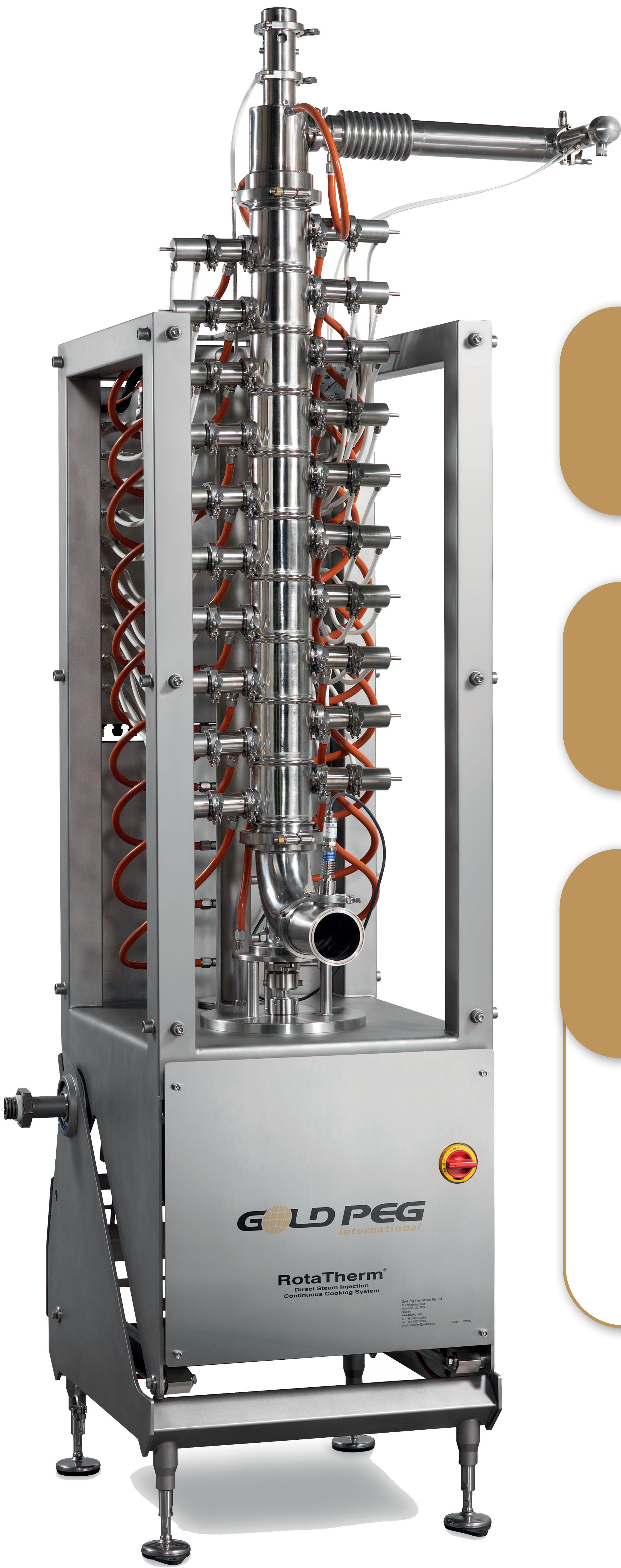


CONTINUOUS COOKING



ROTATHERM®

**ONE STEP
COOKING**

**NONSTOP
PRODUCTION**

**PRODUCT
CONSISTENCY**

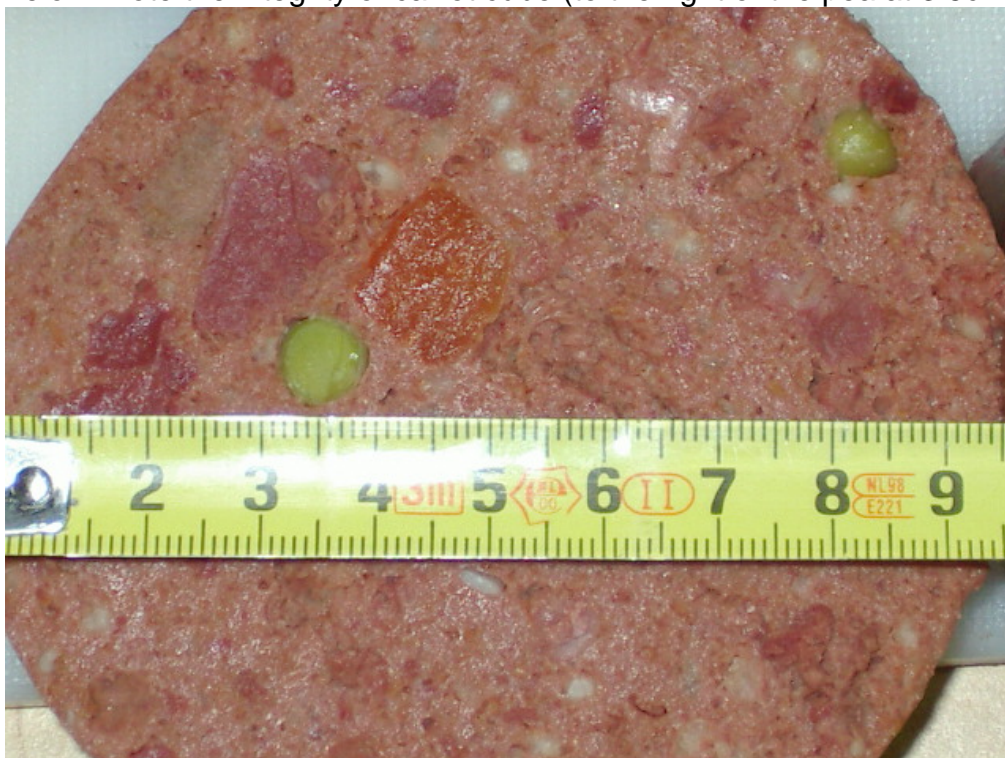


Pet Food with Lamb and Vegetables (& other meats/ingredients)

Manufactured by the **RotaTherm®** Continuous Cooking system



Below: Note the integrity of carrot cube (to the right of the pea at 3.5cm)



Scan American Corporation

9505 N. Congress Ave Kansas City, MO 64153

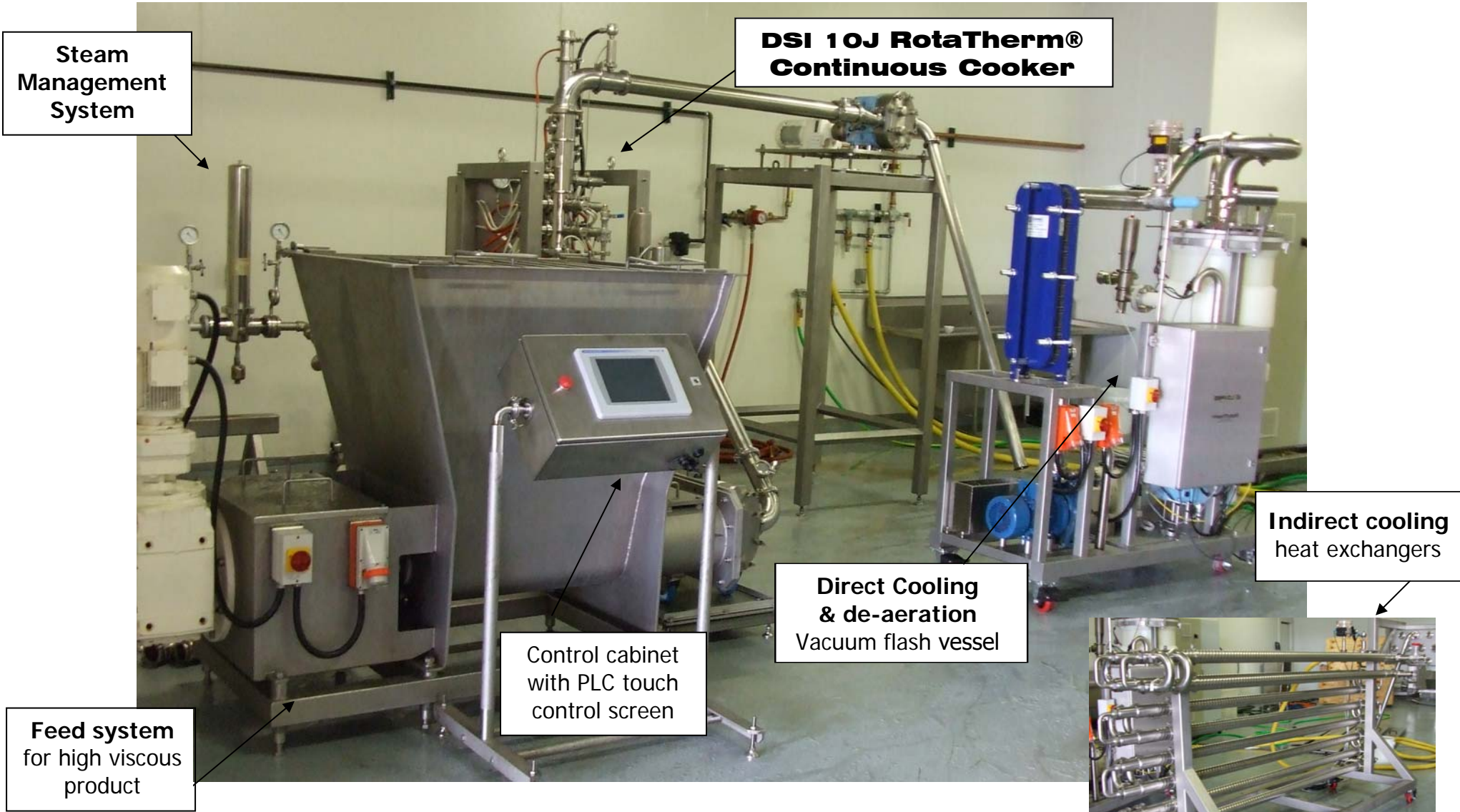
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RotaTherm® Continuous Cooking TRIAL System

Based in Kansas City, USA at Scan American Corporation



RotaTherm® Continuous Cooking system

ROI (Return On Investment) benefits to PET FOOD PROCESSORS

General benefits and technical point summary

Benefit	ROI Area
One step cooking All ingredients could be added into one blender and processed in a single step to achieve rapid full hydration including textured vegetable proteins (TVP) and heat treatment	Labour, running cost & space
Blend management Blend recipe and automatic dosing provides consistent blends and less rejection	Quality, productivity & labour
Non-stop production for up to 156 hours at both pastuerised and UHT. Also at higher flow rates of up to 40,000 lb/h	Productivity
Longer run times equate to increased productivity, reduced CIP chemical usage/cost and reduced effluent. Basically, means more time producing that performing other activities.	Productivity, chemical cost & effluent reduction
Turbulent plug flow in the cooker ensures even heating and hydration of protein, starches and hydrocolloids and excellent bacteriological kill. Results in greater utilization of the protein and therefore lower protein usage.	Formulation cost reduction & less rejection
Reduced processing time. Less than 30 seconds to reach processing temperature.	Quality & flexibility
Improved quality: short exposure to heating results in fresher cleaner flavor and excellent texture.	Quality
Small product volume of the cooker minimizes losses due to local power failure issues, heat losses, or any other utility loss causing an automatic emergency stop.	Productivity & rework reduction
Flexible parameters with recipe control: easily adjust and set throughput rate, cook temperature, heating profile, pressure, mechanical working, shear, cooling temperature. All these parameters can be separately adjusted and saved as recipes to the benefit of the product. Up to 300 recipes can be stored.	Quality
Accurate temperature control. Retractable self cleaning temperature probe allows for accurate temperature measurement over long runs and also allows the probe to be retracted for launching a 'pig' through the lines.	Productivity, waste & quality
Pause ability It is the only continuous cooker that can pause and re-start with close to no waste / minimal. Pause allows cooker to work on/off as demanded by the filler.	Waste/ Rework reduction & line coordination flexibility
Large turn-down capability 1:4	Productivity & flexibility

Small physical footprint: the cooking system is 1m x 1m in floor area. Replacement of four laydown cookers with two continuous cookers. More open floor space gained by removing the batch cooker systems.	Maintenance
Fully enclosed system resulting in improved product safety.	Product safety
Minimal maintenance: no metal to metal contact surfaces. One set of mechanical seals every 12-24 months. Injector seal and o-ring change once per year.	Maintenance
Reduction of staff when automation introduced. Multiple control screens into a single operator station and so multiple systems can be run by the one person. Multiple systems would be producing the multiple products to multiple filling systems.	Labour
Improved Safety: contained system with inbuilt safety mechanisms. Hot product is fully contained so no opportunity for spitting. Moving parts (minimal) are protected by safety guards.	Personnel safety
High levels of solid particles can be used in the RotaTherm continuous system.	Formulation cost/ Waste
Particulate integrity , both large and small, is maintained with gentle handling while being fully cooked, Up to 25 mm in dia.	Quality
Ability to bring multiple ingredient feeds into the cook process at various points through the process	Flexibility
Continuous cooking produces more consistent product and therefore lower levels of rework/product waste produced.	Waste/ Rework reduction
High level of product recovery at shutdown ensures minimal rework production.	Waste/ Rework reduction
Fully enclosed system means all energy added to product stays in the product, no steam is lost to atmosphere	Energy savings
This continuous system is fully enclosed and less likely to have exposure to foreign matter.	Quality
Maximising moisture content to within required regulations.	Quality/ Profit margins
Density and viscosity control are consistent to the filler due to the same time from cook to fill, compared to batch which has these changing time lag and quality factors.	Quality
Fill weight control is improved , and product overfill giveaway is lower as a result of improved and consistent density and viscosity.	Product cost reduction
Filling machine works more consistently and has less stoppages due to consistent viscosity and density of product to the filling hopper.	Productivity
Total line productivity is improved with continuous full week run as plant is producing instead of washing / CIP. Significant cost saving.	Productivity/ Trade waste reduction

UHT Capable: this continuous system has the possibility to cook at temperatures above 100 °C which is not possible with atmospheric batch cooking.

Capital flexibility & increased shelf life

The continuous RotaTherm, with multiple steam injectors, provides a cooking profile, ensuring the **cooking is gentle / efficient** and is achieved **over a short time**. The product accepts the steam into the product better because the steam injectors are spread out and this plus pressure control ensures that there is no steam pockets in the hold tube as can happen with single point steam injection systems.

Quality & energy efficiency

The unique Gold Peg steam injectors design ensure **efficient clean delivery** of steam with minimal burnt deposits and **no product suck back** into the steam side, even under local power failures.

Quality

SCADA data capture and recording allows for higher levels of monitoring and **quality assurance**.

Quality

Automation removes a lot of the human factor and results in better and more consistent product outcome.

Productivity & quality

Fully CIP-able system – with minimal intervention required.

Labour & safety



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