

npcfc

National  
Prepared Consumer  
Food Centre

# Portfolio of Equipment



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# Introduction

The National Prepared Consumer Food Centre (NPCFC) has been established by the Department of Agriculture, Food and the Marine in consultation with Teagasc, Food Drink Ireland's Prepared Consumer Food company members, Enterprise Ireland and Bord Bia, to support research, development and innovation in the Prepared Consumer Food sector.

The Centre contains state-of-the-art pilot scale processing equipment, which PCF companies can use for research and development in collaboration with Teagasc and other innovation support organisations. It also encompasses access to modern analytical and sensory laboratories to characterise foods in terms of nutritional, compositional, microbial and sensory profiles allowing complete product and process development.

The Irish Prepared Consumer Food (PCF) sector has an ambitious vision to be recognised amongst the most advanced, efficient and sustainable PCF sectors globally. Innovation capability is central to delivering this vision and the NPCFC allows manufacturers to cost effectively develop new products for commercialisation and address gaps in the food product development pipeline, through access to cutting edge facilities and Teagasc knowledge. Innovation is a key driver of economic growth and Teagasc continues to be committed to supporting science-based innovation and the delivery of related services to the

PCF sector. Teagasc recognises the diversity and complexity of the sector and offers specialist expertise, facilities and services in the broad areas of:

- Value added meat products
- Prepared meals, sauces and spreads
- Chocolate and sugar confectionery
- Non-alcoholic beverages, juices and waters
- Value added horticulture including fruit and vegetable-based products
- Bakery products including cereals, breads and biscuits
- Chilled and frozen ready meals

Teagasc is delighted to outline here, some of the key technologies and capabilities within the NPCFC. PCF companies are encouraged to engage with us and benefit from the use of the Centre within their own research and development strategies and/or by using the innovation support programmes provided by Enterprise Ireland.



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# Food Product Innovation

The competitive position of food companies is very dependent on their capacity to develop innovative food products. The NPCFC supports the development of new and value-added prepared consumer foods from the initial recipe development and formulation of products, to pilot production trials which test product feasibility. The Centre houses a modern development kitchen, with a range of equipment for the production of kitchen-scale products that are repeatable and scalable. The pilot processing capabilities within the NPCFC facilitate the scaling of products from across the PCF sector. Technologies include drying, extrusion, pasteurisation/sterilisation, bio-fermentation, amongst others.



## Chamber Drying System AIRGENEX® food



### Capabilities

- Gentle drying at low temperature
- High quality drying results in short times
- Drying in a closed system
- Positive results in terms of bioactivity, aromas and appearance
- Temperature variable between 20°C - 90°C



### Applications

- Crispy Nuts and Seeds
- Sprouted Flours
- Fruit
- Jerky
- Sourdough
- Fruit Leathers
- Vegetables



### Firex Cucumix



#### Capabilities

- Electric tilting bratt pan
- Direct heating and built in mixer
- 70L capacity and 300L capacity
- Rotation in both directions
- Speed regulation and time adjustment
- Pressure cooking function



#### Applications

- Vegetables
- Chocolate
- Braised foods
- Confectionery
- Sweet and savoury sauces
- Ready meals
- Homogenised products



### Blast Chillers and Freezers



#### Capabilities

- Freezing Capacity +70 to -18 °C in 240 min/kg
- Cooling capacity +70 to +3 °C in 90 min/kg
- Capacity: 14 gastro trays
- Core sensor with programmable thermostat



#### Applications

- Liquids
- Solids
- Ready meals



### Y-Tron Jet Mixer Impeller Model ZC



#### Capabilities

- Suitable for dispersing difficult wet gums as well as bulk materials
- Provides an air free, homogeneous mix
- Dispersion of very high solids contents in a single pass



#### Applications

- Thickeners and gums, stabilizing and gelling agents
- Milk and whey based proteins
- High viscosity liquids such as sugar syrup and chocolate



## Qbo Universal Processing Systems



### Capabilities

- Three machines with capacities of 25L, 40L and 120L
- Evaporation cooking
- Blast chilling
- Cutting, mixing and homogenising
- Concentrates and vacuum cooking
- Ultra rapid product concentration processes
- Capable of preserving the nutritional properties of food
- Temperature control probe inside the sample



### Applications

- Ready meals
- Doughs
- Concentrates
- Chocolate
- Ice cream
- Confectionery



## Freeze Drier



### Capabilities

- 80kgs of water (as ice) dried in 24-Hours
- 15 x 12-step recipe programming capacity
- Blast Freezers for use pre-freeze drying
- Endpoint moisture analysis



### Applications

- Vegetables
- Fruits
- Meat
- Fish
- Nutraceuticals
- High value proteins
- Enzymes



## Table Top Filling Machine - Riggs Autopack



### Capabilities

- Deposit range of 125ml to 1200ml per cycle
- Stainless steel hopper with a nominal capacity of 40L
- Accurate depositing of hot or cold semi-liquid and solids-in-suspension products
- Controlled operation and foot pedal for fill start



### Applications

- Ready meals
- Sauces
- Cake mixes
- Fillings



### GEA Panda Twin Homogeniser



#### Capabilities

- Mixing
- Emulsifying
- Homogenising
- Two-plungers-double stage
- Product pressure up to 600 bar
- Capacity 30L/hr



#### Applications

- Fruit Juices
- Milk
- Soft Drinks
- Beverages



### Chocolate Tempering and Enrobing System



#### Capabilities

- Tank capacity 24kg of chocolate
- Heated vibrating table
- Fast melting and tempering cycle
- Enrobed with double chocolate curtain, vibrating station, adjustable blowing unit, detailer, conveyor belt



#### Applications

- Filled chocolate pralines
- Solid chocolate bars with inclusions
- Enrobed chocolate and bakery products



### Robot Coupe Vegetable Machine (CL 60 Workstation)



#### Capabilities

- Grating, Dicing, Slicing, Chopping, Mashing
- Automatic Feed Head for all vegetable in bulk
- Pusher Feed Head for bulky vegetables
- 4 tubes feed head a for long, delicate vegetables
- Multi-cut pack of 16 discs included
- Output: up to 1800kg/hr



#### Applications

- All vegetables including:
- Bulky Vegetables (cabbage or celeriac)
- Long, delicate vegetables (cucumber, courgettes)





## Coating Drum



### Capabilities

- 7 Litre Capacity Dual
- Speed function
- Temperature control



### Applications

- Coated sweets such as peanuts, hazelnuts and dried fruit coated with chocolate or other confectionery specialities



## Robot Coupe Blixer 23



### Capabilities

- Cross between a blender and a cutter/mixer
- Speeds of up to 3600rpm
- Purees most foods without the need for additional liquids
- 4 to 15kg capacity



### Applications

- Hummus
- Vegetarian and Mediterranean spreads
- Processing of herbs, spices, seaweed into fine powders



## STERIL-FOOD COM 80



### Capabilities

- Temperature range 40°C - 121°C
- 80 Litre capacity
- Temperature control probe inside the sample
- Counter pressure system to prevent can breakage
- Temperature, time and pressure registered on USB



### Applications

- Sterilisation of preserved foods
- Suitable for small production and a wide variety of food products





### Touchclave-E Autoclave



#### Capabilities

- 80 Litre Capacity Retort
- Steriliser
- Repeatable results which are scalable



#### Applications

- Vegetables
- Fish
- Ready meals
- Pet foods
- Beverages
- Sweet and savoury sauces
- Baby foods
- Plant based meals



### Deck Oven



#### Capabilities

- Reinforced self-contained heating elements on top and bottom of each deck (4 decks)
- Digital independent steam generator in each deck
- Oven decks lined with stone slabs for stone baking
- Pre-set baking programs available
- Automatic control panel



#### Applications

- Snacks and crisps
- Oven-baked rolls
- Pastries
- Wide range of breads



### Roll-in Combi Rack Oven



#### Capabilities

- Capacity for 20 trays
- Hot air cooking, steam cooking, combination cooking
- Mobile/roll-in racks and trays
- Automatic programming, with a wide range of different cooking programmes



#### Applications

- Baking
- Roasting
- Cooking



## Planetary Mixer



### Capabilities

- 30L capacity
- Adjustable mixing speed
- Attachments for mixing doughs batters, mincing meat and slicing vegetables



### Applications

- Yeasted doughs
- Sponge cake, muffins
- Egg whites
- Mayonnaise
- Icing
- Mincing meat
- Slicing vegetables
- Plant based meals



## Clextral Twin Screw Co-rotating Food Extruder Evolum EV25



### Capabilities

- 25mm screw diameter, L:D ratio of 24, options to test 6 to 10 barrels with cooling circuit and electrical heater
- Automatic opening system
- One top and one side feeding barrel
- Continuous HTST (High Temperature-Short Time) cooking
- Precise adjustment of the shearing and mixing
- Pre-conditioning kit and specific co-extruded die and filling tank with one pump and crimper



### Applications

- Encapsulation
- Pet food and fish feed
- Cereal products such as pasta, snacks, flat crispy bread, couscous and breakfast cereals
- Snacks and breakfast cereals with sweet and savoury filling
- High moisture meat analogues and fibrised proteins
- Multigrain chips
- Pre-cooked flours



### Microthermics UHT/HTST Lab- 25EHVH Unit with Two Stage Homogeniser (GEA Niro Soavi NS2006) and Clean-Fill Hood



#### Capabilities

- Suitable for liquid and viscous fluids
- Small batches (3-5L). Up 10-12 batches per day is feasible
- Hot Fill, HTST & UHT capable for low to high viscosities
- Low and high acid products



#### Applications

- Formulation and scale up
- Quality assurance of ingredient blends and flavours
- Fouling studies
- Characterization of the performance of new ingredients
- Kinetic studies: Bacterial death (TOT), Nutrient Destruction, Quality Loss



### Membrane Filtration Unit



#### Capabilities

- Automated lab plant for flat sheet membranes
- Feed pressures up to 64 bar (930 PSI)
- Flow measurement of permeate and concentrate
- Data logging and exchange via USB 2.0 port
- Suitable for ultrafiltration, nanofiltration and reverse osmosis membranes
- Suitable for laboratory work, membrane screening and quality control



#### Applications

- Separation
- Purification
- Concentration



### Limitech Multifunctional Pilot Mixer



#### Capabilities

- Jacketed steam heating
- Direct heating by steam injection
- Jacket cooling
- High shear mixing
- Dispersion
- Agitation
- Vacuum



#### Applications

- Liquid and semi-liquid foods:
- Mayonnaises
- Sauces
- Dressings
- Cream Cheese
- Jams

# Development Kitchen

The National Prepared Consumer Food Centre (NPCFC) houses a modern development kitchen, with a range of equipment for the development and production of kitchen-scale products that are repeatable and scalable.

Developing a new food or drink product is a complex process and one of the key advantages offered is access to a diverse range of processing equipment. The Development Kitchen offers a confidential space in which clients can work independently, or with one of our Teagasc staff, on projects utilising specialist facilities and expertise.



## Capabilities

Full range of commercial kitchen equipment to cook, chill, freeze, emulsify, homogenise, grind, blend, chop, mix and knead food products including:

- Robot Cook®
- Silverson® Homogeniser
- Blast Chiller/freezer
- Merrychef E3 Rapid cook oven
- Rational oven
- Sous Vide equipment
- Six Ring Gas Cooker & Bratt Pan



## Applications

- Dairy and meat preparations
- Bakery products
- Sugar and chocolate confectionery
- Soups and sauces
- Ready meals
- Savoury snacks
- Vegetable and fruit based products
- Fruit juices and soft drinks
- Fruit leathers
- Vegetables

# Meat Product Processing

Processed meats are a key component of many prepared consumer foods. In order to remain competitive, manufacturers must innovate to create products that are healthy, safe, convenient, natural and sustainably produced. The NPCFC provides access to a wide range of equipment of varying capacities for different meat processing applications. A suite of humidity chambers combined with in-house smoking facilities allows for the development of fermented meats with unique flavour profiles and extended shelf-life. The cured and processed meat equipment is flexible and facilitates various protein types and end products, ranging from traditional slow-cured pork to sous-vide pulled beef. Adaptable packaging capabilities allow for testing of MAP and skin packaging solutions. In addition, the presence of multiple small-batch systems facilitates concurrent trials during formulation and process optimisation. This enables processed meat manufacturers to develop new products more rapidly and cost-effectively in response to evolving challenges and trends.



## Vacuum filler RVF420 (Rex Technologie)



### Capabilities

- Minimum load 45-50kg
- Filling pressure 40 bar
- Hydraulic lifting arm
- Rotary vane conveyor system
- High portioning accuracy



### Applications

- Emulsions
- Filling large pieces of meat, sausages and salami



### Piston Filler La Minerva Visn22



#### Capabilities

- Removable piston
- Adjustable speed
- Automatic start/stop with knee control
- Three funnel diameters 14, 22 and 30mm



#### Applications

- Meat emulsions
- Sausages
- Puddings
- Pasty fillings



### Combi Press CP-50-E



#### Capabilities

- Airless pneumatic stuffing into casings, nettings or bags
- Max 9 cycles per minute. 7-9 pieces/min of rolled roast in netting. 2-3 pieces of ham/min in casing
- 300-1500kg/h depending on calibre of casing and length of log
- Mould length of 500mm



#### Applications

- Cooked meat products
- Dry-cured meat products
- Hams



### Dorit Tenderizer M-88



#### Capabilities

- Independently controlled tenderiser head
- Knife head with 22 fix 4-knives 3x1mm offset in 4 rows
- Variable stitch rate 32/64 strokes per min
- Belt advance: 15-45mm, mechanically adjustable in 6 steps.
- Passing width: 270mm
- Passing height: 200mm



#### Applications

- Any boneless products
- Fish & seafood
- Bacon & ham
- Beef
- Poultry



### Inject-O-Mat 21 Needle Injector



#### Capabilities

- 21 continuously spraying, spring - loaded single needles (Ø4.0mm) in two rows
- Precision needle head with quick-change needle bridge system
- Needle carrier speed: 10-60 strokes per minute
- Passing width: 280mm. Passing height: 210mm
- High injection rates with minimal brine pressure



#### Applications

- Fish & seafood
- Bacon & Ham
- Beef
- Poultry



### Vacuum Tumbler 'Vario-Vac'



#### Capabilities

- Drum volume: 20L
- Max capacity including brine: 10kg
- Drum rotations per minute: 23rpm
- Rest time, cycles and total time adjustable



#### Applications

- Massaging cured products
- Dry salting
- Seasoning, marinating



### Multi-tumbler System InjectStar®



#### Capabilities

- Batch size 3 x 30kg in 55L drums
- Variable rotation speed and direction (1.5-20rpm)
- Adjustable vacuum and processing time
- Cooling jacket and internal cooling aggregate
- Concurrent tumbling of small batches
- More efficient brine distribution and increased product yield



#### Applications

- Whole muscle products
- Fish
- Meat
- Poultry
- Marinated meat





### Meat Shredder KT SHI



#### Capabilities

- Capacity approx. 90kg/hr
- Motor speed: 1340rpm
- Shreds cooked meat as fast as it is loaded



#### Applications

- Pulled beef, pork, chicken and plant based meat replacers (depending on the texture)



### Dry Ager DX1000®



#### Capabilities

- Maximum meat capacity of 100kg
- Electronic temperature controller 0°C to 25°C
- Humicontrol electronic humidity controller from 60% to 90%
- DX AIRREG optimal airflow, activated carbon filter & sterilisation
- Himalayan salt block for more intense flavour



#### Applications

- Dry aging beef
- Air drying cured hams, salami, sausages, bacon



### Constant Climate Chamber HPP260 (Memmert)



#### Capabilities

- Precise humidity control 10%-90%RH
- Temperature control 0°C/10°C to + 70°C
- Programmable temperature, humidity, fan speed, ramping times, illumination
- 250L capacity



#### Applications

- Stability or shelf-life tests
- Fermented meat products
- Testing photo-stability of meat products containing colourants



### Skin Packaging Machine - Italian Pack



#### Capabilities

- Temperature Controller with PID control system and PT100 probe
- Vacuum and gas management through sensor and time
- MAP values controlled via digital vacuum controller
- Max standard tray height 120mm (013 and 015 tray size)



#### Applications

- Poultry
- Fish & seafood
- Bacon & Ham
- Beef



### Henkovac MAP Packaging Machine TPS-XL



#### Capabilities

- Tray sealing
- Vacuum packing
- Modified atmosphere packing
- Four trays per batch, 02 and 013 moulds



#### Applications

- Meat products and preparations
- Ready meals

# Packaging Technologies

Food businesses are constantly innovating in terms of products and packaging.

Food packaging performs multiple functions such as containment, protection, preservation, product information, convenience, presentation and brand communication. The NPCFC packaging and testing equipment brings an innovative, economic and qualitative boost to PCF food businesses in Ireland. The Centre houses a range of versatile packaging and testing equipment that can be applied to products across the sector from raw, semi-cooked and ready to eat liquids to semi-solid, solid, dry and granular food products.



## Colimatic Thermoformer Thera 250



### Capabilities

- Rigid and flexible packs
- Modified atmosphere or vacuum packs
- Perimetral sealing plates for any configuration of pack
- Dedicated cutting systems
- Photocell for printed film detection



### Applications

- Ready meals
- Prepared consumer foods
- Meat and seafood



### MF Tecno Vertical Form Fill Machine MF50



#### Capabilities

- Temperature control system for bag sealing
- Modified atmosphere packaging
- High production speeds
- Suitable for solids and liquids



#### Applications

- Solid, granular and non-granular products
- Pet food
- Confectionery products
- Snacks
- Pulses
- Dried fruit
- Liquid products, dairy products, products in brine



### Rotopack Semi-automatic Fill Seal RPXS



#### Capabilities

- Semi-automatic sealing machine for preformed trays in PP, PE, PS, PET, AL
- Teflon coated sealing plate
- Profile cutting to the tray size with possibility to create an easy peel angle to facilitate the tray opening
- Digital temperature controller with PT 100 probe
- Adjustable sealing time



#### Applications

- Thick dairy products such as yoghurts
- Sauces, creams, cheese spreads
- Desserts (puddings, mousse)



### Easy Flow Horizontal Flowrapper



#### Capabilities

- Fully electronic
- Packing speeds up to 80 packages per minute



#### Applications

- Bakery products
- Fruits and vegetables
- Cereal and protein bars



### Colimatic Automatic Tray Sealer TDF 1000E



#### Capabilities

- Sealing
- Partial vacuum
- Modified atmosphere
- Skin packaging



#### Applications

- Ready meals
- Prepared consumer foods
- Meat and seafood



### Rotopack Semi-automatic Tray Sealer Rapida Plus with Gas



#### Capabilities

- Sealing
- Vacuum packing
- Modified atmosphere packing



#### Applications

- Liquid products
- Semi thick and thick products
- Viscous product
- Suitable for dairy product



### Lanico Can Seamer Machine V110 P



#### Capabilities

- Can seaming
- Up to 850 cans/hr



#### Applications

- Fruits
- Vegetables
- Beans
- Soups
- Meats and seafood
- Desserts



## Package Testing Equipment



### Capabilities

- Oxygen Permeation Testing Analyser
- Water Vapour Transmission Rate (WVTR) Permeation Analyser
- Headspace Gas Analyser
- TGA/DSC Equipment for simultaneous thermal analysis
- Texture Analyser (tensile strength, Young's modulus, elongation at break, puncture strength)
- Oxidative Stability Testing



### Applications

- A range of advanced, high-tech testing equipment, allows the evaluation of a wide range of food packaging and film properties

# Advanced Technologies

Over the past several decades, the focus of the food industry has shifted from classical technologies towards advanced food processing, preservation and extraction technologies. This shift is attributed to: a) increased consumer demand for safe and nutritious food; b) the need for improved process and energy efficiency; and c) legislative and regulatory requirements aiming to minimise the use of chemical preservatives. Advanced food processing technologies including pulsed electric field, plasma technologies, cavitation technologies and UV light based technologies offer numerous advantages, including improved safety profiles, nutritional, shelf-life and sensory properties of foods. Such novel technological approaches are sustainable and can be applied to a range of prepared consumer foods.



## Pulsed Electric Field



### Capabilities

- Meat tenderisation
- Nutrient retention
- Improved shelf-life
- Nutritional and bioactivity retention
- Improved process efficiency
- Improved brine and marination processes
- Low temperature preservation
- Reduced water and energy consumptions



### Applications

- Liquid (juices, milk, smoothies)
- Solid food (Meat, seafood, poultry, fruit and vegetables)
- Food pasteurisation





## Cavitation Technologies



### Capabilities

- Inactivation of bacteria on food matrices
- Meat tenderisation
- Emulsification, homogenisation, hydration, extraction and accelerated curing and brining
- Drying and defoaming
- Enhanced cell disruption and mass transfer through cavitation



### Applications

- Solid food (meat, seafood, poultry, fruit, vegetables, grains)
- Liquid (fruit juices, milk)
- Milk powders



## UV Light System



### Capabilities

- Disinfection of produce surfaces, packaging, and other food contact surfaces
- Ensures food safety
- Improved shelf-life
- Produces no chemical residuals
- Versatile technology
- Environmentally friendly



### Applications

- Solid food
- Meat
- Seafood
- Poultry
- Fruit
- Vegetables



## Microwave Extraction



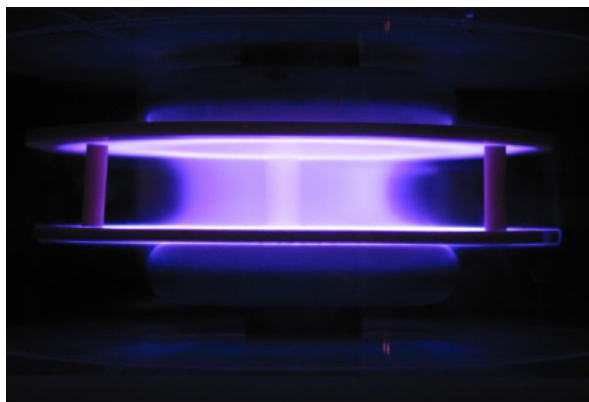
### Capabilities

- Mixed microwave and ultrasound (SINAPTEC Technology)
- Significant shortening of processing time
- Reduction in the use of solvents
- Suitable for clean and green solvents
- Enhanced extraction yield and productivity
- Rapid internal heating by microwave energy
- improved process efficiency



### Applications

- Fruits
- Vegetables
- Beans
- Soups
- Meats and seafood
- Desserts



## Cold Plasma



### Capabilities

- Inactivation of bacteria on food matrices
- Reduction in use of chemicals for food preservation
- Improved shelf-life
- Rapid and cost effective
- Clean technology that can replace chemical sanitisers
- Energy efficient



### Applications

- Solid food (meat, seafood, fruit, vegetables, dry food)
- Liquid (juices, milk, smoothies)



## Microplate Reader



### Capabilities

- UV-Vis measurements in 6 to 384 well microplates and cuvettes
- Allows endpoint, kinetic, spectral scanning and well area scanning modes, plus incubation and shaking



### Applications

- Biomarker assays
- Cell-based assays
- Cellular and microbial growth
- Elisa and related immunoassays
- Nucleic acid quantification



## Supercritical Fluid Extraction



### Capabilities

- Reduction in use of chemicals for food preservation
- Efficient way to extract valuable constituents
- Extraction and purification all in one step
- Use of non-oxidant medium
- Reduces use of energy, water and chemical solvents
- Clean technology that can replace chemical sanitisers
- Carbon dioxide (CO<sub>2</sub>) is the fluid most often used



### Applications

- Extraction of bioactive compounds and essential oils from herbs
- Functional ingredients from micro and macro algae
- Removal of lipids from food
- Application in food safety: fraud, adulterations and residual contamination



## Fluidized Bed Dryer



### Capabilities

- High rates of moisture removal
- High thermal efficiency
- Reduced contact time for drying
- Reduction in the moisture content of powder and granules



### Applications

- Ideal for removal of surface and bound moisture in powder, crystalline or granular materials
- Granulation of food materials



### Oil Press OW510s-inox



#### Capabilities

- Processing up to 100 types of oilseeds into valuable oils
- Temperature-accurate cold or warm pressing of valuable oils
- Stepless speed regulation
- Up to 25kg of pressed material per hour (depending on purity and density of seeds)



#### Applications

- This oil press can be used for processing up to 100 different types of seeds including apple seeds, argan, cotton kernels, chia, peanut, fig, hemp, hazelnut, shea, coconut, cumin, pumpkin, flax, camelina, madcadamia, almond, poppy, moringa, palm kernel, rapeseed, Sacha inchi, safflower, sea buckthorn, mustard, sesame, soy, sunflower and walnut.



### Filter Press



#### Capabilities

- Liquid/solid separation through pressure filtration
- Compresses and dewateres solids concentration providing clearer filtrate solutions
- 32mm cake thickness
- Manual Hydraulic Closure System

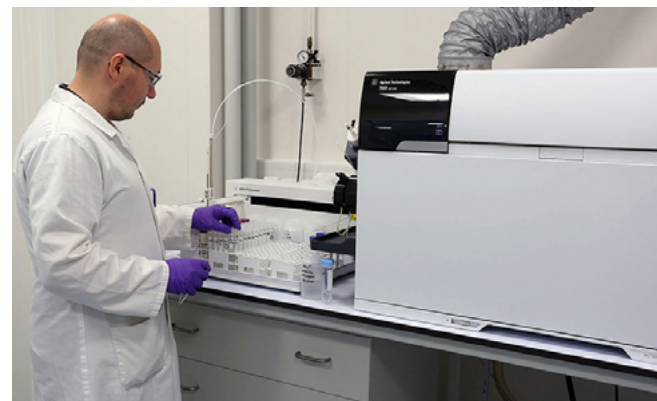


#### Applications

- Fish Oils
- Sunflower oil
- Rapeseed oil
- Linseed oil

# Nutritional and Compositional Analysis

The application of advanced analytical techniques is critical for the development of innovative food products, in particular, those with enhanced nutritional claims. The NPCFC encompasses a comprehensive facility to produce the relevant analytical results and satisfy a wide range of product label claims. The suite of analytical methods available within the NPCFC allows for the determination of macronutrients, sugars, minerals, water soluble and fat soluble vitamins, supporting and enhancing the product development activities within the Centre.



## Mineral Analysis System



### Capabilities

- Inductively coupled plasma mass spectrometer
- Allows accurate analysis of trace and major elemental minerals in a range of foods
- Modern robust system with broad linearity, allowing a broad range of minerals to be analysed without dilution
- System also suitable for single nano-particle analysis



### Applications

- Cost effective solution for elemental analysis:
- Key nutrients: Calcium, iron, potassium, magnesium, zinc and selenium
- Analysis of Sodium
- Food safety including heavy metals such as lead, cadmium and mercury



## Carbohydrate Analysis System



### Capabilities

- Ion chromatography system that is capable of measuring mono-, di-, oligo-, and polysaccharides in a single analysis
- Highly specific electrochemical detector, which allows unrivalled sensitive analysis of sugar free products
- Allows measurement of carbohydrates across a wide range of concentrations



### Applications

- Comprehensive measurement of sugars in prepared consumer food products
- Analysis and profiling sugars in food and beverages
- Authenticity of food and beverages



## Vitamin Analytical Platform



### Capabilities

- Rapid analysis of vitamins in food samples
- High capacity sampling system
- Unique ionisation system to provide improved sensitivity for fat soluble vitamins
- Allows quantitation of vitamins across a broad range of concentrations



### Applications

- Comprehensive measurement of vitamins in prepared consumer foods
- Fat soluble vitamins: A, D, E and K
- Water soluble B and C vitamins

# Sensory Analysis

The Sensory Suite in the NPCFC includes 18 tasting booths, preparation kitchens, panel training facilities and sensory software packages. Teagasc sensory researchers and technologists can support food and beverage companies using a wide range of sensory analysis and consumer studies applications.



## Sensory Analysis and Consumer Studies



### Capabilities

- Full range of discrimination tests (including triangle tests, duo-trio, paired comparison and difference from control)
- Trained descriptive sensory panels employing classic and newer, more rapid sensory methods
- Dynamic sensory methods
- Sensory shelf-life studies
- Quantitative and Qualitative consumer studies



### Applications

- Product Development
- Quality assurance profiles
- Benchmarking against competitor products
- Optimising the shelf-life of current and new products
- Understanding consumer perceptions of products and drivers of liking





## Biometric Technologies for Sensory Science



### Capabilities

- Facial expression software for measuring changes in facial expressions while eating
- Eye-tracking glasses for recording consumer's eye movements natural gaze behaviour
- Galvanic Skin Response (GSR) for measuring changes in the electrical characteristics of the skin
- Electroencephalography (EEG) helmet for recording the electrical activity of the brain



### Applications

- These technologies will be used to overcome the biases of traditional sensory techniques to better understand consumer's true reactions towards food products
- Applicable to all food and beverage products



### Microbial Shelf-Life Suite



#### Capabilities

This bio-containment suite contains a range of

- Processing equipment (mincers/grinders/ mixers/smokers)
- Packaging equipment (vacuum pack/ vacuum skin pack/ modified atmosphere)
- Storage cabinets (temperature and humidity controlled)
- Cookers (microwave, sous vide)
- Retail display cabinets



#### Applications

This suite will facilitate

- Shelf life and pathogen challenge tests on a wide range of PCF products
- Development and validation of new innovative approaches to control micro-organisms in PCF products and to assure food safety
- The ability to validate safety and shelf life of prepared consumer food using real food chain conditions will facilitate a key step in the commercialisation process for new products and processes



### Product Functionality Assessment Suite



#### Capabilities

- Particle Size Analyser
- Physical shelf-life Stability Dispersion Analyser
- Oxidation Stability Tester Rheometer
- Density meter
- Refractometer




#### Applications


- Fast, reliable particle size measurement of fragile and cohesive dry powders as well as wet dispersions
- Analysis of particle and droplet velocity distributions for creaming and sedimentation phenomena
- Determination of the oxidation stability of food oils and fat by AOCS International Standard Procedure Cd 12c-16
- Measurement of dynamic viscosity of low-viscosity up to semi-solid samples
- Quick and reliable refractive index, density and consistency measurements.




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