental Data



Supplied by Hokkaido prefectural Abasiri fishery Experimental station



Grill Program List

	Super-Heated steam temperature (°C) Upper/Lower	Oven temperature (°C) Upper/Lower	Weight before cooking (g)	Weight after cooking (g)	Time (min)	Inside temperature (°C) Front/Back	Yielding ratio (%)
Hamburger steak 	400 / 380	330 / 300	1,287	1,029	5	5 / 90	78
Broil chicken 	220 / 350	240 / 300	1,058	828	7	13 / 80	78
Steamed cod 	160 / 160	100 / 100	850	803	6.5	3 / 75	99
Cuttlefish grill FUKUSA style 	350 / 300	250 / 300	3,305	3,180	9	11 / 77	96
Grilled pacific saury with salt 	350 / 380	290 / 300	856	725	5	6 / 80	85

	Super-Heated steam temperature (°C) Upper/Lower	Oven temperature (°C) Upper/Lower	Weight before cooking (g)	Weight after cooking (g)	Time (min)	Inside temperature (°C) Front/Back	Yielding ratio (%)
Grilled salmon with salt 	350 / 380	290 / 300	708	552	5	11 / 88	78
Meat loaf style grill 	350 / 390	260 / 300	—	—	10	5 / 75	—
Grilled chicken SHOUFUU style 	350 / 390	260 / 300	3,484	3,312	10	9 / 75	95
Grilled mackerel with salt 	350 / 380	290 / 300	775	610	5	7 / 90	78
CHIKUSA style steam 	220 / 350	240 / 300	3,011	2,865	8	8 / 81	95