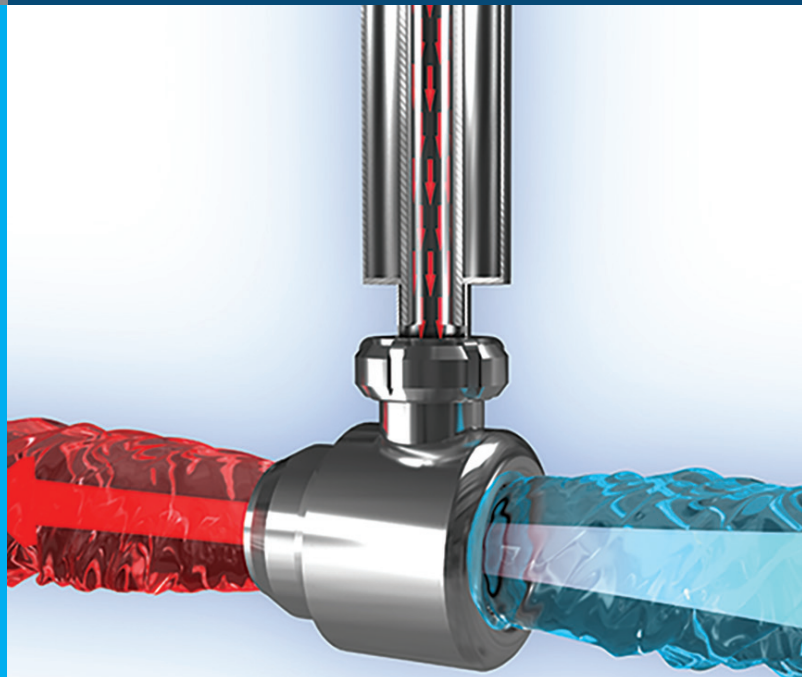




**jet cook™**  
high speed  
cooking & mixing

Advanced Technology from the  
Worldwide Market Leaders in  
Food Processing Equipment

[www.dcnorris.com](http://www.dcnorris.com)





Jet Cook™ Technology delivers fast, flexible and efficient liquid food processing solutions, utilising high performance steam technology to enhance your manufacturing business.

### Patented Design

The system offers significantly reduced processing times and dramatically cuts clean in place requirements, without compromising on quality or flavour. It is a revolutionary fluid processing solution that can homogenise, emulsify, entrain, pump and heat with impressive performance.

DCN's cutting-edge technology also provides the potential for reductions in ingredient quantities, such as starch, gums, dairy and spices – all recipe dependent. It can also eliminate the need to pre-slurry active powders such as salt, starch and gums by utilising a unique powder entrainment facility, combining multi-stage processes into one system. With a small footprint and minimal cleaning requirements, the Jet Cook™ System is a compact, fast and cost effective solution to food production.

DCN has conducted over 3600 trials with covering ready meals, soups, sauces, beverages, desserts and pie fillings (savory and fruit). This has resulted in hundreds of Systems being installed in countries such as Australia, Dubai, USA, Japan, Mexico, Azerbaijan, and throughout Europe, Central and Southern Africa to mention only a few.

*“Production times are much quicker, whilst giving excellent finished product quality with no burn-on contamination.”*

**Nigel McGinn**

VP of Operations - Kettle Cuisine, USA





# jet cook™ benefits



**Improved Product Quality:** The Jet Cook™ Infuser has no moving parts and is extremely quick and efficient at heating and mixing product. Because of this, the thermal impact on particulates is dramatically reduced, resulting in a first-class finished product and particulate integrity.

**Reduced Processing Stages:** The mixing, heating, pumping and homogenising of ingredients can now be completed simultaneously in one simple stage, reducing waste and energy usage.

**Particulate Integrity:** With no moving parts and a reduced thermal impact, the integrity of particulates (meat, vegetables, fruits) is superior to traditional production methods.

**Reduced Batch Contamination:** Energy reduction of between 35% - 40% compared to traditional cooking methods. 99.5% of the steam is utilised and then collapsed into the product, making Jet Cook™ extremely efficient.

**Reduced Cooking/Processing Times:** Production times of sauces, dairy products, soups and ready meals typically reduced by 50% or more.

**Cleaning and Chemicals:** No moving parts or burn-on contamination, so cleaning times and the chemicals required are dramatically reduced.

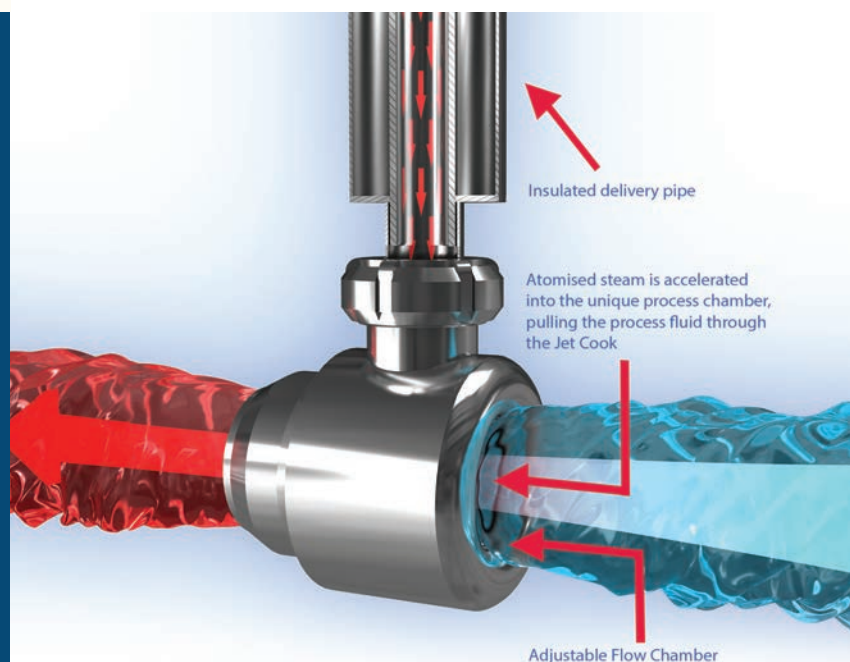
**Flexibility:** a) Can be combined into a purpose built system or retro-fitted to an existing system.  
b) Flexibility to turn around small and large batches of both smooth and particulate sauce very quickly.

1000kgs of Cheese Sauce in 20 minutes.

500kgs of Vegetable Sweet & Sour Sauce in 15 minutes.

## How does its work ?

Steam is accelerated and atomised at high pressure directly into the product through DCN's patented steam conditioning chamber and annular nozzle arrangement. As the steam collapses it creates a partial vacuum and pulls the product through the system back into the vessel, whilst simultaneously heating, mixing and pumping. 99.5% of energy is collapsed directly into the product ensuring huge energy savings.



# jet cook™ case studies

*“It’s been invaluable having a partner with such wide experience and also one that is happy to work with us to deliver against our particular needs.”*

**Charlie Bigham**  
Owner - Charlie Bigham’s, UK

## Strawberry Topping

**Challenge:** Produce a high quality fruit topping with good particulate integrity and a high gloss finish, whilst reducing the traditionally lengthy processing time. Eliminate burn-on which is often an issue when using the traditional steam-jacketed vessel method.

**Solution:**

1) Jet Cook™ In-Tank unit rapidly heats and mixes the base ingredients including the hydrocolloids, to achieve a smooth glossy base for the fruit.

2) The strawberries are added to the gel base and can be gently moved through the unit and around the vessel. They can be heated without damage due to the 50mm bore.

**Outcome:** Fruit topping was produced with superb particulate integrity, a high gloss finish and fresh taste. There was no burn-on, fish-eyes or gel balls, usually seen when hydrocolloids are put directly into water. The production time was halved from existing traditional methods, and there was no need to clean down between batches.

*“The cooking time was incredibly quick and the quality of the pieces of fruit was excellent. The flexibility of the product range we can now produce is remarkable.”*

**Mr Vugar Hebobov**

Chief Automation Manager - Azersun Holding, Azerbaijan





## Ragu

**Challenge:** To improve the particulate integrity of the meat and the overall product quality, whilst reducing the total processing time.

**Solution:** A combination of Jet Cook™, Braising Bar Technology and Multi Aperture Drain System (M.A.D.S) all contained in the same vessel:

- 1) Sear meat using the Braising Bar to seal in moisture, remove excess fat using the M.A.D. System.
- 2) Add onions to the meat and sweat the onions using the Braising Bar. Remove excess liquid from the onions to ensure they are not boiled.
- 3) Add tomato paste, passata, diced tomatoes, water and herbs - heat to 98°C using in-tank Jet Cook™.
- 4) Hold for 10 minutes.

**Outcome:** A rich first class restaurant quality Ragu was produced every time, and the batch production time is more than 50% quicker than traditional production methods. The unit has no moving parts so the particulate integrity of the meat and tomatoes is perfectly maintained during the rapid heating process. The nutritional benefits of the ingredients, and the vibrant colours of the herbs are also preserved.

The finished product yields are superior to that of a traditionally produced Ragu.

*“We purchased our first Jet Cook™ System for the production of meat and particulate sauces for ready meals, and then ordered another two systems within 6 months.”*

**Robert Graham**

General Factory Manager - Greencore, UK



## Bechamel Sauce

**Challenge:** There are a range of issues with bulk production including burn-on, poor viscosity and varied texture. This is due to the methods used to hydrate the starch and activate the flour; if these are not strictly controlled then repeatability and consistency cannot be guaranteed.

**Solution:** Jet Cook™ System unit in a 1000 litre Steam-Jacketed Kettle:

- 1) Add water milk and cream to the kettle.
- 2) Add flour, salt, starch and powders to the entrainment hopper. Powder is inducted into the main vessel ensuring there are no lumps or agglomerations.
- 3) Starch and powder entrained directly into the liquid (milk, cream, water) using DCN's patented Powder Induction System, which will simultaneously heat, mix and add the required non-mechanical shear to the product. By controlling the shear different textures can be achieved - smooth or a more floury finish.

The data collected from the trial included ingredient addition stages, temperatures, shear and timings which can then be programmed into Recipe Manager Software ensuring repeatability every time going forward.

**Outcome:** A top quality 1000kg batch produced in 30 minutes with a single Unit. With the addition of a second unit the processing time can be reduced to 20 minutes.

*“Bechamel Sauce cooked in less than 20 minutes without any burn-on in the vessel or in the finished product.”*

**Thijs van den Bosch**

Process Development Manager - Vaco, Bakkavor, Belgium

# jet cook™ options



## Powder Entrainment

When powders such as CMC, guar, xanthan and other hydrocolloids are introduced into a liquid recipe, there is the challenge of mixing without agglomerates forming. With DCN's Jet Cook™ Powder Entrainment system, the action of the steam collapsing into the liquid phase provides a controllable homogenising effect which breaks down these agglomerates and ensures total homogeneity.

This homogenising effect allows hard to wet-out powders (starch, gums maize, flour etc.) to be fully entrained into the liquid phase in a rapid and controlled manner, without the need for additional mixing e.g. 500kg maize flour in 5 minutes with no blow backs. Due to the simultaneous heating and mixing effect with the nozzle, there is scope to reduce ingredients such as starch, salt and spices.

The process can also homogenise fats/dairy/cheese into the liquid phase, giving a smooth homogenous product for products such as condensed milk.

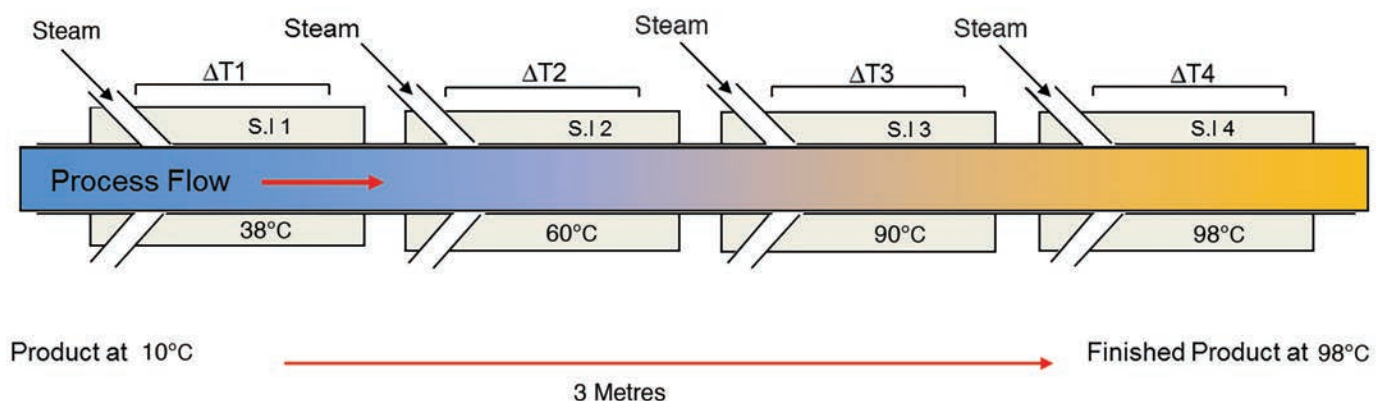
## Multi In-Line System

This unique system combines as many as 4 of our Jet Cook™ Units in sequence, each unit being individually controlled to add the required amount of heat and shear to give the desired finished product results.

Our Multi In-Line Systems can heat, pump and mix your products in a single pass at flow rates between 1000ltrs and 20,000ltrs p/h giving a temperature increase of 80°C in less than 2 metres. This type of system is being used for the production of products such as condensed milk, sauces and maheu in the Middle East, Asia and Africa. In a recent installation we replaced 10 metres of heat exchangers with a single system, the benefits included dramatically reduced waste as the total weight of product in the pipe work was less than 5kgs compared to 150kgs in the traditional heat exchanger.

As with all our Jet Cook™ Systems there is zero burn-on so unlike the traditional heat exchanger it can operate for many hours without cleaning.

## Multi In-Line Jet Cook™ System - With 4 Jet Cook™ Units



# jet cook™ cooking data



Typical comparison times for conventional cooking vs. Jet Cook™ Cooking

Product	Batch Size (kgs)	Kettle Cooking Time (mins)	Jet Cook™ Cooking Time (mins)	Jet Cook™ Yield %
Béchamel	1000	60	20	100
Lasagne Ragù	1500	100	50	105
Tomato Ketchup	500	30	10	100
BBQ Sauce	500	30	10	100
Sweet Chilli Sauce	1000	45	20	105
Tomato & Basil Soup	1000	45	25	105
Dairy Custard	750	60	18	108
Sweet & Sour Sauce	1000	60	20	105
Tikka Masala	1000	100	35	100
Steak & Ale Pie Filling	1000	120	65	100
Porridge	500	60	18	105



*"I am happy to say that every project we have embarked on with DCN has been a success."*

**Richard Cooper**  
CEO - In2food, South Africa



# development kitchens



Testing and product development is crucial to the success of your business. To demonstrate our commitment to you, we have invested heavily in development kitchens in the UK, South Africa and with more planned for the near future.

The kitchens are fully equipped with a range of DCN equipment for Cook-Chill and Jet Cook™ trials along with a leisure area which can be used for tasting, training and discussion.

Here we can rigorously test equipment and cook and cool customer products in a food factory environment.

Services available include steam, chilled water, glycol, compressed air, refrigeration and vacuum cooling electrical power.

Our experienced team are always on hand to assist in recipe and process development, to give customers the opportunity to fully assess their products and equipment prior to investment.

Once an order has been placed and completed we can also use the test kitchen to conduct full pre-delivery trials to ensure the equipment is running to its full potential. Customers can also use this as a great opportunity to be fully trained on their equipment in advance of delivery and installation.



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