



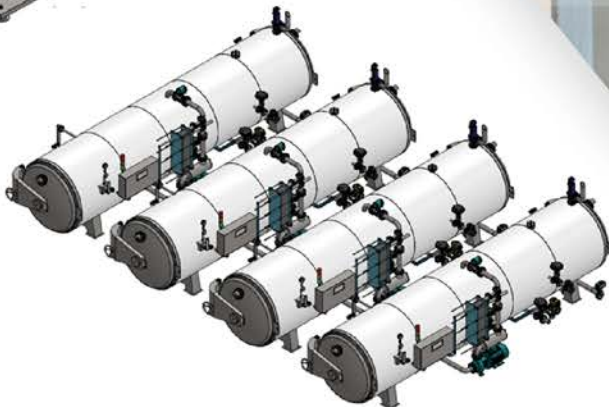
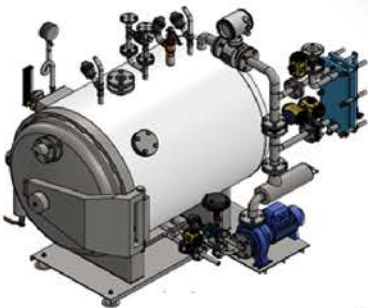
## **Machinery for food industry and food processing design**





NKC PROFESS CO.,LTD.

NKCP retorts are designed and equipped the measuring device complying to USFDA regulation and other international standard. There are several retort systems that will be served to process with suitable condition of product and packaging.



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## Water spray retort

Water spray retort is a steam heated water with air-overpressure. The advantage of overpressure is to protect the package integrity and prevent the package deformation. This system can be used to process with several packaging types as glass container, flexible and semi-rigid container such as retort pouch, plastic cup, tray, plastic bottle and glass container.



## Steam retort

The steam retort is a conventional system that uses only pure steam to be an heating medium as the heat source for transferring into the product. This system is suitable for rigid container as metal can

## Steam mixed air retort system

Steam mixed air retort is an overpressure system that can be used for flexible and semi-rigid containers. Steam and air ratio is a critical control factor during processing. This retort system can be applied to use only pure steam for metal can container. Steam-air retorts are normally operated at steam-air ratios ranging from 75% steam/25% air to 95% steam/5% air, depending upon the air over-pressure in the retort. Temperature distribution and heat transfer distribution test are necessary to perform in this retort.



## DUAL system

(Two in one as steam mode and overpressure water spray mode)



This sterilizer (retort) can be used both pure steam and water heater spray with air overpressure. This system is flexible for using for metal can and flexible/semi rigid container.

## Overpressure Agitating (rotary) water spray retort

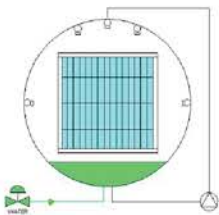
The main purpose of using agitating retort system to improve the quality of viscous and high viscous product. The processing time reduces about 50% when compare to stationary condition.



## Guideline for choosing retort size and capacity

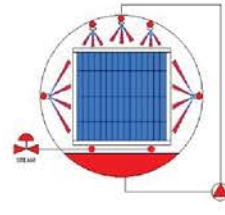
NO	Retort size (Ø × Length) (cm)	Capacity full batch (basket/trolley)	Basket size (W×L×H) (cm)	Tray size (W×L×H) (cm)	Retort system			
					Steam	Water spray	Dual system	Agitating
	60×100	1	35×90×30	35×90×5				
1	80×100	1	45×90×40	45×90×5	/	/	/	/
2	96×100	1	60×80×60	60×80×5	/	/	/	/
3	96×150	2	60×75×60	60×75×5	/	/	/	
4	120×150	2	80×80×75	80×80×5	/	/	/	
5	120×250	3	80×80×75	80×80×5	/	/	/	
6	120×360	4	80×80×75	80×80×5	/	/	/	
7	120×420	4	80×90×75	80×95×5	/	/	/	
8	140×220	2	95×95×90	80×95×5		/	/	/
9	140×420	4	95×95×90	95×95×5		/	/	
10	140×420	4	80×80×80			/	/	/
11	140×610	6	95×95×90	95×95×5		/	/	
12	140×610	6	80×80×75			/	/	/
13	140×820	2	95×95×90	95×95×5	/	/	/	
14	180×420	4	95×95×90	95×95×5		/		/

## NKCP water spray system operation



### Fill water

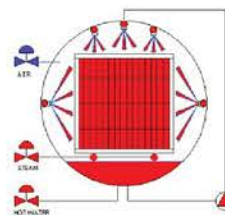
Water is filled into retort as specified level, the water level is set to control the flow rate.



### Pre-heating step

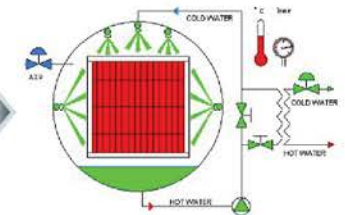
To warm water temperature to set point before circulation. The aim of preheating is to maintain IT and reduce CUT of process cycle.

Come up period  
Temperature and pressure rise the target process condition and the start cooking period.



### Cooking period

Once all points reach a process temperature. The system will alarm to start timing of sterilization. It will be alarm once the critical parameter deviated such as temperature drop, pressure drop and low process water flow rate.



### Pre-cooking and cooling period

PLC will alarm when changes the period of working (cooking, cooling). The products were cold by indirect cooling system with plate heat exchanger that no need to use chlorinated water.



## Control system



## Retort Accessories

## Tray and basket



## Pasteurizer/UHT with tubular/plate heat exchanger



## Mixing tank

## Can loading /unloading machine

## Palletizer





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