

PROJECT PROFILE

Project: Industrial Continuous Stir-Frying Process

Product/Process: Induction Heating with Microwave/Steam Cooking

Summary:

Petrie designed and developed an industrial, ***continuous stir-frying process*** using induction heating coupled with microwave/steam cooking in order to deliver accurate and precise amount of heat to food ingredients at a very rapid rate.

The process can be described as a series of 'Wok' zones arranged sequentially on a continuous flat bed, each of which is heated appropriately to the required end product.



Description:

A major customer in the UK Ready Meals sector was seeking a more consistent method of searing and cooking vegetables and protein on an industrial scale.

They required a volume processing method which would produce food as close as possible in quality, if not superior, to that cooked on an authentic wok.

The preparation of fine cut vegetables and meat by stir-frying is characterized by a short cooking time and high rates of heat and mass transfer, which makes scale-up difficult.

How could dielectric heating technology (Radio Frequency or Microwave) provide a solution?

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Solution – The Industrial Wok

Petrie designed and developed an industrial, ***continuous stir-frying process*** using induction heating coupled with microwave/steam cooking.

The induction process overcame the problems of conventional, uneven cooking methods by delivering an accurate and precise amount of heat to food ingredients at a very rapid rate.

The process can be described as a series of 'Wok' zones arranged sequentially on a continuous flat bed, each of which is heated appropriately to the required end product.

Ingredients are transported on a horizontal conveyor whilst simultaneously being mechanically tossed and stirred.

During the process, the average product core temperature stabilizes at around 80C-90C, despite the intense heating.

Further testing showed the effective surface temperature of the product to be *above* 90C, thus providing a safe cooking process.

The end result was an industrial, continuous stir-frying process which produced ready meals with the unique quality, taste and texture of traditional stir-fried foods.

Benefits:

- **Improved food quality, taste and texture**
- **Higher volume throughput**
- **Rapid and even heat distribution**
- **Safe, healthy process**