The value of adding value

Tetra Aldose®
Tetra FlexDos™
Freedom to innovate

Milk is a healthy, nutritious and affordable product. There’s nothing new about that. However, the fact that there is nothing new about a product can be a challenge; these products are seen as commodities, with little opportunity for profitable margins and growing market share. That’s why there can be great value in adding value....

Catching the trends
In a growing number of markets, consumers are choosing milk products that offer something extra in the form of health and wellness – value-added products that deliver more in terms of nutrition and taste.

Fortified and functional products cost more to produce, but the added value gives a significant return to those producers who can add value while keeping their costs down.

A wide variety
Vitamins, omega-3, aromas, probiotics and enzymes like lactase are all good examples from the long list of ingredients used for adding value to the base product. These ingredients are much costlier than the base product, of course, but they can turn a commodity into a premium product and give your bottom line quite a boost.

Great potential for innovation
One of the most important aspects of value-added milk products is the potential for product development and innovation. By working with different ingredients, you can differentiate yourself from your competitors, find new trend-setting products, build your brand and achieve handsome profits. It can be a real gateway to your future success.

Food safety – more than ever
Food safety has never been a trend. It’s a prerequisite for food producers’ survival. And never has food safety been more important. Thanks to automated systems that minimize human error and human contact, the potential for uncompromising food safety has never been greater.

Getting it right
Along with the use of costly ingredients comes the need to make the most of them. There are different ways to safely produce value-added milk products, some traditional and some innovative, some wasteful and some highly efficient. And sometimes a small investment can mean a big long-term profit.
Existing opportunities

- Enzymes, e.g. lactase
- Probiotics
- Lactoferrin
- Omega 3
- Vitamins
- Calcium
- Aromas & flavourings
- Colourings
- Lipids
- Natural colourings
- Stabilizers
- Salt
- Rennet
- Sugar

Future opportunities

- Antioxidants
- Conjugated linoleic acid (CLA)
- Prebiotics
- Iron
- Other ingredients not suitable for sterilization by heat
21st century UHT dairy production

There are two main approaches to producing UHT milk products: in batches or in-line. Batch production is almost as old as the products themselves. But there is a choice, and here are 12 key differences that are worth considering.

1. Hardware
Take a look at the sketch of the batch and in-line solutions. You can immediately see that there’s much less hardware needed for the in-line solution: no need for a thermizer/pasteurizer and no need for the intermediate storage tanks. The milk goes directly from reception to the UHT unit, followed by a very compact in-line aseptic dosing unit placed before or after the aseptic buffer tank. This means a much smaller footprint – and a reduced investment cost.

2. Utility costs
With no need for the thermization/pasteurization step, energy costs are significantly lower. And with less hardware, there’s less CIP (cleaning in place), meaning that your costs for water, energy and detergent will also be much lower.

3. Product quality
When a product must be heated twice, as in batch production, the extra heat load on the product will impact the quality. With in-line dosing after heat treatment, taste, colour and functional properties remain unchanged. What you taste is what you get! Moreover, automated in-line dosing offers much greater precision and repeatability, assuring you get the desired product quality every time.

4. Ingredient costs
In batch production, costly ingredients must be “overdosed” to achieve the right effect, as their full effect is lost when they are heated together with the product. With in-line aseptic dosing, ingredients are not added until after UHT treatment of the product, thereby retaining their full value.

Here’s an example: If batch production of lactose-reduced milk requires 3.0 g/l of lactase, in-line aseptic production achieves the same reduction with just 0.2 g/l.

5. Product loss
What happens if you get a disruption in your downstream production? In batch production, this can mean losing an entire blending tank full of valuable, formulated product. With in-line aseptic dosing, there’s hardly any product loss at all!

6. Flexibility
Moreover, with batch production you have entire tanks full of formulated product that must be used up before you can switch to production of another formulation. In-line aseptic dosing gives you full production flexibility and enables just-in-time production.
7. Faster processing
Most conventional batch solutions for formulated UHT milk processing may take days from raw milk to the packaged product. Our aseptic in-line dosing solutions cut the time from days to just a few hours. All with full control, top product quality, minimal environmental impact and uncompromising food safety.

8. Product innovation
Developing a new product using the conventional batch approach is a matter of trial and error, and you have to keep adjusting the process as well as the recipe. It’s time-consuming and it’s resource-consuming. With aseptic in-line dosing, you can avoid having to adjust the process, and focus on the recipe, working with one parameter at a time. This gives you tremendous product development potential for the future.

9. Unique products
Certain value-adding ingredients, such as probiotics and lactoferrin, are so heat-sensitive that they simply cannot be produced in conventional aseptic batch lines.

10. The environmental bonus
Any process that cuts the consumption of water, energy and detergent, as well as product loss, is not only going to save you money, but reduce your environmental impact as well. That is the “environmental bonus” of aseptic in-line dosing – sustainable in every sense of the word.

11. Labour costs
A batch dosing line is more complex, with much more manual labour required. In-line aseptic dosing is simple, labour-saving, precise and consistent. You not only cut your labour costs, but also the consequential costs of human error.

12. Payback
In-line aseptic dosing means lower hardware costs, lower labour costs, lower operational costs and less waste of costly ingredients. This gives a very short payback time, after which all those savings are money in the bank – year after year!

So is an in-line aseptic dosing solution the best for your production? Not necessarily. We offer both batch and in-line solutions, so we can offer you objective advice about what’s best for you.
The unique advantages of aseptic in-line dosing from Tetra Pak

Today’s milk producers have many choices – opportunities to optimize production, cut costs and achieve more. We offer two kinds of in-line aseptic dosing solutions. Compared to batch dosing, they offer all these advantages:

- Less hardware and a much smaller footprint.
- Lower costs for water, energy and detergent, as less equipment is required.
- Improved product quality, thanks to lower heat load, greater dosing precision and repeatability.
- Lower cost for ingredients, as they don’t have to be heated and over-dosed.
- Lower product loss thanks to greatly reduced hold-up volumes of formulated product.
- Easier product innovation and evaluation, as you can focus on the recipe.
- Reduced environmental impact thanks to reduced consumption of utilities and product loss.
- Reduced manual labour, including both the costs and risk of human error.
- Short payback time – normally about one year.
- Fast, easy product changes for maximum flexibility – up to 4 times as fast as batch production!

“There is an in-line aseptic dosing solution that matches your needs – and saves you money.”
Tetra FlexDos

In addition, Tetra FlexDos offers:
• Quality-assured ingredients are handled in a closed system.
• Built-in traceability and recipe management system.
• Dosing of probiotics

Advanced technology for the ultimate in aseptic dosing flexibility

Tetra Aldose

In addition, Tetra Aldose offers:
• Low production cost at long and high-volume product runs.
• Built-in filter integrity test
• Wide dosing range

A sound approach to cost-efficient aseptic dosing
**Tetra Aldose – cost-efficient aseptic dosing**

Tetra Aldose can be used for a wide dosing range and is very cost-efficient for production with the same ingredient.

The process also greatly reduces the consumption of ingredients and makes it possible to use heat-sensitive ingredients in an efficient way.

**The set-up**

When using Tetra Aldose for continuous in-line production with the same formulation, the unit is placed directly after the UHT unit. The formulated product then goes to an aseptic buffer tank or directly to the filling machine.

If you have several filling lines and want to use different formulations, you can instead place one Tetra Aldose unit for each filling line after the aseptic buffer tank, so that each formulated product goes directly to a filling machine.

**How it works**

Tetra Aldose is an aseptic in-line dosing unit with online ingredient filtration, based on sterile filtration, and is suitable for true solutions and suspensions containing particles smaller than 0.22 microns.

When working with Tetra Aldose, you purchase your own ingredients and prepare them before feeding them into the Tetra Aldose balance tank, where the ingredients are stored during production. Tetra Aldose uses a flow transmitter and speed control positive pump to accurately dose the ingredient through a pre-filter and sterile filter and then through an aseptic valve cluster into the main aseptic product line, where a Tetra Aline in-line mixer blends the aseptic ingredient and main product into a uniform formulated product. Tetra Aldose is fully automated and includes automatic sequences for sterilization, production, CIP and a filter integrity test.
Tetra FlexDos – the ultimate in aseptic dosing flexibility

Tetra FlexDos is a unique and highly innovative new technique where ingredients are injected with high precision into the base product, just before filling.

Tetra FlexDos enables on-demand production with even greater flexibility, and precision than Tetra Aldose – which is saying a lot – and represents the state of the art in in-line aseptic dosing.

The set-up
The compact Tetra FlexDos unit is normally placed just before the filling machine, so that each formulated product goes directly to the filling machine. With Tetra FlexDos, it is fast and very easy to change between different product formulations.

If desired, particularly when frequent product changes are not required, it is possible to place the Tetra FlexDos unit directly after the UHT unit. The formulated product then goes to an aseptic buffer tank or directly to the filling line.

How it works
Tetra FlexDos is an aseptic in-line dosing unit with off-line ingredient filtration or UHT treatment. The pre-sterilized ingredient is delivered in aseptic bags from a variety of ingredient suppliers and is then connected by a special patented sterile hose and needle to the aseptic injection chamber on the main product pipe of the Tetra FlexDos unit.

All ingredients are handled in an entirely closed system, ensuring safe aseptic transfer. Barcodes on the ingredient bags assure that the correct ingredients are chosen for the selected recipe, eliminating the risk of human error.

Tetra FlexDos uses a flow transmitter, weight systems and speed-controlled peristaltic pump to accurately dose the ingredient through the sterile hose and needle into the main aseptic product line where it is blended to a uniform formulated product by the turbulent flow. The whole operation is controlled by an advanced recipe management and control system that enables tight dosing control and full traceability. The unit required no separate sterilization or CIP system for the main product pipe – the ordinary process handles that.
Reliable aseptic dosing from a reliable supplier

Tetra Pak is a true pioneer in aseptic technology for the food and beverage industry, and our innovation covers the entire value chain for production solutions for dairy products. By making our knowledge and experience available to you, we hope to enable you to get more out of your business.

Safety first
Our dedication to food safety is without compromise. Indeed, it is part of our company motto – “making food safe and available, everywhere” – one of the driving forces in our development of aseptic technology. Our in-line aseptic dosing units and solutions reflect this dedication.

The ecology angle
Some people view responsible environmental performance as an added cost. We see it as a smart way to save money and nature! By designing processes and equipment that enable you to greatly reduce your water and energy consumption, as well as your product loss; you can do the environment a favour while contributing to your bottom line.

Tetra Pak believes in making food safe and available, everywhere. And in using advanced technology to provide cost-efficient solutions with guaranteed performance.

A broad perspective
Tetra Pak not only develops innovative equipment and units. We also offer complete production solutions that are fully harmonized and optimized for maximum efficiency. These include Tetra Lactenso dairy production solutions – our family of customized automated solutions for just about every type of dairy production: aseptic, chilled and fermented.

We also offer complete, plant-wide solutions that include packaging lines and logistic solutions.

Guaranteed performance
We back our production solutions with performance guaranteed, specified in writing to cover the operating parameters that are of importance to you. These guarantees are validated. And we honour them.

Long-term support
Tetra Pak’s scope of delivery includes the offer of long-term technical service and support. Our aim is not only to keep you up and running, but to offer you upgrades and extensions if your needs change, or if we have further developments. It’s an investment in your future!