



Singapore
**Protein
Innovation
Center (PIC)**

Innovations for a **better world.**

BÜHLER

A commitment to reinvent our food system, together

A commitment to sustainability

By 2050, our planet's agricultural system will need to support 10 billion people. Transitioning to plant-based protein alternatives is seen as one of the most impactful way to save resources by bringing protein to the population without requiring a resource and time-intensive animal conversion.

To make this solution viable, it is essential that plant-based alternatives cater to the variety of tastes and dishes around the world, while taking advantage of local crops and ingredients available.

Embracing Asia's culinary diversity

Located in Singapore, at the heart of Southeast Asia, our Innovation Center for plant-based food is able to draw from the vibrant population diversity to develop new innovative products in Asia, for Asian population, using protein-rich ingredients available in the region.

The Innovation Center is also a platform for Singapore to achieve a unique food security challenge, as the city-state aims to locally produce 30% of its food by 2030.



A collaborative project

Inventing and scaling a new generation of plant-based alternative is an intense challenge that will require all parties from the food-value chain to collaborate to accelerate innovation.

In that spirit, Bühler decided to partner with Swiss flavoring leader, Givaudan, to set up this facility. Users of the Innovation Center will for the first time be able to access experts from both companies, as well as use lab and production equipment, all at one place.



Asia's first pilot-plant dedicated to alternative meat

Accelerating innovation

The Protein Innovation Center features a food-grade pilot-plant production line, a flavour lab, a test kitchen, as well as two storages for raw ingredients and final products.

The facility is supported by experts from both Givaudan and Bühler, who will support to accelerate your product development.

Ensuring scalability of your product

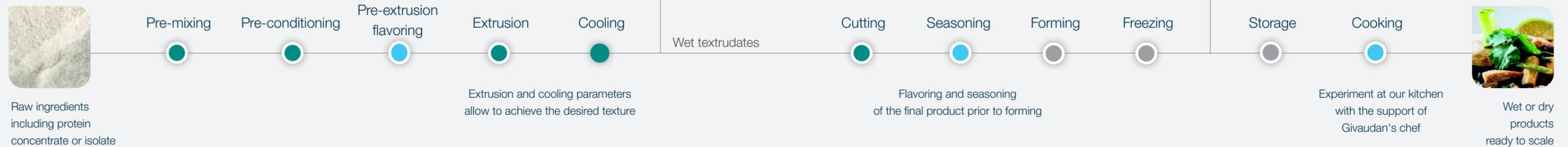
Plant-based food alternatives will only achieve the desired impact on the environment if their production can be scaled for mass-market adoption. Our pilot-plant has been uniquely designed with that factor in mind. With its pilot-plant capacity extruder and cooling-die, we ensure both wet and dry products created at the Innovation Center could be replicated on larger industrial lines.



Available at our facility

Raw material	x2 micro-differential dosing scales for protein and pre-mix. x2 liquid addition systems for oil and flavour solution.
Localization	Localization of products with novel ingredients.
Extrusion	Twin-Screw PiloTwin™ (BCTM-30/32D) 30-50 kg/hour with control system PolyControl (BCTB-3).
Aeration technology	Improve the bite, mouth-feel and colour of the product through gas injection, while enabling better marination from the micro-porous structure of the product.
Cooling die	Cooling die PolyCool50 for wet texturdate extrusion.
Cutting	Downstream cutting and shaping.
Packaging	Packaging area and finished good storage available.

Full expertise and support for the development of dry and wet plant-based meat alternative products.



Flexible product development options to achieve your desired objective



Feasibility trial with undefined recipes



Product development with existing recipes



Enhanced product development with final recipe

Customer Objective

- Develop proof of concept
- Design recipes with combination of protein sources
- Novel ingredients exploration
- Trial concepts

Knowledge & Expertise

- Support in basic texturisation, minor run optimizations and flavorings
- Process and mixture adaptations for fast prototyping and proof of concept

Facility Offers

- Minimum batch runs
- Multiple Trials

How to plan a trial with us

1. Get in touch

- Get in touch with us to discuss your needs and costs with one of our experts.
- Decide on the objectives of the trial and any special equipment needed.

2. Plan in advance

- Make sure you ship your material 1-2 months in advance to allow for customs clearance.
- Different raw materials are available at the PIC.
- Any final special requests must also be made at least 1 month before the trial.

3. Join us for your trial

- Join us physically at the Protein Innovation Center in Singapore.
- We are also fully equipped to host you virtually from the Protein Innovation Center if you prefer not to travel.

Typical trial length

2-3 days



Feasibility trial for novel ingredients

20-50 kg/day



Minimum raw material needed (product development)

70 kg/day



Team of in-house experts with over 50 years of combined experience



Christian Carrillo

Regional Head of Technology

Design of food manufacturing processes for Buhler's industrial solutions, over 20 years of experience developing impactful manufacturing processes.



Eric Ngo

Technologist

High and low moisture extrusion processes, development and improvement of products, Over 20 years of experience developing food manufacturing processes.



Adel Alkaff

Technologist

High and low moisture extrusion processes, planning and execution of extrusion trials, development and improvement of products, extrusion technology experience.



Melita Brainta

PIC specialist

Lab-scale research translation into pilot and full-scale commercial operation, high and low moisture extrusion processes, planning and execution of trials.



Laveena Vaz

Regional Product Manager

Flavour experience, Product technology development and localization, Chef and culinary experience.



Jia Li

Application Specialist

Pre and Post extrusion Specialist, testing and validation, overall support.

Global network supporting transition to sustainable proteins



Givaudan

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Bühler and Givaudan Protein Innovation Center (PIC)

Bühler Protein Innovation Center

Located at

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Scan the QR code
to know more



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