A HYBRID LINE FOR DAIRY AND PLANT-BASED

Enjoy the best of both worlds

Hey dairy producer! Are you ready to diversify into plant-based yoghurt-style products? With a production line capable of producing both dairy and plant-based products, you are well equipped to cater to a growing population of flexitarians. Their production processes share many steps, but parts of the line require choices that suit the more demanding of the two products.

The liquid base

While dairy yoghurt starts with milk, plant-based processes start by extracting the relevant proteins and other ingredients from the raw plant material. The extraction process results in a liquid base.

The extraction can be done directly at a production site, or you can purchase ready-made concentrates, powders or pastes from ingredient suppliers.

Formulation

Ingredients are often added to the base liquid to influence the composition, texture, stability and viscosity of the final product.

A high shear mixer with heating functionality is recommended for hybrid lines because:

- In plant-based products the number of ingredients could be higher than for dairy products.
- Some ingredients require warm mixing, and the addition of oil and certain stabilisers typically need high shear mixing to create a mix that is homogeneous and lump-free.
- In addition, a mixing station should include heating functionality.

Homogenisation and heat treatment

The formulated liquid base is heat-treated before fermentation. Dairy lines typically use plate heat exchangers.

A tubular heating system is recommended for hybrid lines because:

- Plant-based products might contain particles or fibres, which risk getting stuck in the channels of a plate heat exchanger.
- Certain plant-based products quickly build up layers of deposits, or fouling, on the plate surface when heated.
- With tubular systems, the impact of fouling will be smaller, and the cleaning interval can be extended.

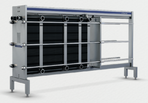
Culture dosing and fermentation

Starter cultures are added to both dairy and plant-based products either using a starter dosing system inline on the way to the fermentation tank, or directly into the fermentation tank.

Low shear agitation and emptying systems are recommended for hybrid systems, because:

- After fermentation dairy products are viscous and very sensitive to mechanical shear.
- A plant-based product containing starch is generally less sensitive to mechanical shear than a dairy-based product, and therefore less in need of low shear design.

Smoothing and cooling



On the way from the fermentation tank to the cooler the product is smoothed, to remove any graininess and make the product more homogeneous and glossier. For dairy products, simple and relatively inexpensive smoothing valves and slot strainers are often used.

A dynamic texturiser and low shear cooling system is recommended for hybrid lines, because:

- For a line that will be used for both dairy and plant-based products it would be a good idea to add the flexibility of a dynamic texturiser.
- A plate-based cooler designed for shear-sensitive dairy yoghurt can be used for cooling both plant-based and dairy products.
- If fibres or particles are included, then a tube-based system is preferred.

Buffering, fruit dosing and filling

Plant-based products often have higher viscosity at this point, while dairy products develop a lot of viscosity in the package after filling.

The viscosity is a key factor because:

- A higher viscosity can make the fruit preparation more difficult to disperse in the product. However, the static mixer solution often used in dairy installations is typically sufficient for the viscosity range of both plant-based and dairy products.
- If your plant-based product falls within the viscosity range of your existing filling machine, then it is possible to use it for your new products.

Managing allergens

Both dairy and plant-based materials contain allergens. As there are plant-based raw materials in many different allergen groups, there is not only risk of cross-contamination between dairy and plant-based products, but also between different plant-based products.

Reuse of cleaning solutions is NOT recommended in hybrid lines because:

- Efficient cleaning in place is essential for avoiding cross-contamination.
- The differing levels of protein, fats and carbohydrates determine the choice of cleaning solution concentration, circulation time and temperature.

Sounds interesting?

Expanding into plant-based yoghurt-style products doesn't have to be complicated or require major investments. With our processing knowledge and expertise, we can advise you on creating a hybrid line, through:

- Added or replaced components
- New settings and processing parameters
- Recommended ingredients
- Recommended cleaning procedures

Contact us to learn more

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