



CASE:

versatile engineering
solution for the Southern
Hemisphere's largest and
most sophisticated purpose-
built infant formula facility

**Flexibility, innovation, efficiency are key factors
in leading the technology game**



► The Challenge

Tetra Pak was awarded a contract to build a turnkey drying facility for a young "aggressively entrepreneurial" New Zealand business, enabling them to become a leading infant formula producer. Synlait, a dynamic company, whose name is derived from "Synergy and Milk," manufacture sophisticated specialty infant and adult nutritional formula products. Their main focus is on the Chinese "Premium Category" consumer market that is known for its growing demand for quality infant formula products, and for high food safety requirements. Synlait Milk are also supplying nutritional powders to a number of countries in South East Asia and Australasia.

► The Solution

Accurate batch composition is the main factor in nutritional powders production and is regulated by sophisticated in-process monitoring at the stage of combining of the fresh milk with water, skim, lactose or oils as per the recipe specification.

Tetra Almix® vacuum mixers offer flexibility of operation with macro ingredients addition for nutritional formula production, as well as with lactose reconstitution for manufacturing of commodity powders. A barcode reading system ensures the right micro or macro ingredients are added manually at the right stage of the recipe preparation. Addition sequences, batch traceability and full automation was provided by the comprehensive Tetra PlantMaster™ software.

Nutritional products are known for their high lactose, whey and solids content and stickiness. Their exceptional microbiological properties have to be retained throughout the whole production cycle. Tetra Magna® MVR/TVR evaporator design allows for up to

50% evaporator capacity turndown, so that infant formula products could be processed under the most gentle and slow heating conditions, while keeping the plant at full capacity for commodity manufacturing.

Tetra Magna® Wide Body Dryer delivers ultimate flexibility and energy efficiency. The plant energy consumption has been substantially reduced thanks to the ability to bypass the cyclones. This enables the exhaust air to be sent directly to the CIP-able baghouse on commodity powders, so the cyclones are only used on infant formula products.

Tetra Pak powder handling system transports powder from the sifter to the dryers' blending circuits. The flexible powder blending circuits and nitrogen gas flushing (MAP) prior to packing secure a high quality end product. High capacity ingredient dumping facility includes automated cutting and tipping of 25 kg bags' plastic inner liners and contamination-free tipping of bulk bags.

Being the head contractor, Tetra Pak was responsible for building and services for the process plant within the turnkey project delivery, which ensured streamlined project execution.

► The Result

Tetra Pak's infant formula project at Synlait encompasses a range of state-of-the-art engineering solutions and serves as a reassurance that the new plant is able to keep up with the highest industry standards for a number of years to come.

"It would create more export growth and sustainable jobs in New Zealand but, more broadly, it was another sign of a much bigger picture that was reshaping the world," said Tim Groser, New Zealand Trade Minister.

CASE: facts

Synlait Milk, Dunsandel, New Zealand



Synlait Milk

COMPANY

Synlait Milk

SITE

Dunsandel, Canterbury,
New Zealand

PROCESS

Infant milk formula plant

PRODUCT

Infant and adult nutritional formulations, functional
food ingredients and specialized milk powder products

PRODUCTION CAPACITY

10.5 tonne of commodity powder, or
7 tonne of nutritional powder per hour

DAILY OPERATION

24/7 - four shifts operation

PROJECT TIME FRAME

Awarded in June 2010
Installation started January 2011
First commercial product in September 2011

INVESTMENT LEVEL

Total contract - 33 MEUR

KEY EQUIPMENT

- Milk storage silos
- 2x Tetra Alex® Homogenizers
- Tetra Centri® Separator
- Tetra Almix® Vacuum Mixer
- Tetra Plex® Plate Heat Exchanger
- Tetra Magna® MVR/TVR Evaporator
- Tetra Magna® Wide Body Spray Dryer
- Hygienic Powder Transport by Tetra Pak®
- Hygienic Combined Bag Dump - bulk and 25 kg bags by Tetra Pak®
- Powder Packing Feed by Tetra Pak® with nitrogen flushing (modified atmosphere packing)
- Full automation, traceability and integration of all phases of the process with Tetra PlantMaster™

HIGHLIGHTS:

- Overall design philosophy enabling hygienic production of infant formula powders
- Innovative energy efficient design of powder fines system
- Significant heat recovery due to the MVR/TVR evaporation technology
- HEPA filtration of all process air; all stainless steel and food grade product and process air contact parts
- Versatile powder blending and handling plant
- Integration of the automated third party 25 kg packing and palletizing

KEY PERFORMANCE CRITERIA

- Process flexibility to handle both commodity and infant formula powders
- Up to 50% turndown of the evaporator capacity
- Compositional control of nutritional ingredients
- Total batch traceability from fresh milk reception to warehouse
- 15 months from start of engineering to the first product

For further information, please contact your local Tetra Pak company or send an e-mail to info.processing@tetrapak.com.

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